HF-VHF-UHF ANTENNAS

The ATN range of HF, VHF and UHF Yagi, Log Periodic and dipole antennas are ruggedly constructed for long life. High grade tapered, swaged and seamless aluminium is used throughout. The precision made injection moulded insulators are tough Lexan.

AH HF antennas include a 2 KW PEP balun, while the VHF and UHF range are supplied complete with a 200 W PEP balun. Also they may have up to 4 driven elements which provide both high gain and good broadband performance. The UHF range use “N” type connectors on their baluns.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>DESCRIPTION</th>
<th>GAIN (dBi)</th>
<th>BOOM (M)</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-14 4-1</td>
<td>20 metre heavy duty rotary dipole</td>
<td>9.2</td>
<td>6.0</td>
<td>183.00</td>
</tr>
<tr>
<td>14-14 4-2</td>
<td>20 metre 2 element yagi</td>
<td>10.0</td>
<td>7.0</td>
<td>276.00</td>
</tr>
<tr>
<td>21-21 5-3</td>
<td>15 metre 3 element yagi</td>
<td>9.2</td>
<td>4.5</td>
<td>122.00</td>
</tr>
<tr>
<td>21-21 5-4</td>
<td>15 metre 4 element yagi</td>
<td>9.9</td>
<td>6.0</td>
<td>204.00</td>
</tr>
<tr>
<td>21-21 5-5</td>
<td>15 metre 5 element yagi</td>
<td>11.2</td>
<td>8.0</td>
<td>296.00</td>
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VHF MONO BAND YAGI's

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<tr>
<th>MODEL</th>
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<th>GAIN (dBi)</th>
<th>BOOM (M)</th>
<th>PRICE</th>
</tr>
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<tbody>
<tr>
<td>50-52 5-5</td>
<td>6 metre 5 element yagi</td>
<td>11.9</td>
<td>3.5</td>
<td>97.00</td>
</tr>
<tr>
<td>50-53 6-6</td>
<td>6 metre 6 element yagi</td>
<td>14.2</td>
<td>5.5</td>
<td>153.00</td>
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<tr>
<td>40-40 10-10</td>
<td>10 metre 10 element yagi</td>
<td>16.2</td>
<td>9.0</td>
<td>194.00</td>
</tr>
<tr>
<td>144-148 8-8</td>
<td>8 metre 8 element yagi</td>
<td>12.7</td>
<td>2.2</td>
<td>60.00</td>
</tr>
<tr>
<td>144-148 12-12</td>
<td>12 metre 12 element yagi</td>
<td>14.6</td>
<td>3.8</td>
<td>71.00</td>
</tr>
<tr>
<td>144-148 16-16</td>
<td>16 metre 16 element yagi</td>
<td>17.0</td>
<td>6.3</td>
<td>91.00</td>
</tr>
<tr>
<td>144-148 24-24</td>
<td>24 metre 24 element yagi</td>
<td>17.3</td>
<td>6.6</td>
<td>91.00</td>
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UHF MONO BAND YAGI's

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<tr>
<th>MODEL</th>
<th>DESCRIPTION</th>
<th>GAIN (dBi)</th>
<th>BOOM (M)</th>
<th>PRICE</th>
</tr>
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<tbody>
<tr>
<td>420-470-6</td>
<td>70 cm wideband 6 el.</td>
<td>10.2</td>
<td>0.6</td>
<td>46.00</td>
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<tr>
<td>420-470-14</td>
<td>70 cm wideband 14 el.</td>
<td>14.2</td>
<td>1.5</td>
<td>67.00</td>
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<tr>
<td>420-440-10</td>
<td>70 cm special 10 el.</td>
<td>15.7</td>
<td>1.85</td>
<td>71.00</td>
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<tr>
<td>420-450-27</td>
<td>70 cm wideband 27 el.</td>
<td>16.7</td>
<td>3.05</td>
<td>101.00</td>
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<tr>
<td>432-16 LB</td>
<td>70 cm Narrow band 16 el.</td>
<td>17.2</td>
<td>3.7</td>
<td>87.00</td>
</tr>
<tr>
<td>47-5</td>
<td>UHFCB 5 element yagi</td>
<td>9.2</td>
<td>0.65</td>
<td>46.00</td>
</tr>
<tr>
<td>47-11</td>
<td>UHFCB 11 element yagi</td>
<td>17.2</td>
<td>1.7</td>
<td>67.00</td>
</tr>
<tr>
<td>47-15</td>
<td>UHFCB 15 element yagi</td>
<td>18.0</td>
<td>2.8</td>
<td>77.00</td>
</tr>
<tr>
<td>580-14</td>
<td>50 cm ATV repeater 14 el.</td>
<td>17.5</td>
<td>2.0</td>
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</tbody>
</table>

TV ANTENNAS

Designed for extra high gain in poor signal situation on both VHF and UHF.

COMMERCIAL ANTENNAS

A wide variety of commercial antennas can be supplied on request. For example the model 480-512-14 UHF commercial trigger link antenna.

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If you have an application but no antenna ATN antennas can probably help you. Contact us with your requirements.

SHORTENED BOOM HF AMATEUR ANTENNAS

On special order ATN can supply a range of shortened boom HF yagi's for those with space problems.

PHASE III SATELLITE PACKAGE

This new antenna system due to be available soon has both 144 and 430 MHz antennas mounted on the one sub-assembly to allow tracking of the new PHASE III Amateur satellite.
in this issue...

A NICAD CHARGER .................................................. 16
A SQUARE-ONE RECEIVER ........................................ 8
ALL MEN ARE EQUAL IN THE EYES OF RADIO .................................................. 40
ENTHUSIAST .......................................................... 40
ANOTHER ANTENNA STORY ........................................ 18
BILL BLITHERINGTWIT IN TROUBLE AGAIN .................. 17
CHUCKLE CORNER .................................................... 26
COMPETITION WINNERS ........................................... 29
DXPEDITIONS! ARE THEY WORTH THE TROUBLE? ........ 27
DO YOU KNOW WHAT BONITO IS? .............................. 14
FAREWELL FUNCTION FOR PETER DODD .................... 9
GETTING TO KNOW YOU ......................................... 14
ISN'T IT STRANGE? ................................................... 31
MY RULER ............................................................. 15
PHASED VERTICAL ANTENNA ARRAYS ....................... 10
THE RADIOCOMMUNICATIONS BILL .......................... 35
WCY — WORLD COMMUNICATIONS YEAR .................... 6
WHAT THEY SAY IS WHAT THEY MEAN ..................... 31
WHO SAYS YOU DON'T HAVE ROOM TO PUT UP A LONG WIRE ANTENNA? ........... 13

... departments...

ALARA ................................................................. 35
AMSAT Australia ...................................................... 38
AR Showcase .......................................................... 25
Advertising Index .................................................... 48
Awards ................................................................. 34
Book Review — How to Buy and Convert Surplus Electronic Equipment ................. 31
Commercial Kinks — CW Switching with TS1520S ........ 20
Commercial Kinks — FT290R Battery Pack Blow-up Prevention ......................... 26
Contests ................................................................. 42
Education Notes ....................................................... 37
Five-Eighth Wave .................................................... 45
Forward Bias ........................................................... 45
Hamads ................................................................. 48
How's DX ............................................................... 22
International News ................................................... 4
Intruder Watch ......................................................... 31
Ionospheric Predictions ............................................ 46
Letters to the Editor .................................................. 47
Listening Around ...................................................... 28
Main QSP ............................................................... 5
National EMC Advisory Service — Quietening Switching Power Supplies ........... 32
Obituaries ............................................................... 47
Pounding Brass ......................................................... 30
QSP ....................................................................... 39
Service Bulletin — Yaesu FRG-770SW Mod ................ 12
Spotlight on SWLing ................................................ 39
Thumbnail Sketches — Leighton Gibson, Norm Odgers, Bill Rohde ................. 19
Try This — Folded Mobile Whip .................................. 21
Try This — Phase Shift Frequency Multiplier ................ 15
VHF UHF — an expanding world ................................ 36
VK2 Mini Bulletin ..................................................... 44
VK4 WIA Notes ........................................................ 41
WIA News ............................................................... 4
WICEN News .......................................................... 25

on the cover

1983 has been proclaimed World Communications Year (WCY). Our cover features the official emblem and throughout 1983 we will have news and information from VK and throughout the world in reference to WCY. Turn to pages 5, 6 and 7 for our first features.
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VK3.5.6.7.8: Graeme Scott VK3ZR

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and 1983 club and school courses.

COUPON

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SERVICE SPECIALISTS for all types of RADIO
EQUIPMENT — TELEVISION RECEIVERS —
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* We have the largest range and consistently lowest prices.

Dick Smith Electronics: Australia's largest supplier and Yaesu factory approved distributor and service centre.

Dick Smith Ham Shacks are located in the stores listed to the right. You'll find a licenced amateur at each shack - someone who can talk your language and give you any help you need. (Amateur items also available at other Dick Smith stores).

The brilliant FT ONE

FT707

The FT707 is a full power HF/SSB all mode transceiver with 10 watt RF output. It includes all WARC band coverage, LED display and it's push button operation and all the things the amateur needs for sale and get reliable mobile operation. But it's more than that - it's a state of the art multi-mode transceiver with 3x6146B's in the base, in a super value package.

NOW ONLY $699.00

The Go Anywhere

FT290R

The brilliant Yaesu FT-290R is a portable or mobile fully microprocessor-controlled transceiver, with 10 watt RF output. It includes all WARC band coverage, LED display, high power operation and it's easy to operate. It includes all the things the Amateur needs for sale and get reliable mobile operation. But it's more than that - it's a state of the art multi-mode transceiver with 3x6146B's in the base, in a super value package.

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NEW FT102

Super compact! Super value!

30W 2M Linear Amp

This is a fully featured high efficiency Linear amp for 2 meters. 30 watts output - 13.8V DC supply makes it perfect for mobile use. Dual timer operation from 500W CW or FM. Reverse polarity protection works well with any 2M transceiver with up to 3 watts output.

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The Go Anywhere

FT290R

The brilliant Yaesu FT-290R is a portable or mobile fully microprocessor-controlled transceiver, with 10 watt RF output. It includes all WARC band coverage, LED display, high power operation and it's easy to operate. It includes all the things the Amateur needs for sale and get reliable mobile operation. But it's more than that - it's a state of the art multi-mode transceiver with 3x6146B's in the base, in a super value package.

NOW ONLY $699.00

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$50,000 IN PRIZES TO BE WON. SEE YOUR NEAREST DICK SMITH STORE.
PUBLIC RELATIONS:

Mr John Hill (VK3DKK) currently the AR advertising manager has been appointed to the part time position of Public Relations co-ordinator. The appointment was made at the executive meeting held on 18th November, 1982. This follows the resolution made at the 1982 Federal Convention.

John's duties will include co-ordination of each division's current PR packages into a central point, and he will liaise directly with the divisions in the near future to establish a unified approach. A programme was drawn up by the convention, and gave suggestions as to where our efforts should be directed. A small budget was allocated and John will be working in close contact with the Executive at all times.

In due course it is hoped to establish a central 'bank' of media contacts for divisional use.

HOW TO APPLY FOR A GERMAN SHORT-TERM AMATEUR RADIO LICENCE

Licensed foreign radio amateurs staying temporarily in the Federal Republic of Germany (on visit or in transit) may obtain a short-term amateur radio licence from the Deutsche Bundespost, valid for a period of three months, by directing their application, at least 6 weeks in advance.

German short-term amateur radio licences are issued to foreign amateurs for periods of three months only, beginning on the first day of the month as requested by the applicant. The short-term licence will entitle the foreign amateur to operate a fixed, mobile or portable amateur station on the territory of the Federal Republic of Germany according to the class of licence.

The call sign to be used will consist of the prefix DL/. . . (for class B), DH/. . . (for class A) or DC/. . . (for class C) followed by the home callsign of the foreign amateur. When operating mobile or portable on telegraphy, the indicators . . /m or . . /p should be added to the above mentioned call sign, or the words . . /mobile or . . /portable in the case of telephony operation. (Example: DL/VK3 ABC working from a fixed location, DL/VK3 ABC/mobile working mobile on telegraphy).

On issuance of the licence by the Deutsche Bundespost the holder undertakes to comply with all German amateur regulations.

Further information may be obtained from Federal Office of WIA.

VSE ACTIVITY DAY 1983

HARTS is pleased to announce that once again there will be a VSE activity day between 0001 l)TC Sat. 2nd April 1983 and 2359 UTC Sun 3rd April 1983.

As in previous years many VSE stations will be active on all band/modes. 1983 is World Communications Year (WCY) and during 1983 the special call-sign V56WCY will be in use by the HARTS club station. Special QSL cards will be issued for QSOs with V56WCY. QSLs for WCY station should be sent to the Hong Kong QSL bureau manager, PO. Box 541, Hong Kong.

NEW CALL SIGN SERIES ALLOCATED TO AMATEUR STATIONS

According to the ITU Notifications, the following new call sign series have been allocated to amateur stations in the countries mentioned respectively since the beginning of 1982.

Bahrain — A92AA — A92ZZ
Cape Verde (Islands) — D44AA — D44ZZ
Comoros — D68AA — D68ZZ
Dominica — J73AA — J73ZZ
Gambia — C53AA — C53ZZ
German Democratic Republic — Y20AA — Y29ZZ
Zimbabwe — Z21AA — Z29ZZ

FREQ. ALLOCATIONS FOR HONG KONG AMATEURS

10 MHz Band

As you know HARTS had made formal application for use of this band by holders of class 'A' licence as far back as November 1979. At a meeting with the telecomms authorities in April this year all seemed to be fine and the authorities were prepared to allow us the use of the band after they had cleared this with the mainland China authorities. The latest position is no different due apparently to staff changes and summer holidays within the telecomms dept. Also they are shortly filling the vacant post of head of freq allocation.

In short we are sure to get this band but due to the above administrative problems within the dept. concerned it now looks that this will not happen until about 1st Jan, 1983.

50 MHz Band

In Hong Kong this is a shared band and HARTS has for some time been pressing the telecomms dept. to allocate more of it to the amateur service. We have at their request made formal application for the following segments of the band and telecoms dept. have agreed in principle subject to the existing users' agreement. This should be a formality and we are hopeful of getting this allocation on 1st Jan, 1983.

UPCOMING REGION 2 CONFERENCE

IARU Region 2 Executive Committee in its meeting in Brasilia on June 19, 1982, among others approved that the next regional conference will be held in Cali, Colombia from June 6th to the 11th of 1983.

More detailed information will follow. However this secretariat wishes to inform this to our Headquarters as well as Regions 1 and 3 without further delay and thus extend the first formal invitations to our central and sister IARU organizations.

Specifically the minutes of our Brasilia meeting will also say: . . . following an established tradition, the EC will also accept documents to be presented by IARU Hq, Region 1 EC and Region 3 Directors." So please consider sending your formal proposals as well as any information papers to this secretary if possible before March 6, 1983. Any documents originated by other IARU bodies, such as special committees, working groups or Region 1 and 3 societies, should be presented through Hq. or R/1 and 3 as may be the case.

From Pedro Seidemann, YV5BPG, IARU Region 2 Secretary

The success of this venture relies wholly on divisional input and support, and is an area which has been neglected for many years. It is hoped that the WIA involvement with a public relations arm will be an ongoing facility, however our continued efforts in this area will be subject to close review at the 1983 Federal convention.

RETIREMENT.

Mr J. D. Williamson VK3JD of the Department of Communications has recently retired.

During his service with DOC, he was deeply involved in the amateur service and congratulations and best wishes for a happy retirement go with him.

AR.
“Everyone has the right . . . to seek, receive and impart information and ideas . . . through any media.”

(Art. 19 of Universal Declaration of Human Rights adopted by the United Nations General Assembly on 10 December 1948)

Next only to food, shelter and energy on the list of vital needs for human survival, communications constitute the life blood of today’s world and serve as a constant reminder of the oneness of human destiny.

The past half century or so has witnessed an exponential growth in the world’s communications capability; yet, with the introduction of every new service, man’s needs grow even faster and the spiralling demand for more and more communications facilities is a reflection of man’s endless search for a better life.

The development of communications infrastructures all over the world is the primary objective of the World Communications Year. The world of today is getting smaller and smaller, thanks to the constant growth of communications networks in many countries. However, there exists an imbalance in the development of communications infrastructures in various parts of the globe. Only through the redress of this imbalance by a more even development of communications infrastructures everywhere can the peoples of the world be brought together, thus creating more stable conditions for the maintenance of international peace and security.

Better communications mean . . .
. . . better living conditions.

WCY Secretariat
International Telecommunications Union
Geneva, Switzerland
"The General Assembly,

Recognizing the fundamental importance of communications infrastructures as an essential element in the economic and social development of all countries.

Convinced that a World Communications Year would provide the opportunity for all countries to undertake an in-depth review and analysis of their policies on communications development and stimulate the accelerated development of communications infrastructures.

1. Endorses the proposal made by the Economic and Social Council in paragraph 1 of its resolution 1981/60 and proclaims the year 1983 World Communications Year: Development of Communications Infrastructures, with the International Telecommunication Union serving as the lead agency for the Year and having responsibility for co-ordinating the inter-organizational aspects of the programmes and activities of other agencies;

2. Requests all States to participate actively in the attainment of the objectives of the World Communications Year;

Extract from United Nations General Assembly resolution 36/40 adopted on 19 November 1981"
THE FEDERAL REPUBLIC OF GERMANY FIRST TO DONATE FOR PRIZE-WINNERS OF "YOUTH IN THE ELECTRONIC AGE"

Following a campaign launched by the Year’s secretariat inviting Member countries of the ITU to donate prizes for the winners of the "Youth in the Electronic Age 83", the worldwide photo and drawing competition organized in the framework of TELECOM 83 as one of the activities of WCY 83, the first donation, of an amount of DM 3000, was made by the PTT Ministry of the Federal Republic of Germany, (Bundesministerium fur das Post-und Fernmeldewesen). All administrations, organizations, associations and individuals should consider the possibility of contributing donations, to stimulate young people around the world to participate in the contest, thus encouraging their interest in the field of telecommunications.

SEVERAL RADIO AMATEURS ENDORSE WORLD COMMUNICATIONS YEAR 83

Many radio amateur clubs have responded with enthusiasm to an appeal made by the Secretary-General of the ITU, Mr. Mili, to support the Year by publicizing it on the largest possible scale and by organizing, according to their possibilities, events relating to this major event. Since the early days of radio, radio amateurs have contributed to the technological and scientific development of communications as an instrument of peace, friendship and technical education and have, on many occasions, proved to be of paramount importance in disaster relief operations. World Communications Year provides a unique opportunity for radio amateurs to help strengthening the efforts ITU deploys in developing the world’s communications infrastructure.

ARGENTINA

The Radio Club Argentino has accepted with enthusiasm the invitation of the Secretary-General to publicize widely the activities of the Year and informed him that contact with the authorities Under-Secretary’s Office for Communications would be established to join their efforts to those of others in the country.

CHILE

The Radio Club of Chile has expressed a keen interest in WCY and plans to mobilize all radio amateurs members of the Club to ensure the widest publicity and stimulating the organization of special events in recognition of the Year. In addition, the Secretary-General has been informed of the Club’s fullest support and close collaboration and of the widest dissemination possible of information on WCY through its magazine and bimonthly radio broadcasts.

HONG KONG

The Hong Kong Amateur Radio Transmitting Society is considering the possibility of focusing their annual "VS6 Activity Day" to be held in April 1983 in World Communications Year.

ICELAND

The proclamation of World Communications Year 1983 has been the subject of discussion at a recent meeting of the Board of the Icelandic Radio Amateur. (Islenzkir radioamatorar). Members of the Board were very positive towards this major event and decided to unite with all other national societies of radio amateurs in the world to "make the Year a success long to be remembered".

PORTUGAL

The Portuguese Radio Amateur Association, (Associacao de Radio amadores Portugueses), has offered to collaborate fully with the PTT administration in Portugal for the activities to be undertaken in the country in support of WCY 83.

PHILIPPINES

The Philippine Radio Amateur Association demonstrated its willingness to co-ordinate its activities with those of other communications users and regulators by becoming member of the WCY National Committee recently formed in the country. The Association will not only be in a privileged position to co-operate effectively in the Year’s activities planned at the national level but their participation in the Committee’s work will also enable them to ensure that the concerns of radio amateurs in the Philippines will be taken into consideration, should new communications policies be adopted as a result of the in-depth review and analysis that all countries have been requested to undertake during World Communications Year.

The Radio Sport Federation of the Union of Soviet Socialist Republics considers the possibility of organizing in 1983 a certain number of events in conjunction with World Communications Year. Further information will be transmitted through the Soviet Ministry of Communications when specific activities will have been identified.

ECUADOR — EL SALVADOR — HONDURAS

The Radio Amateur Clubs of these three countries communicated their intention to support fully national activities that would be carried out during World Communications Year and assured the Co-ordinator of the Year of their full collaboration.

During WCY '83 amateurs throughout the World will be participating in many different ways. Printed here are the ideas of some of our fellow amateur clubs and associations.
The construction of a home-made HF receiver seems a daunting task if one examines some of the designs presented in traditional literature. One glance tells the intending builder that many of the components specified will be difficult to obtain, and that elaborate test equipment will be necessary to get the thing going properly. However, if the project is started with a relatively simple receiver, which tunes a low-frequency band, say 1.8 to 2.0 MHz, converters may be added later to cover other frequency bands of interest. References (1) and (2) at the end of this article have details of some suitable converters. It is also hoped that circuit details for converters may be published at a later date — depending upon response.

Those who expect cunning phase-locked loops and digital displays will be disappointed, as this receiver was empirically designed drawing on circuit ideas from many sources with cost, performance, reproducibility and parts availability in mind. All components are readily available in Melbourne at present. To keep costs down, and to minimise the production of spurious, an analogue dial is used. To preserve frequency resolution, a tuning range of 200 kHz is provided. Any greater coverage would cause a loss or resolution and necessitate the inclusion of a ganged capacitor or peaking control for the RF amplifier.

**PERFORMANCE SPECIFICATION**

The prototype has the following characteristics:

**BASIC FREQUENCY RANGE:** 1.8 to 2.0 MHz.

**RECEPTION MODES:** CW, SSB USB/LSB and AM (as SSB).

**SENSITIVITY:** 0.3 microvolts (-117dBm) for 10dB S + N : N.

**MINIMUM DISCERNABLE SIGNAL:** 0.1 microvolts (-127dBm).

**DYNAMIC RANGE:** 80dB for third-order intermod products.
FAREWELL DINNER FUNCTION PETER DODD VK3CIF

A farewell dinner was held at the Celebrant Restaurant on the 15th of November in honour of Peter Dodd, VK3CIF, retiring as Office Manager of the WIA.

It was good to see that fifty friends of Peter gathered and nostalgia was highlighted from pre-dinner beverages to late, late after dinner time speeches.

Presentations were made on behalf of the divisions and speeches were delivered by the Federal President Peter Wolfenden VK3KAU, the President of the VK3 Division Allan Noble, VK3BBM, and Dave Williamson VK3JD of DOC on behalf of the VK6 Division.

Other speakers showing their appreciation for Peter's work were Michael Owen VK3KI and Dr David Wardlaw VK3ADW.

Peter, in his own inimitable way, went through the "History of Amateur Radio and the WIA".

It was an evening which will be remembered by all present, and in particular, by Peter Dodd VK3CIF.

- FREQUENCY STABILITY: Less than 100Hz in any one hour period after warm-up.
- IF BANDWIDTH: 3kHz.
- Image Rejection (2 x IF): Greater than 90dB.
- IF REJECTION: 80dB.

BLOCK DIAGRAM DESCRIPTION

At this point, the detected audio signal is divided into two paths; one via an audio amplifier to drive speaker or headphones, the other via an AGC amplifier to derive an AGC voltage and drive the 5-meter. As the IF amplifier comprises the greatest gain block, a voltage is applied to this stage to allow AGC action. This is necessary to protect the operator's ears and to allow reception of signals which vary considerably in level without the need to continuously fiddle with gain controls.

When converters are added to allow reception of higher frequency bands, a wafer switch is employed to switch out the input BPF and RF amplifier as indicated in the block diagram. A 5 MHz crystal oscillator is divided by 100 to provide 50 kHz calibration markers. Part Two will have a full circuit description, and Part Three will have construction details and board layouts.


Photos — Peter Dalliston.

Peter responds to a presentation by David VK3ADW.

If you keep putting one word in front of the other you will become a rag chewer.

* * *

While waiting for a DX station to come back to us in an instant is a breath-taking division of time.

ARNS Bulletin Sept. 1982
As the sunspot cycle declines activity will once again move to the lower bands. For DX operation a vertical antenna and in particular a directive vertical array would be a great advantage for operation on the lower HF bands. Hy Gain have produced a paper on phased vertical antenna arrays. This paper is entitled Amateur Phasing Engineering Report. Ref. 1. In the paper a number of vertical antenna configurations are shown. The vertical antennas used are their widely known trap verticals and their less widely known 18HT HY Tower.

**Phased Vertical Antenna Arrays**

**Gil Sones VK3AUI**
30 Moore Street, Box Hill South

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**BROADSIDE ARRAY**
When two vertical antennas are fed in phase with equal amplitudes of RF as shown in Fig. 1, the array will exhibit a broadside bi-directional pattern. The pattern is as shown in Fig. 2 for a spacing of half a wavelength. The pattern is held with some degradation of the null from a spacing of three-eighths of a wavelength to five-eighths of a wavelength. (See Ref. 2, page 294.) This sort of array exhibits a modest gain with excellent nulls at the sides of the bidirectional pattern.

**FIG. 1**

![Diagram of Broadside Array]

**BROADSIDE ARRAY PATTERN**

**ANT. A**

![Vertical Ant. 1/4 Long]

**ANT. B**

![Vertical Ant. 1/4 Long]

**50 ohm COAX. EQUAL LENGTHS**

**1/4 COAX. 1/4 COAX.**

**POWER SPLITTER**

**TO Tx**

**50 ohm COAX. CABLE**

**END FIRE ARRAY**
When the two verticals are fed with equal amplitude RF but where the phase difference between the RF fed to each antenna is 180 degrees then an end fire bidirectional pattern will result. See Fig. 3. This may be achieved by feeding one antenna with a coaxial cable which is an electrical half wavelength longer than the coaxial cable to the other antenna. See Fig. 4. The extra half wavelength of coaxial cable provides the phase shift of 180 degrees.

The end fire bi-directional antenna pattern holds for antenna spacings from one-eighth wavelength to five-eighth wavelength.

The array yields a modest gain, together with excellent side nulls due to the bidirectional pattern.

**FIG. 3**

![Diagram of End Fire Array]

**END FIRE ARRAY PATTERN**

**ANT. A**

![Vertical Ant. 1/4 Long]

**ANT. B**

![Vertical Ant. 1/4 Long]

**POWER SPLITTER**

**TO Tx**

**50 ohm COAX. CABLE**

**180 DEGREE PHASING**
The technique of using quarter wave transformers for power splitting has been used once again, together with a 180 degree phase shift obtained from a half wavelength of coaxial cable.

**FIG. 4**

![Diagram of 180 Degree Phasing]

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Page 10 — **AMATEUR RADIO**, January 1983
A broadband power splitter and the required 180 degrees phasing could be obtained using wideband toroidal transformers. Such power splitters and transformers are used in many transistor amplifiers and are also widely used for antenna matching. An antenna balun could provide both the power splitting and the required phase shift, since it provides two outputs which are balanced with respect to earth and have a phase difference of 180 degrees. A balun matching 50 ohms unbalanced to 100 ohms balanced would be quite suitable. Such baluns are manufactured by Palomar Engineers and others.

The advantage of broadband power splitters and 180 degrees phasing is that they are frequency independent and smaller than the rolls of coaxial cable which would otherwise be required.

Also, if a multiband antenna is used for each element in the array, band changing would not involve the selection of a whole new set of power dividers and phasing lines. This would greatly simplify the switching involved in implementing a multiband array.

**CARDIOID ARRAY**

Two verticals which are fed with equal amplitudes of RF but with a phase difference of 90 degrees will produce a cardioid pattern. The minimum of the pattern will be in the direction of the vertical fed with a 90 degree lagging phase. The null is deep and modest forward gain may be obtained. The gain is greater than for the bi-directional cases. The array is shown in Fig. 5 and the directional pattern is shown in Fig. 6. The pattern starts to break up at three-eighths wave spacing and in the opposite direction it is only a flattened circle at one-eighth wave spacing. (Ref. 2, p. 294.)

**OPERATION ON SEVERAL BANDS**

By suitable choice of the spacing between vertical antennas a useful range of antenna patterns may be obtained on several bands. This may be arranged using a range of coaxial cable power splitters and phasing lines. With some experimentation a broadband system is feasible. The use of multiband vertical antenna elements such as the trap verticals made by Hy-Gain and others, or a stub switched vertical such as the Hy-Gain 18HT will allow the same vertical elements to be used on all bands required without band switching the antenna elements. Other suitable verticals would be any of the wide band verticals such as the broadband bi-conical aerial. (Ref. 4, pp. 252, 263.)

**GROUND SYSTEM**

All the vertical aerial systems described are critically dependent on the characteristics of the ground system used. With an elevated vertical the familiar four radials of the ground plane will suffice for an antenna well clear of the surroundings. However on the lower bands this condition is not met. The earth system must provide a low resistance in the vicinity of the antenna. To this end, radial systems of 120 degrees. (Ref. 5, p. 20-17. Amateur systems may be seen in the ARRL Antenna Anthology, pages 22-31, where the ground systems used for single verticals are shown. The general effect of the number of radials on performance is shown in Fig. 7.)

**TYPICAL MULTIBAND SYSTEM**

The multiband system shown in Fig. 8 is of an installation using two Hy-Gain 18HT verticals to provide Broadside and Endfire patterns on 80 metres and 40 metres and also two cardioid patterns on 80 metres.

**BROADSIDE AND ENDFIRE RADIATION PATTERNS**

A series of radiation patterns for broadside and endfire arrays are shown in Fig. 9, which appears in the Hy-Gain publication.

**OTHER ARRAYS**

A very interesting array is described in the ARRL Antenna Anthology, pages 119 to 122, for those who have the real estate.
None of these antenna arrays is cheap. Multiband verticals are reasonably expensive. The quantities of coaxial cable and coaxial switches involved will set you back a tidy sum. So before embarking on such a project it would be wise to carefully consider the total cost.

REFERENCES

**SERVICE BULLETIN**

**YAESU FRG-7700SW MODIFICATION**

The Yaesu FRG-7700SW is sold as a short-wave communication receiver — it does not have the 150 kHz to 2 MHz band available like the FRG-7700.

If you require the 150 kHz to 2 MHz band, this is easily fitted. The components required are already on the printed circuit board — it is just a matter of connecting them.

**STEP 1:** Remove the screws holding on the top cover (including the screws holding the handle on).

**STEP 2:** Remove the top cover.

**STEP 3:** With the receiver front panel towards you, locate the diodes D09, D10, D11 and D12, on the left side of the printed circuit board, slightly towards the top. These diodes are labelled on the board.

**STEP 4:** You will note each of these diodes is open. Solder the two ends of the diode leads together to re-connect them. (See illustration below.)

**STEP 5:** Test receiver: check that it now operates on all bands including the 150 kHz to 2 MHz band. If not, check your soldering.

**STEP 6:** Re-assemble receiver case.

This information is kindly supplied by Dick Smith Electronics, Technical Bulletin No. 75, and is available from all stores.
Who Says You Don’t Have The Room To Put Up a Long Antenna? Of Course You Do!

BY RICHARD E. JAMES, JR., W4DQU
Reprinted from CQ Magazine Dec ’81

I seldom get on 80 or 40 metres without someone telling me he is using a dipole or inverted Vee antenna because he does not have room for a long-wire-type antenna. I believe part of the problem is in the terminology. Most amateurs think of a long-wire antenna as a single, end-fed, long wire. This is not one of the antennas I have in mind, because it has to be extremely long to achieve much gain, and it is unidirectional.

The antennas I have in mind are Vee-beams and rhombics. Both of these antennas are bidirectional as long as you do not use terminating resistors in them to make them unidirectional. Both of these antennas are also all-band antennas. The antennas in fig. 1 will work 160 metres and up and neither requires a lot longer than that required for an 80 metre dipole. A balanced antenna should be at least approximately one-half wavelength on the lowest frequency band for efficient operation on that band.

In these two antennas, for a given length in feet, the higher you go in frequency, the more gain you get. Of course, there is an optimum angle for each band for each length, but any given antenna will be usable on all bands and will give some gain on each band as long as the apex angle is between 32 degrees and 90 degrees. A short Vee-beam or rhombic will be closer to optimum on the higher bands if the angle is small and closer to optimum on the lower bands if the apex angle is large. A chart of gain and optimum apex angles is shown in Table I.

I have put up many of these antennas, using available trees in most cases. I do not worry too much about the apex angle. The antenna is still a usable antenna and a much better performer than a dipole or inverted Vee.

Yes, these antennas require the use of a tuner and open wire line, but you get some advantages:

1. All band operation.
2. Low feed line loss.
3. Due to higher impedance at the antenna feed point, on most bands, the RF voltage is higher and the amperage lower. This allows the use of light, inexpensive antenna wire and feed lines. I use 18 gauge steel core antenna wire 18 gauge (spaced one inch) 450 ohms open wire feed line, and usually a short piece of insulated open wire line as lead-in between window and windowsill.
4. An extremely good ground system is not needed as with a Vee beam.
5. The antenna is cheap.
6. The antenna is so light that it can be pulled up to tree-top height with a nylon string thrown over a tree limb.
7. Two antennas can work the world, especially if one is oriented northeast and southwest and the other northwest and southeast.
8. Separate antennas for high and low bands are not needed.

In summing up, it is hard to understand why two such antennas have largely been overlooked.

The Vee-beam is almost as easy to put up as a dipole. The rhombic is a little more trouble because it requires four supports and all four in about the right places. However, the rhombic does have slightly more gain, for a given amount of wire and sometimes it is the more desirable on a narrow lot because the apex angle will be twice as large as on a Vee-beam erected on the same lot.

Try one of these antennas. You will like it. Remember, the longer it is, the more gain you get. But even if the antenna is short, it will do better than a dipole or an inverted Vee installed on the same length lot because it will have twice as much wire in it, more gain, and more space diversity.

<table>
<thead>
<tr>
<th>Leg Length in Wavelengths</th>
<th>Gain</th>
<th>Optimum Apex Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.0 dB</td>
<td>90°</td>
</tr>
<tr>
<td>2</td>
<td>4.5 dB</td>
<td>70°</td>
</tr>
<tr>
<td>3</td>
<td>5.5 dB</td>
<td>57°</td>
</tr>
<tr>
<td>4</td>
<td>6.5 dB</td>
<td>47°</td>
</tr>
<tr>
<td>5</td>
<td>7.5 dB</td>
<td>43°</td>
</tr>
<tr>
<td>6</td>
<td>8.5 dB</td>
<td>37°</td>
</tr>
<tr>
<td>7</td>
<td>9.3 dB</td>
<td>34°</td>
</tr>
<tr>
<td>8</td>
<td>10.0 dB</td>
<td>32°</td>
</tr>
</tbody>
</table>

Table I - A chart of gain and optimum apex angles.
Getting to know you

Tom Delandre VK2PDT
102 Buffalo Road, Ryde 2112, NSW

Do you know what “Bonito” is?

In amateur radio communication the computer has taken its place. BONITO is a new line for RTTY/ASCII/CW/FAX/SSTV and for amateur radio communication. For this the computer is the main element. For people out of this milieu a short introduction...

The computer has received a new secondary machine, the transceiver. The normal BASIC has been modified. For RTTY the BONITO is already on the German market. A personal computer in a machine, the transceiver. The normal BASIC has an element. For people taken its place. BONITO is a new line for RTTY/CW/FAX/SSTV and for amateur radio communication. You can build it up to a fully automatic club magazine. The XYL is sure I bought an amateur, VK2NSH) gave us a warm welcome to Griffith, as did Joyce VK2DIX. At this time of the year, August to September, Griffith proved an ideal spot to stop over for excursions to Kelly Country and many lovely spots on the Riverina.

On the way to Wagga we looked in at the Inland Fishery Research Station at Narrandera — don’t miss this if you are in the area. At Wagga we had planned to look up Rex VK2YA but were informed by Bob VK2NOC that he was in hospital. So we visited Rex in hospital and he was, as usual, busy, even in the hospital he was coaching a young chap for the novice exam. By the way, congratulations, Ron, on the new XYL, look forward to meeting you both on the next trip. Bob and Betty (also an amateur, VK2NSH) gave us a warm welcome, but we were sorry we didn’t have a chance to call back (next time, Bob and Betty).

From Wagga the next stop was Burranjack Dam, but my fishing efforts were in vain once more. The XYL is sure I bought all fish from previous Bucks’ party fishing trips. I had intended to pop into Tumut on the way back to visit Jack VK2DUL, Keith VK2D1Z and Bill VK2DPZ, who had met on a previous trip to Tumut, but we were behind schedule and we had to be in Canberra to see our six-year-old grandson play football.

Thanks to all I have mentioned here and the many others in the amateur ranks for your company on the road and at home for the pleasure of your company.

Along the way I have seen many novel, interesting and effective ideas and in future articles in AR I will pass some on to you. There must be an enormous untapped wealth of ideas amongst you, how about passing them on and we will share them with the rest of the happy band. This is a big country and AR is an ideal medium to share your skills in so many spheres of radio.

The group BONITO is working on the next version of ASCII and CW and are keeping to the same standard as in RTTY. Note that the RTTY BONITO already has a CW transmission, part of which can be used. It is used in the RTTY chip as CW-ID or RTTY-ID. The ASCII version will receive 8 bits, which makes it possible to exchange programmes or transmit pictures. The SSTV version will be made up to work together with the 8 bit ASCII. SSTV will take a little longer than expected but will be kept as simple as possible. For those interested it will be a completely new concept; it will be a FAX graphic where only the picture points change; you can also get a print-out. For those interested BONITO is not a club but a group of people looking for new ways in amateur radio communication, who use every new idea and try to make something out of it. BONITO is a loose group of people that help each other as best they can. Anybody can be a member of BONITO, he just has to join and you do not have to come to the German market. We accept help from any part of the world.

For information write to—
Peter Walter, 3100 Celle an der Ziegelei 1, Germany.

The RTTY-BONITO can only be used on CBM systems for the moment.

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Phase Shift Frequency Multiplier

A form of frequency multiplier which uses phase shifted signals was described in Designers Casebook in Electronics for Jan. 13, 1982, by Fred Brown of Lake San Marcos, California.

The frequency multiplier operates by splitting the input signal into a number of equally spaced phases. The number of phases is equal to the desired multiplication factor. A doubler would use two phases 180 degrees apart and a tripler three phases spaced 120 degrees and a quadrupler would use four phases spaced 90 degrees, and so on.

The advantages claimed for this method are the high degree of suppression of harmonics other than the desired harmonic and the ability to build wideband multipliers by using wideband phase shift networks.

For amateur use an interesting approach would be to use coaxial cables as the phase shift network which would be fairly easy to set up.

A skeleton explanatory circuit of a quadrupler is shown in Fig. 1.

A more advanced quadrupler from 7.5 MHz to 30 MHz is shown in Fig. 2. This circuit is reported to have 50 dB suppression of the second and third harmonics below the desired fourth harmonic.

The 90 degree and 270 degree phases are obtained by using a simple LCR network (Fig. 3). The capacitive and inductive reactances are made equal and R is used to control the amplitude. The phase being controlled by trimming C and L. The inductance L is made up of the inductance of the primary of T1 in Fig. 2.

The output network is used to match the output load to Q1, Q2, Q3, and Q4 and to provide some suppression of higher harmonics. The lower subharmonics being suppressed by the operation of the multipliers.

My Ruler

I have a ruler, an ordinary 15 in. long ruler, which I guard jealously. I don't know where I got it from now, it's chipped, faded and a bit hard to read, but it's just about irreplaceable.

"Throw it away," you may say, "this is the metric age, you don't need inches any more!" And even if I do, I have other inch rulers, carefully hoarded or bought overseas, so what's so special about this one? Because it's a "decimal" inch rule, that is, the inches are divided into tenths, not quarters, eights and sixteenths like the others. And that's important because IC pins are 0.1 inch spacing, and as long as the US retains the inch measurement (and they show no signs of going metric yet) we in electronics had better hang on to our inch rulers, and blow the Metric Conversion Board for not doing their homework properly. Just try to design a PC board layout with half a dozen ICs using a metric ruler and you'll see what I mean.

A Nicad Charger

Recent trends by manufacturers have produced a selection of hand-held transceivers which are becoming popular. These are mainly powered by nicad cells, and the charging of these has given many people grey hairs. The following article is my approach to this problem.

Nicads are, for the most part, expensive in outlay so the way to obtain value for one's money is to make sure they live as long and are recycled as many times as possible. In order to achieve this we have two "golden rules": (1) NEVER discharge them to the point where any cell goes reverse polarity, and (2) DO NOT overcharge them; despite what some say, they do "gas".

The following circuit will allow you to control the maximum voltage; other "refinements" are current and discharge controls. Firstly, the circuit in Fig. 1 consists of a clock (74C00/2), a voltage comparator (741), a timing switch (74C74/2), a gate and buffer (74C00/2) and switching transistors. Assuming the battery is low and start on a charge, when the clock goes low the charge is cut off, the 741 looks at the voltage applied to pin 2, compares it with voltage applied to pin 3 via the potentiometer and presents high/low to pin 12, 74C74, to decide if the next pulse will charge or miss. Beautiful in its simplicity!

Having decided to hit/miss, the next trick is, by how much? This can be controlled by using the 2N3055 in a current limit, control provided by the 100 ohm W/W pot — take care when adjusting, it is possible to drive all the current through the 2N3638A and blow it! These transistors are not critical — the ones mentioned are the ones I used but many others will do just as well. As you will see, the layout is designed to get the energy into the battery with as little as possible going to waste. By using a 22 K dropping resistor to the 5.6V Zener, consumption for the whole logic is less than 1 mA, not really required for your average battery charger!!

The next refinement is aimed at maintaining a high capacity in the battery. The feeling is that this is achieved by discharging the battery to a safe level and then recharging — nicads are considered discharged at 1.1V but if you're mean, then allow 1.0V/cell. The circuit in Fig. 2 allows me the option via the push button switch to discharge the battery down to 1V where the relay drops out and the contacts cut the load and re-establish the pulse charge. As you see, there is a red LED which lights to denote discharging, a green LED which lights to denote charging, and when they are both out the unit should be fully charged.

In the case of the 208R all this can be achieved without any alteration to the transceiver itself as the unit has 2.5 mm plug for charging, a separate plug for external power and contacts for direct battery access. If you wish to use the unit whilst it is charging, then use the external plug direct to the output of a LM317 voltage regulator.

By using a multi-position switch, e.g. 11-12 position single pole, the unit can charge any number of cells from 2-12 in, say, battery packs. The resistors can be a wide range of values but must be within, say, 100 ohm of one another. Even this is not critical, you just pick a handful of resistors and get the dozen or so which are the closest. Two of these must go in place of *50 K, i.e. between earth and

By Terry Long VK3EC
In The Radio Bulletin May 8 (EMDRC)
BILL HAS A GO AT A WHIP

After a crude sort of repair to his severed coax (necessary because he had slammed his car door on it) Bill Blitheringtwit was now setting up his mobile 2 metre rig in his car. He was in his back yard, complete with SWR meter and rather tatty looking patch cords. The two dents in his car’s bonnet, caused by his size 9 boots, had been rapidly knocked out with a ball pane hammer. Unfortunately, the metal work showed the results of his pounding in the shape of some odd dome like protrusions.

Bill Blitheringtwit was feeling mildly proud that, after several attempts, he had at last got an antenna to function. He decided to investigate and found that he had a dead short, in that the centre pin of his antenna was going to ground, due to excessive use of solder. Better get rid of some of it, but a heavy duty iron was needed.

He applied his massive plumber’s iron (tried and trusted) to the pin area and within a very short space of time had totally melted all the solder, together with the plastic dielectric in the plug, which now looked decidedly droopy and unhappy.

Hot solder dripped to the ground and, rather painfully, Bill found out that it was not a good idea to wear thongs whilst using a soldering iron.

BILL GOES MOBILE

Having safely installed his ancient mobile rig in his car, Bill Blitheringtwit was feeling mildly proud that, after several attempts, he had at last got an antenna to function. No real credit was due to him, however, as his own home-brew efforts had been nothing but consistent failures. He had been obliged to purchase a ready made steel quarter whip and this aspect went somewhat against his grain. After all, Amateur Radio was also about being deterred. He climbed into the Holden, started up and moved safely out of ris driveway. After a few miles along wet and miserable streets he was aware of something cold trickling down his neck. A quick glance told him that the hole he had made in the roof of the car for the coax should have been properly sealed. A steady stream of water was coming through and heading in the direction of his shirt collar.

He cursed and carried on driving. He switched on the rig. A steady whining noise came from the speaker, engendered by the windscreen wipers. It was a powerful sound, almost soporific, and below all this he could just hear the sound of somebody speaking. This must be the local repeater. He might as well have a go at it whilst he was about it.

Bill waited until the voice stopped and then grabbed for the microphone. It tell off its hook on to the floor and he found himself kicking it about so as to get at it and to lure it somewhere he could pick it up again. Eventually he managed to tred on it heavily with his size 9 boots. The sound of crunching plastic could be clearly heard. They didn’t make things the way they used to: some of his old mikes could be trodden on by a regiment and survive — not this modern trash! Using the curly cord, he began to pull and, like someone bringing in a fish, haulled up the microphone’s dangling viscera.

At this point he decided to pull over and stop in order to see what he could do to rectify matters. The rain had stopped and Bill simply didn’t see the overhanging tree branch, near where he had pulled over, which neatly and efficiently decapitated his brand new quarter wave whip, leaving only the base mount as a relic of the antenna’s brief existence.
The antenna at this OTH is a trap dipole, and we had been keeping an eye on the tree in the next door garden which was being very loving and kept on growing towards one of the end masts. Whenever the wind was in the right direction, it would wrap itself round the mast and the end of the wire.

During the last gales, and, naturally around 2 o'clock in the morning, there was an almighty crack and bang went the poor old end mast, and one end of the trap dipole was laid on the ground. Being the middle of the night and pitch black and a howling gale, there was nothing to do but hope until daylight. Fortunately, the wind did lessen.

The next day we lowered the centre of the antenna having decided we might as well put in some new centre sections of wire, the existing ones being patched up with new bits twisted in and spliced into the stranded wire in use.

To lower the centre of the antenna we undid the halyard which has to be open ended in order to wrap it around the coax feeder and the mast to prevent the coax slapping about and making an awful racket in any wind.

We lowered the antenna very carefully so that it didn't get caught on the guttering of the house, and it was almost down to the ground when there was a flurry of wind and — yes, you've guessed — away went one end of the halyard.

A ghastly silence prevailed for a split second and then Tom, my OM G3HPJ, said, "Now look what you've made me do!" Then the awful realisation dawned that we would have to lower the central mast, all 35 feet of it. This entails undoing 'U' bolts which are threaded through two spaced angle iron supports bolted to the corner of the house. Then the old climbing rope is tied around the top part of the mast, and a turn taken round the upper angle iron, and then the mast is guided in towards the house so that it rests in a corner formed by the house and the angle irons. The free end of rope is then taken round an ancient apple tree half-way down the back garden.

This is where Shorty, that's me, has to stand at the foot of the mast, arms above my head as far as they will reach, and Tom takes the free end of rope to guide the mast down shouting to me to PULL! PULL! PUSH! PULL! I start PUSHER! All 5'3" and 8½ stones of me, and believe me, it's jolly hard to get 35 feet of metal masting over centre before you can guide it to ground.

We finally manage it and Tom lowers it safely within the confines of the garden without smashing up the neighbour's fencing.

Got to get a move on for the days are short. It is November, and the wind is rising again, and it's cold.

Measure out new centre sections using soft drawn copper wire this time so its not too bad to handle. Wish we had got the new traps we have talked about, but never mind these will have to do for we cannot be without an antenna.

We attach wire to traps and the balun and then check outer sections and see that one end of the stranded wire is holding by about three strands, but as the light is getting poor, our hands are cold and the wind is worse, we decide to chance it.

First thing is to re-erect the centre mast. This is done by Tom lifting the top of the mast and 'walking' it upright while I try to guide it with the rope, and correct the horrible sway that develops just before it becomes upright again.

All safely clamped to angle irons again and we haul up the centre section of the antenna. Then one end and last of all the weakened end which, of course, breaks!

Decide we can manage to replace end sections without lowering the centre again, so we lower both ends only and replace with nice new wire. Quite dark now and we are both perishing cold.

Have a quick cuppa and decide we'd better do some checks. The antenna is smashing on 80, 40, and 20 metres, but won't take more than 40 watts on 15 metres without the SWR going astronomical. So we decide the traps are US and the next morning telephone KW and order new traps, telling the man who answers the 'phone we think we have a dud one, and he asks how long have we had them in use? We say about 12 years, and he says, "Oh, well, they'll be out of guarantee!" "They aren't KW anyway, they are IOW.

The new traps arrive in a few days time, but in the meantime I work 20 metres, and one morning as Tom had to be away earlier than usual, I saw him off the pre-mises and thought I'd take a listen on 20, and there was ZL1AXM (whom we know as G2KK) just signing off at the end of a QSO. So I gave him a call with my 80 watts, and there he was answering me! The band was changing, but we managed the bare bones of a QSO assuring each other that families were OK. There must be something in this business of "an ill wind!"

At the weekend we got to work to lower the antenna to put in the new traps. We lowered the centre of the antenna carefully, but the knot in the halyard slips — and — away she goes again to the top of the mast. So back to the mast lowering exercise — it's a shocking habit to get into you know.

Eventually we get the mast back up, the new traps fitted and the antenna raised. Now comes the big deal when we check the antenna from the rig again. We get exactly the same results. OK on 80, 40, and 20 but still only 40 watts on 15, without the very high SWR.

Ah ha, we say. It must be the balun. Oh well, we'll use the nice shiny Hygain that we are keeping for the beam whenever we can sneak one up without the neighbours noticing.

Lower the antenna once more — YES! Yes — we folks — away goes the halyard. Privately, I think that maybe one of those Snow Snakes that have invaded Long Clawson has strayed to Loughborough, eaten the halyard and taken its place.

Poor Tom cannot face managing with only me to push — pull twice in one day, so we have a brainwave and keeping our fingers crossed that he is at home, telephone a friend who lives a few yards down the road, Jack G3BKF, whom some of you may know for he is a CW only operator and works quite a number of VK/QL stations.

Great! Jack is at home bottling wine, so he comes over and lends a hand. It makes everything so much easier, and the mast comes down and goes back up again like a dream.

Everything must be OK this time for even the coax feeder is new, having been replaced a few weeks earlier.

Inside to check that all is now well, and we just cannot believe it, for we get exactly the same results again!

So we go over everything we have done. New feeder, new wire, new traps, new balun, so what is it?

Suddenly, remember we have made up a shorter length of coax to connect the SWR Bridge to the ATU, so put back the old longer length and check again. EVERY-THING IS FINE ON ALL BANDS.

So we put the short length back and try again, and we are back to square one, fine on 80, 40 and 20 but not 15 metres.

So we are still with the longer length of connecting coax and are still in the dark as to why the short length is no good. It measures 77 cms and was checked so that there is no short and it works all right into a dummy load, but not into the antenna. The longer length is about 1½ metres. Any suggestions?

So, friends, remember, there is always an easy solution to every problem — neat, plausible and wrong.
Leighton Gibson, ex 4AN.

Leighton started building receivers in the 1920s with circuits from “Hertzian Waves” and his father brought a Marconi crystal set back from Canada, which would receive VIB and so to learning morse code, then in 1921 a “smuggled” “Anaka” valve six volt one amp. Next he used the inevitable spark coil to make a nuisance of himself and nearly lost his licence (it was untuned), but using a receiving valve got him out of trouble.

At that time, being a semi-invalid, enabled Leighton to spend much time experimenting and operating and he became very well known. For a time Leighton was Technical Editor of Queensland Radio News and also wrote under the pen name “Bananalander”.

He joined Philips in 1928 and served with them in various parts of Australia and overseas until his retirement in 1967.

Leighton and Andy Couper 4BW were the sole means of communications between North Queensland and Brisbane after the 1927 cyclone which brought forward a letter of praise from the Deputy Director of Posts and Telegraphs, Mr. A J Christie. This event is well written up in “Radio” 30 March 1927.

Norm completed a Marconi course with AWA in 1925, Sydney, and went to sea in 1926, moving through many ships in his sea career.

He came ashore in 1936 to Coastal Radio, Port Moresby and remained in control there at times as Navy, through the war years until 1951.

Norm encompassed the Coast Watching System in his responsibilities. From 1951 to 1971 he was manager of International transmitter and receiver stations in WA, also having close association with NASA for whom he holds certificates of commendation.

Norm is quite active on the HF bands and would vie with Hal VK4DO as the longest licensed active amateur in VK.

W C “BILL” ROHDE, 4RW, 1924.

“Bill”; a Brisbaneite of 1906, was a schoolboy “wireless” addict. He joined the Woolooowin Radio Club in 1920 and the YMCA Radio Club in 1922. “Bill” was mostly a low power, 7 MHz, CW operator but occasionally played gramophone music over the air.

1924 saw him as a trainee mechanic with the PMG graduating to a telephone mechanic in 1928, to radio 4QG 1930, then to long line communications for some years to return to radio as Divisional Engineer for Queensland, Port Moresby, New Guinea, in 1953. In 1961 he was promoted to Supervising Engineer assuming departmental control of broadcasting, television and radio operations in Queensland. “Bill” retired in 1972.

Congratulations — you’re coming through like a steam train!

Don’t congratulate me—congratulate the repeater . . .

from “Caballeros Del Aire” Translated by Luis VK3ZLO

AMATEUR RADIO, January 1983 — Page 19
COMMERCIAL KINKS

WIDE OR NARROW CW SWITCHING WITH THE TS-520S

It’s always pleasing to get feedback on modifications published in Commercial Kinks. The wide/narrow CW switching for the TS-520 has proved useful to many amateurs but it seems that the modification is not directly transferable to the TS-520S. If you have tried without success here is the answer by Evan Jarman, VK3ANI.

I was interested in the TS-520 modification in the June 1979 issue of AR and attempted to change a TS-520S believing the circuitry to be identical.

The modified unit did not work as expected, casting suspicion on the procedure. However, a number of changes were found necessary. There is one slight difference still to be mentioned: the JJY/WWV voltage for the TS-520S does not; CWT is used on both Rx and Tx. This modification restores the function switch rationale to that of the TS-520 to enable basic operation: One on receive (CWR = 3.3943 MHz), the other on transmit (CWT = 3.3950 MHz). These frequencies are obtained by diode switching.

The number of additional modifications required surprised me for what, I thought, were basically identical units. I am now quite wary of modifications published in Commercial Kinks.

WIDE OR NARROW CW SWITCHING WITH THE TS-520S

Dr. David Lewis leader of the 1982/83 Oceanic Research Antarctic Expedition has chosen Kenwood Communications Equipment on board the “Dick Smith Explorer”. Where lives and safety are paramount and reliability is of prime importance the professionals always choose Kenwood.

TRIO-KENWOOD (AUSTRALIA) PTY. LTD.
(INCORPORATED IN N.S.W.)
4E WOODCOCK PLACE, LANE COVE, SYDNEY, N.S.W. 2065. Ph. (02) 428 1455.

NEW SOUTH WALES

TR-2500

See your dealer for more savings in our Super Summer Sizzler Sale

TRIO-KENWOOD (AUSTRALIA) PTY. LTD.
(INCORPORATED IN N.S.W.)
4E WOODCOCK PLACE, LANE COVE, SYDNEY, N.S.W. 2065. Ph. (02) 428 1455.
If you have an interest in a different type of VHF whip antenna which has proved its worth to me . . . what about trying this. I have been using, experimentally, for some 6 months or so, a mobile antenna made from fencing wire, which caused some stares but worked so well that I decided to set down the details for others to try out.

My old 50", 5/4th whip kept fouling the garage roof, but not so the folded whip, which is some 8" shorter. A good feature to start with! I find also, that the new whip has a performance edge over the 5/4th. Another bonus is its operation without the need of a ground plane some interesting possibilities. What about hanging it on the picture rail, or making one, using TV ribbon which could be suspended anywhere, or even rolled up and put in your pocket.

The sketches are self-explanatory. The two parallel wires may be anything you think suitable . . . stiff, or flexible. I finally used two thin stainless steel commercial whips which I bonded together at the top. For separators I used the black insulators from 'dog-bone' TV ribbon. An old 'Pental' pen served as a coil former.

Wind the coil as shown and shunt it with a small variable capacitor . . . say, 0 to 5pF. Grid-dip the coil and capacitor circuit to the middle of the range you wish to operate . . . in my case 146.5MHz. Do the grid-dipping before connecting the antenna whip. The 50-ohm coax matching may be varied by adjusting the position of the tap . . . about 3 turns.

Push the tuned circuit into the plastic conduit, and carefully drill a hole for final screw-driver adjustment of the capacitor. Afterwards I filled the hole with plasticine (easy to dig out again). The top end of the conduit sleeve where the antenna exists, was sealed with some hard-setting epoxy.

Have fun!

73 . . . John VK2BTQ
The start of the year 1983, World Communications Year, is now with us. One hasn’t got to be prophetically inclined to be able to discuss with authority that ten metres will not become more popular, more licenses will be issued throughout the world and a number of DXpeditions will be undertaken. One cannot say with certainty whether such occurrences as the appearance of BY stations on SSB, how many countries will be deleted as the appearance of BY stations, and whether as good as it was last year, more licenses will be granted. Discussions with authority that ten metres will not become more popular, more licenses will be issued throughout the world and a number of DXpeditions will be undertaken.

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We, as individual amateurs, can do little except enjoy the privileges, that have been granted to us over the years, by abiding with the regulations governing our hobby and remembering that you are an ambassador for your country, that you prefix your call with.

Collectively, through being a member of your society, such as the Wireless Institute of Australia, you are part of the voice that negotiates on items that effect the future of your hobby on both a national and world basis. This is only one of the numerous advantages that one receives with membership of one society. Make one resolution for WCY 83 now, that being, that you will join a new member this year.

POSTBOX BARE

The amateurs who incessantly make statements on air regarding spending all that money on stamps and IRC’s in an effort to obtain cards that don’t eventuate, either by negligence of the and or have not read of the offer as outlined in any or all of his submission and for the sake of brevity excerpts only have been selected. The best QSL’er award would have to go to WA3HUP. Mary Ann, she is about the only manager in the game who consistently and promptly sends cards back. Moreover, the only delay she seems to encounter is getting the info from the station she manages, not due to ‘missing mail bags’ and the like. I think the longest time I have had to wait to get a card from her is about three weeks from the date I posted mine. I wish all the managers were like her.

Fred’s summary of “What it boils down to, is that too many of these people are in it to make a quid. Some of them reply to direct QSL cards by sending them back through the bureau. Some of them send the reply back via surface mail (when enough money has been sent for an air-mail reply — and to leave them some change). And the worst don’t even bother to reply. Of course, there are the others that demand large sums and/or excessive amounts of IRC’s before they will send you a card, but at least they are being blatantly honest in their business attitude.”

Fred, you and your nominations will be passed on to Jan and Jay together with my return of the QTH’s of some of the better known card handlers. Thank you Fred, and your nominations will be appreciated. It would be appreciated if written comments regarding the value of the Heard and Worked segment of this column have enough following to justify their inclusion. If you have any doubt as to the value of their inclusion each month please ask yourself the question “Am I really interested in what DX is worked by someone else in my locale or across the other side of the continent?”. Your comments will be appreciated.

JY1 BIRTHDAY CELEBRATIONS

Mid November saw the proliferation of JY7 prefixes on the airwaves. This prefix was to celebrate the birthday of His Majesty King Hussein JY1. If you were fortunate enough to have been within the year, you were a DXpeditioner, a DXpeditioner, and asking how do they achieve the honour of a card.

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JY7DIPLOMA

PO Box 2353 Amman, Jordan. No QSL cards are required for this award.

QSL MANAGER QTH’s

A number of QSL Managers who look after the affairs of more than one station always seem to be in demand and this list has been prepared in the hope that it will provide a ready reference of the QTH’s of some of the better known card handlers. They are eligible for an award which is presented by His Majesty. If the standard of QSLs is anything to go by, this one should be a beauty.

Applications giving at least the listing of seven QSO’s with JY7 prefixes noting date, time in UTC, call sign, frequency and reports exchanged together with 10 IRC’s to assist in defraying postage expenses to “7 JY 7 DIPLOMA” PO Box 2353 Amman, Jordan. No QSL cards are required for this award.

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Luis EA1VG, a member of the LYNX DX Group and IDXF, classes himself as a newcomer to the bands having been licensed since late 1977. In this time he has achieved confirmations from 263 countries and certificates for WAYS and WAZ.

The equipment used at the QTH consists of a Kenwood TS-830S driving a SB220 linear through a Drake MN2000 antenna tuner into a Swan three element Beam.

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SCIENTIFIC APPROACH

Have you ever been on the twenty metre band and wondered why one VK3 station always gives and gets signal reports from any continent that are beyond your wildest dreams. I have and one has had to listen over quite a period to gather what equipment this best VK report gatherer is using. The operator of this outstanding home-brew station is none other than Ian, VK3MO.

Ian VK3MO looking for elusive DX??

Ian, who is rather shy in discussing his accomplishments so far, has forwarded numerous photographs and a brief description of his equipment to me so that readers of this column may better understand the experiments he is undertaking.

The antenna system, in which lies the heart of Ian’s success, consists of three by four element yagi’s on forty foot booms that are mounted on the tower at 46, 94 and 142 foot above ground level. The tower is fully rotatable using a chain drive mounted at ground level and is held in the vertical plane by guys which consist of 1 1/2” circumference polyester rope attached to bearings at the three levels.

Ian’s antenna system. The three, four element yagis are mounted 46, 94 and 142 feet above ground level.

From inside the tower looking up to the yagis.

It is interesting to note that the yagi design was developed experimentally on 14 MHz by W0OKC and then scaled up to 440 MHz by Dr. Jim Lindsay of the DENVER RESEARCH INSTITUTE, where the antenna was compared with other designs using an antenna range.

Ian’s objective is to develop a computer based system which will automatically produce an optimum antenna radiation angle for transmissions to a specified target area. A “home brew” computer, specifically designed for this purpose, is on line and at his disposal.

Ian hopes to further develop the system along the following lines so that by sending out short pulses at various radiation angles and recording all the return signals (Back scatter etc.) he will be able to compare this data with signal strength reports and after correlation of the relationship of the two, be able to use the data programme produced to steer the antenna array automatically.

An example of how the system should operate in practice is given by quoting from Ian’s notes to me. “A sched is arranged with the UK. G is keyed into the computer. The computer will take control.

The “home brew” computer used to produce optimum radiation angle.

Short pulses of RF will be sent out at various radiation angles. Using the data experimentally determined the computer will adjust the phasing between the three antennas to produce the best radiation angle for G at that instant.

An update every minute will keep the array focused on the target area. The update will oc-
cur so rapidly both operators will barely perceive the brief interruption in speech etc.
Ian stated that the ultimate system would no doubt have computers at both ends of a circuit, communicating with each other, and making decisions about parameters necessary for most effective communications.

So when you hear that BIG signal, generally on the airways very late at night, and the operator is diagrammatically trying to go ORT and get away from the ever growing pile up so he may go to bed it is usually Ian. Congratulations on your station and best of luck on your endeavours with the current project, Ian.

Perhaps, Ian, at a later date may be able to be persuaded to write a technical article on the aspects of the development and findings of his experimentation for Amateur Radio.

SV9 CRETE ACTIVITY
Cliff KA2PFV/SV9, was doing very good business running with the help of Franco 11KFB acting as MC. All QSL’s via KA2PFV either direct or via the Bureau.

PLEASE QSY
DXers have a pretty rough time in chasing the elusive stations that appear from time to time let alone being QRMed by a station appearing out of the “night” and working split in a ‘Rag Chew’.

Oceania stations have a great habit of “splitting” to 28.595, 21.295 and 14.195 MHz and obliterating any DX that may be in the vicinity. Generally one cannot alert them to the problems they are causing because of being unaware of their receive frequency.

With DXoperation for this year, that are costing thousands of dollars to get underway, it would be appreciated by DXers worldwide, if the minority could give way to the majority by leaving the prime calling frequencies free.

HEARD ISLAND
Dave VK3DHF, the licenece of VK0H1 has laid some ground rules for the proposed operation on the island and it would be appreciated if all callers could abide by them.

Initial appearances when propagation conditions permit will be made on the recognised SSB DX-working frequencies of 3.690, 7.090, 14.195, 21.295 and 28.595 MHz using transceive operation working through the callers by using the last letter of the suffix as an identifier in alphabetic progression, then split frequency operation to upper and lower nominated listening segments.

Novice and other class licensees not having these frequencies at their disposal will be catered for on 3.620, 21.190 and 28.595 MHz and other frequencies initially using the alphabetical progression method of the last letter of the suffix when optimum propagation conditions exist to give the maximum QSO’s per hour. CW operation will commence 25kHz inside each band edge, shifting as QRM overtakes the operator.

Dave also envisages working controlled Net operation, as time and propagation conditions allow, which will be a deviation for a more relaxed operation.

All cards to be in correct date, UTC and RS(T) format which will expediate checking and prompt return.

On behalf of all DXers, Dave, Chuck and Fred thank you for a positive approach and statement on your intentions. Best wishes to all that sail in ANACONDA II for a pleasant, safe and successful trip.

Good DXing ladies and gentlemen and please remember amateur radio is a hobby to be enjoyed by all.

Alex VK9CCT
Alex, quite well known for his operation from Cocos (Keeling) Islands signing as VK9YA has now been stationed in West Malaysia and has made application for a local call.

Further information that has been passed on by Ian VK5OQX is that the beam that Frank VK9NYG has been using has been probably returned to VK for use as a backup for VK0H1.

Please remember the VK9s at 14.280MHz and other frequencies initially used have been returned and stored for use on VK9 or any other location where it can be used to advantage.

PREFIX CHANGE?
Remember the ZS5 and ZS9 duo located in the Kaw Thoo Lei Province which isn’t recognised by the Burmese Central Administration? They have now changed their prefix to 120. One cannot help but wonder if this is an Oriental play to increase the chances of a reversal of the ARRL’s decision on the acceptance of cards for DXCC credits or is it a method to increase the volume of the incoming managers already dwindling mailbag.

Whatever is the eventual outcome of any decision on these stations validity one cannot speculate but it can be assured that someone, somewhere, with connections attributable to the new “PREFIX” will be counting the “green stamps” with glee.

THANKS
Due to the Holiday season and printing deadlines these notes were prepared in mid November from information received through the courtesy of VK’s 1MM, 3PBA, MO, UX, DFD, SQX, 6IH, HD and Eric L30042. Thanks to one and all.

O’TH’S YOU MAY NEED
4240S PO Box 1019 Tel Aviv, Israel.
584LY PO Box 375 Lamaca, Cyprus.
0X1P PO Box 160, Quezon city, Philippines.
3F7WW PO Box 879, Fort de France, Martinique.
156RPO PO Box 5006, Tahiti.
6HAPL PO Box 2318, Santo Domingo, Dominican Republic.
K4AAAA PO Box 500, FPO San Francisco 95503 USA.
T3900 PO Box 34, Tarawa Airport, Kiribati.
YJ8LT La ila Gaetan, PO Box 88, Port Vila, Vanuatu.

QSL ROUTES

( ) denotes manager.

Joe N5AMP and Judy WD5PH

Page 24 — AMATEUR RADIO, January 1985
KENWOOD R-2000 COMMUNICATIONS RECEIVER

The R-2000 provides outstanding performance through the use of microprocessor controlled operating functions, allowing maximum flexibility and ease of operation throughout its operating range.

This all mode receiver covers 150 kHz to 30 MHz in thirty bands on SSB, CW, AM and FM. Key features include stable digital VFOs, ten memories that store frequency, band and mode information, memory scan, programmable band scan, fluorescent tube 100 Hz resolution digital display with dual 24 hour dual clock with timer.

The high performance receiver circuits have three built-in IF filters with narrow-wide selection switch (CW filter optional), all mode built-in squelch circuit, noise blanker.

A large front mounted speaker, RF step attenuator, tone control, AGC switch, SINPO scale "S" meter, lithium battery memory back up and 100-240V AC operation round off this appealing receiver.

Further information may be obtained from Trio-Kenwood or any of their dealers.

NEW EMI/RFI SHIELDING OF ELECTRONIC COMPONENTS

Scientific Electronics, Australian agents for the Sil-Pad range have released details of Sil-Pad Shield, a physically tough, greaseless product which provides excellent shielding characteristics coupled with low thermal resistance and high dielectric strength.

The shield consists of a 1 mil copper sandwich bonded between two layers of calendered 9 mil Sil-Pad. Part of the copper is exposed for the attachment of an earth lead to drain off the unwanted signal.

It can be used to shield any electronic component which could be emitting a frequency or a magnetic field. The copper absorbs radiated emissions that have a frequency of 10 kHz or more at a level of 60dB or higher, which is generally considered excellent. If a lower frequency is a problem thicker copper can be specified.

Components that can utilise the shield include high speed switching transistors, relays, oscillators, DIP packages, chips etc. In a lot of instances, attenuation at component level will prevent the radiated signal from penetrating and interfering with other components and will also, in some cases, preclude total case shielding.

Shapes currently available are TO-3 and TO-220. Non standard shapes can be produced on request with a lead time of about eight weeks.

For further information contact: Mr Peter Lloyd, Scientific Electronics, 6 Holloway Drive, Bayswater, 3153. Telephone (03) 762 5777.

CHECKLISTS

Many issues ago I reprinted a VK1 equipment and kit check list for WICEN operators and suggested it might be an idea to pack it into a couple of cartons, boxes or old suit-cases held ready in the workshop or garage for a callout or exercise. Since that issue I chanced to see a similar list printed in a recent OST, however the US amateur emergency communications co-ordinator concerned had enough gear to fill one tonne utility. Nevertheless this does serve to demonstrate that equipment checklists are a very personal thing, indeed some people can get by with a sweater, change of jeans, thongs and a plastic money card but any fool can be uncomfortable.

Also from a sister magazine, a recent RSGB Radio Communications column discussed amateur communicators' dress. The writer's point was that for emergencies clothing was generally chosen to suit the need weathewise; but for training exercises in civic aid situations many amateurs left much to be desired appearance wise. The columnist, an active RAYNET co-ordinator had an opportunity to view the voluntary communications for a recent major event from the public's side and concluded that amateurs should dress no worse than their companion emergency service and relief agency communicators for public events.

ITEMS OF LEAST VALUE

Uncle Roger of Flight magazine recently ran an article calling for readers contributions on "items of least value". The aviators response was "runway behind the aircraft", should WICENs be flat NiCads in the handheld, or microphone home in the shack?

THE FUTURE FOR WICEN

Next issue I will attempt a review of WICEN and what the future holds; do you have any thoughts on this matter? I would be glad to hear from them so drop me or the editor a line please.

73 Ron VK1RH
Having heard of several cases of battery pack blow-ups in Yaesu FT290R two metre rigs I resolved that it would not happen to my FT290R.

The cause of the blow-up is the application of an excessive voltage to the battery pack. This may occur when the rig is operated from an external DC supply if the switch in the external power socket J05 fails to operate. This may occur due to either improper switch action or improper insertion of the external power lead. The result of this is to supply 13.8 volts to the internal battery pack. With nickel cadmium cells this will cause an excessive charging current leading to rupture of the cells. Ordinary dry cells or alkaline cells will suffer also.

I have therefore fitted a 50 PIV 3 Amp diode between the internal battery pack and the switch contact of J05 as shown in Figure 1. This arrangement prevents the 13.8 Volts from the external power supply being applied to the battery pack if the spring switch on the Ext DC jack J05 fails to operate on insertion of the external power supply plug.

The additional diode does not prevent operation on the internal battery. The diode does cause a small voltage drop on the supply voltage from the battery. In my view the protection afforded to the NiCads or alkaline cells is worth more than the small voltage drop.

Fitting of the diode is simple—
1. Remove Cells.
2. Undo 4 Phillips screws.
3. Remove battery carrier.
4. Cut red lead to battery carrier positive terminal.
5. Solder in Diode with cathode looking at P/S Socket.
6. Insulate soldered leads.
7. Replace battery carrier, screws and batteries.

I understand that a diode has been wired into the FT690 and the FT790 to perform this function.

On looking at a Yaesu FT208 hand held circuit it would appear that it might possibly suffer from the same problem and warrant the same protection.

Technical Editor's Note: Examination of the circuit of an FT690 revealed a protection diode in the negative External DC connection. Whilst this would provide protection normally without the battery voltage drop of Theo's modification it may not work in all situations. Should an external antenna be connected which has the coaxial braid connected to the negative of the 13.8 V External DC source then the protection circuit will be inoperative. This may be reasonably expected to occur if mobile operation in a car, using an antenna fixed to the car, is intended. If such operation is intended then a modification such as that described by Theo VK1KV would be appropriate.
Mounting a DXpedition to one of Australia’s Island Territories is not a case of just hopping on a plane or ship with rig under the arm, and upon landing, looking for a likely motel or some other place to set up shop.

For Cocos and Christmas Islands one must have accommodation guaranteed by a resident and government from the Administrator of the Island. Heard Island is slightly different in that there is no permanent population (human) so for permission to land must be made to the Department of Science and Technology. After many letters to and fro the application, if found in order, is then sent on to the Antarctic Division, who also consider it, and if found in order, then, and only then, a permit will be issued by the Department of Science and Technology.

This may have seemed straightforward so far, BUT, prior to submitting the application, the Department of Sc & T will have issued a set of guidelines to be observed by people wishing to go to Heard and McDonald Islands. Also a questionnaire to be answered.

Do not get me wrong, I am not knocking the Department. All this is vitally necessary to protect the extremely fragile ecology of the islands. This group of islands is extremely unique in this world in that no foreign animals or plants or diseases have been introduced by weekend trippers, such as has been the case with many of our off-shore holiday resorts.

Guidelines for a permit cover many things, the 12 most important being:

1. Application to be submitted four months prior to departure.
2. Tour is to be adequately equipped for the severe weather and ocean conditions.
3. Tour is to protect the environment.
4. Group must be competent in navigation, landing of personnel and equipment ship to shore, ability to live in antarctic conditions.
5. Tour must be equipped with all necessary safety aids both at sea and ashore, self contained in relation to precautions for emergencies, should not depend on government assistance if it gets into trouble.
6. Tour must provide own shelter.
7. Safety of the tour members is the responsibility of the organisers and the government may require a signed release of responsibility.
8. Organisers should arrange own insurance of personnel and equipment.
9. If Australian Government personnel are on site, there is to be no interference with them, their work etc, and any buildings used must be left as found.
10. The number of visitors will be limited and tourists must not stay overnight.
11. Expeditions may apply for longer stay.
12. Bona fide scientists may apply to collect limited specimens.

INFORMATION REQUIRED INCLUDES:

1. Name of vessel.
2. Size and description including capability under power.
3. Number of persons going ashore.
5. Cold weather experience of organisers and members.
6. Purpose of visit — include proposed activity and any temporary buildings that may be erected.
7. Localities proposed to be visited.
8. Dates, timetable and duration of visit.
10. Equipment to be taken ashore including camping, medical, food, clothing and communications.
11. Ports of departure and return.
12. Details of radio frequencies and skeds, both at sea and ashore.
13. Any other questions thought necessary (this last one could develop into a lulu).


A full report of activities must be sent to the Department of Sc & T within six months of return.

NO NO’s:

- Don’t even think of killing, wounding, molesting, or even scaring penguins, seals, birds, etc, or disturb their living conditions, e.g. don’t raid bird nests, don’t walk on the grass or pick the daisies, and don’t take the family cat, plants, ticks, fleas, diseases, or your own picnic ants, etc.
- Don’t try and sneak back with eggs, penguins, seals, etc, without permission. No cars, trucks or trail bikes allowed. Always move slowly when approaching bird colonies, but keep away from seals with pups (daddy seals won’t like it). No guns or explosives, and no lighting of fires in the open or erection of permanent holiday shacks. Choppers to keep clear of nesting birds as the rotors scare them. And keep out of restricted areas.

WASTE DISPOSAL:

1. Solids such as food scraps, tins, plastic, wire, batteries, etc, must be carted away for disposal at sea outside territorial waters.
2. Definitely no littering. (Didja drop somethin’ sport?).
3. Liquids must be macerated and flushed out to sea (or) deposited in deep holes away from fresh water channels, swamps, etc.
4. Pits to be filled in prior to departing.
5. Oil must not be discharged at sea if liable to harm the territory, etc.
6. In the event of hasty departure a list of all alien material left on the island and its exact location must be notified to the Department within two months.
7. Bulk fuel can be carted in metal drums only; definitely no plastic containers or fuel bladders and all empty drums must be removed.

In other words, no weekend revellers will be allowed to land. The government does not wish to spend taxpayers’ money to pull anyone out of the place. They certainly do not want spray can graffiti painted all over the island.

It may be of interest to know that the submission from the VK6HI Heard Island Expedition 1983, filled 68 foolscap pages. Quite a book.

If anyone still has doubts as to the necessity for any of the above questions and rules I would suggest they read “Sea and Snow” by Philip Temple for a description of the Patanella Expedition and its trials and tribulations. Also “Ice Bird” by David Lewis gives a good description of ocean conditions around latitude 60° south. Also our own Jon Sanders will have a mighty tale to tell after sailing single-handed twice round the world.

Even though I may have seemed to introduce some levity with the rules, it was in no way intended to be derogatory of the department. They are to be commended in their stand to try and preserve this ecologically unsullied island, and its surrounding islands for posterity. Heard Island is unique in that it is one of the world’s few remaining wilderness areas.
Some of you may remember my reference some months ago to W6ITH then of Whittier, California, a station that I used often to listen to on 20 metres in pre-war days when I was an SWL in Sydney. Well, that story evoked an immediate response, first from my good friend Alf Ah Gee VK3DBV of Merbein, Victoria, who sent me the QSL card that Reg Tibbetts W6ITH, now of Morgana, California sent to him, and which you saw published with my story, and then came a letter from W6ITH himself.

This is what Reg wrote:

"Several Australian amateurs I have talked with recently kindly sent me the page with your column ‘Listening Around’ from the March issue of Amateur Radio.

"Very interesting column and I enjoyed reading same.

"Since you mention if ‘W6ITH is around today’, I thought I would write to you and say hello and that I am still as active as ever and still around even though I was 71 this month (May).

"Have been on the air since 1927, first as 6PD (no prefix then) and have had W6ITH since the early 1930s. And to give you a better story I have enclosed a copy of my Professional Biography which will give you some details of my activities over the years. Have been very active on SSB, all bands 160 through 10 metres, and hope I will have the pleasure of talking with you before too long."

Reg Tibbetts PJ2MC card which features an oil painting by Mrs Louise Tibbetts at Sint-Maarten in 1956

"Have enclosed my current QSL together with my 1936 QSL card and my card from PJ2MC which I operated 1956-1969 at intervals when I stayed at my home on Saint Martin Island in the West Indies. Also operated FSTRT, VP2MR and VP0RT (Anguilla) when there during these years."

So ends his letter and here are some of his achievements as mentioned in his Professional Biography.

Reg was born in Berkley California, where he attended various schools including Menlo College, Menlo Park California (and wasn’t it Thomas Alva Edison who was called "The Wizard of Menlo Park"? for his many inventions?)

Later he attended the University of California where he got his BS in electrical engineering and communications, later became a member of the California Engineering Council, the Circle C Society, the Lambda Chi Alpha Fraternity, and the Theta Kappa Nu Fraternity. (Unfortunately Reg did not explain to me what these societies are all about).

In 1926 he designed and installed the first Pacific Coast Police Radio System at Berkley, and in 1934 invented the portable shortwave radio telephones first used during construction of the San Francisco-Oakland Bay Bridge, a painting of which, painted by his wife, appears on his QSL cards. The use of these radios saved the State of California and bridge contractors over one million dollars in construction costs, and they also laid the foundation for two-way police and industrial radios which are now in widespread use.
San Francisco. From radio transmitters secreted for the design, installation, and operational Intelligence Contest for young men and Electrical and Electronic Engineers, the author of include being a registered professional electrical of surrender terms. The offer of surrender as well as the Japanese offer other sources. Among these were the Doolittle Chairman of the Board of UPI. And just to keep him busy in his spare moments when he’s not been doing anything else, between 1950 and 1970, he developed — under contract to the Manhattan Project, US Army Corps of Engineers (later to be known as the Atomic Energy Commission) radiation detection instruments used nearly exclusively for the atomic bomb project and postwar atomic tests in the Pacific by the Atomic Energy Commission. Production of these instruments continued until 1966 for use in laboratories and industry for peaceable uses of atomic energy. Between 1931 and 1966 Reg was chief engineer to the United Press International where he was in charge of communication systems, and was responsible for the design, installation and operational maintenance of all worldwide radio communications systems for UPI, including REX, radio-photo and audio voice news event circuits. In 1963 he had additional duties as communications consultant to the Chairman of the Board of UPI. And winding back the years a bit, between 1941 and 1945 he established jointly for UPI, US Dept of the Navy and the US Office of War Information, the intercept receiving station which copied numerous Japanese and Russian radio transmissions and was the prime source of news from enemy territories. Via the facilities of this intercept station, many news beats were received ahead of all other sources. Among these were the Doolittle bombing of Tokyo, the Japanese capture of Singapore and the East Indies, the shooting down of Admiral Yamamoto and the Japanese offer of surrender as well as the Japanese offer of surrender terms.

Reg Tibbetts, W6ITH was also engineer in charge of the office of War Information for secretly established communication circuits between the Republic of China and the US at San Francisco. From radio transmitters secreted in caves near Chungking, China, hundreds of radiophotos were successfully transmitted and received near San Francisco.

His honora and special achievements include being a registered professional electrical engineer in the State of California, a Life Member, Second Grade of the Institute of Electrical and Electronic Engineers, the author of many technical, and popular radio communications and electronics papers published in English and foreign languages. As a youth he was runner-up in the Thomas A Edison National Intelligence Contest for young men and was selected as being in the “higher than genius” group, for life study by the Stanford University and Dr Lewis I. Truman. He was the recipient of the American Institute of Electrical Engineers National Award for his paper on the San Francisco-Oakland Bay Bridge Construction radio telephone system.

As an amateur radio operator he is licensed with the FCC as Radiotelephone First Class and Amateur Advanced Class with his call W6ITH, and is charter member of the Northern Californian DX Club.

Reg Tibbetts — amateur extraordinaire

They say that Thomas A. Edison was called “The Wizard of Menlo Park.” If Edison was the Wizard of Menlo Park in his day, surely, after all his achievements Reginald Tibbetts, aged 71, and amateur radio operator W6ITH, must claim a similar honour today. My thanks to Reg for supplying me with the data on which this article is based, and I do look forward to the day when I have better equipment and can speak with him directly. I almost forgot to mention that Reg appears to be a keen stamp collector for the envelope which carried his letter to me was almost covered with a variety of United States stamps, many of them publicising the US space activities. So if you decide to write to Reg at 2151 Camino Pablo, Moraga, California 94556, stick as many varieties of Australian stamps as possible on your envelope. I know Reg will be pleased to have them.

SPECIAL EDUCATION QSP

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10 Exams fill a C60 tape. Send a tape and I will copy what you want onto it.
Complaints — or other comments — about Exam papers?
Make them known to your Federal Education Officer, VK3KT, QTHR, or on the Education Net, Wednesday evenings 12.00 UTC. 3.685 MHz±.

WANTED
Any good technical articles for publication in AR

Please remember your STD code when you advertise in HAMADS.

COMPETITION WINNERS

The first correct answers drawn at random by Peter, VK3CIF from all entries submitted were winners of the handsome prizes donated by Bail Electronics for the Antenna Competition Quiz (Page 8 October AR).

The first prize a Yaesu RSL435 Collinear Array was won by:
J M Swan, VK2BQS
PO Box 93,
Toongabbie, NSW 2146

The second prize, a pair of Yaesu YH77 Headphones were won by:
F Robinson, VK3DDK
PO Box 173,
Prahran, Vic. 3181

If either winner does prefer some other article they are entitled to a voucher, redeemable on any purchase from Bail Electronics, which will be to the equal value of the prize.

The Publications Committee extends its sincere thanks to Bail Electronic Services for the donation of the prizes and to the many participants who made the competition possible.

Winners have been notified of their prizes by Mr Stan Roberts, Managing Director of Bail Electronic Services.

The correct answers to the quiz were 1 (c), 2 (c), 3 (a), 4 (b), 5 (b), 6 (b), 7 (c), 8 (a), 9 (d), 10 (b).

Edwin was the "Wizard of Menlo Park." If Edison was the Wizard of Menlo Park in his day, surely, after all his achievements Reginald Tibbetts, aged 71, and amateur radio operator W6ITH, must claim a similar honour today. My thanks to Reg for supplying me with the data on which this article is based, and I do look forward to the day when I have better equipment and can speak with him directly. I almost forgot to mention that Reg appears to be a keen stamp collector for the envelope which carried his letter to me was almost covered with a variety of United States stamps, many of them publicising the US space activities. So if you decide to write to Reg at 2151 Camino Pablo, Moraga, California 94556, stick as many varieties of Australian stamps as possible on your envelope. I know Reg will be pleased to have them.

My thanks to those, who by letter or on air continue to say kindly things about this column which are most encouraging for the effort that I put into putting it together. Sometimes I find myself writing this under very difficult conditions, but it is all made worthwhile when I have such excellent feedback from what I write. I must apologise to those of you who will have missed the pre-Christmas issues and found “Listening Around” not there. This is because I missed the deadlines, but not to worry for there will be much more to come.

I’m writing this on the 4th of November so about Exam papers?

Make them known to your Federal Education Officer, VK3KT, QTHR, or on the Education Net, Wednesday evenings 12.00 UTC. 3.685 MHz±.

WANTED
Any good technical articles for publication in AR

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AMATEUR RADIO, January 1983 — Page 29

Please remember your STD code when you advertise in HAMADS.

AMATEUR RADIO, January 1983 — Page 29
To the newcomer to CW operation the variety of available keys and keying equipment must be bewildering indeed. In order to try to make some sense of it all, we’ll discuss the gear in three groups — manual, mechanical, and electronic.

Manual keys range from compact heavy-duty models designed for incorporation in military transmitters to flashy works of art on marble bases, costing many dB. A morse key is really nothing but a switch, and you could 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 important that you understand the parameters. 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 would be familiar with 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-knob key is more appropriate. Why these two widely different styles 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 African.

A problem with manual keys is that they get pounded, 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 the WIA) is to place the key on two pieces of fine-grade sandpaper glued back to back. Of course the only foolproof method is to bolt or screw the key firmly to the table, but for some reason this idea is unattractive to some (and understandably not the way to win the heart or co-operation 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 onto a heavy metal or even marble base, which helps to keep the thing in one spot as well as contribute to the price. As far as the engineering of the key is concerned, there isn’t a whole lot of variety. Adjustment 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 them, something else is grossly wrong.

Most of the keys readily available to the amateur are of 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 like the plague, or 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.

Next month we’ll talk about mechanical keys and electronic keyers. Till then, 73 and keep pounding.
Intruder Watch

Bill Martin, VK2EBM,
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Rd., Hornsby Heights,
NSW, 2077.

Whilst preparing the Intruder Watch column this month, I was reminded of a few lines from Samuel Coleridge-Taylor's "Rhyme of the Ancient Mariner", which, slightly altered, becomes applicable to the intruder-plagued radio amateur.

"Intruders here, Intruders there,
Intruders all around,
They pulse and growl and roar and howl,
AND WE DON'T MAKE A SOUND!"

"We", of course, being the long-suffering radio amateur, who SHOULD BE making sounds.

To keep on with the task of trying to rid the amateur bands of intruder stations, we must indeed make sounds; and we can do this via the convenience of the Intruder Watch, whose function is to make the sounds on your behalf. The Intruder Watch collates the sounds of fed-up amateurs whose QSOs are continually being interfered with by intruder stations.

Transfer the sounds of your indignation to paper. Put down the facts of the intruder's transgression, and send the details to your Divisional Intruder Watch Co-ordinator. Merely jot down the details of the offender's transmission, and send in the report. As I've said so often before, intruders are not at all impressed by the odd complaint from some irate amateur. But great numbers of complaints are an entirely different thing. This is why we must have many people combining their efforts to rid the bands. WE DON'T NEED THIS.

Make the effort to send in reports of any intruders you hear on the bands. There are plenty from which to choose. We're still looking for reports on the Russian Merchant Navy station, "UMS", which, slightly altered, becomes applicable to the intruder-plagued radio amateur.

SHOULD BE making sounds.

Intruders all around,
They pulse and growl and roar and howl,
AND WE DON'T MAKE A SOUND!"

IT FITS MY SCHEDULE: "She's visiting her sister."

IT'S IN THE PROCESS: "We forgot about it until now."

YOU HAVE MY SUPPORT: "You do it, and I'll take credit."

DO YOU LIVE IN . . .
Ringwood, Lilydale,
Bayswater, Wantirna,
Moorooburk etc? . . .

We carry a comprehensive range of electronic components at very keen prices.

AMATEUR RADIO, January 1983 — Page 31
This month we have permission from Mr. Dick Levine, Editor of Electronics News, to reprint an article written by Peter W. Grant, published in the May 1982 issue, pages 30 and 31.

The article titled "Quietening switching power supplies" should prove extremely interesting to all interested in EMC.

**NATIONAL EMC ADVISORY SERVICE**

Tony Tregale VK3QQ
Federal EMC Co-ordinator
38 Wattle Drive, Watsonia 3087

**Quietening switching power supplies**

By adjusting impedances of internal and external noise loops and using EMC approaches, noise reduction is possible.

By Peter W. Grant, IBM Corp.

When designing power supplies requiring lightweight and small physical size, the transistor switching regulator (TSR) is an increasingly popular approach.

**Figure 1.** A fundamental transistor switching regulator circuit. AC power is rectified, stored in bulk capacitor C, and then switched across the transformer primary winding by the transistors.

In such a design, prime power entering the TSR (Fig. 1) is rectified, stored in bulk capacitor C, and then switched by transistors across the transformer primary winding. Several hundred volts (at high currents) are switched at kilohertz rates, creating both audible and electronic noise. This unwanted electronic noise often spills into adjoining circuitry causing severe interference problems.

The reason why noise is generated in a TSR lies in the method of voltage regulation. The high degree of regulation obtained is achieved by adjusting the switched current's pulse width instead of the former method of quiet, dissipative series regulator circuits. But switching high voltages and currents creates electronic noise.

The usual "brute force" shielded-enclosure method of containing electrical noise consists of totally surrounding the noise source with a metal shield to reduce E and H fields, and requires the use of feed through capacitors on all wires entering or leaving the enclosure, thus adding greatly to the cost of the regulator's design.

**Figure 2.** Brute force shielding of transistor switching regulator is a common method of containing the regulator's electrical noise. It consists of totally surrounding the noise source with a metal shield to reduce E and H fields, and requires the use of feed through capacitors on all wires entering or leaving the enclosure, thus increasing the shield's cost. The capacitors can also put prime power voltages on the shield if it is not securely grounded.

There are other methods by which noise in a TSR can be controlled. These include lowering the impedance of internal circuit noise loops, increasing the impedance of external circuit noise loops and other electromagnetic-compatible (EMC) circuit approaches.

**NOISE SOURCE**

The main source of noise in the TSR is the sudden charging and discharging of the parasitic capacitances of the transformer winding, the transistor-to-heat-sink space, and the wiring by the basic TSR action of switching high currents and voltages. The charging source is the bulk capacitor; so with the capacitor, transformer, transistors, and wiring making a complete circuit (small loop) there seems little reason for charging current to enter the outside world. However, the impedances of this small loop are irregular and some components have grounded heat sinks or cases through which current is dissipated to the entire TSR (larger loop) and thus to the outside world.

**Figure 3.** Noise from a transistor switching regulator leaves or re-enters the regulator's case by four ports: (1) prime power entry, (2) green-wire ground, (3) remote load grounding, and (4) the capacitive coupled drain-wire.

Noise from the TSR that could interfere with an associated system must leave and re-enter the regulator's case by four ports; (1) prime power entry, (2) green-wire ground, (3) remote load grounding, and (4) the capacitive coupled drain-wire.

In reducing noise from the TSR, an understanding of the terms "differential mode" and "common mode" is required.
Differential mode (DM) refers to a system of conductors, usually a pair, having a signal contained in their voltage difference. In a simple single-ended DM system, the return line and the transmission line form a differential pair which contains the total signal. Also, the sum of conductors carrying current in one direction and the sum for the opposite direction could be called a DM pair.

In most cases, if the return current is divided among elements of a common return, the signal line and one element of the common return would not make a DM pair. The grounding or common return elements would constitute a common mode (CM) system, referred to as a system of conductors where a signal is common to two or more conductors. If currents going past an observation point on the transmission line have their direction in common, they are common mode. If their directions are different, they are differential mode. That is, for differential mode the currents must be equal and exactly opposite in phase. For common mode the currents must be evenly divided among the impedances of the various conductors and exactly in phase.

The small charging circuit (small loop) in the TSR becomes part of a common-mode circuit when the current in the circuit finds a common-mode return path. This return is found via the transformer secondary, out through the DC bus, through logic ground, to prime-power ground, and back through prime-power wires through the rectifiers to the bulk capacitor, and also via radiated paths. These paths can be traced with a current probe and scope; i.e., a particular spike can be seen leaving by the power line and returning by the ground wire. DESIGN CONSIDERATIONS

It would be ideal to design the small loop in the TSR so that the generated noise could be contained in the loop. However, since parasitic capacitance exists and energy escapes through transformer cases, heat sinks, etc., current is transmitted to the larger loop, which consists of the entire TSR. It would be difficult, if not impossible, to design the small loop in such a manner that no energy would be converted to a common mode and allowed to escape. But, the larger loop (entire TSR) can be "noise-shorted" so that the noise mainly circulates inside the TSR, without allowing any noise currents to seriously shunt any external series regulator.

If small spikes of ground current remain, they can be reduced in amplitude and frequency by winding the AC wires and green-wire ground around ferrite cores (common-mode impedances). Six turns of the twisted-pair AC wires around an X-30 ferrite core will reduce the spikes by a factor of 10.

The core has to be used with twisted-pair wires since each wire carries large amounts of prime current that would saturate the core, making it useless. Since the sum of AC currents in the twisted pair is zero, the core only sees common-mode noise.

Both wires of a pair (each of the AC wires or the positive and negative wires of a DC output) are sufficiently high-frequency coupled so only one wire of a pair is needed for noise shorting, as previously described. Since a large capacitor to AC neutral is used, another capacitor to the phase wire is, in effect, only paralleled to the neutral one. Also, since both wires of a pair are sufficiently high-frequency coupled, only one wire of a pair is needed for noise shorting.

The loop is closed to the DC output with a resistor that damps the oscillation through the system ground back to the DC output. Grounding the box to TSR ground and system ground by-passes the high green-ground wire impedance and raises the noise level considerably.

DIODE NOISE

Another source of noise common to most power supplies is diode reverse-recovery noise. Because diode current does not shut off exactly as the diode voltage crosses zero, it takes a little reverse current to clear out the carriers. Depending on the types of diodes used, this reverse-recovery current comes in different amounts and different turn-off speeds result when the carriers are cleared.

Fast-recovery diodes do not allow the reverse current to reach very large levels and soft-recovery diodes shut off slowly at the end of recovery. Hard-recovery diodes shut off very rapidly, creating a current step function that causes adjacent circuitry to ring. So the choice is for both fast- and soft-recovery diodes.

Finally, circuit analysis of electric noise paths and currents can never be total or complete since the impedance of noise paths are extremely complex. The engineer must rely strongly on past experience, developing a "feeling" for impedances of open wires and interframe capacitances.

ELECTROMAGNETIC COMPATIBILITY

EMC is the present term covering a wide range of undesirable elements of electronics including interference to radio reception, computer errors caused by noise and some of the effects of lightning. EMI, electro-magnetic interference, is part of EMC. This term covers radiated noise and is usually measured in terms of volts per metre or amperes-turns per metre. If the noise is broadband, it is measured in complex terms such as dB/µV/m/MHz (decibels above one microvolt per metre per megahertz). RFI, radio frequency interference, is the outdated term for EMI.

PLT, power line transients, is one kind of conducted noise generally caused by switching inductive loads and is measured on the power line.

![Figure 4. Noise can be "shorted" in a transistor switching regulator by placing a high-frequency capacitor C6 between the AC neutral and output. A series resistor R6 is added to dampen tank-circuit oscillations.](image)

As a start, a high-frequency capacitor is placed across the bulk capacitor C as close to the transformer and transistor as possible. Adding a large high-frequency capacitor between the DC output and AC input (Fig. 4) reduces externally circulating ground currents significantly. A series resistor is added to dampen oscillation, since the capacitor is part of a large tank circuit whose inductances are created by wiring and magnets.

For safety, capacitors should be run to green-wire ground from all of the input and output wires. Shorting one side of the DC output directly to the green-wire ground is an effective way of keeping the noise from the external world, except that return-lead series regulators should not be shorted with this wiring.

The optimum noise correction system (Fig. 5) meets external circuit requirements and shunts a large amount of external noise current. A large, UL-approved, high-frequency capacitor is placed between the AC neutral wire and green-wire ground.

Since a large capacitor from ground to AC neutral is used, another capacitor to the phase wire is, in effect, only paralleled to the neutral one. Also, since both wires of a pair are sufficiently high-frequency coupled, only one wire of a pair is needed for noise shorting.

The system ground back to the DC output. Grounding the box to TSR ground and system ground by-passes the high green-ground wire impedance and raises the noise level considerably.

![Figure 5. This optimum noise-correction system meets external circuit requirements and can shunt a large amount of noise current from external circuitry. The ferrite cores add even more protection by increasing noise path impedances.](image)
DXCC News

HK0, Serrana Bank, HK0, Baja Neuvo and 8Z4, Neutral Zone have been deleted from the ARRL Countries List. The total number of current countries now stands at 315.

DXCC LISTS AND NETS

In an earlier issue of this column, I reported on the proposal of WB4ZNH to have the ARRL DXCC Rules altered so as to make list operations unethical. The September issue of QST (pages 44 & 45) details the pros and cons of DX lists.

Whatever you may think of lists and nets you cannot get away from the fact that they exist and look as if they are here to stay. It seems to this writer that basically the controversy centres around one point and that is the definition of QSO. The supporter of lists believe the important part of a QSO is the report (usually his call sign has been passed to the DX station by the net control). The chaser of DX, through the "pile up", has to get his call copied by the DX station (he knows his report is going to be 5 & 9!!)

On marginal QSOs I would suggest it is harder for a call sign to be copied than a report. Further, as the report does not really matter for DXCC (any report is accepted, 1 & 1 or 5 & 0, as long as a two way exchange takes place), why is it considered so important?

The foregoing may suggest that I am against lists and nets. Nothing could be further from the truth. My concern is, that in a particular area of amateur achievement, DXCC awards, we have a division of opinion and unfortunately this division is getting wider.

A possible solution to the problem could be that "check ins" to nets are given a number by net control. When all "check ins" have been completed the net control announces the DX on frequency and then invites stations by number to make their call. This procedure means that a net station has to get his call and the report across plus receiving the DX station's report. This could result in a stronger QSO than that of DX, through the "pile up".

Further, as the report does not really matter for DXCC anymore, it seems to this writer that the controversy is being diluted.

While the controversy continues, DXCC award programme is a plus for us.

DXCC AGAIN

It is interesting to note how emotive people are in any discussion of the DXCC programme. Since I last penned a few words on the controversy, opinions have ranged from, "Let's scrap DXCC altogether" to "we should tell the ARRL how to run a proper DXCC programme". Strong stuff this, but we should at least try to get some of these problems in their true perspective. The ARRL is perfectly entitled to lay down whatever conditions they wish for their DXCC, it is their award. The fact that they allow overseas stations to participate in their award programme is a plus for us.

At present our DXCC award policy is that we try to follow the ARRL DXCC guidelines as closely as possible. If we VKs do not like some of their country definitions and rules we have several solutions available to us. We can opt out altogether; accept their rules; start our own DXCC award with our rules or keep DXCC and have an alternative DX award.

SARG AWARD

SOUTH AUSTRALIAN RADIO TELETYPE GROUP

Sample

Grant to: .................................................................who has fulfilled the necessary conditions to earn this radioteletype award.

Award Classification .................................. Date ...........

Signed ..........................................................

South Australian Radio Teletype Award (SARG) Award

RULES:

1. GENERAL AWARD — Overseas and interstate operators need to work ten different SARG members using 2 way RTTY. VKS stations need to work fifteen instead of ten as mentioned above.

2. CROSS MODE AWARD — Available only to those whose licence does not permit RTTY transmissions. Such must copy in RTTY and transmit on SSB or CW. The number of stations required etc. is the same as for the General Award.

3. VHF/UHF AWARD — Operators must work ten different stations using 2 way VHF/UHF. RTTY and not less than three of these must be SARG members and all qualifying contacts must be more than 50kms distant.

In addition to the above, from time to time, Special Awards will sometimes be issued for certain special occasions.

Applications for these awards are to be sent to the Group's official address enclosing a payment sufficient to cover printing and postage costs. Further details can be obtained from Bruce VK5X1 QTHR.

FIVE BAND WAP

As part of NZART activities for WCY 1983, a Five Band WAP will be made available.

REQUIRE: QSO 30 eligible Pacific Countries (as count for Oceania for WAC), each on five different bands making a total of 150.

ACTION: Send list of log extracts (QSLs not required to be held) to NZART Awards Manager, 152 Lyton Road, Gisborne, New Zealand with $6.

REWARD: Wooden Shield surmounted with NZART badge and appropriately inscribed.

Extra postage if air mail required overseas.

$3.

AWARDS ISSUED

Awards issued and amendments received up to 6th November 1982 are listed below.

WAVKCA AWARD

CALLSIGN# CERT. NO. # CALLSIGN# CERT NO. #
K1KTB 1054 JAK1KAW 1074
I4ACG 1055 J4H4GF 1075
VA6DE 1056 U8MW 1076
JF3VST 1057 U8CB 1077
JH4LYU 1058 U8SR 1078
JAI1UJK 1059 U8CM 1079
G3LDR 1060 U8B 1080
W1BWS 1061 U8SG 1081
JAI8LS 1062 U8G 1082
N4AH 1063 UAB0 1083
JH1KRC 1064 U8HR 1084
JF3GKE 1065 UABG 1085
E30DJ 1066 UAC 1086
JAS6M 1067 UABD 1087
JG1NNG 1068 UAGL 1088
P29NSF 1069 UAKN 1089
JF2ZHI 1070 UAKC 1090
JAI2RGC 1071 V28A 1091
JAI8WX 1072 V28K 1092
Y37XJ 1073

Mike Bazley VK6HD

FEDERAL AWARDS MANAGER

8 James Road, Kalamunda, 6076

Page 34 — AMATEUR RADIO, January 1983
A very happy New Year to you all, may all your hopes and dreams for the year ahead be realised.

Nice to meet so many YLs at the Ballarat Convention, Mavis VK3KS; Brenda VK3KST; Brenda VK3QT; Vicki VK3??, Dale VK3PEH, Maggie VK3NQQ, Joan VK3NLO. The weather was a bit miserable but the hospitality more than compensated. So thanks to all the organisers for a very enjoyable weekend. Dale, hope you enjoyed the contents of the competition.

ALARA MEMBERS

VK1NJE 21-2-82 WE 29-10-76
VK2ADH 10-11-80 VAN 20-2-81
DJJO 22-7-81 VBN 17-3-79
DLT 22-7-80 VON 2-3-81
DKX 14-7-79 AOE 10-10-80
DVL 11-8-79 VK4ABM 14-7-79
HD 22-10-76 ACJ 22-7-80
NOL 3-11-80 AKJ 20-3-82
PAW 1-10-80 VX4MME 5-9-82
PLG 15-1-82 NXX 12-6-81
SW 26-7-80 VAX 6-1-81
KJF 27-1-80 VDI 1-10-80
VLV 17-9-79 VIT 28-2-82
YOK 20-3-82 VKT 7-10-80

VK3AGD 6-5-79 PZ 9-3-81
AYL 1976 ATK 1-9-82
AZW 9-8-76
BBJ 9-6-79 VK5ANW 21-4-76
BIP 23-8-75 BJH 30-3-80
BJB 2-8-76 LM 4-4-76
BRE 1-9-76 IWM 1-9-78
BTU 1-9-77 NBY 5-6-79
DMN 8-6-77 ZHI 12-2-81
DMS 24-10-77 CCI 12-2-81
DVT 24-10-81 YJ 14-7-75
DYL 20-4-81 YL 20-4-76
HD 31-10-76 YW 25-7-76
KSI 22-8-75 NWN 30-7-76
NLD 19-10-81
NMM 11-11-76 VK6KYL 2-3-79
NQD 19-2-79 NLY 2-3-80
PCI 2-3-82 QM 21-6-80

AR

THE RADIOCOMMUNICATIONS BILL

Recent Government sources indicate that the BILL will not now be introduced into Parliament until the Davidson Report has been fully considered. The Davidson Report, which is the comments and recommendations of the Davidson Committee who have been reviewing the operations of Telecom, is open for a three month comment period.
Graham also enclosed a snippet from R A Ham in Sussex, England, who advised: "the authorities have given the OK for UK amateurs to use 6 metres outside of TV hours; no good for DX, but a step in the right direction." It's certainly a start, but whilst it may be outside regular TV hours, it may still be that from time to time some useful contacts will result providing the operators are there!

Peter, VK6ZDY has also written from Gooseberry Hill (is that an elevated site?) to say most 6 metre openings are occurring north of Perth, with the MUF hovering just below 50 MHz much of the time, and allowing the JA stations to contact many other areas. Also, from his observations in the 49 to 50 MHz area, there are at least 3 UA TV transmitters, one from Vladivostok, one central UA, and one western UA on a bearing of 310°, which usually comes in late afternoon. The signals on 49.750 can reach tremendous strength for long periods of time, at others propagation is much like ionospheric scatter and ringer pings hovering on the noise level. Times are from 2330 UTC through to 1430 UTC at night.

The following has been heard or worked from Gooseberry Hill: 21/9: 0829 UTC weak JA on 50 MHz, 49.750 very strong 279°; UA TV 5x9, plus VK4, 5 and 6 on 52 MHz. Peter received signals were weak at first then S9 + 50 MHz, with a JA dogpile on 50.101 MHz much of the time, and allowing the JA stations to contact many other areas. Band open all day around 49 and 50 MHz so that should signals appear there they could be worked. Thus it seems sensible to consider 50.050 as a DX call frequency and 52.050 as at the moment for VK contacts, with the changing of the band switch to go from one band to the other without returning. On the other hand, you might consider that W stations are not permitted phone below 50.100, that area being reserved for CW and other call areas. So there will need to be some thinking in regard to a band plan for any such changed circumstances. WHAT ABOUT A BIT OF FEEDBACK ON YOUR IDEAS PLEASE?

FROM CAIRNS

John VK4TL has written to say that JA pag ing beacons between 146.760 and 146.810 were heard on 27/9/82. They started coming in at 2051 at S1, with VK4KBT in Townsville hearing them S4. They were also heard on 25/9 by VK4AFC and VK4AVV, and again on 28/9.

John also advises VK4AFC has had a two way SSB contact on 48.250, and on 31/10 VK4AFC, VK4TL and VK4RR had a QSO with Tom VK2DDG on 147 MHz SSB! That’s a long haul from Cairns to Byron Bay. 144.1 was tried without success, this frequency being too low for propagation at the time. Good work chaps!

FROM SOUTH AUSTRALIA

Not a lot to report other than the few usual JA openings, both on 50 and 52 MHz. However, a fairly stationary high in the Great Australian Bight did produce some interesting conditions on the late afternoon and night of 9/11, between Adelaide and Albany. Contacts resulted on 144 and 432 MHz with signals up to 5x9. Those involved included VK6KJ, VK6BE, VK6VG, VK6XY, from Albany, and VK6BO from Denmark. At this end were VK5ZRO, VK5ZDR, VK5RM, VK5RO, VK5LPL, VK5ZTS and VK5ZUC — there were probably others but I cannot always hear them when they have their beams side on while pointing at VK6. We were also pleased to have a contact with Mal VK5KMW at Ceduna on 144.100 SSB. That’s not an easy path, and I personally was most happy to have a contact from behind my big hill! Attempts were also made to contact Mal on 50.050 and 52.050 — some of us could hear him but he couldn’t hear us, so it was pretty much a cross.
**EDUCATION NOTES**

World Communication Year is being publicised elsewhere, but I would like to add a few comments for those who feel they are not likely to be affected or involved.

It has been said many times that for people whose hobby is communication, we are generally very bad communicators. We are very ready to criticise or complain among ourselves, but not so keen to make an effort to get our message across clearly in the right direction.

How many times have you tried to explain some technical point, and ended up floundering or leaving the listener more confused than ever?

Many of us are at times called on to try to explain amateur radio to a non-technical audience. Here is a chance to do something for the hobby, for other amateurs, and incidentally for World Communication.

Although most people are generally less ignorant about radio than they were a few years ago, there are still many people to whom it is no more of a mystery than a masonry black box that makes noise.

Here are a few of the questions I have been asked by staff as well as students, during the time I have been running a school station.

- Why do you need an antenna?
- Why can’t you listen to the police on it?
- Why is it so noisy (static)?
- Why do you have to have a licence to use it?
- How is it different from CB?
- Can you call up my Auntie in Bendigo (London, Brussels)?

**Why can’t we understand what they’re saying? (tuning off a sideband signal)?

Will — (the one we talked to last time) be there again today?

How many channels has it got?

Unless we meet these questions, occasionally, we tend to forget that many people do not know the answers. If you can produce spontaneous, clear, simple answers to questions such as these, you may be able to claim credit for introducing new enthusiasts to our ranks.

Talking of questions — I hope to have a new Trial AOC(T) Theory exam ready early in January for those planning to sit in February. Let me know if I can help you in any way.

73 Brenda VK3KT
In this last year we have had the good news of watching UOSAT as the amateur scientific satellite renewed its promise of new vistas in amateur science and education. Sending its beacon, the KEPLERIAN ELEMENTS for the above satellite, although a short lived one, never fulfilled its primary objective of providing a 21 to 29 MHz linear transponder. However, the beacon of ISKRA 2 signing RKO 2 was prominent in the 10m band throughout its short life. It fell from orbit on the 9th July 1992 just north-west of the Canary Islands. The main feature of this satellite was the unique method of its launch.

One of the unfortunate happenings of the year was the failure of the L5 the fifth launch of the fated rocket that plunged into the sea with airlock of the manned Russian space mission and perseverance and 12 megawatts of ERP. One of the unfortunate happenings of the year was the failure of the L5 the fifth launch of the fated rocket that plunged into the sea with airlock of the manned Russian space mission and perseverance and 12 megawatts of ERP.

In April 1982, an amateur Soviet satellite RS 3 & 4 which transmit telemetry only, RS 5 & 6 with transponders, Phase IIIB, for example, can be recaged or if earlier reports were untrue, the 50 foot (16 metre) structure as a linear antenna. The memories abroad UOSAT are generally thought to be the most susceptible to radiation damage since they provide a relative index to the general health of the entire spacecraft.

Soon the stabilization regime will recommence from where it left off abruptly last April. Earlier it had been reported that the gravity gradient boom had been partially deployed last April but current telemetry indicates that the tip mass has not been uncaged (telemetry status point 29 = 0) yet. It is not clear if the 2.5 kg tip mass can be recaged or if earlier reports were in error. Nevertheless plans are proceeding on all fronts to make maximum use of the year to two years remaining in the useful life of UOSAT-OSCAR.

In related developments AMSAT UK Secretary Ron Broadbent, G3AAJ, appearing on the Radio Netherlands radio broadcast "Media Network", indicates that he expects AMSAT to exercise the balance of its on-board experiments soon. Although the CCD camera has been on briefly and has revealed a very rough image on its first shot, this experiment is the one which seems to have the widest general appeal despite its dubious merit. On the other hand, the HF beacons (7.05, 14.002, 29.510 MHz) have notable amateur scientific appeal since they use the 50 foot (16 metre) structure as a linear antenna. The memories abroad UOSAT are generally thought to be the most susceptible to radiation damage since they provide a relative index to the general health of the entire spacecraft.

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**WCY**

This year of 1983 has been designated by the United Nations as the International Year of Communications, called World Communications Year (WCY). Previously, we have seen Years of the Tree, the Child, and the Disabled Person. There will be special events held to celebrate this, throughout the world during the twelve months. I am sure that further details will be included in "AR" over the next few months.

I know that several international broadcasters are planning special competitions in conjunction with WCY '83. Well, what will happen as far as listening goes in 1983? It is hard normally to predict what will happen, as far as propagation goes, from day to day. Yet various trends point to an increased usage of the HF spectrum, despite many services opting for satellite and tropospheric scatter techniques, yet other users quickly utilise any vacant channels on HF. Many also have SW frequencies as a backup, for satellites have been known to fail. Many developing nations still prefer HF communications, as it is economically more feasible to their budgets.

**OTH**

We will continue to be plagued by interference from "Over The Horizon" Radar Systems on shortwave. As you are possibly aware, recently the United States commenced operating a 1,380 kw sender in Maine, to watch the North Atlantic. This FM/ICW sender is reportedly programmed to operate between 5 and 25 MHz, and on vacant frequencies (at least they are in America). I believe that a second site on the American West Coast is contemplated for the Northern Pacific, as well as increasing the beam width on the existing site. With the USSR currently operating systems similar to this, from various sites within the Soviet Union, QRM from OTHR transmissions are bound to increase. Fortunately, they do have limitations as far as a radar system goes, but certainly have proved to be an effective disruption to telecommunications services.

**DIGITAL MODES**

There will be a swing towards the employment of digital modes of transmissions, now the technology and software are available. These enhance security and privacy factors, with times of occupancy per channel being measured in milliseconds, and will not be easily detectable on a normal receiver. Unfortunately, digital emissions are subject to dropsouts, which can affect messages and their meanings, alleviated somewhat by repetition of the copy.

**SOCIETY TODAY**

Amateur Radio seems to be fragmenting further, into groupings of amateurs', amateurs, operators, etc. RTTY, novices and Old Timers', each drifting apart to their interests. We have to realise that we have one thing in common, a hobby and a friendship, as well as an organisation that can adequately represent their needs and aspirations with the appropriate authorities. As Society becomes more technology-oriented, so the complexity of problems arise from the abuse and use of it, which can cause difficulties for the individual wishing to pursue his recreational pursuits.

Recently the Tasmanian Division of the WIA launched a voluntary levy from amongst its members, to cover any contingency that might conceivably arise from the problems to amateurs from today's complex living standards. A veritable increase in electronic wizardry and gadgetry in the home has meant a host of problems to the amateur who wishes to utilise his transmitter. In many cases, expensive legal litigation can accrue from consumers' neighbours use of mass produced equipment, which in many instances is of inferior standard to that of the amateur equipment. This has happened in America. As well, a plethora of local building codes make it difficult to erect towers and/or masts in urban areas. Here, there is a need for such a contingency fund to cover these situations likely to be faced by amateurs TODAY. I do not know if other divisions are contemplating Contingency Funds, yet I would urge the members to support them, for it is probable that more of these problems will surface during 1983. Elsewhere in this journal, you will find details of the Federal EMC Coordinator — Tony Tregale, VK3QQ, who has compiled an extensive background of AFIRFI from transmission sources.

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**STRIKE GOLD — BY CALLING ALL SCOTTISH DISTRICTS**

The Scottish Tourist Board is to encourage radio amateurs throughout the world to make contact with Scotland in a new scheme which was launched in Edinburgh on 26 November, 1982.

Under the scheme, entitled "WORKED ALL SCOTTISH DISTRICTS", certificates will be awarded to overseas radio amateurs who confirm two-way communications with amateurs located in Scottish district. In order to be awarded a special plaque, you will have to contact the first station in each country and in each USA and Canada call area to qualify for having worked all fifty six Scottish districts. The award is open to all licensed amateurs.

Alan Devereaux, GM8VVJ, Chairman of the Scottish Tourist Board, which is sponsoring the scheme, said in Edinburgh today: "We'd like to establish Scotland as a radio mecca for the half million radio amateurs throughout the world, and our new scheme will result in many thousands of contacts and enquiries from radio enthusiasts who want to visit Scotland."

Application forms and record books are obtainable from Mr A. G. Anderson, GM3BL, West Ballorm House, Dunns, Banchory, Kincardineshire AB3 58J, Scotland, who will deal with all correspondence in connection with the scheme.

The award is in three classes: Gold for all districts; Silver for forty five districts; Bronze for twenty five districts.

Endorsements are available for all bands, single band and all mobile.

OSL cards must be in possession of applicants and applications certified by two general class licensees.

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**REJUVENATION**

Recently, I resurrected an old Philips Model 2262 Receiver (circa 1939) from oblivion, hidden in the corner of my shack. With a friend's assistance, all old components were replaced, and dust removed. We were surprised by the performance of this forty year old receiver, especially its sensitivity and audio dynamic range, compared to today's sophisticated solid-state models. Its performance on MW was better than the Yaesu FRG-7 I mainly use. Of course the older receiver does have some drawbacks, primarily poor selectivity, but this is to be expected, as the spectrum is far more crowded than forty years ago. Neither does it have a Band Frequency Oscillator (BFO). Yet, with the addition of a "Q" Multiplier stage, it would become a very good receiver.

**RABBITTIs**

On a recent "Waveguide" programme on the BBC World Service, the announcer referred to the problems of rabbits at the Daventry Site. It seems that Brer Rabbit has taken a fancy to gnawing at the plastic covering on the transmission cables! As the Daventry site covers an enormous area, just adjoining the M1 Motorway, the little bunnies have plenty of space to hop around and live. So be warned, keep your cables away from bunnies or any other creature, eager to gnaw away at the covering.

Incidentally if you are interested in listening to "Waveguide" from the BBC World Service, it can be heard at 0915 UTC Mondays on either 15.070, 21.550 or 25.650 MHz. Clayton Howard, the popular compere of HCJB's "DX Partyline" programme, has returned to Ecuador, after a twelve month sojourn in the States, and can be heard again with his session. It can be heard on Mondays and Saturdays at 0930 UTC on either 6.130, 9.745 or 11.295 MHz. As well, the European release at 2130 UTC can often be heard at 21.477.5 MHz.

Well, that is all for this month. I hope that I will be able to bring further developments from the World of Shortwave during the coming months. So until then, the best of 73's and good DXing Robin.
All men are equal in eyes of radio enthusiast

Christine Salins
Townsville Daily Bulletin

Len VK4GD was recently awarded Life Membership of the Townsville Amateur Radio Club.

Phot by Townsville Daily Bulletin

He had to cease his amateur radio activities during the war years — the only time he has ever been off the air since he started. Amateur radio was closed down during the war years. The PMG had to check to see if people had dismantled their equipment.

"It was then taken into the PMG and locked away. We got our licences back after the war."

Mr Dodds was discharged from the RAAF in November 1945, and joined the PMG not long after. He retired in 1973 and has since had a heart attack and lost the lower part of his left leg.

But nothing will stop him from doing what he loves most.

"Today I've got three sets and a monitor scope to check the output of my transmitter. I still mess around with the equipment — I can still see well and my hands are pretty steady, but things are a lot smaller these days," Mr Dodds said.

"The trouble with building things now is finding things to build them with. The Japanese have got the market these days. You can just walk into a shop and buy what you want.

"I enjoyed making my equipment myself. It's a greater achievement to speak to someone in America or somewhere, when you've put it together yourself."

Apart from reading Mr Dodds spends the best part of his days making contact over the airwaves.

"It's a good hobby which you can be involved in regardless of the weather," he said.

"It can be expensive but, if you do the work yourself, it doesn't have to cost much.

"It's my being. It's what I live for really."

Reprinted from Townsville Daily Bulletin 23 August 1982

In order to fill out the Amateur Radio details of Len's long and varied career, I should state that Len received his first "experimental" licence in 1927 as OA2LD in Sydney. This was changed to VK2LD when the new Australian "VK" prefix was introduced in 1929.

His first Tx was a tuned plate / tuned grid circuit using a UV202 valve.

Len had to stop all Amateur activities during his RAAF service during World War II. When the war ended, Len settled in Townsville, and requested a Queensland callsign. He was allotted VK4GD, the call which he has retained to this day.

Peter VK4PV

The old fashioned man who had a good head for figures now has a grandson who has an eye for them.

In the good old days a boy would give his girl his class ring and they were going steady. Nowadays he lets her use his hair curlers.

ARNS Bulletin Sept 1982
Scenes from the 1982 Gold Coast Hamfest and VK4 State Convention held at Broadbeach on 6th November 1982.

Geoff Adcock, VK4AG, receives an ARRL Handbook from Ken Ayres, VK4KD, for winning the VHF Fox Hunt.

The Historical Display attracted a lot of interest.

One of the stalls that got well picked over was the Brisbane Amateur Radio Club's Disposals Stall.

Not everyone knew the way to the Convention Centre, so VK4WIG, the Gold Coast Amateur Radio Society Club Station was on hand for directions.

Entries in the Home Brew Competition. On the right is the interface unit designed and built by Geoff Adcock, VK4AG for use at the Commonwealth Games Station.
CONTEST CALENDAR FOR JANUARY 1983

9-10 End of Ross Hull VHF
9-10 73' 40 and 80 metre Test
15 World Communication Year contest
15-16 73' 160 metre Phone
29-30 White Rose SWL Test
29-30 French CW Test (not official)
28-30 CO WW 160 metre CW

FEBRUARY
5-6 French 40 metre Phone (not official)
12-13 John Moyle National Field Day
12-13 NZART National Field Day
12-13 OCWA CW QSO Party
12-13 Dutch PACC Test
12-13 YL/OM Phone Test
19-20 ARRL CW DX Test
19-20 YL ISSB Phone Party
26 '73' RTTY Test
25-27 CQ WW 160 metre Phone
26-27 YL/OM CW Test
26-27 RSGB 7 MHz Phone (not official)

MARCH
5-6 ARRL DX Phone Test
12-13 OCWA Phone QSO Party
12-13 YL ISSB CW QSO Party
26-27 CQ WW WPX SSB Test

CONTEST RULES FOR JOHN MOYLE, WHITE ROSE SWL, NZART FIELD DAY

JOHN MOYLE NATIONAL FIELD DAY CONTEST
CONTEST PERIOD From 0300 UTC 12 Feb 83 to 0500 UTC 13 Feb 83
OBJECT: To encourage portable operation on all bands by radio amateurs in VK and P2.

CALL AREAS Shall be defined as:
(a) Within one's call area, VK2 to VK2, VK4 to VK4 etc.
(b) Outside one's call area, VK2 to VK4, VK6 to ZL etc.

RULES
1. In each division there are ten sections.
   (a) Portable field station, transmitting phone, solo operator.
   (b) Portable field station, transmitting CW, solo operator.
   (c) Portable field station, transmitting open, solo operator.
   (d) Portable field station, transmitting VHF, multi operator.
   (e) Portable field station, transmitting HF, multi operator.
   (f) Portable field station, transmitting HF open, solo operator.
   (g) Portable field station, transmitting HF open, multi operator.
   (h) Portable field, or mobile station, transmitting VHF.

2. In each division, 6 or 24 hours, the operating period must be continuous.

3. Contestants must operate within the terms of their licence.

4. A portable field station is defined as one which operates from a power supply which is independent of any permanent installation. The power source must be fully portable, ie batteries, solar panels, motor generators / alternators etc.

5. No radio apparatus, including masts, antennas, feeder cable, may be erected on the site more than twenty-four hours before the contestant begins operating.

6. All amateur bands may be used, but cross band operation is not permitted.

7. Cross mode contacts are permitted, and count single.

8. The size of any portable field station shall be restricted to approximately that of an 800 metre diameter circle.

9. Each multi-op transmitter must maintain a separate log for each band. An FM rig may be separate from an AM or SSB rig, but only one multi-op transmitter may operate on any one band at any one time.

10. Multi-op logs should be entered under the same call-sign.

11. RS or RST reports should be followed by serial numbers beginning at 001 and increasing by one for each successive contact.

12. SCORING FOR PORTABLE FIELD STATIONS AND MOBILES.
   (a) Portable and mobile stations outside entrants call area — 15 points.
   (b) Portable field stations and mobiles within entrants call area — 10 points.
   (c) Home stations outside entrants call area — 5 points.

13. SCORING FOR HOME STATIONS.
   (a) Portable field stations and mobiles outside entrants call area — 15 points.
   (b) Portable field stations and mobiles within entrants call area — 10 points.

14. Portable field stations may contact any other portable field station on ALL bands repeatedly, provided that at least four hours have elapsed since the previous contact with that station. Portable field stations may contact any home station only once on each band and mode. Note that AM, FM, SSB and any other voice modes are grouped together as PHONE.

15. Operation via earth repeaters or satellites is not acceptable for scoring. However, contacts via extra-terrestrial repeaters, eg satellites, EME is acceptable for scoring. Contestants should note Rule 6.

16. All logs shall be set out under the following headings:
   Call sign, band, emission mode, RST/SERIAL sent, RST/SERIAL received, date-time in UTC, points claimed. Contact must be listed in chronological order. There must be a front cover sheet showing the following:
   Name, address, division, section, call sign, serial of that station, location of station, equipment used, power supply used. Contestants in all sections shall also include a "zero value contacts list", showing all contacts made that were of zero-value and contravened the rules. This list shall be set out under the same headings as for the contestants logs. Contestants must also certify that they have operated in accordance with the rules and spirit of the contest. It should be noted that the practice of multi-op. station participants considering themselves to be portable stations and making regular contacts with the portable field contest station so as to bolster that station's score is deemed to be not in the spirit of the contest, and as such contravenes Rule 16.

17. Certificates will be awarded to the winner of each section, in both the 6 and 24 hour divisions. The 6 hour certificates cannot be won by the 24 hour entrants.

18. Entrants in sections (a) through (h) inclusive must show how their power was counted in accordance with Rule 16.

19. There is no bonus multiplier to be used in the case of CW-CW contacts. These count single.

20. Logs must be received no later than 23 March 1983 and sent to PO Box 236, Jamison ACT 2614.

RECEIVING SECTION
This section is open to all short wave listeners in VK and P2. Rules are the same as for transmitting stations, but do not have to show RST/SERIAL of that station being worked by the portable or mobile field station. Logs shall show the call sign of the portable or mobile station heard, the report and serial number sent by that station, and the call sign of the station called. Scoring is as shown in Rule 16.

A station calling CW does not count — only portable and mobile stations, which must be listed in the left-hand call sign column of your log, will count for scoring. Stations in the right-hand column (if available) may be any station contacted.

A certificate will be awarded to the highest scorer of each of the 6 hour and 24 hour divisions, individual or multi-operator entries.

The decisions of the CM are final and no correspondence will be entered into.
**WHITE ROSE RADIO SOCIETY 3rd SWL LF BANDS CONTEST RULES**

1. From 1200 UTC 29th January 1983 to 1200 UTC 30th January 1983 with contestants choosing their own period of eighteen consecutive hours.

2. The contest is open to anyone in the world and there will be two sections — phone and CW. No mixed mode entries.

3. The 1.8, 3.5 and 7 MHz bands are to be used.

4. The practice of logging a series of contacts made by one station is deprecated. Log entries must not include the same call sign in the “Station Worked” column more than ten times on each band.

5. The object of the contest is to log as many stations in as many countries as possible. Scores should be compiled as follows:-

   - One point for each station heard on each band from one’s own Continent and five points for each station heard on each band outside one’s Continent. Total points to be multiplied by the number of different countries heard on each band added together.

   - A list of countries heard must be furnished and a separate log must be submitted for each band.

6. Some areas of the USA, Canada, Australia and New Zealand will count as a separate country. ie W1, W2, W3, W4, W5, W6, W7, W8, W9, W0, VO1, VO2, VE1, VE2, VE3, VE4, VE5, VE6, VE7, VE8, VEY1, VK1, VK2, VK3, VK4, VK5, VK6, VK7, VK8 and ZL1, ZL2, ZL3, ZL4. All other countries will be determined by the ARRL Countries list.

7. NO, CQ, ORZ or similar calls will be allowed to count for points. AM or /MM stations are not to be included in the entries.

8. Log sheets to show the following information: Date, Time UTC, Band, Station Heard, Station being Worked. Reports at SWL QTH. Points may only be claimed for stations actually heard and the call sign must be shown in full. Points are claimed for both stations, the call sign must appear in the “Station Heard” column.

9. Entries should be sent to the Contest Manager, Mr David McGregor G4 IDJ, c/o White Rose Radio Society, 8 Manor Court, Shadwell, Leeds LS17 8JE to arrive not later than 24th March 1983.

   - Comments on the Contest will be appreciated and contestants are asked to give details of their receiving equipment and antennas.

10. Certificates of Merit will be awarded at the discretion of the White Rose Radio Society, and its decision will be final.

11. Contestants wishing to receive a copy of the results are asked to send a stamped self addressed envelope or two IRC’s if outside the United Kingdom to the Contest Manager.

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**RESULTS OF THE 1981 RUSSIAN CQ M DX CONTEST “PEACE TO THE WORLD”**

Congratulations to N. Boegheim, VK6UN, who won overall fourth place from all foreign amateurs with a score of 20,160 points.

Australian amateurs that were medal winners in the Oceania section of the Contest are as follows:

- **“A”** 14 MHz
  - C. Maughan VK5TI .................................... Gold Medal
  - B. W. Thomas VK2TD .................................. Bronze Medal

- **“A”** 28 MHz
  - N. Boegheim VK6UN .................................. Gold Medal
  - T. M. Garvy VK2OOO .................................. Silver Medal
  - “B” GR
  - S. R. Coleston VK4AXA .................................. Gold Medal

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**AMATEUR RADIO, January 1983 — Page 43**
DIVISIONAL OFFICE
The office of the WIA NSW Division is now located on the first floor, 109 Wigram Street, Parramatta. The office hours are between 11 am and 2 pm weekdays, and from 7 pm to 9 pm on Wednesday evenings. The phone number is 02-689 2417 and all correspondence should be sent to PO Box 1066, Parramatta, NSW, 2150.

Facilities include publication sales and information, QSL card drawers, and the members lounge/library area. Off-street parking is available for members visiting the new office.

GOSFORD FIELD DAY
All amateur radio operators, their families, friends and all interested in amateur radio are invited to attend the 26th Annual Field Day of the Central Coast Amateur Radio Club on Sunday, the 20th of February, 1983, at the Gosford Showground in Showground Road, Gosford.

EVENTS include an open scramble, pedestrian DF hunts, with junior events on 144.4-144.7 MHz and open events on 146.7 MHz, ladies and gents quizzes, children's events, outing to the Reptile Park, an afternoon barbie, a Ladies' Night and early booking is advisable.

CATERING is as for last year. You can bring your own picnic lunch or purchase at the take away food bar. Tea and coffee available separately at no charge.

ACCOMMODATION is usually scarce and early booking is advisable.

TRAINS from Newcastle at 8.10 am and Sydney at 7.20 and 8.50 am will be met at Gosford with free transport to the Showgrounds.

WET OR DRY, the Field Day will proceed as there is plenty of shelter.

DISPOSALS items must be booked in before 9.30 am on the day. Catalogue forms and lot numbers must be obtained in advance from Bill Smith VK2TS at RMB 4525, Gosford, NSW, 2250. You can phone 043-74 1207 after hours for forms and lot numbers. A commission is given for small quantity individual item purchases. If you are making a multi item purchase, please include sufficient postage. We will return any excess as cash or components — please indicate preference. Send your order and payment to: WIA NSW DIVISION, COMPONENTS OFFER, PO Box 1066, PARRAMATTA NSW, 2150.

Electrolytic capacitors, pigtail, mixed packs of values such as 22/250V, 100/25, 100/10, 100/63, 100/40, 220/10, 33/25. At least 15 items per pack. $1 per pack. Post $1.50 up to 5 packs.

Variable capacitors, 2 gang, broadcast band type. $0.50 each. Post $1.50 for 2, $2.50 up to 6.

4.7 uF 250V non polarised capacitors. $1 pack of 10. Post $1.50 up to 3 packs.

24M Max IC sockets. $1 pack of 5. Post $1 up to 5 packs.

Octal valve sockets, solid mica. $1 pack of 10. Post $1.50 up to 3 packs.

1 pF (pack a) and 4.7pF (pack b) ceramic disc capacitors. $0.50 pack of 25. Post $1 up to 10 packs.

2.5uH RF Chokes. $1 pack of 25. Post $1 up to 3 packs.

AS322 transistors (sim to BC107). $1 pack of 20. Post $1 up to 5 packs.

Computer PC Boards, containing transistors, card sockets etc. $0.50 each. Post $1.50 for 2, $2.50 up to 8.

Relays all 5/10 amp contacts. Types include 3PDT-6V, DPDT-6V, DPDT-24V, 3PDT-24V, DPDT-230V. They are open frame or sealed, some socket mount and others stud mount. Only $1 each. Post $1.50 up to 4, $2.50 up to 7.

This relay offer was made possible by the generosity of PROMARK at 6 Clare St, Crows Nest. Being distributors of Toshiba Semiconductors and other items they should be remembered for large purchases.

DETAILS OF 4 CLUBS AFFILIATED WITH THE WIA NSW DIVISION

HORNSBY ADARC
PO Box 362, Hornsby, NSW, 2077.
Net: Mondays at 1930 EST on 287.350 MHz and repeater 7250 using VK2AFF.
Meetings: 1st Wednesday of each month at the hall, cnr Sefton & Lockerbie Sts, Normanhurst.
President: Barry VK2AAB, V-Pres: Geoff VK2BQ, Secretary: Bill VK2EBM, others: Colin VK2PLV, Gerry VK2BMZ, Chris VK2YMW, Gareth VK2ANF.

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WAGGA ARC
PO Box 294, WAGGA WAGGA, NSW 2650.
Meetings: 1st Wednesday of month, 2400 MHz and repeater 6750 using VK2WG or VK2NWG.
Meetings: Last Friday of month at Wagga Rescue Club at 8 pm.
President: Peter VK2DOL, V-Pres: Graeme VK20JD, Secretary: Neil VK2KUR, others: Simon VK2PM, John VK2PMT, Peter VK2DUS, Barry VK2VDU.

REG Wednesdays at 1930 EST on 28.370 MHz and 438.000 MHz.
Meetings: Informal meetings at Westlakes ARC Clubrooms in York Street, Terangia on Saturdays.

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As advised last month, the Annual General Meeting of the VK1 Division will be held on 28 February 1982 in the Griffin Centre Studio at Somm. Rockamber, it is in your interests to attend and participate.

The topic at the October meeting of the division was amateur television, and was most ably presented by Ron Harrison VK3AHR and Ian Davis VK3ATY. The expert way they demonstrated and explained this mode made it look remarkably simple. The resultant interest generated surprised even a hardened cynic like myself.

As a result of this demonstration, an ATV group has been formed in VK1 and they hope to have about ten simple ATV stations on air within a few weeks. They have also decided to construct an ATV repeater, with an input on 426.25MHz, to be located on Black Hill alongside the Channel 6, 2 metre repeater. The group will seek sub-committee status within the VK1 Division, and we hope the division for assistance in constructing the repeater.

Dennis VK1DG is the convenor of the ATV group, and Reg VK1BR has been appointed Procurement Officer to handle bulk purchasing, enquiries about availability of parts and the like. The group will hold an ATV net on Channel 6, VK1RAC, every Sunday night after the VK1 broadcast. So if you are interested in ATV, contact Dennis, or check into the net on Sunday nights.

One of the increasing problems to amateurs in the Belconnen area of Canberra is our local naval station. It was hoped that with the development of Canberra, the Naval Station would be relocated, if for no other reason than the fact that it occupies a choice piece of real estate which must be worth much more than the equipment in the station. Alas, this has not happened, and indications are that it will be with us for at least another ten years.

The problem with the Naval Station is not so much the amount of power they put out, but rather the fact that most of their equipment is getting on for thirty years old. This, combined with poor maintenance, results in the generation of unbelievable amounts of 'crud'. Their CW can be heard on 80, 40, 20 and 10 metres, their RT7B buzz saw transmissions on 40, 20 and 10 metres, and their RTTY on 20 and 10 metres. The Melbourne meteorological broadcast is RST 579 on 14.119MHz, and they generate a strength 9 + 20dB carrier on 14.955. Most of these transmissions generate spurii 200kHz either side of the fundamental.

If you are one of the unfortunate in the Belconnen area, make a note of every instance you hear the Naval Station in our bands and pass it to me. If our complaints to the local Radio Inspector don't do any good, we will bend the ears of a few politicians. For our soon to be $18 per year, we deserve some protection from the Navy museum of broad-band junk.

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Due to early printing deadlines these predictions are reprinted from the Dec '82 issue.

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Please ring (03) 551 1452
Voller Transformers Pty. Ltd.
16 Pietro Rd., Heatherton. 3202
Dear Sir,

It was with great interest that I read the article about Nara's "pupils" in February 1980, when my CW was a very shaky five wpm. With his expert instruction, not only in receiving, but in sending CW, I was able to pass the 10 wpm CW in August of that year. He was always most kind, patient and encouraging, and unfailingly castigated me for "full call", and wished them both many more years of active participation. We extend our sympathy to his wife Dorothy and other members of his family. Bill maintained his keen interest in radio until only recently when complications got the better of him. He made many new friends who will remember him for his cheery disposition and subtle remarks.

Yours faithfully,

JOY COLLIS VK2EBX
3/157 Brook Street, Coogee 2034

THE VK3BWW FORMULA FOR DX SUCCESS!!

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BEAMS

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<td>3 EL 10m, 3 EL 15m $148.00</td>
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HARRY KINZBRUNNER VK4HK

Bob had a wide experience as a promoter of amateur radio and youth clubs dating back to his boyhood days in London as part of scouting and similar activities. He moved to Australia in the mid 20's.

In 1943 he was appointed to a church in South Broken Hill, where he inaugurated the Open Door Boys and Girls Club, bringing with it the activities of VK2A0D. Five years later he arrived in Port Pirie where he had charge of the Central Mission and continued his interest by establishing the first club in that city, transferring the club call sign to VK50D.

The Youth Radio Club Scheme (YRCS) was adopted Federally by the WIA in 1962 there were a number of youth radio clubs existing in each state. In 1964 Bob had established the Open Door radio club at the Methodist Church at Mount Barker and later at Christies Beach.

That year (1964) he was appointed the WIA State Co-ordinator of youth radio clubs in South Australia and was instrumental in preparing a state constitution and publicity brochure.

Bob did not disclose the details of his radio background but one sensed that it was founded in the days of crystal radio. He had been enthusiastic in promoting and administrating the activities of the club station VK50D and as a result of visits overseas he was well informed with regard to developments of novice licensing in other countries prior to its introduction in Australia.

There is no doubt that he displayed a remarkable sense of commitment. He was also adept at getting things done. As a person he was down to earth, cheerful, energetic and an enthusiastic supporter of youth. He did not think of himself as "a parson" in the popular usage of the word.

With the advent of novice licensing, the CB boom and his impending retirement, Bob withdrew from active participation in the radio scene by transferring the club call sign to his son John. Nevertheless, he retained an association with amateur radio and was occasionally seen at WIA functions.

There is no doubt that he displayed a remarkable sense of commitment.

Bob died in his sleep on 1st November, '82, aged 76.

To son John and other members of the family we extend our sincere sympathy.

Allen Dunn VK5FD
John Allan VK5UL

THE REV. ROBERT GUTHBERLET
NEW
CHIRNSIDE VERTICAL ANTENNA
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Unlike our Model CE-5B, this vertical needs no guy ropes and stands only 5 metres high, is very easy to erect and can be disassembled again into four pieces in about 45 seconds.

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Specifications
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Power handling...up to 400 watts PEP on 10M.
Termination...SO-239 socket.
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YES, ONLY $89

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Hamads

* Please insert STD code with phone numbers when you advertise.

Please note: If you are advertising items for SALE and WANTED, please write on separate sheets, including all details, e.g. Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.

Eight lines free to all WIA members.
$9 per 10 words minimum for non-members.
Copy in typewritten please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
Replies may be charged at full rates.
Closing date: 1st day of the month preceding publication.

TRADE HAMADS

Conditions for commercial advertising are as follows: The rate is $15 for 4 lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the first day of the month preceding publication.

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distribution trade should be certified as referring only to private articles not being resold for merchandising purposes.

Advertisers' Index

MAGRATH'S...1B
AUSTRALIAN MARITIME COLLEGE...2
BAIL ELECTRONIC SERVICES...OB
CHIRNSIDE ELECTRONICS PTY LTD...48
DICK SMITH ELECTRONICS...8
HAMRAD...45
IAN J TRUSCOTT ELECTRONICS...31
KALEX...45
KNOXTRONICS ELECTRONIC SERVICES...2
ATN ANTENNAS...IF
NORTH QUEENSLAND CONVENTION...35
NOVICE OPERATOR TRAINING...2
TRIO-KENWOOD (AUSTRALIA) PTY LTD...20
VQ2 VW NOVICE LICENCE...43
WERNER & G WULF...47

FOR SALE - ACT
KENWOOD TS520S, as new. 27 MHz fitted, $700 ONO. L10073 OTHR. Box 25 Cook 2614. Ph: (052) 51 2788

FOR SALE - NSW
FT101B with matching VFO and speaker, $550, FT200 with FP200 power supply/speaker, $300, FRG7 receiver $200. All in excellent condition. VK2EE OTHR. Ph: (02) 587 2502.

KENWOOD TS820 with dig. display, DC converter, manuals and orig. carton. $600 ONO. Kenwood TS150S with mobile bracket, manual and orig. carton. $500 ONO. David VK9KVLX OTHR. Ph: (02) 476 1048.

TOWER, 90ft. free standing. KVC Southern Cross Tower. Disassembled into 10ft. sections for transportation. No rust. Hot dipped gabaanzied steel work. $1000. Ian Buchanan VK0AUV, 112 Ocean Pte, Dalmeny 2546 NSW. Ph: (044) 76 7660

FOR SALE - VIC
IC-225, complete with mic, in original packing, latter used, $300. Trio TS-820S ex estate, complete with mic, small usage, $580. VK3Q2Q. Ph: (051) 74 7707.

ICOM IC220E, 2M 144-144.4 MHz plus Octal crystal, VGC, $150. VK3ZMP. Ph: (05) 560 6995.

KENWOOD TR2400 2m, 800 channel, handheld telev. Complete with charger, manual and soft carry case. Perfect order and condition. $240 ONO. Harry VK3ASJI OTHR. Ph: (02) 43 1831.

KENWOOD TS1205, late model, as new in carton, with mic, $465. Yaesu FT7, excellent order, extras, mic, $380. 13.8V 5A regulated PSU, $45. Fox Tango Club 9MHz, 2.1 kHz stl filter, for FT301, FT7, etc., new, $60. Dawu CL57A 500W ATU, 1.8 to 30 MHz, $60. Kenwood R820B deluxe communications receiver, as new in carton, $495. VK3ARZ OTHR. Ph: (03) 584 9512.

KENWOOD TS100V, also remote VFO 120. Both units are in first class condition and come with all manuals and instructions, also original packing and 50K, V/C, etc. Asking price $650 the lot, will consider any reasonable offer. Orchard Disposals, considered for Yaesu mobile. VK3ZP5 OTHR. Ph: (03) 21 6763.

KENWOOD TS520S HV Tcvr, also remote VFO 120. Both units are in first class condition and come with all manuals and instructions, also original packing and 50K, V/C, etc. Asking price $650 the lot, will consider any reasonable offer. Orchard Disposals, considered for Yaesu mobile. VK3ZP5 OTHR. Ph: (03) 21 6763.

FOR SALE - ACT

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The early ideas of HIDXA seem very naive these days - much of it based on
money was involved, it stated that all 'donations' would be acknowledged
the Heard island DX Association was formed in PNG in mid 1980 with the then
1000 QSO's could have been made. This was a fraction of what seemed
The master and licensed crew ate very keen to undertake this expedition, and
massive number of amateurs in the area. At that stage this fee would run into a 6-figure amount. It therefore seemed reasonable that amateur
Six months later, it was announced that permission was given to use existing facilities on Heard. It is emphasised
An excellent vessel, excellent skipper, but a $2,400 a day charter really
absolutely tremendous.
On reflection, the initial attempt for the 1981 season was impossible.
Heard Island. It, of course, seemed a dream chance, but that is what it
The reason for this is simply that the groups had different aims and objectives,
these Guidelines, a proposal for the expedition covering all aspects of
refurbishing the Cheynes II to meet the survey requirements for a deepsea
negotiations for joining a possible expedition to HI with the "Dick Smith Explorer", and alternatively, a return to a charter of a
The vessel was apparently checked and a report received on the fitness and condition of the vessel. The
It was decided to think again about joining forces with HIDXA. A visit to Norfolk Island early in April 1982 by
In May, HRH the Prince of Wales, and Mrs. Diana, arrived in Hobart. The Prince of Wales then proceeded to Heard Island and MacDonald Islands became the ground rules for any private visit to Heard Island. The authorities put a great deal of thought and hard work into
Antarctic waters for the Norwegian company "Thordahl" from 1947 to 1962. The ex-whale chaser has also
The vessel was checked and a report received on the fitness and condition of the vessel. The
the vessel. This vessel was apparently checked and a report received on the fitness and condition of the vessel. The
It was the 25th anniversary of the first expedition to Heard Island. As a generous gesture on behalf of the authorities, additionally,
appropriate master-mariner cleared the way to sign the charter contract on Sep. 4, 1982. The vessel was apparently checked and a report received on the fitness and condition of the vessel. The
There was an ongoing discussion about the charter fee. A fee of $2,400 a day for 12 days was
码头 had been made. Even so, many more than three days away. As if to defend an international amateur radio and the idea of most wanted Heard Island as a DXCC
calls "HIDXA" became the ground rules for any private visit to Heard Island. The authorities put a great deal of thought and hard work into
We would be interested in the special Philatelic material which will be available soon after return from Heard Island.
I would like to donate to HIDXA to help to make the projected expedition a reality.
I will be interested in the special Philatelic material which will be available soon after return from Heard Island.
I request information on how I may become an Associate Member of H.I.DX.A.
I feel I can help additionally.
*H.I.DX.A. are *Exponents. *Acknowledged *Donations

HEARD ISLAND DX ASSOCIATION Inc.

TO: THE SECRETARY FROM

HEARD ISLAND DX ASSOCIATION

P.O. BOX 90

NORTH NORFOLK ISLAND

A USTRALIA 2899

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I feel I can help additionally.

---

HEARD ISLAND DX ASSOCIATION

HEARD ISLAND AND MACDONALD ISLANDS ROUNDUP

An assessment of Cheynes II and the crew made by an independent master-mariner/
It is emphasised that the courtesy and genuine assistance given to HIDXA was
It always been, and still is, the intention of the expedition team to share the

CHEYNES II in Hobart

---

HEARD ISLAND DX ASSOCIATION INC.

HIDXA PO BOX 90 NORFOLK ISLAND SOUTH PACIFIC 2899

TO: THE SECRETARY FROM

HEARD ISLAND DX ASSOCIATION

P.O. BOX 90

NORTH NORFOLK ISLAND

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I will be interested in the special Philatelic material which will be available soon after return from Heard Island.

I request information on how I may become an Associate Member of H.I.D.X.A.

I feel I can help additionally.

---

HEARD ISLAND DX ASSOCIATION INC.
Dear Dr. Jacka,

I hope this message finds you well. I’m writing to update you on the progress of our expedition to Heard Island. As a result of the available number of berths on the Cheynes II, the expedition will consist of 18 members, depending on weather and propagation, and the great-circle route will be used straight back to Hobart, with only about half of its bunkered fuel consumed. The Itinerary is:

**Hobart Arrival**
- Jan 10
- Heard Arrival**
- Jan 18
- Heard Departure**
- Jan 31
- Hobart Departure**
- Feb 10
- Tasmania Arrangement**
- Feb 19
- Hobart Arrival**
- Feb 20

We have received a great deal of interest from amateur radio operators around the world, and we are confident that the expedition will be a huge success. They will be using several transceivers, gyro and magnetic compasses, autopilot, etc. to communicate with other countries.

The British-built vessel is 156 ft long, of 440 gross tonnage, powered by a 1C76 SHP triple expansion steam engine with two independent boilers using furnace oil, good for 10 knots cruising or 19 knots top speed. For fuel, we will use 5000 gal of furnace oil, good for 15 knots cruising speed. The bridge will be equipped with a navigating satellite and Omega navigator with printer/joiner, a 100 m radar, a 1000 m colour display depthounder, a radar weathercope receiver, two VHF transceivers, and three VHP transceivers, gyro and magnetic compasses, autopilot, etc.

At the time of writing, the expedition group consists of: Jim Smith, Kirsti VK9NS, SoJo VK0SJ, Ron VK7RM, Graham VK7GD, Dr. Fred Jacka, physisist with the 1947-48 ANARE expedition, setting up the ANARE station, and later Assistant Director (Science) of the Antarctic Division. He opened with an introduction to the early days of ANARE and the rough voyage to HI, in excellent operational condition, a real highlight.

The expedition will be well-prepared with scientific equipment and personnel. We have received a great deal of support from various organizations, including the Antarctic Division, the Australian National University (ANU), and the Department of Atmospheric Physics. We are also collaborating with marine biologists of the Antarctic Division.

The expedition will be led by Jim Smith (VK9NS) who stays in Hobart until the departure to HI, finalising the seemingly never-ending amount of preparation for this expedition. We have received over 500 donations and other support from various companies and institutions.

We are looking forward to a successful expedition and are confident that we will reach our goals. We will keep you updated on our progress.

Yours sincerely,

[Signature]

P.S. We would like to thank all individual amateurs, clubs, companies and other institutions who provided us with support and assistance.

---

**Funding Information**

The expedition is a collaboration with the 1947-48 ANARE expedition, setting up the ANARE station, and later Assistant Director (Science) of the Antarctic Division. He opened with an introduction to the early days of ANARE and the rough voyage to HI. He was the first ham radio operator on HI as VK3ACD, and showed the original transceiver used being in excellent operational condition. He explained how the expedition was a great introduction to what we could expect to find on arrival at HI.

Chairman of this meeting was Jim Smith (VK9NS) who stayed in Hobart until the departure to HI, finalising the preparations for the expedition. We have received a great deal of support from various organizations, including the Antarctic Division, the Australian National University (ANU), and the Department of Atmospheric Physics.

The expedition is well-prepared with scientific equipment and personnel. We would like to thank all individual amateurs, clubs, companies and other institutions who provided us with support and assistance. A complete list of names of companies who support us will be issued at a more appropriate place as we progress with the negotiations.

**HEARD ISLAND DX ASSOCIATION now INC.**

Hobart Nov. 1982.

---

**Stop Press**

**HEARD ISLAND DX ASSOCIATION now INC.**

Hobart Nov. 1982.

---

**Hobart Arrival**

**Heard Arrival**

**Heard Departure**

**Hobart Departure**

---

Dr. F. Jacka  Dr. G. Johnstone  A. Campbell-Drury

---

Dr. Jacka

---

Dr. Gavin Johnstone, biologist with the Antarctic Division and member of the original expedition to Heard Island, gave a talk on the history of Heard Island and its significance as a habitat for various marine animals. He was the first ham radio operator on HI as VK3ACD, and showed the original transceiver used being in excellent operational condition.

---

J.B. Smith (VK9NS) and R. Barnett (Master)
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Two Tone Oscillator
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Review of TS430S Transceiver
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<table>
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<th>Type</th>
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<td>30 - 30</td>
<td>1.33</td>
</tr>
<tr>
<td>12%</td>
<td>3X028</td>
<td>110 - 110</td>
</tr>
<tr>
<td>15%</td>
<td>3X029</td>
<td>220 - 220</td>
</tr>
<tr>
<td>3X030</td>
<td>240 - 240</td>
<td>0.33</td>
</tr>
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<table>
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<tr>
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<tbody>
<tr>
<td>No</td>
<td>Volts</td>
<td>Current</td>
</tr>
<tr>
<td>100 VA</td>
<td>5X010</td>
<td>6 - 6</td>
</tr>
<tr>
<td>90x40mm</td>
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</tr>
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<td>1.8 Kg</td>
<td>5X012</td>
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</tr>
<tr>
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<tr>
<td>15%</td>
<td>5X018</td>
<td>35 - 35</td>
</tr>
<tr>
<td>Regulation</td>
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<td>40 - 40</td>
</tr>
<tr>
<td>8%</td>
<td>5X028</td>
<td>110 - 110</td>
</tr>
<tr>
<td>7X029</td>
<td>220 - 220</td>
<td>1.36</td>
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<tr>
<td>3X030</td>
<td>240 - 240</td>
<td>1.25</td>
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<table>
<thead>
<tr>
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<th>Series</th>
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</thead>
<tbody>
<tr>
<td>No</td>
<td>Volts</td>
<td>Current</td>
</tr>
<tr>
<td>225 VA</td>
<td>6X012</td>
<td>12 - 12</td>
</tr>
<tr>
<td>90x40mm</td>
<td>6X013</td>
<td>15 - 15</td>
</tr>
<tr>
<td>225 VA</td>
<td>6X014</td>
<td>18 - 18</td>
</tr>
<tr>
<td>110x40mm</td>
<td>6X015</td>
<td>25 - 25</td>
</tr>
<tr>
<td>2.2 Kg</td>
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<td>25 - 25</td>
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<td>6X017</td>
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<tr>
<td>7%</td>
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<td>2.72</td>
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<td>3X030</td>
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<table>
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</thead>
<tbody>
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<td>Volts</td>
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<td>5X018</td>
<td>35 - 35</td>
<td>7.14</td>
</tr>
<tr>
<td>8X019</td>
<td>40 - 40</td>
<td>6.25</td>
</tr>
<tr>
<td>140x60mm</td>
<td>8X020</td>
<td>45 - 45</td>
</tr>
<tr>
<td>4 Kg</td>
<td>8X021</td>
<td>50 - 50</td>
</tr>
<tr>
<td>8X033</td>
<td>55 - 55</td>
<td>4.54</td>
</tr>
<tr>
<td>4%</td>
<td>8X022</td>
<td>60 - 60</td>
</tr>
<tr>
<td>8X025</td>
<td>70 - 70</td>
<td>4.27</td>
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<tr>
<td>8X026</td>
<td>80 - 80</td>
<td>3.28</td>
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<td>8X027</td>
<td>90 - 90</td>
<td>2.94</td>
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<tr>
<td>8X028</td>
<td>100 - 100</td>
<td>2.60</td>
</tr>
<tr>
<td>8X029</td>
<td>110 - 110</td>
<td>2.27</td>
</tr>
<tr>
<td>8X030</td>
<td>120 - 120</td>
<td>2.00</td>
</tr>
</tbody>
</table>

Page 4 — AMATEUR RADIO, February 1983
WIDEST OPTIONS AVAILABLE

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Novcom Electronics, 6 Manton St., Darwin, N.T. (089) 817 414.
A DIFFERENT DIPOLE

The coaxial dipole presented here is a variation of an HF design which has been described in a number of publications.

Claims for the antenna include improved bandwidth, Balun not required, less affected by proximity to trees etc, electrically quieter because the entire antenna is at ground potential and a direct match to 50 ohm coaxial feedline.

It is not the writer's intention to prove or disprove any of the above claims but merely to present his ideas on how to construct VHF/UHF versions. As can be seen, from the accompanying diagrams, two construction methods have been employed. One is a variation on the other.

In method A, see fig 1, the entire antenna is made from a length of coaxial cable which, after construction, is suitably enclosed and weatherproofed. PVC conduit makes a very suitable enclosure.

Take note that the velocity factor of the coax used will affect the length of section "B". If there is any doubt as to the velocity factor of your piece of coax then DO NOT USE IT. Length "B" is an important dimension. For method B, see fig 2, the braid of the coaxial cable is removed and replaced with a suitably sized metal tube. 10mm OD tube is a neat fit for RG8, UR67 style coax.

The tube is cut for the total dipole length "A". With small brass plugs being used to provide the short between inner and outer conductors. The method used to achieve the short will depend on the material used but be guided by the following. Tin the brass slugs. If the tubing is copper or brass the plugs may be soldered in place through a small solder hole in the outer tube. If aluminium tube is used the plugs may be secured by some small screws into the brass slug. If the screws and tube are dissimilar metals then protection from the atmosphere will be necessary to avoid corrosion. In any case the brass plugs are first soldered to the inner conductor. Again dimension "B" is critical and remains dependant on the velocity factor of the cable used. With method B it is not necessary to enclose the entire antenna. Just seal up the ends of the tube and also the termination with the main feedline.

The author has constructed one of each type to date including 2m version using LDF4 hardline coax according to method A and enclosed in PVC conduit for weather-proofing. This antenna was designed for 146.5 MHz and pruning of element lengths was not necessary to achieve the following VSWR characteristics; 144 MHz less than 1.2:1 146.5 less than 1.2:1 and 148 MHz 1.5:1.

A 70cm antenna was constructed in accordance with method B using 10mm aluminium tube and UR67 coax. It was designed for 435 MHz (Band Centre) and its VSWR was under 1.5:1 across the band (420-450 MHz). Again, these figures were obtained without the need to prune the element lengths.

These dipoles do work and offer a matching system and a construction method which is highly recommended to anyone looking for a simple yet rugged antenna. The elimination of external matching devices (gamma etc) make it an ideal portable antenna. Its on air performance is equal to any conventional unity gain antenna.

Reproduced by arrangement from 'Smoke signals' October '82

Ray Wells VK2BVO

Fig 1: Method A. For construction — see table for dimensions

Fig 2: Method B. For construction — see table for dimensions

<table>
<thead>
<tr>
<th>TABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension</td>
</tr>
<tr>
<td>Normal dipole length. L(mm)=299780 x k</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>B (IMPORTANT DIMENSION)</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>E</td>
</tr>
</tbody>
</table>
REMINDER
Subscriptions should be renewed now to ensure your copy of AR arrives in March.

THE CONVENIENCE REVOLUTION

A brilliant line-up of high quality Amateur radio accessories from Daiwa.
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AUSTRALIAN TABLE OF FREQUENCY ALLOCATIONS

As a result of lengthy negotiations by the WIA with the Department of Communications new frequencies have been allocated to amateurs. Still under discussion is the 50-50.15 MHz band which will hopefully be finalised this month.

Mr Ross Ramsey of the DOC wrote to the president on the publication of the tables thanking him for the part played by the WIA in the finalisation of the tables.

Further to the information given on the insert in the January issue of AR, a number of alterations have also been made to Australian VHF and higher amateur bands. Details of all changes are contained in the "Australian Table of Frequency Allocations October 1982" publication ISBN 0644017910 and now available from the Government Printing Service.

Briefly, changes to the VHF and higher frequencies are as follows:

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>52-54 MHz</td>
<td>No change</td>
</tr>
<tr>
<td>10.00-10.50 GHz</td>
<td>Remains a shared allocation, amateur service</td>
</tr>
<tr>
<td>24.00-24.05 GHz</td>
<td>Remains exclusive amateur allocation</td>
</tr>
<tr>
<td>24.05-24.25 GHz</td>
<td>Remains a shared allocation, amateur service</td>
</tr>
<tr>
<td>47.00-47.20 GHz</td>
<td>New exclusive amateur allocation</td>
</tr>
<tr>
<td>75.50-76.00 GHz</td>
<td>New exclusive amateur allocation</td>
</tr>
<tr>
<td>76.00-81.00 GHz</td>
<td>New shared allocation, amateur secondary service</td>
</tr>
<tr>
<td>119.98-120.02 GHz</td>
<td>New shared allocation, amateur secondary service</td>
</tr>
<tr>
<td>142.00-144.00 GHz</td>
<td>New exclusive amateur allocation</td>
</tr>
<tr>
<td>144.00-149.00 GHz</td>
<td>New shared allocation, amateur secondary service</td>
</tr>
<tr>
<td>241.00-248.00 GHz</td>
<td>New shared allocation, amateur secondary service</td>
</tr>
<tr>
<td>248.00-250.00 GHz</td>
<td>New exclusive amateur allocation</td>
</tr>
</tbody>
</table>

Amateur satellite bands are as follows:

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>7000-7100 kHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>14000-14250 kHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>18068-18168 kHz</td>
<td>Shared, refer to footnote 664</td>
</tr>
<tr>
<td>19068-19200 kHz</td>
<td>Shared, refer to footnote 808</td>
</tr>
<tr>
<td>21000-21450 kHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>24890-24990 kHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>76.00-81.00 GHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>119.98-120.02 GHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>142.00-144.00 GHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>144.00-149.00 GHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>241.00-248.00 GHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>248.00-250.00 GHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>1240-1270 MHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>2400-2450 MHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>3400-3410 MHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>5650-5670 MHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>5830-5850 MHz</td>
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<tr>
<td>10.45-10.50 GHz</td>
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<td>24.00-24.05 GHz</td>
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<td>47.00-47.20 GHz</td>
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<td>75.50-76.00 GHz</td>
<td>Available in future (ITU resolution 8)</td>
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<tr>
<td>76.00-81.00 GHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
<tr>
<td>119.98-120.02 GHz</td>
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</tr>
<tr>
<td>142.00-144.00 GHz</td>
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<td>144.00-149.00 GHz</td>
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<tr>
<td>248.00-250.00 GHz</td>
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</tr>
<tr>
<td>248.00-250.00 GHz</td>
<td>Available in future (ITU resolution 8)</td>
</tr>
</tbody>
</table>

NOTE:
1. Footnote 664 states:
   "In the bands 435-438 MHz, 1260-1270 MHz, 2400-2450 MHz, 3400-3410 MHz (in Regions 2 and 3 only) and 5650-5670 MHz, the amateur-satellite service may operate subject to not causing harmful interference to other services operating in accordance with the Table (see No.
Administrations authorizing such use shall ensure that any harmful interference caused by emissions from a station in the amateur-satellite service is immediately eliminated in accordance with the provisions of No. 2741. The use of the bands 1260-1270 MHz and 5650-5670 MHz by the amateur-satellite service is limited to the Earth-to-space direction."

2. Footnote 808 states: "The band 5830-5850 MHz is also allocated to the amateur-satellite service (space-to-Earth) on a secondary basis."

Information from DOC advises of revised arrangements concerning the issue of amateur radio station licences in respect to stations proposed to be operated in Australian External Territories. The listing hereunder details the State Offices and the Territories for which they are responsible.

<table>
<thead>
<tr>
<th>STATE OFFICE</th>
<th>TERRITORY</th>
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<tbody>
<tr>
<td>New South Wales</td>
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</tr>
<tr>
<td>Queensland</td>
<td>Coral Sea Island Group</td>
</tr>
<tr>
<td>Western Australia</td>
<td>Willis Island</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Christmas Island</td>
</tr>
<tr>
<td></td>
<td>Cocos (Keeling) Islands</td>
</tr>
<tr>
<td></td>
<td>Heard Island</td>
</tr>
<tr>
<td></td>
<td>Macquarie Island</td>
</tr>
<tr>
<td></td>
<td>Australian Antarctic Mainland</td>
</tr>
</tbody>
</table>

Unnecessary delays will be avoided if in future all applications and enquiries are submitted to the Manager of the appropriate State, in accordance with normal procedure, as outlined in the Department's general licensing brochure RB68 and the information given above.

* Please remember your STD code when advertising in HAMADS.
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BRIAN STARES — 11 MALMSBURY STREET, BALLARAT (053) 39 2808
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1983 AND ONWARDS

Now that the Christmas and New Year holidays are well behind us, it is time to face reality and start work again. This year we can foresee another busy year ahead for the Institute. Of prime importance at this time of the year is our forthcoming Federal Convention, to be held as usual at the Brighton Savoy motel, in Melbourne. The dates for the convention are April 23, 24 and 25 – that is only a little over two months away.

I can recall writing something similar this time last year, to remind readers of the need to forward your thoughts to your division early, so that your divisional representatives are adequately briefed in the presentation of your particular item.

Remember, under our constitution, all agenda items must be in the hands of the Federal Secretary 30 days prior to the convention. This is to enable agenda items to be forwarded to and discussed by the other divisions, so that a particular policy may be determined and voting cast accordingly. WIA policy is determined by the divisions, and NOT the Executive as some of our members have thought recently.

If you have a pet theory which you think is worthy of consideration, it MUST be submitted to your division for discussion first. Your division’s representatives will decide whether or not your item is to become a convention agenda item at its next council meeting.

Too much convention time has been wasted in the past in dealing with agenda items which are of a local or parochial nature. The WIA policies as determined by the seven councillors at the convention reflect matters of NATIONAL importance, and embrace all amateurs throughout Australia.

The executive itself has the power to raise items to be placed on the agenda, but it is unable to vote on their acceptance or otherwise. The executive items are usually restricted to matters of administration, or Department of Communications liaison etc. The executive cannot accept agenda items direct from members.

Time is again closing in on us, and at the time of writing this editorial (1st January ‘83), only one agenda item has been raised so far. You should act immediately, and advise your division of your thoughts so that adequate investigation and preparation can be made on your behalf.

Visitors to the convention as usual will be made most welcome. To enable proceedings to continue without interruption, I would ask those members intending to 'look in' for a short while, could you let your councillor know in advance, and appropriate measures will be taken to ensure sufficient seating is available.

RADIO MASTS INVESTIGATION

An item which will have gone unnoticed by many of you appeared in the Victorian Government Gazette during December 1982. It was only a small and insignificant announcement, but the ramifications contained therein could have far reaching effects on the entire amateur radio community. I refer to the proposed government investigation into the erection of radio masts and the environment. Full details of the announcement are published elsewhere in this issue, please read that item thoroughly.

TWO HATS

Following the resignation of the Federal President, Mr Peter Wolfenden VK3KAU as announced on the federal tapes recently, the President’s chair will be kept warm by yours truely in my capacity as Executive Vice Chairman. This appointment is for an interim period only up to the coming Federal Convention, when a new Federal President will be officially appointed.

WCY

Most of you will have noticed our involvement with the World Communications Year (WCY ’83) celebrations. This is an important step for the WIA and we trust all will be able to make some small personal contribution (not money!) to ensure its every success.

Publicity in the media for our hobby cannot be bought, it must be earned. The national dailies and commercial TV and radio stations are mainly interested in news of ‘sensational’ nature. Confusion by reporters and editors in comparing the amateur radio service and the citizens band radio (CB), more often than not tends to be detrimental to the amateur service. In their eyes, every person that operates a radio transmitter is a ‘CBer’, and ‘CBers’ and ‘HAMS’ are one and the same!

Naturally this type of publicity also confuses the general public, a point which we are all aware of, but have done little to rectify.

As part of the WCY preparations, the federal WIA is co-ordinating ideas from the divisions and is putting together various ‘packages’ which can be of use in the education of the general public.
One factor that is often overlooked is the local weekly newspaper. From past experiences, it has been shown that editors of local papers are more willing to accept news of a less sensational or insignificant nature. This is mainly because of the 'local' effect and its general interest impact on a smaller (by comparison) population and circulation.

News of clubs doings, WICEN, educational courses, community displays at the local level etc are able to be publicised quite effectively by this means. It is an area worth fostering further, but it does require an amateur in the local area to make the initial contact with those in control. I would ask that we all make a conscious effort to ensure suitable publicity is arranged for events which you consider are newsworthy, and which do not contravene the terms of the secrecy provisions associated with your licence.

AR

This year also shows promise of a further successful year. Already plans are well advanced to bring you further 'bumper' issues, due mainly to our increased membership and support generated by our advertisers. There are some excellent technical articles in the preparation stages, and we intend to continue to improve the high quality publication you have come to expect from last year.

We would like to thank those members who have given us words of encouragement recently.

If you have not yet renewed your current subscription, then this will be your last issue of AR. Members who have not paid their 1983 subs by the 15th February will have their names deleted from our computer address labels. There is no guarantee that missed AR's will be replaced in the event of a subsequent renewal.

This seems a pity, but we must contain costs within our operating budget therefore only sufficient magazines will be printed to allow for distribution to the paid up members. Both of us are therefore the loser.

Your financial support through your membership subscription enables the WIA to continue its work to represent your interests. Without your individual membership support, we go backwards.

Please give this serious thought.

Bruce R. Bathols, VK3UV,
WIA Acting President and AR Editor.

YOUR HOBBY IS UNDER THREAT

Intruders, pirates, interference, restrictions by Government decree on one hand and not enough on the other, these are the threats that face us. It is imperative that you are aware of these dangers and know how to combat them. It is essential that you keep yourself informed of all aspects of these threats.

There are intruders in our bands, broadcasters and commercial point to point services. There is a world wide intruder watch organization supported by most national societies, but it comes down to you, the individual amateur, to be the intruder watcher. The incidence of pirates appearing on our frequencies is increasing. How do you handle these situations?

Then there is EMC, electromagnetic compatability. We all suffer from interference of one sort or another, often that which can be easily stopped at its source. In turn, we, ourselves, can cause interference to entertainment devices in our own and in our neighbours homes. How prepared are we to deal with these threats to our operating time?

Government regulation and the lack of it hangs over our heads, both local and federal. Already, in a number of states, court cases regarding aerial masts and towers have been fought. The lack of regulation allows all sorts of interference to continue unabated, and also allows transmitting equipment to be sold by anyone to anyone without question of licence.

These are the changes that amateur radio faces today but they pale into insignificance when we consider the greatest danger of all — APATHY.

Bud Pounsett VK4QY
Editorial in QTC
VK4 Division AR insert
November '82
MORE SCAN FOR YOUR DOLLAR

with the brilliant

DICK SMITH PRO 40 SCANNER

Compare this superb Scanner with others of similar performance elsewhere, at nearly twice the price! The new PRO 40 Scanner from Dick Smith represents the state of the art in computerised scanning receivers! Completely solid state computer-controlled circuitry - no expensive crystals to buy - complete with battery backup for stored frequencies. 

$399

you can hear . . .

Just about everything from harbour control nudging a supertanker into its berth, to telephone conversations from cars speeding along city streets! All the emergency services, authorities and forces . . . And of course, there are thousands of business radio stations, amateur and CB radio operators. Plus the thousands of stations in the band that we don't know about yet (we're waiting for you to tell us about them!)

look at these special features

Touch-type, splash proof keyboard for direct entry of all operational commands, frequencies, etc. Ideal as either a base or mobile scanner (operates on 12V - beware of others that don't operate from 12V!) with its own self-contained whip or external plug-in antenna. Also included is a specially prepared Australian instruction manual written and produced by our own engineers.

Also available from good bookshops and newsagents

DICK SMITH'S AUSTRALIAN RADIO FREQUENCY HANDBOOK

Up-to-date and thorough listings of virtually all the VHF/UHF radio users we've been able to find. YES - find out who is where - and where to listen for all the excitement! PLUS: air band, marine band, and how to use a scanner, amateur radio and CB etc.

$12.95

DICK SMITH Electronics
A "SQUARE-ONE" RECEIVER

Part 2

Drew Diamond, VK3XU,
43 Boyana Cres., CROYDON, 3136

CIRCUIT DESCRIPTION

The input RF amplifier is only used for reception of the 1.8 to 2.0MHz band. Ideally, a transistor specifically designed for this application, such as a 2N5109 or a 2N5179 should be used at Q1 to obtain low noise figure and high dynamic range. These devices are difficult to buy in small quantities however, so the easily obtainable 2N3053 was tried and found to perform satisfactorily. This stage has a gain of 10dB. It employs a bipolar transistor with feedback, and as a result is not easily overloaded or damaged by the application of excessively large signals. Rejection of out of band signals is obtained with a band-pass filter at the input and output of the RF amplifier.

Apart and output impedances are approximately 50 ohms.

Receivers with high dynamic range — greater than about 80dB, have become necessary due to the large number of strong signals which may be encountered on HF bands today. Much has been written lately about mixers and amplifiers with high dynamic range, and experimenters seem to favour the ring Schottky diode mixer. During the development of this receiver, IMD measurements were performed upon active mixers and a ring diode mixer. During the development of this receiver, it was found that a dynamic range of 83dB could be obtained with the ring mixer, and 80dB using a CA3028 active mixer. However, the ring mixer required at least +10dB (10MW) of local oscillator signal to achieve this performance, had a -6dB insertion loss, the diodes were hard to obtain, and a weak spurious was noted at 1.812MHz. In view of these disadvantages, and the only marginally better performance, an active mixer was employed.

The mixer is singly balanced, and has 0dB gain. U1, a CA3028 differential pair is driven in push-pull via input transformer, T2. The 100 ohm resistors R10 and R11 terminate the balanced secondary of T2 so that the input impedance of the mixer is close to 50 ohms. VFO at 10.8 to 11.0MHz is injected into the current source transistor of U1 in common mode, so little or no VFO signal appears at the output of the mixer. 9MHz IF energy is coupled via T3 to the crystal filter. Once again, 100 ohm resistors are used to obtain correct impedance values. R12 and R13 have the additional function of absorbing mixer products which are not at the IF, thus reducing their amplitude and the danger of reduced dynamic range. A diplexer is therefore not required.

The product detector performs similarly to the mixer already described, with the exception that IF plus or minus BFO equals audio. One

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Figure 1 — RF Amplifier

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The IF amplifier is tuned to 9MHz, and provides the greatest gain block in the receiver — about 50dB. CA3028s are used at U2 and U3 in the single-ended mode. A voltage is applied to pin 7 of U2 and U3 to effect AGC action. When a very strong signal is tuned in the AGC line will drop to about +2V, and reduce the gain of the IF amplifier. When a weak, or no signal is applied, the AGC voltage will be about +8V, so allowing maximum IF gain.

The product detector performs similarly to the mixer already described, with the exception that IF plus or minus BFO equals audio. One

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Block Diagram of Square One Transceiver.

9MHz crystal filters have become hard to obtain, so 27MHz third overtone CB crystals were tried. By choosing crystals whose 9MHz fundamental frequencies are about 3kHz apart, a reasonable half-lattice filter can be made. The -6dB points were measured at 9005 and 9008kHz, passband ripple was less than 1dB, and insertion loss was about -6dB. Equipment was not available to measure shape factor, but on-air performance indicates that it is adequate for most listening conditions. Not a bad filter for under $20.

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Figure 1 — RF Amplifier
Detected audio is divided into two paths at the secondary of T5. Audio gain is set by the front panel pot, R34. Some preamplification is provided by Q7 before the audio signal is applied to the ever-popular LM380 at U5, which supplies sufficient power to operate speaker or headphones.

crystal at about one third its marked frequency of 27.015 supplies BFO frequency. For USB reception, the BFO must be on the high side of the IF passband, e.g., signal on 1.800, VFO on 9.008 + 1.800 = 10.808 MHz. Now, if a modulating signal upon the incoming signal is 1 kHz (1.801), 10.808 - 1.801 = 9.007 MHz. 9.007 beats with 9.008 BFO and so produces 1 kHz audio at the secondary of matching transformer T5. For LSB, the BFO must be on the low side of the IF passband. To supply 9.005 MHz, the crystal Y5 is pulled low by the use of series inductor L10, switched in by removing the ground from the base of Q3. To produce 9.008 MHz, the crystal is pulled high by switching in series capacitor C56 with the removal of the ground at the base of Q4.

A small proportion of audio is picked off via R49 and applied to the AGC amplifier U6 — an ordinary LM741. Amplified audio is rectified by D1 and D2, and C65 is charged with a positive voltage which is proportional to the audio level of the received signal. AGC time constant is set by R61 and C65. The values indicated are a fair compromise for CW and SSB AGC characteristics. A DC amplifier, Q5 and Q6, supplies the CA3028 compatible AGC voltage.
As collector current in Q6 is proportional to signal level, a milliammeter is connected here to indicate signal strength. Manual IF gain control R58 injects a positive voltage into the base of Q5 to decrease the gain of the IF amplifier. Use of this gain control will only be necessary when extremely strong signals are being received.

Part Three will have construction details and board layouts.

References:
1. Solid State Design — ARRL.
4. Radio Communication Handbook — RSGB.
Between Christmas and New Year, a group of amateurs provided communications for the conduct and safety of the annual Red Cross Murray Canoe Marathon. This is the major WICEN practice exercise in Victoria. Operators taking part provide essential communications and safety links for the conduct of the marathon.

The Red Cross Murray Canoe Marathon is a major canoeing event with a course of four hundred kilometres on the Murray River. The start is at Yarrawonga on Boxing Day, the 26th December and the finish is in Swan Hill on New Years Eve, 31st December.

WICEN operators set up stations at the start and finish of each days course and at intermediate checkpoints. Stations are also set up in power boats on the river and, this year, in an ambulance. Other stations are attached to mobile key officials and first aid teams.

As the marathon moves down the river, camps are established in a different town each night. Whilst facilities are steadily improving, the number of participants is also growing each year.

New ideas and techniques are tried to handle the volume of traffic. This year RTTY was tried with mixed results. The main lesson being that well established and field proven stations were required. Heat, dust and mobile power supplies can really play hell with sophisticated equipment.

Weather conditions are usually hot and it is usual for there to be one storm during the period. This year was no exception with a damp night in Echuca and a violent combination of dust and electrical storms at the finish in Swan Hill.

The drought meant that the river level was down on previous years, however the flow of water for irrigation was sufficient to ensure the conduct of the event. Even the larger power boats were able to follow the canoes right through to Swan Hill.
Antenna Tuners — Trick or Treat?

This month we will discuss the general theory of antenna tuners in a descriptive manner followed by a practical design next month.

At some time in your amateur career you will be faced with the problem of using a single wire antenna or perhaps a dipole as a multi-band antenna. Assuming that you have a modern rig, connecting a feedline with a VSWR greater than 2:1 is undesirable and a VSWR greater than 3:1 unacceptable. So what can you do as the VSWR of an off-resonant antenna may be 10:1 and, if Murphy has his say, that's exactly the situation you will be facing. The answer is of course an Antenna Tuning Unit or an ATU for short.

Naturally your junk box has all the necessary bits but before you rush out and start drilling holes in Mother’s aluminium baking dish or her best cake tin (what else would you use for a chassis?) lets consider the various circuit configurations. Indeed how does any ATU work?

THE FUNCTION OF AN ATU

An ATU must perform two functions. Firstly it must resonate the antenna-feeder system. Secondly it must transform the resulting resistive load to the one required by the transceiver, which we will assume is 50 ohms.

Fig 1(a) shows a stylised ATU. There is provision for connecting just the right amount of reactance in series with the line to cancel out the reactive component at the end of the line. If, for example, the antenna system presented a reactance that on 3.6 MHz looks like a 10 ohm resistance in series with a 147 pF capacitor, then the VSWR would be too high to measure on a VSWR meter. If we connect 13.3 μH in series it will be resonant with the capacitor giving a zero series reactance so we are left with a 10 ohm load which is a VSWR of 5:1. A step-up transformer with a turns ratio of 2.24:1:2.24 will give the perfect match we desire.

You will remember that the resonance of a circuit occurs when the reactive components cancel. Now it is not immediately obvious that 147 pF will resonate with 13.3 μH at 3.6 MHz but if we use the standard formulae, \( Xc = \frac{1}{2\pi fC} \) and \( XL = 2\pi fL \), we get 300 ohms for 147 pF and 13.3 μH becomes 300 ohms and it is obvious that in series the sum is zero and hence we have resonance.

Back to the ATU. While performing the two functions the ATU should not be inefficient. That is, it should not be lossy or, if it is not connected to any external circuit, it should have a very high Q which amounts to the same thing. This condition is sometimes referred to as being a high unloaded Q.

When the transceiver is connected to the ATU which is in turn connected to the antenna system the Q should be low. This is referred to as a low loaded Q. A high loaded Q means that if the operating frequency is changed then the ATU must be readjusted even if the frequency change was relatively small. Most simple ATUs have a good matching range but also have a medium loaded Q requiring several retunes of the ATU as the transceiver is moved across an amateur band. All practical ATU’s must perform the functions of tuning and matching illustrated in Fig 1 a. Fig 1 b shows a possible circuit.

**ATU CIRCUITS**

The L Network

Fig 2 shows a simple practical circuit. It is called an L network because of the circuit diagrams similarity to the letter L. L and C can be adjusted to have many combinations which resonate at the operating frequency but there is only one combination of settings that will give both resonance and a 50 ohm load for the transceiver. If the antenna system presents a reactance which...
Fig 2 ATU using an L-Network circuit.

The circuit is slightly different if the coil L is wound on a toroid (see b) than when an air solenoid is used as in a. Inexpensive commercial ATU's use this circuit which works well with end fed wires. is capacitive then the value of C1 for resonance is reduced by that amount. The antenna system is "tapped across" the tuned circuit formed by L and C1, while the transceiver load is in series.

This circuit is popular in inexpensive commercial ATU's. It is capable of matching most practical antennas. If you find that a particular ATU will not match an antenna add a length of wire or feeder about ¼ of a wavelength long to the antenna system, in the shack at the ATU, and try again.

The L network provides additional harmonic suppression.

For low power or receiving applications a small toroidal coil with taps may be used for L and a receiving type variable capacitor used for C1.

On some occasions it may be advantageous to swap the antenna and transceiver connections.

Fig 3 The Ultimate Transmatch

This ATU will match most random wires and other antennas used for HF operation. Note that C1 is a differential capacitor and not the usual two-gang capacitor.

THE ULTIMATE TRANSMATCH

Another popular circuit is shown in Fig 3. This is the Ultimate Transmatch. As its name implies it can match most antennas to 50 ohms on all HF bands. It is also a circuit frequently misunderstood. The problem is C1. This must be a differential capacitor and not the ordinary "two gang".

As C1a is increased in capacitance, by turning the shaft, C1b is reduced. Two single capacitors can be connected in tandem, with one inverted, to produce a differential capacitor. L is an air-cored roller inductor and C2 is a variable capacitor typically of 270 pF maximum. For high power the spacing of the capacitor plates needs to be generous if arc-over is to be avoided. This is true of any ATU of course. A combination of C1 and C2 is used to resonate with L. Adjusting C1 varies the tapping point of the transceiver thus giving a correct match.

Adjustment can be a four-handed affair. One hand operates the rig, one tunes C1, one tunes C2 and the fourth adjusts L. If you can locate a differential capacitor and a roller tuning inductor your antenna tuning problems are as good as solved.

Once the optimum settings for each band have been found record them on a card for future use.

The ultimate Transmatch does not always provide much harmonic rejection.

Fig 4 The T-Network ATU

This is a simplified version of the Ultimate Transmatch. It does not provide any harmonic suppression. THE T NETWORK

Fig 4 shows a T network, so called for the similarity between the circuit diagram and the letter T. It is similar to the previous circuit and is almost as versatile. C1b is omitted (otherwise it is the same circuit) so ordinary capacitors only are required. Note that the shafts of both capacitors are "hot" and both shafts should have insulating connections to the tuning knobs. A short length of knitting needle is useful here.

The T network does not have significant harmonic attenuation.

Fig 5 ATU using a Pi-Network

Many medium priced commercial ATU's use this circuit. C1 and C2 are often labelled "LOAD" and "TUNE" respectively. Harmonics are attenuated by this circuit.

THE PI NETWORK

Fig 5 is our old friend the pi network. It looks like the Greek letter pi. Fig 6 shows the circuit redrawn to illustrate how the antenna system is tapped across C2 and the transceiver across C1. The circuit matches a wide range of reactances and is very popular with commercial ATU makers. The components used in the old AM transmitters are very suitable for a homebrew pi ATU. The inductor may be tapped if a roller inductor is not available.

The adjustment of the relative settings of C1 and C2 vary the transformation ratio as well as the resonance which is of course achieved by adjustments of L as well.

The pi coupler has good harmonic suppression characteristics. C1 is so-called the LOAD control and C2 the TUNE control while L may be provided with one tap for each band. This tapping arrangement is a compromise between ease of operation and range of impedances that can be matched.

WIDE RANGE TUNER

Fig 7 shows a wide range tuner based on the pi network. C3 has been added to allow tapping of L (no expensive roller inductor) yet retain the ability to match any useable antenna on any HF band (well as near as any other affordable system will). The details of its construction will appear next month.

It is in fact one of the old AM output circuits turned around. C2 is the old "tune" control and C1 is the "load" control. The switch which adjusts the tap on L is the older plate circuit band-change switch. In the AM transmitter the load was usually 50 ohms so with L switched to the appropriate band C1 is set in the same position for the ATU as it was in the AM rig, provided that the resistance across C2 is also the same as in the AM rig. A typical plate load was 2000 ohms so if C3 can be adjusted to give the antenna system the same equivalent resistance the rest of the network is as it was for the AM rig. The same components can of course be used. Unfortunately the operation of C3 is not always sufficient to provide this ideal situation. The result is an ATU that will match most practical HF antennas although sometimes the loaded Q is not as low as would occur in a perfect ATU.

Next month we will discuss the construction of this ATU which has an inbuilt twin VSWR meter.

73 de Ron VK3AFW
Following our reprint of articles on the G5RV antenna in our December issue (which by the way was done after many requests from newcomers), Jim Davis VK70W has written to us and has outlined briefly an up-dated version of this popular antenna.

Here are relevant excerpts from Jim’s letter:

“The popular G5RV antenna, which I understand, originally appeared in “AR” in 1973 is a most informative article, although now outdated. You will agree that a lot has happened in ten years.

In our little town, not only do we now have running water, but Bullock drays now no longer churn up our main street, instead, the occasional horseless carriage is noticed choofing up the street.

So also with the G5RV. There is a Mark II version now — since around 1979. About eighteen months ago, I had a long QSO with a “G” station who was a friend of Lou Varney — G5RV — and he gave the details of the improved Mark II G5RV.

I gave these details to a friend, David VK7MS, and he built the best G5RV I have seen. He has a row of pine trees — about seventy feet high either side of his property, and he slung the G5RV Mk2 between these.

The down-lead drops straight all the way — into his shack. It performs superbly.

I also gave the information to a very good W7 friend, in Arizona. He built a Quarter sized version for portable work, and I have worked him on this antenna. Sure, he was 3-4 S points down on his beam, but he had a most readable signal.

The revised details are as follows.”

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Editors note:

Many thanks for your letter Jim, and we would be grateful if any reader has any further details of the G5RV Mk2 version, particularly the theory of operation, bands operative and critical lengths of the 300 ohm stub and 75 ohm coax. Please forward comments to me at PO Box 300, Caulfield South, Vic. 3162.

Bruce Bathols VK3UV Editor:

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RADIO AMATEUR OLD TIMERS’ CLUB

QSO PARTIES

Each year, two QSO parties will be held for members of RAOTC Australia, and Old Timers’ Club New Zealand.

Members are requested to cut out this notification and keep it before them as the days, times, and bands will remain fixed.

RULES

ELIGIBILITY — The parties/contests are open to members of RAOTC (Australia) and OTC (New Zealand).

Note — There are members of the Australian Club in overseas countries who could possibly participate at the times laid down.

CONTEST EXCHANGE — Members will exchange:
1. Their Club membership number, VKs prefixed by “A”, ZLs prefixed by “Z”.
2. Year of first licence.
3. Name.

4. Age.
   E.g. Number A256 1951 Bill 49
   Number Z128 1923 Harry 78

SCORING — One completed contact with a member on CW or SSB but not both, will score 5 points.

MULTIPLIER — the total of VK, ZL and Overseas call areas contacted.

FINAL SCORE — Contact points times multiplier.

DATES, TIMES, AND BANDS

No. 1 — Second Monday in March — 20 metres 0200 to 0500 UTC.

Please spread out around centre frequencies CW 14.050 and SSB 14.150 MHz.

No. 2 — Second Monday in August — 40 metres 0800 to 1100 UTC. Centre frequen-

Entries — Claimed scores showing mode (CW, SSB or CW/SSB), number of QSOs and multiplier should be forwarded to John Tutton VK3ZC, 31 Denham Street, Hawthorn, Victoria 3122.

All amateurs who have been licensed for a period of 25 years or more are eligible to join the Radio Amateur Old Timers’ Club. A self-addressed envelope (9 x 4) to the Secretary, Harry Cliff VK3HC, PO Box 50, Point Lonsdale, Vic. 3225 will bring you a membership application form.

1983 Contests — 14th March and 8th August.
C-5800E NEW FM, SSB, CW 25 WATT TRANSCEIVER
So small it should be a portable. $532
The Standard C-5800E includes many features not previously available on a 2 meter multi-mode transceiver. For example it weighs only 1.75 Kg with dimensions of 149 (w) x 54 (h) x 208 (d) mm. For complete details on this revolutionary transceiver write or call us for a brochure.

C-7900E COMPACT 10 WATT UHF FM AMATEUR TRANSCEIVER $409
Small in size, 138 (w) x 31 (h) x 178 (d) mm., the 70 cm C-7900E uses unique circuitry and layout to achieve 10 watts power output and extremely high receiver sensitivity.

C-8900E COMPACT 10 WATT 2 METER FM TRANSCEIVER
Twin brother to the C-7900E, the C-8900E is equipped with all the same outstanding features except it is ready to operate on 144 to 148 MHz. For complete technical specifications on both these units write or call us for a brochure.

NI'RECOM
VHF MONITOR RECEIVERS
The FS-10 Series of VHF 10 channel pocket scanning monitor receivers are designed to give exceptionally high sensitivity. This is achieved by incorporating a cascade RF amplifier stage and a telescopic V- wave antenna. No bigger than a cigarette packet and no heavier than a pocket notebook the Nirecon FS-10 uses a rugged double sided epoxy-glass printed circuit board and is housed in a high impact plastic case. With a capability of scanning up to 10 crystal controlled channels or being locked on just one, the FS-10 is ideally suited to a wide range of monitor applications. Both battery charger and rechargeable Ni-cad batteries are supplied with all versions.

FS-10HF $185
Victoria Country Fire Authority or South Australian CES version. Fitted with 7 crystals for the VHF high band.

FS-10H $103
VHF high band, may be tuned to any 4 MHz segment from 150 to 170 MHz. No crystals supplied.

FS-10L $103
VHF low band may be tuned to any 2 MHz segment from 70 to 85 MHz. No crystals supplied.

G-01H $13
Short (10 cm) rubber duck antenna for FS-10H.

G-01L $13
Short (14 cm) rubber duck antenna for FS-10L.

G-05C $13
Belt mount carrying case for FS-10.

PS-393 $13
Car charger for FS-10 series.

SKY ACE
Palm-size airband receiver equipped with across the band tuning plus facilities for 3 crystal locked channels.

R-517 $125
AC adaptor for R-517.

PS-30 $12
Standard GFS stock crystals to suit R-517. [Enquire about frequencies.]

X-SA $10
Converter for SX-200 Provides receiving capability of 280 to 320 MHz.

EXP-32 $49
Memory Expander kit increases memory channels in SX-200 from 16 to 32 channels.

A-4AM $30
Air Band Auto AM Kit.

NI'RECOM
Marine Radiotelephone

NR-6000 VHF MARINE TRANSCEIVER
The NR-6000 6 channel marine transceiver is your passport to easy communication in the VHF sea-phone marine band. Operating on 6 crystal controlled channels within any 4 MHz segment of the marine band, the NR-6000 is the ideal way to keep in touch with other boats, shore stations, coastguards and emergency services. Approved to the Australian DOC specifications of RB275C, it is a self-contained communications system small enough to keep in your life jacket or on the bridge. The internal rechargeable battery pack gives complete freedom of use. The NR-6000 is supplied complete with crystals fitted for Channel 16 (emergency channel), rechargeable batteries, AC/DC battery charger, rubber duck antenna, earphone, carrying case and handstrap.

X-SA $10
Standard GFS stock crystals to suit Nirecon FM-10 series and NR-6000. [Enquire about frequencies.]

X-SO $24
Crystals to order for FS-10 and NR-6000 (2 week delivery).

J.I.L.
MODEL SX-200 HF/VHF/UHF PROGRAMMABLE SCANNING RECEIVER
THE SX-200 includes many unique features not provided on any other scanner. For example, its wide frequency coverage of 26 to 88, 108 to 180 and 380 to 514 MHz. Its capability of receiving over 33,000 channels. A mode squelch that can be set to only allow the SX-200 to stop on carrier with modulation signals. 16 channel channels that can be expanded to 32 with the EXP-32 kit. AM and FM detection on all bands. For full details write or call us.

SX-200 HF/VHF/UHF
33,000 CHANNELS

SX-36 $122
Converter for SX-200 Provides receiving capability of 280 to 320 MHz.

EXP-32 $49
Memory Expander kit increases memory channels in SX-200 from 16 to 32 channels.

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AMATEUR RADIO, February 1983 — Page 21
EQUIPMENT REVIEW

Ron Fisher VK3OM
3 Fairview Avenue, Glen Waverley, Vic. 3150

THE KENWOOD TS-430S HF TRANSCEIVER

The trend in amateur equipment design for HF operation seems to be towards the general coverage type transceiver. Up to the present time this has only been available in relatively expensive gear, but with the introduction of the new Kenwood TS-430S, we have the first popular priced transceiver with full general coverage capability. Maybe with the present state of the art in amateur design, it just might be as economically viable to build a full coverage design as it is to build a normal band switched transceiver.

TS-430S is to say that it is a compact version of the TS-930. It does not have a built-in A/C power supply, but is intended for operation from either a 13.8 volt power supply or a 12 volt battery for mobile operation.

A quick look at our photo will show that the 430 is just a little larger than the popular TS-130S transceiver. It is the same height, same depth but 29cm wider than the 130. Now pack into this package a 100 watt transceiver with operation on all amateur bands from 160 to 10 metres, a receiver with full coverage from 150kHz to 30 MHz and we start to see just the beginning of what this amazing transceiver has to offer. Unfortunately my time with the 430 was rather limited, so this review is perhaps more of a preview. However, I hope I can give you a good idea of what you might expect from this transceiver.

THE TS-430S TECHNICAL FEATURES

The TS-430S is a fully solid state transceiver with a broad band final that does not require any tuning. The receiver has provision for reception on SSB, CW, AM and FM and has full general coverage from 150 kHz to 30 MHz. It is the same height, same depth but 29cm wider than the 130. Now pack into this package a 100 watt transceiver with operation on all amateur bands from 160 to 10 metres, a receiver with full coverage from 150kHz to 30 MHz and we start to see just the beginning of what this amazing transceiver has to offer. Unfortunately my time with the 430 was rather limited, so this review is perhaps more of a preview. However, I hope I can give you a good idea of what you might expect from this transceiver.
to 30 MHz in one MHz steps. However the band switching up/down buttons can be programmed to select either the next higher or lower amateur band or one MHz up/down steps. Split operation is available with two synthesized VFOs which have two tuning rates. Eight memories can be programmed and these are then available for recall at any time, even if the primary supply voltage is removed. An internal lithium battery is built in to store memories for up to five years. Not only do we have the eight memories but it is possible to set up each of them in any particular mode that the 430 is capable of operating in. Memory scanning is selectable from the front panel keyboard with five second monitoring on each in turn. Imagine being able to check a couple of local broadcast stations, your favourite amateur band channels on a mixture of USB, LSB, CW and FM. The FM feature is an optional extra, as are the CW, AM and narrow SSB filters. However with the very low basic price, I can see that many amateurs will put in all the options when they purchase the transceiver.

The 430 set up was that there is no AC power supply, but you will need to operate two switches instead of one as with the TS-130. Strange to say the least.

Operation mode is selected by five push buttons to the left of the tuning knob. As each is selected a status indicator comes up alongside the appropriate button. The mode selection is USB, LSB, CW, AM and FSK. It will be noted if you are scanning the memories which includes different modes, the status indicators will follow the memory selected mode. The memory channel in use is shown by a special readout to the right of the frequency display.

For mobile operation a frequency lock button holds a given frequency regardless of any operation of tuning or scanning controls.

Due to the short time that I had the 430 I was unable to carry out our normal technical tests. Only power output was checked and the following results were obtained:

160 80 watts
80 85 watts
40 80 watts
30 80 watts
10 70 watts

This is a little down on what we might consider a normal 100 watts output, but it is still a very satisfactory result and in fact quite comparable with the older TS-130S synthesized VFO. PEP output on SSB was about the same as viewed on the scope with a clean pattern. On-air tests for intermodulation distortion showed that the 430 was not quite as good as some equipment tested, but quite satisfactory.

The speech processor used in the 430 is a simple audio type and not an RF clipper. It appears to be similar to the processor used in the TS-130 and the TS-530. Results obtained with it were certainly worthwhile but not up to the better RF clipper types. Audible distortion appeared to be quite low.

Receiver sensitivity was very good when compared to our normal station transceiver and strong signal handling excellent. Under normal use we found no front end overload at all.

The noise blanker worked well on ignition noise and fairly well on domestic electrical noise but produced no effect on the Wood Predictor at all. Pitty, as in every other respect the 430 performed very well indeed.

CONCLUSION

The TS-430S is certainly a new generation of HF transceiver. It would seem to be in a class of its own and will soon change amateurs’ ideas of what a transceiver should do. In one stroke, it has made most existing transceivers obsolete. The TS-430S is highly recommended. Our test transceiver from KENWOOD Australia via Eastern Communications of Box Hill South, Victoria.

FOR YOU ANTENNA BUFFS:

Aside from physical damage, the most common fault in the antenna system is low resistance to ground. Moisture in the antenna system (ie impedance matching networks, coax cables, etc) due to insulators and coax dielectric breakdown all cause varying degrees of shunting resistance and must be guarded against if maximum efficiency is to be expected. Testing is accomplished by using a meggar or if one is not handy, a simple ohm meter will suffice.

Theoretically, any transmission line system should read infinity on the meggar, but this reading is not always possible to obtain. Abrupt changes in the weather, high humidity, or other natural causes often result in low resistance readings. Often resistances may be raised by cleaning the insulators. The coax cables and other cables and fittings used to connect the equipment should also be tested. A check of cables or insulators should be done to ensure that the transmission line system should be made periodically. The following values are suggested.

1. A resistance of 200 megohms or more to ground indicates that the antenna system is in good condition.
2. A resistance of 5 to 200 megohms to ground indicates the insulators need cleaning or the coax is contaminated with water.
3. A resistance of less than 5 megohms to ground indicates that the antenna system is in bad shape and an urgent need exists to locate the low resistance point and correct it.

HAAT IS IMPORTANT . . .

About twenty years ago I was employed by my fellow citizens to ride around in bombers, a mostly boring job, with occasional exciting moments. There is the excitement of physical danger (a different series of stories), and the excitement of snagging exotic DX.

On one of our training missions due to a computer malfunction, we scrubbed, and hung around our home base to burn off fuel for a safe landing weight. The B-47 had no provisions for dumping. We flew big circles at 22,000 feet, just west of Abilene TX.

It was my custom to set in 14.340 in our ARC-65, for use when I wasn’t busy. This mission was lost, so I played with the Collins, calling “CO, this is K5RPB mobile.” I expected no reply, since it was 0300 local. Just maybe someone in Big D or Cowtown would be awake.

"K5RPB, this is VK3AHO." I switched my Intercom from HF and asked the co-pilot where he learned the exotic call. He denied fooling me, saying he was half asleep. Back to HF. It really was VK3AHO! Excitement, excitement . . .

The three of us talked to Bram for 20 minutes or so, and to two other Aussies. For a little over an hour, K5RPB was the only signal heard from North America, having spotted a bigceiver of me in LeMay’s world-wide sideband nets, and highlighted the importance of Height of Antenna Above Terrain.
# EVALUATION AND ON-AIR TEST OF THE KENWOOD TS-430S

## Category | Rating | Comments
--- | --- | ---
**APPEARANCE**<br> Packaging | *** | Foam inserts, plastic wrapped, strong carton. For a full general coverage transceiver, amazing!
Size | **** | Good, but not quite as good as other Kenwood gear. Seems to be well constructed.
Weight | **** | Very practicable layout.
External finish | **** | A bit small for big fingers, but for the number of functions, very good.
Construction quality | **** | Clearly labelled.
**FRONT PANEL**<br> Location of controls | **** | Rather tizzy appearance and hard to read.
Size of knobs | **** | Very smooth. Finger hole right size and adjustable tension.
Labelling | **** | No analogue dial.
Meter | ** | Most required facilities available.
VFO knob action | **** | See test section.
Digital readout | **** | Spot-on readout.
Analogue | NA | Best yet seen in any transceiver.
Status indicators | *** | Only IF shift provided.
**REAR PANEL** | | Audio notch — not IF, but works well.
**RECEIVER OPERATION**<br> VFO stability | **** | Four filters can be fitted.
Digital dial accuracy | **** | A few weak ones. Not audible with antenna connected.
Analogue dial accuracy | NA | Action good but hard to read under low external light conditions.
Memories | **** | Not tested, but appeared very good.
Shift/width | ** | No overload noted.
Notch filter | **** | Operates on receive only. No frequency indication of shift on digital dial.
Peak filter | NA | Only IF shift provided.
Optional filters | **** | Normal attenuator — about 15dB.
Spurious responses | **** | Smooth, progressive action. Threshold type.
’S’ METER | | Some reduction in certain types of line noise.
AGC PERFORMANCE | **** | Good effect, but effectiveness reduced on strong signals.
**SIGNAL HANDLING** | | No noticeable reduction.
CLARIFIER (RIT) | ** | No apparent cross modulation.
**SENSITIVITY** | **** | Reasonably well balanced.
RF ATTENUATOR | ** | No matching accessories have been released. Good quality with my own external speaker.
RF GAIN | **** | Stereo headphones match well.
**NOISE BLANKER** | | Fan only operates under extreme conditions and then very quiet.
Line noise | ** | Quite noticeable with VOX operation.
Auto ignition | **** | Reasonable well balanced.
Woodpecker | * | See test section of text.
Effect on signal handling | **** | Smooth transmit quality.
**QUALITY OF RECEIVED AUDIO**<br> Internal speaker | ** | Plenty of audio gain.
External speaker | NA | Audio compressor type.
Headphone output | **** | Easy to set mic level.
Cooling fan noise | **** | ALC, IC and ‘S’ meter only. Also see comments on meter above.
Relay noise | ** | Ran cool even on hot day.
**TRANSMIT OPERATION**<br> CW power output | **** | VOX keying worked well.
PEP output | **** | No manual available at time of test.
Audio quality | **** | A very compact, highly complex transceiver. Attractive to look at and easy to use after some practice.
Audio sensitivity | **** | Band change method both for amateur bands only or for general coverage receive is superb.
Speech processor | **** | At the suggested retail price of $999 with FM option is should sell like hot cakes.
ALC action | ** | No apparent cross modulation.
Metering | ** | No apparent cross modulation.
Cooling | **** | See test section of text.
VOX operation | **** | Smooth transmit quality.
QSK operation | NA | Plenty of audio gain.
CW operation | **** | Audio compressor type.
Manual (owner’s handbook) | NA | Easy to set mic level.
Further comments | | ALC, IC and ‘S’ meter only. Also see comments on meter above.

## Rating Code: Poor * Satisfactory ** Very Good *** Excellent ****
Improving the Duty Cycle of the FM 321 & 320

Nev Fenton VK2BQ
1022nd Avenue, West Hoxton, NSW 2171

Both these units can be modified very simply to improve their duty cycle. (Two minutes on transceive, two minutes on receive). The ventilation modification alone helps to keep the temperature down. The cooling fin/heat sink improved the duty cycle to four minutes transceive, two minutes receive or better on the writer's equipment.

Several variations on this modification exist. One operator fitted a heat sink, another an aluminium plate which extended some distance above and below the covers, while a third obtained a piece of aluminium tubing, 60mm x 50mm x 146mm and turned it into a double cooling fin.

VENTILATION

Both Covers

HOLE DIAMETERS 12.5mm AND 8mm

THE COOLING FIN

SIZE, 136 x 50 x 3mm WITH 16mm FLANGE MATERIAL, ALUMINIUM

EXTERNAL SPEAKER POWER LEAD CUT OUT

3mm PCB

8mm PCB

4.5mm PCB

Do not forget to cement as well as bolt the fins or heat sinks into position.

The photographs give a reasonable indication of these modifications, and operators will no doubt use their ingenuity with material they may have on hand.

Before reassembly, it is beneficial to peak C141 on an offset frequency near the band centre, and also to solder XL801, on the FM321, into circuit, as this ensures less likelihood of the transceiver dropping out when in repeater mode.

For further information the writer may be contacted on the morning net via VK2RUS, the afternoon net via VK2RUG, or by letter.

HUNTING PIRATES

An article by Mimmo Martinucci I5WWW in Radio Rivista of Oct. '82 lists the number of pirates by countries for the period Jan.-Dec. 1980 on ten metres only. The information came from the monitoring system of DARC in West Germany.

A total of 840 pirate stations were intercepted, 709 identified by country of origin, and 131 not identified. The top five were Brazil with 264 (37.2% of 709), Italy 94, Spain 80, West Germany 36 and U.S.A. 30. Even the U.S.S.R. had 4, followed by U.K., Japan and five other countries 3 each, and Australia, together with 12 other countries, one each.

"THE COMPUTER CONTROLLED CAR"

Not only must we be very much aware of the possible interference problems caused by the inadequacies in home electronics and entertainment products — these present more of a frustration than a danger. We must be even more cautious in respect of the ever increasing use of 'computer style electronics' by vehicle manufacturers.

The erroneous operation of a low immunity factor fuel gauge caused by the presence of a correctly operating radio transmitter is little more than a nuisance. Disturbance to an electronic braking system could be considered a more pressing problem!

It is interesting to see that even the automobile industry has been programmed to consider amateurs and amateur equipment to be inferior to commercial operators and equipment used by commercial stations, especially in respect to interference.

Subaru of America, Inc. recommends that, "Electrical transmission devices (CBs, HAMS, Garage door openers, etc.) not be installed on 1982 Subaru vehicles, since such installation may interfere with the ECC system and possibly result in erratic driveability."

If such a device is installed, care should be taken to route the antenna lead as far as possible from the ECM and ECM harness. Shielding the antenna may also help to cut down on interference. However, these procedures are not guaranteed to correct any interference problems.

The term ECC refers to the Electronically Controlled Carburettor, and the term ECM refers to the Electronic Control Module.

The interference, if any, is generated by the close proximity of the transmission device's cables to the cables of the ECC system and ECM. There would be no interference caused by large commercial transmitters (radio, TV, microwave transmitters, etc)."

PLEASE HELP WITH INTRUDER WATCHING

AMATEUR RADIO, February 1983 — Page 25
The Christmas surprise package announced by the Minister for Communications as regards the release of the two WARC Bands, 18 and 24 MHz and the additional bandwidths to the 160, 80 and 40 metre bands will allow greater flexibility to the DXer and for the experimenter, new antennas to erect that may be "tweaked" to perfection.

DXer or not, one would have to be impressed with the extra amount of spectrum that has been made available for amateur use and it is hoped that these privileges are used and not abused. With sensible use the three WARC bands, though contacts made on them will NOT BE VALID for DXCC, should provide some interesting propagation through to the next sunspot maxima.

Unfortunately 10 MHz has not taken on, some excuses being that "I will not get interested in it until the other bands are allocated". That excuse no longer exists, nor does the argument of suitable antennas if you have equipment that will transmit on these frequencies. The dipole is effective, cheap and simple to erect.

Transverters, from junk box parts can be designed, built and coupled to the existing transmission equipment. Who is going to be the first experimenter to submit a suitable WARC band transverter for the perusal of the Technical Editors for printing in AR?

It is predicted that the economic climate of the "80s" will alter the trend of equipment for present and future amateurs. The "black box" will by no means disappear but more "homebrewing" will be anticipated. Also new and larger projects will be undertaken and there will be a major swing back to low power and CW operating habits.

The "budding" short wave listener or amateur should not be deterred from becoming active and getting on the air as the designs of simple receivers and CW transmitters are available. One such receiver that will provide more than adequate coverage and service to the newcomers and old timers alike is the SQUARE ONE Receiver, the design of which commenced in AR last month. All parts are locally available and minimal test equipment is required to "tweek" it to optimum performance. This positive approach is a credit to the designer.

Dipoles are easily constructed and the ever popular and effective G5RV antenna, as described in detail in December 1982 AR will not break the family budget. Will you join the trend and boast "Using all home brew equipment at this QTH OM" in 1983?

New operators are Ray Clarke VK0RC, Eric Endacott VK0RE and Adrian Smith VK0AS.

OTHER ANTARCTIC OPERATORS

Three other Antarctic signals should be heard this winter from the operators pictured. They will be at their respective sites until November this year.

MACQUARIE ISLAND

Peter, VK0AP, seems to be settling in and has erected the VHF antenna on six metres. Many VK3 operators added a new country to their list when Peter's manned keyer was heard in mid December. As can be imagined, after no six metre activity from the island for nearly a decade, he was much in demand. One particular VK3 still couldn't believe it until he held the card in his hand. Peter hopes to be active on the HF frequencies as the winter months approach.

WILLIS ISLAND

The new operator at Willis Island is John, VK8ZJ who is on the HF bands until June. The "permanent" Willis Island QSL Manager seems to be Gill, VK6YL, who has again taken on this chore for John's tour of duty.

SPOT NEWS

ETHIOPIA

From reports received it appears that operations from this country have been suspended, including the Police Club Radio Station, by the National Security Agency. It is believed that a number of amateurs are working towards having this decision by the NSA reversed.

CHINA

Overseas magazines and DX sheets are reporting CW activity from BY8AA on the low end of 21 MHz. No VK reports are to hand on an BY activity heard for the last couple of months.

ANZA NET APPEAL

Can you help? This is the question asked by Percy, VK3PA. Percy, who has nurtured this net for in the vicinity of a decade, finds, due to the ill health of his XYL Linda, that he cannot devote as much time to act as controller as he has done in the past. The net presently meets on 21.204 MHz daily at 05.00 UTC and any assistance from someone with some spare time would be appreciated. Further details from Percy, VK3PA when he is on the frequency or by writing to Percy at QTHR. To Linda, wishes for a speedy recovery are extended from DXers worldwide.
GLOBE TROTTING

Two US amateurs are visiting a number of countries (some much sought after) with their itineraries commencing late January 1983.

K4YT will be visiting AP, YI, VU, 4S7, HS, 9M2, XW, 9V, YB0, DU and BY.

K4DDA visits include areas such as JY, A4, A7, A6, A9, 9K, HZ, ST, 4W, SU, and YK.

Good tripping gentlemen and it is hoped that you are able to get on the air from some of these areas and that your call will appear in a few VK log books.

4U1VIC

Reports indicate that this station has now made in excess of 1000 QSO's and QSL's are 100% via the OE Bureau. The operators are using a 14AVQ which is mounted 125 metres above the ground on one of the towers at the Vienna International Centre. Many VK's are looking for this one in case it becomes a new one for DXCC.

TRINIDAD IS

The operation from PY0TA on the 17/18th December was conducted by PY1RR and PY1VOY. Those that missed out, take heart, as these two have left the equipment in situ at the naval Base and will be making a return trip in the next couple of months with the supply boat. QSL's for the CW operation go to PY1BVY and SSB to PY1VOY.

GUANTANAMO BAY

Dick KG4CD, has commenced a one year tour of duty at the base and promises lots of activity. QSL's to PO Box 585, FBPO, Norfolk VA 23593, USA.

3D2XN/XR

This station, that operated out of Rotuma, did not qualify for DXCC country status and will not be allowed as a new country by the ARRL.

NEW BAND ACTIVITY

Derek 9K2BE, now has crystals in his possession which will allow him to operate on the 18 and 24 MHz bands. The antennae for these bands will be dipoles.

PREFIX CHANGES

It is on the cards that there will be further prefix changes with some of the island countries this year. These changes will bring all the newer prefixes into line with the ITU allocations.

CHAFARINAS ISLAND

ED9ICH was active and the QTH does exist. Chafarinas Island is one of a group of islands located about 30 miles ESE of Mellila. The island is under Spanish administration and a serviceable lighthouse is its main attribute. QSL's direct only to EA9JV. It is very unlikely that it will be of much interest to anyone except prefix hunters.

TEN METRES AGAIN

The ten metre band behaved over the Festive season and provided some excellent QSO's into all parts of Europe, Africa and the Middle East. Admittedly the signals were not as strong nor had the staying power of last season but they were there, generally appearing from seemingly 'dead' band which wasn't even noisy.

One European told me that he had tried to break a number of VK novice operators speaking amongst themselves on numerous occasions but to no avail. Apparently many VK's have given ten away as on numerous occasions I was told that I was the only VK to be heard which is a pity and embarrassing to be in so much demand.

IMPENDING DX

Unconfirmed reports indicate that PYIOR hopes to visit Trinidade in early February. If he is successful QSL's should be routed via PY1VOY.

Another unconfirmed report is that Aves Is will also be activated in the early part of this month. No further details are to hand.
ANOTHER DELETION?

A well known and respected VU DXer, in a recent QSO with a VK, was quite adamant that the Andaman and Nicobar Islands (VU7) would become a deleted country this year. If this does occur, he stated that the islands would revert back to the VU2 prefix.

Many stations will remember how this country was so ably represented by Fred Burn, VU7ANI until his sudden and untimely death in 1977. Mary Ann WA3HUP still has logs for any one that still requires a QSL. Information from VK2PS, VK3's FR, PBA/XSD, YJ, VK6AKH, VK6's HD, IH and NE and L30042.

THANKS

Information for these notes has been derived from such magazines as cQDX, DX NEWS, RADCOM, 6EGO & K6HD, QSL MANAGER LIST, OTC, QST, WORLD RADIO and amateurs including EA1VG, G3NBC, ON5NT, ZL1AM and ZL1AMN. Also reports and information from VK2PS, VK3's FR, PBA/XSD, YJ, YL, VK5AKH, VK6's HD, IH and NE and L30042. Thanks to one and all.

WORKED ON THE NOVICE BANDS

10 MX
5W1DW (*VK3VU), F081W, SM05YC, SM7LPJ, T32AJ (SM3CXS) and T32AL (*WB7SIC).
15 MX
3D2Y, 5W1DW (*VK3VU), 605KXT, F081X, F081F, H080BHA, HC2DG, HC5R, HC3R2, WH6AV (CW), YV40DA.

SSB WORKED ON THE EASTERN BANDS

10 MX
8B2JA (LP), DL's, E09ICH (E9UV), F09UC, G's, GJ's, GM1, GI6 and 8, LA's, SM's, PA0, PA2 and PA3's, R28R, U28's, US's, WW2's and WW2's.
15 MX
3V2AA (*15ZLYN), 6W8EX, FB8WX, FW0JXN, GC5A/AA (*YASM1), JT1B6.

SSB WORKED ON THE WEST COAST BANDS

10 MX
5H5FJH, 5NB8, 8NBARY, 9Y9RAD/SU, A92F, HC2TM, PAGWAY/A6, UI5M8Z, U8M8D, W4GSM/HCS, 15 MX
3V5AL, CN0CX, HH2OD, J3AH, GJ5LFLJ, H91HZ, UF6CR, UI5J6.
10 MX
5NBARY, 9N3B, F7YAN, J20DU, J8AB (YL), P7A0L, T2GSH, T32AF, V2D3, W5NUT/PJ7.
40MX
8WON, J6LB, T32NX.
80MX
UI5J6CQ.

INTERNATIONAL NEWS

NETHERLANDS — Expansion of teletext broadcasting.

With effect from February 1982, four lines in the field-blanking period of the television signal have been made available for teletext broadcasting in the Netherlands, instead of only two as was previously the case. The addition of lines 20 and 21 has enabled the average time required for access to any of the total of about 200 pages now broadcast cyclically to be halved in comparison with that required if only lines 15 and 16 are used, as was previously the case.

At the same time, several improvements have been made to the range of information broadcast by means of teletext. In particular, new pages of special interest to the hard-of-hearing, to users of inland waterways and to radio amateurs have been added. Research by the Nederlandse Omroep Stichting audience-research departments is continuing, and it is expected that it will be decided, by 1st April 1983, to expand the use of teletext as a regular form of information broadcasting.


CORDLESS PHONES... MORE TROUBLE??

A new interference menace has surfaced in the US according to the US amateur publication WESTLINK REPORT. Two units of so-called "ultra-long-range cordless phones" are being made in the States for export. One of these, the "Non-Cord DX Model NC 20 M" boasts operation in the two-metre band, from 143 to 147 MHz, complete with a claimed 13 watts and a "twenty-mile range".

Accessories include "gain" antennas and a power amplifier of 25 watts. The second one, with similar "long-range" claims, is something called the Rova/Pro Cordless phone. Both of these units are illegal in Canada and the US.

Canadian regulations permit the operation of very low power devices without licensing if they operate above 510 kHz and if they do not interfere with regular radio services. Typical of these units is one sold by Radio Shack. The units which provide for full duplex working, use a number of channels between 1.6 and 1.8 MHz for the 'base' station and the remote sets transmit on various channels in the 49.8 to 49.9 MHz band. The outputs are so low that users are advised to operate them near the AC lines which can "piggy-back" the very weak RF output. Another obvious drawback is that this may introduce an AC hum. Another is that there is no privacy to phone conversations using these units. A third problem is that if your neighbour is using one and it happens to be on the same channel, one or the other of you will have to take the units back and exchange them for a different frequency pair.

These devices operate on a secondary use basis and licensed services, such as the Amateur Service, have priority in use and in any cases of interference.

(From: 'The Canadian Amateur' Oct. 82)
Many circuits for two-tone oscillators using ICs have appeared, so this is not anything new. However the use of transistors enables the home brewer to construct such small projects with less difficulty.

The two-tone oscillator, as shown, is constructed on a piece of double-sided board approx. 2 inches (50 mm) square. It may be placed inside an FRG7 receiver or other equipment. The output can be taken to the phone patch socket on any transceiver and as the coupling is light the connecting cord may be left permanently in place. To use it, switch on the power and press the PTT button. Adjust level with the transceiver microphone gain control.

The piece of double-sided board is marked off as shown. Each side is marked as a mirror of the other so that identical components are mounted back to back. Each side generates one tone, the two coming together at the output pads. However do not connect them together until tests show each to be operating.

All components are soldered direct on to the pads, and component leads are cut short so that resistors and capacitors stand about \( \frac{1}{4} \) inch above the board.

**TESTING**

To test the unit, apply power and bring one output lead at a time to the top of the volume control pot in a receiver, when the tone should be heard from the speaker. The two outputs may then be joined together and checked in the same way.

To adjust for equal output the 100pF coupling capacitors may be altered, e.g. one may be 100pF and the other say 82pF if found necessary.

I have an FRG7 which has become the home of small units like this, as there is plenty of unused space available inside.

Power to operate the unit can be taken from the FRG7, controlled by a small switch mounted on the rear panel. Better still, if you have made the "Frog Remote", a 3 pole 3 way rotary switch can be fitted in lieu of the fine tune and the extra positions used thus:

- **Position 1** Receiver only
- **Position 2** Double unit for FROG REMOTE
- **Position 3** Two-tone oscillator

The unit can be mounted inside the FRG7 or wherever space is available in other equipment.

* See FROG REMOTE in December AR page 29.
ADDENDUM AND CORRECTIONS TO 1982 REMEMBRANCE DAY CONTEST RESULTS

SECTION BVK3
Full call winner VK3AEW with 149 points. Full call listed as VK6PC corrected to read VK6PP plus 19 points for CW entry.

THE 1982 NOVICE CONTEST
Congratulations to the winners of the 1982 Novice Contest.
The trophy winner is VK4VIK, Mr R. Chalmers of Cairns. Very well done and congratulations.
The winners of section certificates are denoted by * and various excellent effort certificates will be sent to other participants.

The contest was pretty poor this year, mainly due to the very poor propagation and to the almost total lack of interest by the amateurs.
This was the first year of the 10 WPM maximum speed to encourage the use of CW and as you can see from the result, the response was almost nil.
The deliberate restraint shown by Ivor VK3XB will allow the novice trophy to be re-allocated a new home for the next year, however there will be some fierce competition for its temporary ownership in 1983, so a big effort will be required by everyone in the next contest.

COMMONWEALTH CONTEST 1983 (BERU)
From 1200 UTC Saturday 12th March to 1200 UTC Sunday 13th March 1983.

MODE
CW (A1) only in the 3.5, 7, 14, 21 and 28 MHz bands. Call is CQ BERU. The Commonwealth contest is a single operator, single transmitter event. Eligible entrants are radio amateurs licensed to operate in British Commonwealth call areas as listed below.

A contest exchange consists of RST plus Serial number received. Separate logs are required for each band.

Five points for each contact exchanged:
- Bonus of twenty points for each of the first, second, and third contact in each call area as listed, on each band. Contacts with one's own call area do not count at all. Note that G, GW, GD etc. are counted as one area.

LOGS
Separate logs are required for each band showing columns:
- Date and time UTC
- Station worked
- RST/Serial number received
- RST/Serial number sent
- Bonus points claimed
- Contact points claimed
- Bonus points claimed

Separate band totals should be added together and the total claimed score entered on a cover sheet giving particulars of station, QTH, equipment, power, antenna and a declaration that the rules and spirit of the contest have been observed.

It is important that logs are carefully checked for duplicate contacts. Unmarked duplicate contacts for which points have been claimed will be heavily penalised, and logs containing in excess of five will be disqualified.

Entries may be single or multiple band. Single band entries should claim contacts on one band only, but details of contacts on other bands should be submitted for checking purposes only.
Entries should be addressed by AIR MAIL to: D J Andrews G3MXJ, 18 Downsview Crescent, Uckfield, East Sussex TN221UB, England.
Closing date: 16th May 1983.
All entries become the property of the RSGB. In the event of any dispute the ruling of the Council of the RSGB shall be final.

COMMONWEALTH CALL AREAS
The following call areas are recognised for the purposes of scoring in the 1983 Commonwealth Contest:
- A2 Botswana, A3 Tonga Is., A5 Bhutan, CZ2 Nauru, C5 Gambia, C6 Bahamas, G6/GB/GGl/GGJ/GER/GU/GW, H4 Solomon Is., J3 Grenada, J6 St Lucia, JD Dominica, J8 St Vincent, P2 Papua New Guinea, S2 Bangladesh, S7 Seychelles, T2 Tuvalu, T3 Kiribati, V2 Antigua and Barbuda, V3 Belize, VE1, VE1 Sable Is., VE1 St Paul Is., VE2, VE3, VE4, VE5, VE7, V6, VK1, VK2, VK2 Lord Howe Is., VK3, VK4, VK5, VK6, VK7, VK8, VK9 Christmas Is., VK9 Cocos (Keeling) Is., VK9 Norfolk Is., VK9 Willis Is., VK10 Heard Is., VK0 Macquarie Is.
- VK0/VP8/ZL5 Antarctica*, V0.
- VP2E Anguilla, VP2K ST Kitts Nevis, VP2M Monserrat.
- VP3 British Phoenix Is., VR6, VS5, VS6, VU India, VU Laccadive Is., VU Andaman & Nicobar Is.
- VY1 Yaku, YJ.
- Z2, ZB2, ZC4/5B4, ZO7, ZO9, ZF, ZK1 Cook Is., ZK1 Manihiki, ZK2 Niue, ZL1, ZL2, ZL3, ZL4, ZL Auckland and
THE RAVIN

From QUA WJRA (West Jersey Radio Ass'n)

THE RTTYERS NIGHTMARE

One upon a midnight dreary, as I labored, 
O'er a battered Model 15 purchased at the 
surplus store —  
While I nodded, nearly napping, suddenly 
there came a tapping  

"This is receiver noise", I muttered. "Pulsing in 
my magnet's core — 
Other things and nothing more."

Ah, distinctly I remembered it was in the 
bleak December;  
And the main shaft's driven member lay in 
fragments on the floor.  
RTTY contest was tomorrow; vainly had I 
sought to borrow 
From this junk source of sorrow, sorrow for 
my Sweepstake score —  
Working rare and radiant stations to upgrade 
my Sweepstake score —  
Zer0ed here for evermore. 
Now unto my TU turning, all my soul within 
me burning.  
Soon again I heard a tapping somewhat 
Louder than before.  
"Surely", said I, "Surely that is signal at my 

Shall it type that "464".  
Typed the printer, "464".  
Marvelling at this ungainly old machine to 
type so plainly, 
Though the alternating figures quite hint of 
trouble bore.  
For we cannot help agreeing that, the typewriter 
carriage being 
Shifted upwards, I was seeing in rotation 6 and 
4 —  
The upper case of RY, alternating 6 and 4.  
Only this and nothing more. 
But the carriage, sitting lonely on the greasy 
rails, typed only 
These two numbers, which was all the flying 
typebars did output. 
Nothing other than it uttered, as the printing 
ball it flattened —  
Till I scarcely more than muttered, "It needs 
rung a little more".  
Till the oil and grease have worked in, then 
assuredly ran more. 
Shall it type that "464".  
Then, methought, the air drew denser, 
depressed by my oil can's censer, 
Pumped until the vicious fluid trickled on the 

All calls operated from Commonwealth controlled 
areas of the Antarctic (VK0, VP8, ZLS, etc.) count as one 
call area.

AUSTRALIAN AWARDS

1. An individual award to the highest VK 
scorer — a gold medallion.  
2. A State Team award — four silver 
medallions to the state team of four 
which achieves the highest aggregate 
score. If the "individual" winner is a 
repeater, "team", he will receive the 
gold medallion instead of the silver one. 
3. An award to the middle placing among 
VK entrants i.e. to, say the 22nd 
place, and among 43 or 44 entrants — a 
bronze medallion.

FREE LITERATURE

This catalogue features all equipment manufactured by Fluke Manufacturing Inc. 
— a well-known instrument supplier.

All products are organised into groups 
by function and performance together with 
their relevant specifications.

Readers may receive their copy by 
contacting any of the Elmeasco offices, or 
for more information please contact Bert 
Kleverlaan on (02) 736 2888.

Icom Incorporated of Japan, announces the 
opening of its Australian office as part of 
its international expansion.  
Icom Australia will not sell direct to 
amatuer, but rather, through a number of 
dealers in Australia. Vicom International, 
the company which has established the 
Icom name in Australia over a period of ten 
years will continue to be a dealer, selling 
from its premises at 57 City Road, South 
Melbourne.

Mr Kiyoshi Fukushima will manage the 
Australian operation. He is well placed 
to take this position, having worked for several 
years as the Service Manager at Vicom, 
where he helped set the existing high 
standards for Icom service in Australia. 

Icom Australia will ensure that customers 
do not need to wait long periods for spare 
parts or new models of transceivers. As an 
Icom office, it will receive special priority in 
the receipt of equipment from its factory in 
Japan.
Now ICOM is directly represented in Australia with the establishment of its own company, ICOM AUSTRALIA Pty Ltd.

The Australian Amateur has known ICOM for many years as the leader in 2 metre and 6 metre transceivers, more recently for the State of The Art multi-band units such as the IC-740 with full WARC facilities.

You will soon know ICOM AUSTRALIA for the best in Australian service.

---

**ICOM BRINGS THE WORLD**

1. **MINICOM IC-25A** A small 2 metres package with 25 watt punch. IC-25A is a full featured FM transceiver for the band transceiver with General Coverage Receiver. Multi mode operation includes CW AM SSB RTTY.

2. **IC-740** metre and 70 cm multi mode transceivers providing many base station features in a mobile package.

3. **IC-730 Go**

4. **IC-R70** General coverage at its best. 100 kHz to 30 MHz commercial grade receiver.

5. **IC-AT500** HF fully auton most successful hand-held on the market.
ICOM AUSTRALIA Pty Ltd and its authorised dealers can now offer you factory backed technical and service facilities here in Australia.

All dealers and prospective dealers, please feel free to call on us soon and talk with The Team that understands Amateur Radio.

Discover a new deal with ICOM AUSTRALIA

- MINICOM IC-45A Full featured 70 cm 10 watt FM transceiver.
- IC-720A HF all band SSB CW RTTY transceiver with extensive versatility for the serious operator.
- IC-290H/IC490A 2 kW where HF rig for everyone’s pocket.
- IC-2KL Solid state Linear Amplifier 500 W output power SSB CW RTTY.
- IC-2A IC-4E ICOM’s reliable, field-proven IC-2A IC-4E series has become the
GRAY LINE RADIO GLOBE

This globe of the world, which measures more than thirteen inches in diameter, is a useful tool for the amateur radio DXer, particularly for the lower frequencies.

The globe has very detailed printing which includes amateur radio prefixes, zones, great circle bearings with given distances, most standard frequency and time signal station callsigns and locations, and 10 m beacon callsigns and locations. In addition it is cleverly illuminated from within to accurately display the daylight and darkness zones.

The inclination of the earth's axis in relation to the sun can be set in increments of one day by the aid of a day to day calendar on the globe stand. Also, there is a time graduated ring along the equator to enable the setting of the position of the globe for any time of the day in increments which can easily be interpolated down to an accuracy of five minutes for any spot in the world.

Another feature is the ability to determine the sunrise and sunset times for any given location with an accuracy of ± 3 minutes, and to clearly see the sunrise/sunset path for the whole world.

The quality of construction appears to be sound and although, at the price, it may not be for everyone, it would make a useful tool and attractive addition to the shack of the DXer who "has everything".

The globe is available only from Realto International, 26 Karoonda Road, Booragooon 6154, Western Australia.

WAVELINE PROGRAMMABLE ROTARY-VANE ATTENUATORS

Programmable broadband rotary-vane attenuators and coaxial piston attenuators, complemented by micro-processor-based control devices, are offered for automatic test equipment and systems applications by a British firm, Flann Microwave.

The precision rotary-vane attenuators are available in all standard waveguide sizes from 3.94 GHz to 140 GHz and in 14 frequency bands. All versions have a voltage standby wave ratio better than 1.15 and an accuracy of 1 per cent or 0.1 dB, whichever is greater, from 0 to 60 dB. Resettable is stated to be better than 0.1 dB at 60 dB and to improve considerably over the lower attenuation ranges. The devices can be operated at ambients of 5-35°C.

There is a choice of four options for each of the 14 frequency bands. Devices bearing the suffix 01 reach their preset attenuation in the 0-60 dB range in 10 sec. The 02 types are similar in all respects but include a helical drum scale with manual control. Resembling the 01 devices in most respects, the 03 types differ in reading preset attenuation in only 3 sec. Finally, the 04 attenuators have a range up to 85 dB (their accuracy above 60 dB is 2 per cent) and reach preset values in 6 sec.

The coaxial piston attenuators are highly accurate instruments with a low insertion loss. They are fully screened to prevent leakage and provide good linearity to low attenuation levels.

The 17 types between them cover the 1-12 GHz band and have a relative attenuation range of 0-120 dB, traversing the full range in about 3½ sec. Both settable and resettable are in 0.1-dB increments, with an accuracy for most models of better than 2 per cent in the linear region (that is, 20-120 dB). Insertion loss is generally less than 5 dB at the 0-dB setting.

Micro-processor-based controllers suitable for both types of attenuator are equipped with an IEE-1975 interface for remote control using ASC11 code plus alphanumeric control setting. Pushbuttons are provided for manual control. The three models of operation comprise set attenuation to any dB value within the range; and either increase or decrease of the attenuation by any dB value in the range. Any operational mode is selected by pushbutton. Controllers are available for driving one or two microwave units, and are normally designed for operation from 110-V or 240-V AC supplies. For further information, please contact Scalar Distributors Pty Ltd, 20 Shelley Ave, Kilsyth, Vic 3137. Phone (03) 725 9677.

TALKMAN HANDS-FREE TRANSCIEVER WITH NOISE CANCELLING MIC

Now even when operating in a situation where a high level of background noise is experienced, such as you would normally encounter in many industrial applications, the latest version of Standard's C-900 Talkman allows the operator's voice to come across clearly and concisely.

To achieve this, a unique built-in, noise cancelling microphone accepts only its operator's voice while rejecting any background noise. Beside allowing clear communication this system also prevents transmitter lock-up which would normally render a voice operated transceiver (VOX), unusable when background noise is present.

Unique in currently being the only unit of its type and price available in Australia with a noise cancelling microphone, this unit is ideally suited for many hundreds of communications.

Amateur Radio, February 1983
applications. They include any situation where a range of up to 1 km is required by operators who need their hands free to perform other tasks.

A range of options is also available, including rechargeable Ni-Cad batteries and battery chargers.

For further information on the Talkman Headset communicator contact the Australian distributors: GFS Electronic Imports, 15 McKeon Road (PO Box 97) Mitcham, Victoria, 3132. Phone: (03) 873 3939; or one of their interstate outlets.

ATTENTION DRAKE TR7 OWNERS

It is not often amateurs are offered something for cost price — Ian Hunt VK5QX, a well known amateur in WIA Federal and South Australian circles has produced a substitute PC board, fully wired and tested to allow the Drake TR7 to operate on the new WARC bands, together with receive operation from 1.5 MHz down through VLF.

The board is designed to simply plug in to the AUX 7 slot in the transceiver. No adjustments are necessary.

The PC board comes complete with instructions, and costs just $25.00. Enquiries to Ian Hunt VK5QX, 8 Dexter Drive, Salisbury East 5109 or phone (08) 259 6418 (Bus. Hrs).

"A CALL TO ALL AMATEURS" and others

Are you an active member, the kind that would be missed.
Or are you just contented that your name is on the list.
Do you attend the meetings and mingle with the flock.
Or stay at home in comfort to criticise and knock.
Do you take an active part to help the work along.
Or are you satisfied — just simply to belong.
Think it over members — you know right from wrong.
Are you an active member or do you just belong.

Clem Brown

I have just returned from a somewhat, exhausting few days with the WICEN team handling communications for the Murray River Marathon. Discussions there with other team members brought up several points relating to education of the newly licensed amateur with regard to operating techniques.

During the course of this exercise, operators may be required to:
— set up a portable station, HF, VHF or both, using emergency power source in a location which has not previously been investigated;
— establish and maintain communications under difficult propagation conditions;
— transmit and receive messages accurately and efficiently;
— operate or maintain a listening watch for long periods under unpleasant environmental conditions, high local noise or interference, heat, wind, rain, flies, or mosquitoes;
— make adjustments or temporary repairs to equipment under said unpleasant conditions;
— maintain radio silence except when handling traffic.

Practical operating skills such as these are not included in any exam syllabus or tested in any licence exam. So where does a newcomer go to learn them? Naturally, many licensees do not see any need to learn them. They have no desire to operate away from the comfort and convenience of their own shacks or cars, and accuracy of transmission or reception is not terribly important so long as call signs and QSL information are correct.

I wonder how many of us really listen to what the other operator is saying. Does it really matter if he has been operating for thirty-five or thirty-nine years, or lives seven or eleven miles from the nearest town?

Now that we are into the new year I expect that various bodies will be starting to think about starting classes. I would very much appreciate being notified of classes that are arranged so that I can compile a current list. If you think I can help in any way, please say so.

Best of luck to those who are sitting for the February exam. Be prepared for some new questions, READ THE QUESTIONS, and answer the question that is asked.

73 Brenda VK3KT

URGENT!

Please let us know of clubs and schools etc. starting theory classes.
Where, when, how much and whom to contact.

Contact Brenda QTHR

AMATEUR RADIO, February 1983 — Page 35
EMERGENCY AND DISTRESS CALLS

It is of prime concern to the Wireless Institute of Australia, that there have been several instances lately where distress traffic has been improperly handled by radio amateurs. The reason for this is considered to be the lack of knowledge of the regulations covering distress calls by the amateurs concerned.

Every licensed amateur must be fully aware of the correct procedure in the event of hearing a distress call. The amateur service prides itself on being able to assist where necessary.

As a means of educating amateurs in the correct procedures of handling distress traffic, we have reproduced verbatim the requirements as printed in the Amateur Operators Handbook (revised edition Dec. 1978). These requirements were made for a purpose, do not abuse them. These regulations together with common sense will satisfy all of the requirements expected of us.

It is important that the following information be obtained from the person or vessel or vehicle in distress:
• Name of person or vessel etc.
• Location, Map reference or Latitude/Longitude or nearest township.
• The nature of distress and the kind of assistance required.

Any other information that may be relevant, such as number of persons in distress.

If you do not have a copy of the regulations book, please send $3.60 plus $1.20 postage to the WIA, PO Box 300, Caulfield South Vic. 3162, or alternatively to your division. Every licensed amateur is expected to have a copy of the regulations in his/her radio shack.

VK3UV Editor

DISTRESS PROCEDURE

DISTRESS SIGNALS

7.17 The radiotelegraph distress signal consists of the group .---.---. symbolised herein by SOS, transmitted as a single signal in which the dashes are emphasised so as to be distinguished clearly from the dots.

7.18 The radiotelephone distress signal consists of the word MAYDAY pronounced as the French expression 'm'aider'.

7.19 These distress signals indicate that a ship, aircraft or other vehicle is threatened by grave and imminent danger and requests immediate assistance.

7.20 The frequency 500 kHz is the international distress frequency for radiotelegraphy. The frequency 8364 kHz is additionally designated for use by survival craft for search and rescue communications.

7.21 The frequency 2182 kHz is the international distress frequency for radiotelephony. The frequencies 4125 and 6215.5 kHz are designated to supplement the frequency 2182 kHz for distress and safety purposes.

7.22 The frequency 156.8 MHz is the international distress, safety and calling frequency for radiotelephony for stations of the maritime mobile service when using frequencies in the authorised bands between 156 MHz and 174 MHz.

DISTRESS CALL AND MESSAGE

7.23 The distress call sent by radiotelegraphy consists of:
• the distress signal SOS sent three times;
• the call sign or other identification of the mobile station in distress, send three times.

7.24 The distress call sent by radiotelephony consists of:
• the distress signal MAYDAY, spoken three times;
• the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);
• the call sign or other identification of the mobile station in distress, spoken three times.

7.25 The distress call shall have absolute priority over other transmissions. All stations which hear it shall immediately cease any transmission capable of interfering with the distress traffic and shall continue to listen on the frequency used for the emission of the distress call. Acknowledgement of receipt shall not be given before the distress message which follows a distress call is sent.

7.26 The distress message consists of:
• the distress signal SOS (for radiotelegraphy) or MAYDAY (for radiotelephony);
• the name, or other identification, of the mobile station in distress;
• particulars of its position;
• the kind of assistance desired;
• any other information which might facilitate the rescue.

DISTRESS TRAFFIC, OBLIGATIONS

7.27 A licensee hearing a distress call must immediately cease all transmissions, continue to listen on the frequency and prepare to record full details of the distress message which follows. The information should be recorded in writing in the station log book and, if possible, by tape recorder.

7.28 A licensee who receives a distress message should defer acknowledgement for a short interval but should continue listening to ascertain whether the message has been received by a station in a better position to render assistance. If the distress message is not acknowledged within a reasonable time, the licensee is obliged to assist.

7.29 He should endeavour to acknowledge receipt of the distress message and then immediately alert and convey details of the distress situation to:
(a) for land-based distress situations, the nearest police station;
(b) for sea-based distress situations, the Australian Coastal Surveillance Centre, Canberra, ACT, telephone Canberra 47 5244 (reverse charges call) or STD (062) 47 5244;
(c) any other appropriate authority; or
(d) if the above proves difficult, an officer of the Regulatory Licensing Section, Postal and Telecommunications Department, in any of the areas listed in Appendix 1.

7.30 The licensee should then resume listening and keep the respective Authority informed of any developments. He should continue to render any assistance practicable until cessation of distress traffic is announced (by means of the operating signals ‘QUM’ or ‘SEELONCE FEENEE’), or he is advised that his assistance is no longer required.

7.31 A licensee hearing or becoming involved in a distress situation is not permitted to pass the text of any messages to anyone other than the above-mentioned authority (see Wireless Telegraphy Regulations 36 (3) in Appendix 2).

7.32 A licensee handling distress messages should in any case advise the Regulatory and Licensing Section of the Department within 24 hours of the conclusion of the distress working. If required, the station log book and copies of all messages handled must be made available to an officer of the Department.

URGENCY SIGNAL

7.33 Where the transmission of the distress signal and call is not fully justified, the urgency signal may be used. The urgency signal, which comprises in radiotelegraphy the group XXX repeated three times and in radiotelephony the expression PAN PAN repeated three times, is to indicate that a ship has a very urgent message to transmit concerning the safety of the ship or aircraft or the safety of a person. The procedure for transmitting and replying to an urgency call and message shall follow the same lines as prescribed for the distress call and message.

7.34 The urgency signal has priority overall other communication except distress. All stations which hear it shall take care not to interfere with the transmission of the message which follows it.

EMERGENCY POSITION INDICATING RADIO BEACONS (EPIRBs)

7.35 These are small low-powered radio beacons which are usually released when a ship sinks or an aircraft crashes. The beacon transmits a repetitive emergency signal on 121.5 MHz and 243 MHz. These devices do not transmit an identification nor are they capable of speech modulation. Amateur operators should be aware that such a system is in world-wide use.

7.36 Further details are included in the Handbook for Radiotelephone Ship Station Operators, which may be obtained from any of the addresses shown in Appendix 1.

(The appendices as noted above have not been published here due to space requirements, we suggest you refer to your copy of the Amateur Operators Handbook)

— ED

WORLD COMMUNICATIONS YEAR: 1983

PUBLIC RELATIONS

John Hill VK3DKK
Public Relations Co-ordinator

I was really very surprised when I heard some amateurs actively engaged in voluntary work, for the WIA say that we do not need public relations. Well, these members may be very clever in their own field as far as electronics is concerned but, their knowledge for the WIA say that we do not need public relations. Well, these members may be very clever in their own field as far as electronics is concerned but, their knowledge of influence of good PR-work certainly leaves a lot to be desired.

In the first place, what is public relations? Well, to put it very simply: informing the public. In other words, creating an image. And... any person or organisation creates an image whether we like it or not. Even when breathing out, one can create an image particularly after eating garlic, an image which is not always appreciated by the recipient, and a “ring of confidence” approach would win and influence many more friends.

Now, let us be more positive and apply this to our own hobby. With “communications” being the name of our game and 1983 the World Communications Year, we have excellent reasons for improving our image to the public.

I say “we” because every member must be a PR Officer as from NOW. It is not a matter of a handful of volunteers in divisional or federal circles to go all out.

EVERY MEMBER should join in the activities during 1983.

How can you do that?
1. Contact your local division or club and offer your services.
2. Invite non-amateur friends into your shack and explain the many uses of amateur radio.
3. Introduce new members (always have a membership application form handy).
4. Let your friends (non-members) know what the WIA has to offer like: Amateur Radio monthly magazine, beacons, QSL-Bureaux, and don’t forget the many successful negotiations with the authorities for extension of frequencies for amateur use. (See elsewhere in this issue for results.)

These are only a few pointers for this month, but I have one request to you all, please write to me and let me know what YOU are doing, and what YOUR CLUB is doing during 1983. Is it going to be “garlic” or “Ring of Confidence”? Hi.

COMMENTS ABOUT WCY

“We should realize that inasmuch as we speak on the telephone, use a telex machine, listen to the radio, watch television, fly in an aircraft guided by radar, write a telegram or receive a press wire dispatch, we are immersed in the world of telecommunications.”

El Jalisciense, Mexico

“I seriously believe that the overwhelming headlong development of modern technology is such that a person watching, say, a moonlanding on television sees no further than the actual landing itself and fails to realize that there is a whole infrastructure—a terribly sensitive and costly one—which is enabling him to see it.”

General Caupolican Boisset
Minister of Transport and Telecommunications in “La Tercera de la Hora”, Santiago (Chile)

“Politicians and sociologists (have) realized that man is paying dearly for inadequate communication infrastructures and that this inadequacy is acting as a brake on progress in the economic and social sectors.”

Electronique, Aarau (Switzerland)

AMATEUR RADIO, February 1983 — Page 37
Most people find RTTY fascinating as they watch the distant station’s incoming message print out on their paper or screen. But quite apart from fascination the mode has many advantages that are well worth serious consideration.

**RTTY ADVANTAGES**

RTTY is superb for exact word messages, as for such, it is much faster and more accurate than phone and slightly better than a very good reply.

When someone is typing appears on your paper or screen you can in like manner make an immediate reply.

Many people like to have pen friends in distant places but RTTY sure beats that idea and avoids high postage costs at the same time.

Those with speech impediments and foreign language accents can communicate very well with RTTY. Some who have had strokes and are not able to type can still use a typewriter type keyboard quite well.

That old AM/CW transmitter gathering dust in the corner of the shack could make a fine RTTY transmitter. Home brew RTTY transmitters are an easy project to undertake. There are presently some CW operators that could make a fine RTTY transmitter, gathering dust in the corner of the shack could make a fine RTTY transmitter. Home brew RTTY transmitters are an easy project to undertake. There are presently some CW operators that could make a fine RTTY transmitter.

**CW ONLY or TELEGRAPHY ONLY?**

The following motion was put to the SA Division of the WIA "That the South Australian Division of the WIA request the Federal WIA to change the words CW ONLY to TELEGRAPHY ONLY in all future Gentlemen’s agreement band plans." This was carried and if the Federal body see fit to do this RTTY will benefit greatly from the change.

There are presently some CW operators that are saying RTTY is not CW so should stay out of the CW only portions of the bands. Such will need to revise their ideas if the wording becomes telegraphy only.

**THE GREATEST BENEFIT TO THE GREATEST NUMBER?**

In order to underline the need to update existing Gentlemen’s Agreement Band Plans I made the following statement in a SA Division broadcast 22/8/82. "If the WIA were to obtain statistics of CW as compared to Phone, say compare the number of CW contacts recorded as compared to the number of Phone contacts in the recent RD Contest I am sure CW would be less than 10% of the total. In other words 10% (or less) of amateur operators using a narrow band width mode are restricted to certain limited portions of these bands on a shared basis. Surely the rule should be the greatest benefit to the greatest number of people?"

As each control gives 12dB gain or loss the response can be made to peak at or near the demodulation centre frequency. Twice as much equalizer range can be had by connecting the left and right channels in series (output of one to input of the other). With this series connection you can get 24dB lift at the desired frequency and by setting all other controls at -12dB you get 24dB loss at all other frequencies. This means the desired frequency range is 48dB higher than all other frequencies outside this range.

This idea can be useful for CW and even for Phone as it will sometimes be found that hard to understand speech can be equalized and made more readable.

In conclusion if you want advice or help concerning RTTY why not contact one of the following RTTY Clubs? Write to the Secretary of one of the following.

- ANARTS PO Box 860 Crows Nest NSW 2065 — Eastern and Mountain Districts Radio Club PO Box 87 Mitcham Vic. 3132 (note not an RTTY club but has many members involved in RTTY) — South East Qld. TT Group PO Box 184 Fortitude Valley Qld. 4006 — SARG 57 Haydown Road, Elizabeth Grove SA 5112 — AARTG 91 Arlunya Ave., Cloverdale WA 6105.

73 from Bruce VK5XI
POUNDING BRASS

Marshall Emm VK5FN
GPO Box 389, Adelaide, SA, 5001

This month's column was intended to be a continuation of the discussion of keying equipment, but it might be better to take this opportunity to answer some of the mail. As I intended when the column began, I am not an expert CW operator, just an 'enthusiast,' and as such, feedback from the real experts is always valued. For example, Fred, VK4RF, has written advising me of some of his "pet hates," which are worth passing on because they should be everyone's pet hates!

(a) Long CQ's without signing (as opposed to the standard 3x3 call.)
(b) Ending a CQ call with KN (which means "called station only to respond" and is a contradiction of CQ). A CQ should end with AR or AR K.
(c) The "bug" or mechanical key user who sends his dots at 35 WPM and the dashes at 20 WPM (more will be said about this later, in the context of mechanical keys.)

Fred also noted that a lot of operators seem to have trouble with spacing. You don't have to spend a lot of time listening to the "low end" of 80 metres to hear someone running words and letters together. CW sending is a fairly exact science, and any sending fault makes it less copyable at the other end.

My thanks to Fred to a new "abbreviation"—apparently a lot of ex-commercial ops use four dashes (-----) to represent the letters CH in such words as such, much, touch, etc. This is a new one on me, but I can't recommend its adoption for everyday use.

At the other end of the scale of expertise, Ken, VK2BIW is approaching CW operation from the angle of a complete newcomer, and his questions based on the first two columns have shown me how easy it is to overlook something.

First of all, my "golden rule" for sending speed is in need of revision. As printed, it read "Call at the speed you want to work; answer at the speed of the other station." There would be no point in answering a 20 WPM CQ at 20 WPM if you can only copy at 12 WPM! The revised standard version is "Call at the speed you want to work; answer at the speed of the other station if he is slower than you, or at your own speed if he is faster."

Ken also pointed out that I neglected to describe the use of "overlining" for procedural symbols. When two or more letters are written with a line over them (e.g. SK, SOS), they represent a special symbol which sounds like the written letters run together. For example, SK is sent as --•-, or S and K run together. In point of fact, SK is sometimes written VA, but SK is the more common usage. Theoretically, SK could be written all sorts of ways, including SNT, but it starts to look ridiculous.

Ken thought a full CQ call and response sequence, with notes on the abbreviations (procedural signs or prosigns) would be of interest, so here goes.

CQ CQ CQ DE VK5FN VK5FN VK5FN AR VK5FN DE VK2BIW VK2BIW VK2BIW KN R VK2BIW DE VK5FN FB KEN HW U? K

The call is a "Three By Three" call because the CQ and the sending station's callsign are sent three times each. AR, as noted earlier, is the proper way to end a CQ because it is an invitation for any listening station to respond.

When VK2BIW responds to VK5FN, he uses a "One by Three" format because it is safe to assume that VK5FN will recognize his own callsign. The response ends in KN because VK2BIW only wants to hear VK5FN coming back.

I hope the above has cleared matters up for you, and I expect to hear a lot of unfamiliar calls sending CW CO's on 80 in the next week or so. I'll answer any I hear, and I'm sure Fred will too if he isn't chasing DX.

It's been a pleasure to respond to both of these letters, and I hope I can do more of the same in the future — keep the mail coming! FER NW, 73 ES CU ON 80.

Mike Provis VK3KKA

AMATEUR ACHIEVEMENT.

Two Victorians amateurs were involved in the production of a film which recently won a national award as the outstanding audio/visual production for 1982.

Dale VK3DXB, producer, and Chris VK3VYI, sound recordist, worked on "The Sounds of Silence" which was awarded a "Golden Target Award" by the Public Relations Institute of Australia. The award was presented by the Federal Treasurer, John Howard, at a special dinner in Sydney.

Dale said the film took a rather different look at the effects of noise deafness through the eyes of a man who lived with the disability. Produced for the Victorian State Electricity Commission, the film also shows the workings of the SEC's hearing conservation programme. Dale and Chris work in the Public Relations Department of the SEC.

Dale said: "We set out to show how industrial deafness occurs and what the SEC is doing about the problem.

"We told the story through the eyes of one man and his family. We filmed them at home and work and our locations ranged from a power station, to home and to the 90 mile beach, on Victoria's east coast. Two out of the three members of our film crew are amateurs and we're both working on Barry, our cameraman to make it a full crew."

AMATEUR RADIO, February 1983 — Page 39

Dale VK3DXB, producer (left) and Barry Woodhouse, cameraman, receive the Golden Target award from Treasurer, John Howard.

AR
Easter is the time when the Federal Council usually gets together. One of the many items on the agenda is the Federal Award Manager's report. This year I am proposing some changes in our award rules. Could I suggest, if you are interested in the awards programme, that you read these proposed changes and make your point of view known to your federal councillor.

**Proposed Award Changes**

**FOR ALL WIA AWARDS**

1. **NEW RULE.** All applications for any WIA award must be accompanied by the applicant's address label taken from the latest edition of "Amateur Radio". Note WIA members will still have to enclose sufficient return postage for any QSLs submitted.

Explanation of new rule. The Federal Awards Manager does not know whether applicants are WIA members or not. It seems unfair that members dues should be used to subsidise non-members. Most other bodies make a charge for this service.

2. **AMENDMENT UNDER VERIFICATION:**

2.1 **AMENDMENT.** Under verification checking is not carried out properly.

Proposed amendment: It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.

Proposed amendment: It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence, from the station contacted, showing that two-way contacts have taken place.

Explanation of amendment. This clears up the point raised by several members, that is, other written evidence could apply to the applicant's log.

3. **AMENDMENT UNDER VERIFICATIONS. RULE 4.5**

In addition to the present rule it is proposed that the following be added: Every person certifying an award application must sign the following declaration: I have checked the (insert number in words) QSLs submitted by (insert call sign) and certify that the details attached correspond with the verifications inspected by me. Signed...

Explanation for the new rule. This clears up the point raised by several members, which I believe should help to clarify the few points, at least I hope so. One further point, which does not involve a rule change, is that stickers should be available for additional countries past one hundred. These stickers could be issued for 150, 200, 225, 250, 275, 300 and then in intervals of 10 countries.

Also it is suggested that single band stickers should be available in the same increments. The different stickers could be distinguished by colour. For example, all band stickers can be red, 3.5 MHz blue, 7 MHz yellow, 14 MHz green, 21 MHz grey and 28 MHz purple. These stickers could apply equally to our Open, CW, and Phone DXCC awards. The cost of these stickers, I suggest, could be met by applicants. I do not know what the cost would be, though I am certain they should not be more than say, 20 cents each.

Further, the design could be the WIA crest with DXCC and the country total below. WHAT DO YOU THINK? Let your views be known.

**RUSSIAN PREFIXES**

Several members seem to be confused with allocating the correct USSR country to a prefix. These can be easily found if you use the DXCC countries list in the current call book, page 53. The first letter U can be replaced by an R. For example, RJ6 or UJ8 is in Tadzhik as is UK8J__, RK8J_, RU8R or RK8R. If you would like a copy of this DXCC list, an SASE to me will bring you one by return. Alternatively, you can send me a list of calls together with a SASE and I will sort them out for you.

---

**Proposed OXCC Award Change**

**NEW RULE**

1. Delete rule 3.6 and insert the following:

**PROPOSED OXCC AWARD CHANGE**

**NEW RULE**

1. Delete rule 3.6 and insert the following: All stations must be contacted from the same DXCC "country".

Explanation for the new rule. This would bring us in line with the ARRL award criteria. Further, it seems unfair that a station should be penalised because he is required to change locations, for example, to continue his employment.

Well those are the proposed changes, which I believe should help to clarify a few points, at least I hope so. One further point, which does not involve a rule change, is that stickers should be available for additional countries past one hundred. These stickers could be issued for 150, 200, 225, 250, 275, 300 and then in intervals of 10 countries.

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**BLUE LAKE AWARD**

The "BLUE LAKE AWARD" is offered by the South East Radio Group located in Mount Gambier, SA, to any amateur who establishes two-way contact with five SERG members. All bands and modes are permitted. Crossband operation is not permitted. No QSLs are required, only full log entry. The cost of the award is $2 Aust. or 5 IRCs. Contacts made after 1st January 1980 will be eligible for the award.

Send applications to: The Awards Manager, SERG, PO Box 1103, Mount Gambier, SA 5290.

The following are the member stations of the South East Radio Group Inc.:

VK5CC VK5NC VK5AD0 VK5NEF VK5Z0N
VK5CH VK5DA VK5ATA VK5NHC VK5ZDX
VK5CJ VK5Z0V VK5ATD VK5ZHA VK5ZD0
VK5DJ VK5SS VK5XVR VK5UY VK5Z0O
VK50K VK5SSR VK5KBF VK5N00 VK5ZWC
VK5FF VK5TH VK5KRR VK5NRN VK5MC
VK5GJ VK5YM VK5KTC VK5NUE VK5AGD
VK5JA VK5AGD VK5NBI VK5NUE VK5ALS
VK5LP VK5A5J VK58BP VK5NVE VK5AXV
VK5MC VK5AJK VK5NCZ VK5Z0F VK5DJG
VK5SM VK5ALC VK5N0D VK5ZCH VK5VEJ
VK5MV VK5APD VK5NDS VK5ZCP VK5YYV
VK52GY

SERG Net — 3.585 MHz — Mondays at 1030 UTC. Good hunting.

**THE CAPE NORTHUMBERLAND LIGHTHOUSE AWARD**

Did you work VK5CNL on either 1st or 2nd May last year? If the answer is yes, then log details of your QSO and $2.00 should be sent to the Awards Manager, SERG, PO Box 1103, Mt Gambier 5290 to claim this multi coloured award.

**PORT ELIZABETH BRANCH AWARD - SOUTH AFRICA**

Confirmation of five QSOs with Port Elizabeth Branch stations. Certificated logs or QSL cards plus 1 dollar or 5 IRCs to be sent to The Awards Manager, PO Box 462, Port Elizabeth 6000, Republic of South Africa. QSL cards will be returned.

Port Elizabeth Branch members are as follows: ZS1GV, 1WD; ZS2s — AB, AE, AI, AJ, AO, AW, BX, CC, CM, CV, CZ, DD, DK, DR, EA, EE, EQ, FM, GH, GJ, GR, GU,
The South East Radio Group has pleasure in granting this certificate to SAMPLE ONLY who has complied with the conditions under which this award is granted by contacting the required number of members.

Mode
Award No. Date

W. von Eyn Awards Manager
President

SERG: MOUNT GAMBIER, SOUTH AUSTRALIA
P.O. Box 1103, Mount Gambier. 5290

THE KENYAN AWARD
The Radio Society of Kenya will issue the above award to any licensed radio amateur located outside the Republic of Kenya who qualifies under the following conditions:

TECHNICAL REQUIREMENTS:
Ten points are necessary, these are established as follows:
— a contact with each 5Z4 station who must be a member of the RSK = 1 point
— a contact with 5Z4RS, the club station = 5 points

MODES APPLICABLE: all modes
BANDS APPLICABLE: all bands

ADMINISTRATIVE REQUIREMENTS:
— submission of log book photocopies witnessed and signed by a responsible official of the local radio society/club or the licensing authority
— only contacts made after 31 December 1977 are eligible
— for surface mail the charge is five US Dollars and for airmail ten US Dollars: Cheques and bankers' drafts must be crossed and made payable to the Radio Society of Kenya
— a self addressed adhesive label must be enclosed with the letter of application which should be addressed to the Society and marked "Kenyan Award" at top left hand corner of the envelope.
— all applications to The Radio Society of Kenya PO Box 45881, Nairobi KENYA

Until next month. Happy DXing. 73 de Mike, VK6HD.

SAN SP3RN
On 10 Oct., '62, a Polish Franciscan priest, Fr. Massimillano Kolbe, SP3RN, was declared a saint by Pope John Paul II. Fr. Kolbe was incarcerated in Auschwitz concentration camp during World War II. On the morning of 2 Aug., '41, a man escaped while being taken to work. The Nazis immediately instituted reprisals by killing 10 people from each block of the camp.

In Block 14, Fr. Kolbe asked that he be taken in place of one of the 10 who had a wife and children. This was agreed to by Lagerführer Fritsch, and Fr. Kolbe was killed by a lethal injection on Aug. 14. The man whose place he took is a Polish farmer, Francesco Gajowniczek, who is alive today.

Three weeks before his arrest, Fr. Kolbe was assigned the call-sign SP3RN. Is Fr. Kolbe our first radio amateur Saint?

Translated by Jack VK3AXQ

AMATEUR RADIO, February 1983 — Page 41
At 0237 UTC, on 30th December 1983, the maxi yacht Anaconda II slipped its moorings and put to sea. With it went our operators, mountaineers and photographers along with two tonnes of food, and one tonne of equipment. About one hundred people farewelled the vessel from the wharf in Success Harbour, Fremantle.

Perth’s three TV channels had camera crews there and commercial radio was also represented. The yacht was followed out to sea by TV helicopters and some small craft.

For the amateur component of this unique expedition, so many people and organisations have helped, that we became surprised, very pleasantly, and it showed that the spirit of adventure is still alive in people’s hearts.

It was unfortunate that Chuck Brady VK0CW could not be with our other operators. Two days prior to sailing, he received phone calls from the USA. He then decided to return home, stressing that the reasons were connected with his personal life, and not the expedition. His decision threw a great burden onto our other two operators, so when you hear and try to work VK0HI, remember that only two men are working long hours in very cold weather to give you a contact.

Fortunately, there are other expeditioners around the main base camp at Atlas Cove, so loneliness is not a problem.

RESUME OF THE COST OF THE EXPEDITION

$30,000 was paid to the expedition company for transport, clothing, food, bedding and shelter. Equipment to the value of $18,000 was obtained in various ways. By loan, donation and outright purchase, we managed to equip our DXpeditioners with brand new, but tried and proven gear, so that we have in effect two complete stations, plus 100% back up.

Briefly, VK6 division loaned an IC730 power supply, three element HF beam rotator and controller plus sundry items; VK3 division, IC720A, two ICP515s; VK2 division, IC730 and power supply; VK6NE, two IC730s and power supply, two 2.5 Kw antenna tuners, SWR bridgers and special lighting units. Two new diesel-driven alternators were purchased in South Australia, which were run-in and tested by the company. One was purchased by a VK6 TV company and loaned to the expedition, and VK6FS also loaned one. The supply company kindly lowered their price, however VK6FS and the TV people still paid out over $1000 each. Spares cost the expedition another $330.

From JA arrived a new FT680 for use on six metres. Because of non-arrival from Cocos Island of the TET Beam, a new 6 element beam was hastily obtained from Victoria, again at reduced cost from the manufacturer. A host of other necessary articles were purchased, but one expense not required was that for forty “jerry cans” for cartage of fuel on the yacht. VK6 people have provided these, and it was greatly appreciated as their great gesture saved around $800. The rest of the fuel which was provided free by a major oil company, was lashed on decks contained in 200 litre drums.

Other expenses over the past fourteen months, for publicity, postage, phone calls, came to about $2000 each for VK6XI and VK6NE. We found that it was impossible to conduct expedition business via amateur radio, due to its content and also the deliberate QRM that we received.

The two American operators each spent $3000 on fares to and from Perth in VK6. We know that Perth is a long way from anywhere, but Heard Island is further. And the intrepid operators have also taken three months leave of their employment for the chance to give you a VK0HI contact.

They brought with them two new LA1000 Linear Amps; an IC740, Procom headsets, keyers and a two metre hand held unit. When they boarded the plane at Los Angeles for Perth the 2 metre unit was taken out of their hands as it was being carried in Al’s hand then; we haven’t seen the unit since. Other items included special baluns, lightning arrestors and 240 volt surge suppressors.

Of the $30,000 paid, $10,000 came from the Northern Californian DX Foundation INC, $10,000 from the IDXF, $2,000 from the DX Family Foundation of Japan, $7,000 from KP2A, which possibly will be lowered to $4,000 when the $3,000 of the five thousand dollars promised from JA DX Family Foundation arrives.

The final cost of the expedition has worked out close to $200,000. Whether the cost was justified, will only be judged when all return, and the projects evaluated, and the results obtained published. Perhaps in a future issue of AR, a list of equipment taken could be published, as a guide to forthcoming expeditions and perhaps a check list for operators making a “normal” trip to a good DX location. Purposely, names of companies and people who have helped are not given in this issue. We intend to publish a full list in a later issue, as even this week, people have come forward with assistance.
MAYOR'S PARLOUR
Council Chambers, Port Adelaide

HCRM:mm


Members of the Heard Island Expedition 1982/83,
On Board ANACONDA II,
North Arm,
OSBORNE. SA 5017.

Dear Members,

The Mayoress and myself, together with all citizens, not only in the Municipality of Port Adelaide, but throughout Australia would surely join in wishing each and every one of you a most successful and rewarding journey.

To all who have in any way supported this interesting venture, we pay a sincere tribute for such thoughtfulness, and take this opportunity to congratulate them, and particularly the selected personnel on board. Undoubtedly science will benefit considerably whilst the knowledge gained will also assist Australia's future.

Under the command of ANACONDA's Owner/Captain Mr Josko Grubic, who is well acquainted with all of Earth's oceans, the party will be in safe hands.

I wish to convey my personal appreciation to Mr Ian Hunt for his complete co-operation and assistance, and again extend our sincere gratitude to everyone taking part, and wish you all the best of luck on this wonderful voyage, and a safe return to port.

Yours truly,

H. C. R. Marten, CBE, JP,
Mayor.

WIRELESS INSTITUTE OF AUSTRALIA

1982 SPECIAL AWARDS

At the December meeting of the Publications Committee the following Special Awards were made.

Alan Shawsmith Journalistic Award — Mayday by Alan Campbell-Drury VK3CD (May AR page 8).
Technical Award — Single Frequency Crystal Ladder Filters by Rob Gurr VK5RG (November AR page 14).
Higginbotham Award — Peter Dodd VK3CIF.
AMATEUR BAND BEACONS

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<td>50.005</td>
<td>VK4VNR</td>
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There are quite a few changes to the beacon times this month so they have been listed again (1) and (2) are frequency changes for VK8E6 and VSSB6.

THE 1982 SPORADIC "E" SEASON

From reports filtering in to me it seems to have been a year of mixed successes, some have, some haven't! There is little doubt there has been a very wide area from which signals have been received, indicating operators are coming on the air in lots of places, but many familiar call signs and names have been missing from the scene particularly in VK2 and VK4. It is likely the VK2 boys are finding the full impact of a Channel 0 for the first time as their TV station goes on and on pouring out programmes and making 52 MHz contacts.

Just to prove he is rather versatile, Bob VK5ZRO wasn't content with all the above contacts so from his work car park at Hindmarsh (Adelaide suburb) on 15/12 at 2210 he had a two way contact on Ch. 50 FM with VK3ARR (mobile) who was in eastern Victoria. The VKZRO mobile contact with whips was 5 x 3. (Not a bad effort Bob) To prove it was no fluke the next day, 16/12 at 2155 he had a contact with VK3AKN and VK3ATN at 5 x 5 again from the car park with his mobile equipment. However, he did use the Channel 7 repeater in Victoria this time!!

Eric Jamieson VK5LP
1 Quinns Road, Forrester, SA 5233

VHF UHF-
an expanding world

All times are Universal Co-ordinated Time and indicated as UTC.
However, this was his first real DX day for the summer so he must spend a lot of time listening to a dead band except for JA’s.

Bob VK5ZRO advises that for the past twelve months skeds have been kept with VK5ZRG in Cowell on 144 and 432 and it was only on rare occasions contacts could not be made over the 210 km path. Others to join in included Jim VK5ZMJ and Neil VK3ZEE at Woomera (500 km path).

SIX METRES FROM MELBOURNE

Gil VK3AUI has written to say the work helping set up the VK0s has taken a toll of his operating time, but has been able to chalk up the following on 6 metres: 24/10: JA1, 2, 3, 4, 5, 6 from 0800 to 0930; 9/11 VK4; 11/11 VK4, VL; 14/11 VK2, VK8GB, VK4, JA2; 15/11 VK4; 16/11 JA4, JA6; 26/11 VK5ZEE; 28/11 ZL; 29/11 VK8GB, VK8GF, VK4, VK5, 1/12: ZL1MQ; 3/12 ZL1AKW; 4/12 JA2, JA3, JA0, VK4; 9/12: VK2, VK4; VK6; 11/12; VK4; 12/12: VK6ZPG; 16/12 VK4DO; 17/12: JA1, JA2, JA7, heard P29SIX; 18/12 VK0AP, ZL3ADT; 24/12: ZL3TIB, ZL3HB.

WALLY VG6WG has been kind enough to supply information of contacts between Reg VK5QR and himself on 19/11/82, and with others in VK5, with the following sequence of events.

2250 on 18/12 (UTC day) VK5VF on 144.800 first heard. 2322 gone. Beacon back again at 0120 but just audible. 0352 VK5VF fair strength, better at 0625. 0830 worked Andrew VK5ZUC, 0930 beacon. 0725 worked VK5ZUC, VK5ZDR and VK5ZK. All above on 144 MHz. Then worked VK5ZUC, VK5ZDR, and VK5ZRO 5 x 1 at start and going on to 5 x 7 on 432 MHz. This rise in signal seemed to indicate distinct possibilities for higher bands.

Reg VK5QR was contacted, and tests were made throughout the night on 1266 with good SSB quality and strength. Reg was also contacted on 2305 MHz for a period of over half an hour on one occasion. 3456 MHz was also tried but nothing heard. Went back to 2304 and 1296.

1296 MHz was being received by Reg on a 4 element beam one metre above his table. Then he tried a three inch length of wire in his converter and could read some of his SSB and the keyer, the time now was being very late in the evening. Earlier in the evening Reg VK5QR and I could read the one watt from Reg’s 1296 at very good strength. We had many good contacts on 1296. I used about 50 watts into a six foot dish.

AMATEUR TELEVISION ON 1290 MHz

Wally VK6WG goes on to report that he received ATV signals from VK5QR on 1290 MHz that night of 19/11/82. Reg was using 100 watts, and Wally was using a Microwave Modules 1296 MHz transverter with an 18 MHz to a Toshiba C531 monitor on Channel 5A. Wally reports as follows: “The pictures started off with fuzzy lines and plenty of snow, but good enough to recognise things. Bear in mind that the MM converter was not tuned to the 1290 MHz frequency, being 6 MHz away, and no preamp. I easily identified Reg when he televised himself, and on a meter he tele-vised, I told him where the pointer was; he televised a man talking to a woman in a commercial, and used several odd movements of the camera in an effort to trick me but I was able to tell him each time where he was going. Next time I will try and get a photo of the screen.”

I am sure the VHFRS fraternity offer their congratulations if you both of your achievements so far, and particularly in regard to spanning the 2000 km (approx.) distance between Albany and Adelaide with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately we hope this will become a 2-way achievement with 1290 MHz television. Ultimately
was only able to copy my call sign coming back. 1220 paging transmitters disappeared.

"Although no two-way QSOs resulted, it has proved the path possible. At approx. 138°E 22°S it's the farthest south signals have been heard so far and the farthest north in JA and about 800 km further than my longest two-way QSO. Also interesting the path to JA1T. Also at the same time, an 800 km spread N/S even though it was 3° longitude west of the N/S path. It is also the same geomagnetic latitude as Vladivostok (to Alice Springs area).

"1730: I was awakened by the roar of a 4WD and a 'You right mate' enquiry. The road had been recently repaired and unfortunately the cattle agisting road trains heard about it and were using it as a short cut and had reduced it to a long series of bull dust bogs in just one week. In places it was so bad that the road had been buried well below ground level. The sides were steep and covered in bull dust that it took the 4WD five minutes to get up the bank so he could get around in front of my car to pull it out!

"2030: Started the 55 km back to Urangi and despite cross country detours, the engine stopping three times due to burnt points, a part falling off the carby, and bull dust clogging the air filter and starter motor by 0020 I had bogged again only 6 km from Urangadi. After half an hour of digging I arrived in town looking rather pale, covered from head to foot, inside and out in bull dust.

"The couple at the post office, which is also the telephone exchange, general store and one of the only three buildings in town, took pity on me and a much appreciated bath resulted. Apart from the 60 km around Urangadi and coming close to having my 2 metre yagi damaged by four Indian elephants, the 6700 km (short one this time) trip really was eventful — honest (well, that is if you don't count the brakes failing coming down the Toowoomba Range!)

"I arrived back in Brisbane just in time to hear from locals you should have been hearing but could not, is the 142 MHz beacon appearing within half a minute of each other at the start of openings. "I would like to thank Hidde JA2DDN and Kazu JA1JRJ for the considerable amount of telephoneing they did to alert JA9s, northern JA7s and JA8s.

"Frank at Urangadi is offering one pound jars of genuine Simpson Desert bull dust for $1.00. The inquiries are for "Searchmaster, Urangandi, Queensland!"

"Thank you for your letter Steven. I am sure you have many readers following your exploits in the back working 2 metres to Japan. You are certainly following the true amateur spirit of adventure and experimentation and at the same time opening up new vistas and horizons of VHF interest, and giving food for thought to those able to have access to scientific think tanks. One wonders where it might all end. We wish you well for future trips. One of your rewards is working four countries on 2 metres. Are there others that anyone else done that from Australia?

HEARD ISLAND

The VK6 VHF Group News Bulletin mentions that the VK6 Heard Island expedition will be operating on the 52 MHz band for sixteen hours each day whilst on the island.

Two 6 metre rigs are part of the equipment list, as well as a 70 watt 6 metre linear amplifier and a 3 element beam. A beacon, beaming towards JA will be operating on 52.005 MHz ... via VK6UN.

LATE NEWS

A35GW in Tonga has been working into New Zealand, so far no reports to here of working to VK. Also noted that ZK2RS Niue has been worked by VK2BA, VK2ASZ, VK2ZY1, VK2BOD, VK2EB, VK2ECC, VK2VC, VK2BBN and VK2YOE. This was on 29/12 at 0521 with 5 x 7 for 20 minutes. Also, VK0AP was worked on 18/12 at 0537 for 10 minutes around 5 x 4 by VK2BA, VK2BHO, VK2VC, VK2YOE. (Thanks to VK2BA.) On 28/12 A35GW heard by VK2ASS. On 29/12 VK2ASS heard by A35GW! That's getting close!

2/1/83: Report of VK3KAZ hearing VK0 beacon on 52.100 at 1100. VK2 working right across continent to VK6 around 1215. VK4WS reported 6 metres open all day in Queensland to most states, plus P29, H44, ZL and JA. ZL4OV/C will be operating 6 metres from Chatham Island south of New Zealand from early January 1983. Might still be on when you read this. Graham VK6RO sent word that Nori JR6IGG has worked his fifty eighth country on 6 metres by contacting the DX-pedition to St Peter & St Paul Island.

Incidentally, thank you to Nori JR6IGG who sends news of happenings in Japan regularly to Graham VK6RO who then passes on what's relevant to me. Thanks chaps.

Mark VK5AVQ advises of the installation of a new solid state 2 metre beacon, running at the moment with 10 watts output and reported as being stronger than the previous beacon which obviously was down in power! There are a few problems to be sorted out yet, but the unit looks good, and should be a useful asset to VK5 when operating as we would like it. It is planned to leave it on the present frequency for the moment, it's enough to sort out one lot of problems without compounding the matter with others which are more personal in nature! The VK5 VHF fraternity thanks Mark for his work and dedication.

Mark also advises the successful installation of the Adelaide UHF repeater near the site of the present Channel 8 repeater. It is running 12 watts output on a frequency of 438.525 MHz with the usual 5 MHz offset. A masthead pre-amp has boosted the receiving range of the repeater. That this has been successful was demonstrated today (4/1/83) when VK3VL in central Victoria worked VK5KRA through it between 2100 and 2200. At this late hour details are scarce, but it's a pretty long haul for a UHF repeater!

I did hear during one of the last 6 metre opening before writing this that Des VK5ZO in Mount Barker had worked a station in Canberra on 2 metres. Unfortunately, in the short time available I have not been able to obtain any information, but will try to do so before next month's notes.

Readers please note that a letter symbol no longer follows any times given in the text. Since the demand to use UTC for any times based on what originally was known as GMT, and which could conveniently be shortened to Z, has now reached "AR", I feel to add UTC to the multiplicity of times used in my text is tiring for me and the typesetter, so I believe the notation at the heading of the column that all times are UTC will help those involved. The times for our purposes are still GMT, Z or UTC whichever is more convenient to call it.

I hope 1983 has started off well for you, and may continue so. Closing with the thought for the month: "The smallest good deed is better than the grandest intention". 73. The Voice in the Hills.

SAINT DAVID'S DAY SPECIAL EVENT STATION

In 1983 (The Year of The Castles) a Special Event Station will operate to commemorate the National Day of Wales and will run for the 24 hours of 1st March 1983. It is hoped to provide a focus for Welsh exiles, relations and friends throughout the world. All callers will be welcome and contacts will be mainly in English to serve this end.

The Special call sign will be G825DD (St David's Day) and all QSO's (contacts) will be acknowledged with the Special Event QSL card. In addition to this, an attractive HF award is available to radio amateurs who work the Special Event Station along with any other five GW stations during the month of March 1983. It is intended to work on all HF bands (conditions permitting) which will include 10, 15, 20, 40 and 80 metres, contacts will also be welcome on 2 metres throughout the event period.

Further information can be obtained from the Event Co-ordinator GW4HQQ 13 Strawberry Place, Morriston, Swansea, Wales UK.

JOINING IN FEEDLINES

When making joins in feedlines etc, a neat way to make the join waterproof or just cover it, is to use the small plastic boxes 35mm films come in. Drill a hole in each end just enough for the respective cables to fit through. Pass the ends through the holes, join them and snap the lid shut. If necessary seal around the holes or maybe encapsulate in epoxy resin.

Jonathan Marshall SWL AR
On the confounding aspects of radio signal propagation with respect to the signals of intruder stations.

I have long been puzzled by the inconsistencies of propagation. I have, for instance, been conducting a QSO with an amateur station in New Zealand, and have had the signals fade to zero before my very eyes/ears. Then, conversely, I have been in contact with a VK3 station, at about S2, and within minutes, his signal strength increases to an S9 plus. Mostly, I have observed, the fading of DX signals seems to coincide with my contact of a rare DX station, or a new country. How the "Iono-sphere Manager" knows when I'm desperately trying for a new country, I'll never know — but he reacts always very quickly to shut me down!

All the foregoing leads me to question another amazing behavioural pattern of the ionosphere, and it's treatment of radio signals, with respect to the directivity of the signals of intruder stations.

Why, for example, are the signals of intruder stations only heard in certain states of Australia, and then why only in the same particular areas of those states?

To expound:

Intruders are NEVER heard in VK8; Intruders are RARELY heard in VK7; Seldom, if ever, are intruders heard in VK6 or VK5 . . . yet intruder signals are heard and logged in VK1, VK2, VK3 and VK4 almost daily. But, mind you, ONLY IN THE SAME AREAS OF THESE FOUR STATES! Why is this so? Is it because ionospheric propagation favours only the eastern states of Australia? Are the intruder stations working to a cunningly devised plan designed to thwart and abort the QSO's of radio amateurs ONLY in the eastern states?

It did occur to me that perhaps the intruders were in fact being heard in ALL the states, and in most parts of all the states, and that the amateurs who are hearing these intruders simply do not bother complaining, as they are happy to QSY to another spot on the band, and let the intruder(s) push them aside.

Of course, if this is so, then my whole theory of the idea of selective propagation favouring certain states and certain areas within those states, is completely erroneous. In other words, I'm wrong yet again!

I wonder which theory is true?

If your QTH is in one of the intruder-free areas (half your luck) but by chance you do happen to hear an intruder station, the Intruder Watch would be pleased to hear about it to at least confirm or abrogate the above theories.

Please send any intruder reports to your Divisional Intruder Watch Co-ordinator, whose particulars can be obtained from your Divisional Office, or in the 1982/3 Call-book.

Please help the Intruder Watch.
PHASE IIIB
Pat Gowen G3IOR and Harry Yoneda confirmed. Accessibility to every part of the country is fortunate that Mission No 9, scheduled for launch early October 1983, will have an 2 metre antenna. Handheld transceiver with ground plane 'ASTROHAM' W5LFL, will carry on board Manned Orbital Spacecraft.

The majority of shuttle missions have an orbit inclination of 28.5 degrees which makes the spacecraft out of sight for most of the southern part of Australia; it is fortunate that Mission No 9, scheduled for launch early October 1983, will have an inclination of 57.0 degrees west. The inclination was 51.6338 degrees. It is not so easy to obtain the technical data of programmes, through to very special satellites, however, the arrival of the micro computer has provided a cheap effective way to "hide the mathematics in the software of the computer". Thereby allowing anyone who has access to a micro to locate and follow any satellite they wish.

This collection of satellite tracking software, ranges from the very simplest of programmes, through to very specialised programmes. The three major types of satellite orbit (Near earth circular, Elliptical and Geostationary), are all covered, and attention is given to the Weather satellites, Scientific Experiment satellites, Radio Amateur Communications satellites, professional Communications satellites and the Geostationary satellites providing Global Weather and Entertainment TV pictures. Additionally the programmes can be used to track near earth manned space vehicles such as Shuttle, Soyuz and Salyut.

The presentation of each programme is designed to allow someone with little or no knowledge of satellite mathematics, to input the programme listings into a micro computer and get useful manner to the launch of RK02. Shortly after launch the satellite had an orbital period of 91.615461 minutes and a longitudinal increment of 23.275886 degrees west. The inclination was 51.6338 degrees.

The satellite has been transmitting complex telemetry data on 29.583 MHz and the transponder, with an uplink frequency of 21.230 to 21.580 MHz and a downlink frequency of 29.270 to 29.620 MHz, has carried a number of local and overseas QSO's. At the time of writing ISKRA 3 is in an operating mode allowing anyone who has access to a micro to locate and follow any satellite they wish.

International SATELLITE Report.
ARRL News Bulletins.
AMSAT-UK.
INFORMATION NETS
AMSAT AUSTRALIA
Control VK3ACR.
1000 UTC Sunday.
7.064 MHz (Summer).
AMSAT PACIFIC
Control JA1ANG.
1100 UTC Sunday.
14.305 MHz.
AMSAT SW PACIFIC
Control W6CG.
2200 UTC Saturday.
28.880 MHz.

Updated information on Orbital Data may be heard on the above Nets, participation by all interested Amateurs is welcomed.

SPACE SHUTTLE
There is a reasonable possibility that 'ASTROHAM' W5LFL, will carry on board Space Shuttle Mission No 9 a 2 metre handheld transceiver with ground plane antenna.

The equipment will be modified to NASA specifications and will give many amateurs around the world, an opportunity to work a Manned Orbital Spacecraft.

The majority of shuttle missions have an orbit inclination of 28.5 degrees which makes the spacecraft out of sight for most of the southern part of Australia; it is fortunate that Mission No 9, scheduled for launch early October 1983, will have an inclination of 57.0 degrees thus making it accessible to every part of the country.

We certainly hope this good news will be confirmed.

AMSAT BOARD
Congratulations to Tom Clark W3IWl, Pat Gowen G3IOR and Harry Yoneda JA1ANG on their re-election to the AMSAT Board of Directors.

PHASE IIIB
The performance test results on the Phase IIIB equipment are summarised below:

1. MODE 'B' TRANSPONDER
   Parameter                  Performance @ 0°C   @35°C
   Power Output               51W PEP            45W PEP
   Freq Out (435.100 In)      145.900            145.900
   Eng Beacon                145.988            145.988
   General Beacon            145.8105           145.8091
   Receiver NF               3.0dB
   Gen Beacon Output 1.8W
   Eng Beacon Output 3.0W (25°C) Transponder OFF
   Eng Beacon Output 1.5W (25°C) Transponder ON
   Bandwidth                  154 kHz @ 1dB point
                                152 kHz @ 3dB point
                                154 kHz @ 30dB point

Ground Station Requirements:
750/1000W EIRP, RHC Polarisation, Receiver NF 3dB or better.

2. L-BAND TRANSPONDER
   Efficiency is less than designed. Power Output 35W. Interlock and 3rd order intercept products are now OK. The launch of Phase IIIB is still holding to the scheduled time slot around 20th April next.

PHASE IIIC
Amateurs in this region of the globe will be pleased to hear that Phase IIIC is unlikely to be Geo-Sync (and at a location inaccessible to Australasia). More probably it will have parameters similar to Phase IIIB following a USAF launch.

UOSAT 9
Little news is forthcoming on UO 9, the controllers at the University of Surrey are probably being exceedingly cautious in order to avoid the possibility of a further slip up. The spin down is virtually complete and is now one revolution per ten minutes, the Z-Axis has to be corrected before the Orbit inclination of 28.5 degrees. The performance test results on the Phase IIIC equipment are summarised below:

Av Power Out 14.3W 12.8W
Freq Out (435.100 In) 145.900 145.900
Eng Beacon 145.988 145.988
General Beacon 145.8105 145.8091
Receiver NF 3.0dB
Gen Beacon Output 1.8W
Eng Beacon Output 3.0W (25°C) Transponder OFF
Eng Beacon Output 1.5W (25°C) Transponder ON
Bandwidth 154 kHz @ 1dB point
           152 kHz @ 3dB point
           154 kHz @ 30dB point

Frequency Out (435.100 In) 145.906 145.900
Freq Out 750/1000W EIRP, RHC Polarisation, Receiver NF 3dB or better.

PUBLICATION REVIEW
AMSAT-UK continues its high standard of publications on satellite related subjects with a new book entitled "Satellite Tracking Software for the Radio Amateur" by John Branegan, CEng, MIRERE, GM4IHJ.

INTRODUCTION
Every year an increasing variety of man made space craft and satellites take to the skies. These vehicles can provide a wealth of Scientific, Educational, Experimental and Entertainment information to individuals able to locate and track them. This tracking can involve some rather complex mathematics, however, the arrival of the micro computer has provided a cheap effective way to "hide the mathematics in the software of the computer". Thereby allowing anyone who has access to a micro to locate and follow any satellite they wish.

This collection of satellite tracking software, ranges from the very simplest of programmes, through to very specialised programmes. The three major types of satellite orbit (Near earth circular, Elliptical and Geostationary), are all covered, and attention is given to the Weather satellites, Scientific Experiment satellites, Radio Amateur Communications satellites, professional Communications satellites and the Geostationary satellites providing Global Weather and Entertainment TV pictures. Additionally the programmes can be used to track near earth manned space vehicles such as Shuttle, Soyuz and Salyut.

The presentation of each programme is designed to allow someone with little or no knowledge of satellite mathematics, to input the programme listings into a micro computer and get useful manner to the launch of RK02. Shortly after launch the satellite had an orbital period of 91.615461 minutes and a longitudinal increment of 23.275886 degrees west. The inclination was 51.6338 degrees.
This photograph depicts the antenna farm at VK3ACR. Chas Robinson, the National Co-ordinator for AMSAT In Australia, uses most of these antennae in pursuit of his satellite interests whether they be communicating to and from satellites or maintaining links with AMSAT connections across the world.

Pictured are 144 MHz eleven element Cross Yagi, two metre Dish with Dual Feed for 70 and 23 cm, 146 MHz Ringo, 70 cm Ground Plane, 70 cm eleven element (ATN), 2 metre sixteen element 2L Special, TH3 junior, twelve element ATV Yagi, 3.5 and 7 MHz inverted 'V' Trapped Dipole, 1.8 MHz Marconi.

THESE PROGRAMMES ARE LONGER THAN THEY NEED TO BE FOR SOME MICROs, BUT THIS HAS BEEN ACCEPTED IN THE INTERESTS OF UNIVERSAL APPLICABILITY.

Despite the above, some micro owners will find a need to make changes to the listings, in order to accord with their personal dialect. Every effort has been made to make this as easy as possible even where this has meant the inclusion of words and commands which are redundant in most modern BASIC dialects.

The following programmes are included:

**PROGRAMMES FOR CIRCULAR ORBITS**
- Simple Nine — a UOSAT programme
- NOAA Weathersat
- RS8 Russian Amateur Satellite
- Russian Meteor Weathersat
- ASCOT — Any satellite circular orbit
- UOSAT all one days orbit
- OSCAR 8. Several weeks tracking
- RS 3 to RS 8 series — all six satellites time sequenced for several weeks orbit

**PROGRAMMES FOR ELLIPTICAL ORBITERS**
- A minimum elliptical programme SRET
- Phase 3B type tracking and communications programme

**PROGRAMME FOR A GEOSTATIONARY ORBITER**
- Locating a Geostationary Satellite

**APPENDICES**
- Glossary of Terms
- Sources of Orbital Data
- How to make up a BASIC satellite tracking programme — OSCAR 8.

This most useful book is printed in A4 format and may be purchased direct from AMSAT-UK, 94 Heron Gate Road, Wanstead Park, London, E12 5EQ, England. The price for non-members of AMSAT-UK is £3.50 (members £3.00) plus £1.90 for packing and airmail. All remittances should be in English Currency.

**BASIC LANGUAGE FEATURES**

The language used in these programmes attempts to keep near to Microsoft BASIC, whilst allowing the material to be directly input into ZX81 micros. Special features found in some BASIC dialects have been excluded in an effort to keep the language as universal as possible. This has meant that several

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The next step is creating a regulatory body which may or may not be part of the Australian Broadcasting Tribunal. Amendments to the present Broadcasting and Television Acts might have to be made and any new legislation could take some time if there is opposition in Parliament. Saving holdups, this new regulatory body could begin licence hearings early this year.

Successful applicants would need about one year to set up, so RSTV could be in operation by late 1984.

The introduction of Cable Television (CATV) is going to be complicated. The government probably won’t announce its intentions until after the Davidson Report has been considered.

Nevertheless to be viable, Cable will probably need to use our domestic satellite (due to be in service in 1985) for the supply of programmes, so we are looking at Cable’s introduction in about 1986 at the earliest and if at all.

The long-awaited Cable inquiry conducted by the Australian Broadcasting Tribunal was tabled in Federal Parliament on September 7, 1982, consisting of five volumes of recommendations covering the introduction of Cable Television (CATV), Radiated Subscription Television (RSTV) and Direct Broadcasting Satellite television (DBS) in Australia.

TERMINOLOGY

“Subscription” or “Pay” television services are those services which, although offered to cable subscribers or to the general public within a certain area, may only be viewed by households who have paid an extra fee for the service and who are then eligible to use the special technical equipment necessary to convert the otherwise unusable signals into standard television signals for viewing on conventional domestic television receivers.

The programmes distributed in the “scrambled” manner are usually high interest movies or sport but special programme material which may prove offensive to members of the public other than those to whom it is specially intended (medical lecture material and “adult” entertainment material) is also distributed in this mode in some countries. When delivered over cable systems the services are designated “pay TV services”.

When delivered “over the air” by VHF, UHF, or SHF television transmission the services are designated “radiated subscription television services (RSTV)”.

In some countries alternative titles such as “conditional television transmissions”, “exclusive television transmissions”, and “restricted television transmissions” are in use to distinguish the scrambled mode transmissions from normal “free to air” transmissions.

RSTV TRANSMISSIONS

Depending upon the area to be served by the RSTV franchise holder, and also upon the radio frequency band made available for the RSTV transmissions, the radiated power of the transmitter may range from tens or hundreds of watts (low coverage station serving from 5 to 15 kilometres radially from the transmitter and operating on either VHF or UHF frequencies) to many hundreds of kilowatts (wide coverage station using up to 100 kilowatts radiated power from the transmitter). In the case of wide coverage RSTV transmissions, as is the case with conventional “free to air” transmissions, higher radiated powers are required when UHF channels are used. Depending upon the topography of the area being served, auxiliary transmissions from translator stations are required to “fill in” areas of poor reception of VHF, but especially of UHF, signals.

Although there are not, as yet, examples of the use of direct or community level broadcasting satellites to deliver RSTV transmissions to individual subscribers there are no technical reasons why this delivery method should not be used. There are many examples of the use of the transponders within fixed service satellites to distribute the programme material for RSTV services as well as for free to air and for CTV networks. This programme distribution began in North America with an unscrambled satellite transmission. The development of low cost “TV receive only” (TVRO) units for home use and the subsequent use of this equipment to “pirate” the RSTV and other TV programmes has led to announcements regarding the early introduction of scrambled transmissions from the programme distribution transponders of the North American domestic satellites.

The International Radio Regulations provide for the broadcasting of television signals in other bands than the well established VHF (47-230 MHz) and UHF (470-960 MHz) bands. There are examples of the use of SHF bands at 2.3 GHz and 12 GHz for the broadcasting of RSTV programmes where favourable terrain profiles and short transmitter to receiver paths exist.

On the other hand, the use of the 2.3 GHz band demands that there be clear line of sight from the transmitting aerial to all receiving dishes and that the radio lengths be relatively short. The 2.3 GHz band is a poor substitute for the VHF or UHF bands for use in broadcasting television signals and the particular frequencies used in the USA are already in use for other purposes in more heavily settled areas of Australia.

CODING OF RSTV SIGNALS

The earliest regular pay TV services were those distributed by the cable TV system operators. The scrambling of the signal to prevent its use by cable subscribers other than those who were paying a premium subscription for the service was relatively simple (and still is in many cable systems in the USA). The security of the system against unauthorized use being, in the first case, assisted by the fact that only cabled homes could attempt unauthorized reception. Either negative security, which involves the use of a filter at the home of all subscribers who are not paying extra for the service, or positive security which involves the use of a decoder at the homes of all cable subscribers who are paying extra for the service, have been used successfully.

In the case of RSTV the scrambling methods used are more sophisticated to avoid piracy of the transmission by non-subscribers. A modern RSTV encoding system may incorporate the following features:

• both video and audio components of the picture signal are completely re-formatted.

• the audio signal is digitized, encrypted and embedded within the composite video signal.

• digital addressing data is also inserted within the composite picture signal to enable each individual receiving decoder to be “addressed” from the programme source to authorize its use in receiving the scrambled picture signal.

The studio encoding facilities must include an appropriate computer to provide the “addressability” facility but this computer may then also be used for additional management functions. The address function, when provided, not only greatly enhances the security of the scrambling system but also permits subscriber disconnects to be effected without the need to visit individual premises.

CONVENTIONAL COAXIAL CABLE NETWORK

Present day cable systems are based on coaxial cable technology and use a tree (as distinct from star) topology. Modern systems provide between 4 and 100 channels and operate at frequencies up to 500 MHz. Two-way interactive capability is available and upstream video transmission is possible. Such cable television systems do not utilise subscriber switching. The 2.3 GHz band is a poor substitute for the VHF or UHF bands for use in broadcasting television signals and the particular frequencies used in the USA are already in use for other purposes in more heavily settled areas of Australia.

The cable is installed either aerially or underground depending on pole availability, local regulation and costs. Amplifiers are power fed along the cable and are installed either
ALTERNATIVE TO COAXIAL CABLE NETWORK

Alternatives to the coaxial cable network are based on either balanced pair cable or optical fibre technology.

BALANCED PAIR CABLE

Because of its practical bandwidth limitations due to a number of factors including crosstalk and induced noise, the pair cable is used necessarily in a different network configuration to conventional coaxial cable, viz multipair cable per subscriber or remote switched. In the first case (especially suited to low capacity systems, eg 6 channels) a multipair cable is provided to each subscriber and a single rotary switch used by the subscriber to effect a choice of channel. With a larger channel offering, the switching takes place at a central location, with the subscriber-actuated control signals being transmitted in the upstream direction, (possibly with the audio signals in the downstream direction) on one pair and the video signals being transmitted downstream over a separate pair.

Such pair cable systems have not proved commercially practicable for high capacity systems and will not be considered further.

DIRECT OPTICAL FIBRE EQUIVALENCE TO COAXIAL CABLE TREE NETWORKS

At the present time the lack of suitable laser sources prevents application of the logical method of using (a single) fibre to a single wideband fibre tree network topology. In the longer term (beyond 5 years), it may be possible to provide each subscriber with very wideband (eg 1 GHz) capability using a single fibre per household. Such a transmission medium would provide for video, telephony and other integrated services. Power feeding of subscriber equipment poses a serious problem, however, and available optical taps are presently unavailable.

HYBRID COAXIAL/FIBRE NETWORKS

At the present time there are some commercial cable television systems which utilise a multi-fibre cable in the supertrunk/trunk portion of a cable network while distribution to households is performed using coaxial cable. The multi-fibre cable is capable of providing up to four analogue video channels per fibre with channel capacity limited by source linearity and fibre mode dispersion.

The application of such fibre cables is based on costs and they can be cheaper than coaxial over relatively short distances (eg 5-10 km). Beyond this distance range the bandwidth-distance product of commercial fibres is inadequate to support systems of large capacity without repeating/regeneration which places the fibre option at a disadvantage.

With such systems, optical/electrical conversion at each end of the fibre or frequency-division multiplex equipment must be provided at an intermediate position (between trunk and distribution plant).

Installation of the above type do not provide switched telephony facilities although such would be technically possible.

COAXIAL OR REMOTE SWITCHED OPTICAL FIBRE NETWORKS

Two further alternatives utilising multi-mode (low bandwidth) fibres, eg 3-4 video channels, should be considered:

• A star connected network providing two multi-mode fibres per subscriber and centralised switching could provide subscriber access to multi-channel cable television together with other services in separate telecommunications facilities, including the requirement for very large multi-fibre cables, eg up to 2700 fibres, and the realisation of a non-blocking, full access switching with a very large outlet capacity.

• Alternatively, switching could be located at a remote position with a high capacity (eg 50 channels) fibre cable back to a central point. The remaining fibre (or exchange) and two narrowband fibres distributed to each subscriber. Again, the realisation of an appropriate switch would appear the major impediment to this approach.

AUSTRALIAN NATIONAL SATELLITE SYSTEM

During the course of its inquiry, the Tribunal, received submissions and heard evidence regarding the use of the planned Australian National Satellite System to provide programs to residential facilities. These would be used for the distribution of television programmes from an originating centre (usually Sydney or Melbourne) to cable or RSTV heads, located in major and (perhaps ultimately all) areas of Australia.

Attention was also drawn to the effect of the introduction of the homestead and community facility (HACBSS), provided on the satellite, for the distribution of the ABC television programme direct to viewers, mainly in the more outback areas of Australia. It would also be possible for other viewers currently experiencing poor reception, including those in metropolitan areas, to provide their own reception facilities to take advantage of the improved reception which will be possible from the HACBSS transmissions. Special attention was drawn to the effects upon the existing radiated free to air television services, as well as to any future cable and RSTV services, if a HACBSS type service is provided for the outback areas. This service would then become available as an additional programme in all or most areas of Australia.

The importance of the HACBSS transmissions is that they provide a higher field strength over the Australian continent than do the transmissions from the more plentiful fixed satellite service transponders, and so permit much simpler and cheaper receiving facilities to be used at outback homesteads, or at residences in the more settled areas.

TECHNICAL FEATURES OF THE AUSTRALIAN SATELLITE SYSTEM

Frequency Bands

(i) for transmissions from the spacecraft (downlinks)

**Fixed satellite service (FSS):**

- 10.5-11.5 GHz
- Community broadcasting satellite service (HACBSS): 12.5-12.75 HzG
- (ii) for transmission to the spacecraft (uplinks):

- 14.0-14.5 GHz.

It is to be noted that the frequencies chosen, in the 12 GHz band, lead to increases in path loss over the 4 or 6 GHz bands, and so under conditions of high rainfall, compared with the losses which would occur if operation in the 4 GHz or 6 GHz bands (as are used in the majority of the US national satellites) was to be undertaken. On the other hand there are many advantages which accrue from the use of the 12 GHz band, including:

• Smaller aerial ("dish") diameters at earth terminals.
• Higher aerial gains in the spacecraft.
• Easier co-ordination with the operations of satellite systems on other operational, geostationary, or orbital positions.

SPACECRAFT RADIO DESIGN

The first generation system will comprise two spacecraft in orbit (located at 156 degrees and 164 degrees East longitude) with a third spacecraft available on the ground capable of operating at either of the first two orbital positions or at a third position midway between them at 160 degrees East.

Each spacecraft will be equipped with 15 transponders (11 of 10-15 watts transmitter power and 4 of nominal 30 watts transmitter power).

The receiving antenna beam will enable uplink signals to be received from any point in Australia, and a set of four spot beams will permit any of the five beams to be used for reaching the transponder to transmitting antennas in the spacecraft although full flexibility to connect any transponder to any aerial is not possible. With the aerial patterns as stated the ground field strengths for the various satellites are:

- HACBSS service (30 watt and spot beam) = 47 dBW minimum
- FSS service
  - (i) 10-15W and spot beam approximately 42 dBW
  - (ii) 10-15W and national beam approximately 36 dBW.

In choosing switching combinations within various services between the two satellites consideration must be given to the needs of the various proposed services. In particular to the need to maintain service on all of the HACBSS 1 beams by pre-empting other services in case of a failure of one of the satellites.

It is to be noted that the 30W transponders may not be switched to the National beams and that the interconnectability of the lower power transponders to spot beams is limited.

BROADCASTING ISSUES

As indicated earlier, the Tribunal’s attention was drawn to several issues involving the use of the National Satellite which have some relevance to the introduction of cable television or radio services. In particular:

(a) Most prospective CTV or RSTV licensees stressed their dependence upon the use of a satellite transponder(s) for the distribution of programme material. In general this would mean the use of a low power transponder into a National beam. There could be cases where the nature of the programme material (sport or news) may be limited in that a spot beam at any position would be acceptable. The resulting increased signal level from the spot beam would reduce the cost of the receive only earth terminal.

(b) It was generally given that the intended use of satellite transponders, and associated privately owned receive only or two way TV terminals, for the relaying of television programmes by the existing terrestrial TV stations, as an alternative to the present uses of the Telecom terrestrial television relay system, the material...
distributed would either be for instantaneous broadcast by the stations receiving the satellite signal, or for recording and later replay. In one case the material would be encoded after reception, to be re-broadcast as RSTV transmissions.

The Tribunal’s attention was drawn to the likelihood that high interest programmes being distributed by the satellite may well be received by unauthorized users, including members of the public, as is now the case in North America and in Europe. Recent developments in the latter areas involve the encoding of the television programmes distributed by satellite, and such remedies for unauthorized reception may ultimately become necessary.

(c) FACTS drew to the Tribunal’s attention a scheme whereby the low power transponders fed into spot beams could provide a “quasi BSS”. The cost of receive facilities would be higher than would be the case for a “true BSS” using the power levels set down in the 1977 ITU Plan, and would also be about 5 db lower than HACBSS. FACTS believed that members of the public, living in areas which are presently served by only one commercial programme and/or the ABC programme would readily accept the costs involved (about $100 dearer than the HACBSS receive only terminal ($1,000-$1,500) to cover an increase in aerial diameter from 1.2m to 1.8m).

(d) Information was also provided regarding the methods which might be adopted to establish a second HACBSS service to provide a commercial programme to the outback and other areas not yet adequately provided with commercial TV programmes. In particular it was indicated that HACBSS-2 would be pre-emptible should any fault occur on the HACBSS-1 service and that because of the likely use of one of the 30W transponders for other services, the coverage of HACBSS-2 may not be identical with that of HACBSS-1. As the HACBSS signals will be receivable in all areas of Australia any new commercial programme radiated from the satellite as an HACBSS-2 service could affect the viability of existing terrestrial licences, particularly those operators and particularly if TV receive only terminals become available at costs as low as $700-$800 as was predicted by some witnesses.

Australia is on the threshold of a new era in communications. The introduction as soon as practicable of CTV preceded by the introduction of RSTV will enable the nation to further realise its potential for social development and economic growth. The entertainment applications of the new technologies provide the short run justification for the early development. These leisure and recreation orientated uses will be the catalysts for stimulating the construction of broad band local CTV systems in the immediate future... so saith the Australian Broadcasting Tribunal.

Weil our contest is all over and thank you to all who sent in logs, fifty six this year. Slightly more than last year’s result. Certificates have now been issued to the following ALARA members: VK2SU, VK3DYL, VK4ATK, VK5ANW, VK6KYL, VK7HD, P29NSF, G4E2I, DJ0EK, ZL1B1Z, 524CM, G0TY, VK2PLG (top novice). Non Member YL’s VK3KIM, G4G4AJ, Z52AA, 11MO also received certificates as did OMs VK3XB (also top score in contest), G3VUH and SWLS VK4L40018 and ZL1-261.

A full list of the results will appear in the contest column shortly.

NEW CALLS

Congratulations to Kim VK3CFL ex VK3KIM, Margaret VK3NZD, and Narelle VK1NG formerly VK3NMV/3DNG. Narelle was at Echuca and was one of the seven licensed YLs from the area.

LIFE MEMBERSHIP

The first life membership in ALARA was very proudly awarded to Mavis VK3KS at our December meeting. Mavis has been a member of LARA, as it was then, since 1975. She has always been there on the nets ready to help in any way she can. First licensed in 1939, she was instructed by Ivor VK3XB a teacher in the country town where Mavis lived. After three months on air World War 2 intervened. Mavis and Ivor were married in 1943, and after the war amateur operations were continued from East Gippsland using a 2½ watt input battery powered set. In 1951 they moved to their present QTH and over the years Mavis has been very active in contests, mainly on CW. She is a member of the First-Class Operators Club, having been nominated in November 1966. Mavis is a member of YLRL (1950) and joined the YLSSBers in 1963.

Mavis has won many cups and certificates over the years and is always on the lookout for new YLs to add to her lists, always being helpful to newcomers and has helped many of us to gain confidence and skill in the use of the key.

SUBSCRIPTIONS

Subscriptions are now due. Valda VK3DVT, Box 4, PO Brighton 3186, our treasurer will be delighted to receive your subs — $5.00 for Australian and Overseas Air-mail. $3.00 for Overseas Sea-mail.

Valda also has teaspoons for $2.80 ea., badges $3.00 and charm for chain or key ring $2.00 all with ALARA’s logo on them.

I hope to meet some of you at the Midland Zone convention at Strathfieldsay on Sunday 20th February. Until next month 73/33/88 to all.

BOOK REVIEW

THE ARRL ANTENNA BOOK

Many amateurs deplore the passing of the “homebrew” era when, mainly because of necessity, amateurs built all their station equipment. In today’s society, particularly with the advent of the ubiquitous “black” (or mainly grey, now) box, many interesting and welcome developments, the coverage of the ubiquitous “black” (or mainly grey, now) box, many interesting and welcome newcomers have entered the amateur ranks with little practical knowledge of electronics. Transmitters, like color cars, now go “back to the dealer” for maintenance and repairs.

But there is one facet of our hobby in which all amateurs can (and must do) involve themselves, and that is antennas. (The purist will argue that I should use the word “antennae”, but I disagree.)

A number of books have been written about antennas for amateur use over the years, but only one has become, for many people, almost an antenna “bible” and that is THE ARRL ANTENNA BOOK.

This 14th Edition (over 600,000 previous editions have been sold) is a worthy successor.

Whether you are a newcomer interested in discovering how and why your commercial antenna works, or you are contemplating building a HF log periodic, or even a microwave dish, this book will be of value to you. I would even suggest it is a must for the library of any amateur. In fact I will be quickly obtaining a copy to replace my well worn 13th edition.

Chapters 1 to 7 cover the theory of antennas and transmission lines, wave propagation and its relationship to antenna design, and the performance characteristics of directive antenna systems. Chapters 8 to 14 give complete data on a variety of antenna designs from HF to UHF, base station to mobile / portable, space communications to direction finding, and antennas for restricted spaces.

Copies of this excellent publication are available from Magsubs, and from leading booksellers in capital cities.

VK3ARZ
One problem experienced by owners of the Sony ICF-2001 receiver is the heavy battery consumption, especially if one wants to use it as a portable. Using standard D cells, you hardly have more than two hours of operation, which destroys any portability it might have had. By using rechargeable batteries, a fairly satisfactory solution to listening is obtained, although it does depend on what cells are used. Nickel-cadmium batteries are satisfactory, but they have to be removed from the set, in order to be recharged. A way around this, is to have a spare set in the charger. But this can be expensive, and time consuming.

In the latest Andex bulletin (1) put out by HGJB's popular "DX Partyline" programme, John Stanley suggests the use of Gates lead-acid cells. These cells are totally sealed, and will not leak and damage the innards of your set. He says that Gates cells are superior to Nicads in all respects bar one. If you happen to forget to turn your set off, the cells are fully discharged, taking weeks to recharge. However, by the use of the ICF-2001’s sleep timer, you can rest easy, as the set will switch off, if you do forget to turn off the set.

These cells are nominally rated at two volts, but actually deliver 2.2 volts each at full charge. The ICF-2001 works satisfactorily down to 4.0 volts, which is the discharge value of a pair of the above cells. Also the AC power supply has enough reserve to charge the batteries whilst the set is operating. After ten hours of use, the Gates cells will be discharged, and are easily re-charged overnight.

Timer, you can rest easy, as the set will switch off, if you do forget to turn off the set.

The use of these two frequencies, 9.420 and 15.050 MHz, must have been influenced by the success of the BBC World Service, which have utilized 9.410 and 15.070 MHz for many years. Propagation on these channels is very good into Europe and America.

Which reminds me, recently the New Zealand Meteorological Office commenced transmitting facsimile signals on 9.410 MHz. This channel has been used by the BBC World Service for quite a number of years, especially beamed to the Pacific area. Quite naturally, longtime BBC listeners across the Tasman were up in arms. It even made the news headlines, current affairs programmes had interviews with Arthur Cushen, with excerpts of the ORM. All this had the result, that the Minister of Science directed the NZ Met to use another channel to transmit their facsimile. Would it not be wonderful if Australia’s amateurs and shortwave listeners could rise up and complain about the broadcasters transmitting programmes in exclusive amateur allocations. For example, on 7.025 and 7.095 MHz in the evening hours, or 14.320 MHz, where an obscure European country (Albania) transmits Chinese programmes at 0500, 1100, and 1300 hours UTC daily. And the best way they can register their complaint is through their Intruder Watch Co-ordinator. There are plenty of other non-amateur signals within the exclusive allocations to report. If we don’t support IF, we will never get these intruders off our bands.

Well, that is all for this month. In next month’s issue, I will be reporting on my trip to Queensland and Victoria, among other things. Until then, the best of 73’s and good dxing.

— Robin

AMATEUR RADIO, February 1983 — Page 53
ANNUAL GENERAL MEETING

The Annual General Meeting of the WIA NSW Division will be held at 2 PM on Saturday, the 26th of March, 1983. The venue is the auditorium of the Granville RSL Club, located at the corner of William Street and Memorial Avenue, Granville. Full notice of the meeting will be posted in early March to all FINANCIAL NSW members.

Persons wishing to stand for election to Council may obtain a form from the office. Please note that only Ordinary i.e. Full Members are able to nominate and vote and that nominations must reach the office no later than the 23rd of February, 1983.

The duties of council involve the management of the division’s affairs. These are covered by articles 45 to 77 inclusive. Perhaps this is the year that you wish to volunteer some of your time and energy to assist your division of the WIA and fellow members. The duties of a councillor are not particularly difficult nor time consuming, especially if all members of council are prepared to contribute their fair share of the workload.

DIVISIONAL OFFICE

The office is open each weekday from 11 AM to 2 PM and additionally between 7 PM and 9 PM on Wednesdays. The phone number is 689-2417 and all correspondence should be sent to PO Box 1066, Parramatta, NSW, 2150.

The office is located on the first floor of 109 Wigram Street, Parramatta.

COUNCIL REPORT

Divisional Council met on the 12th of November at the headquarters of the NSW Division at 109 Wigram Street, Parramatta. After consideration of Federal WIA proposals to promote World Communications Year 1983, it was decided that the division would give $2,000 to the Federal fund to support WCY 83. Assistance is required at a state level for supporting PR work and we require volunteers who might be able to help in this campaign. Ideally there would be three volunteers, one in each of the major population centres. Their role would be to combine federally supplied material with locally produced material so as to produce items of interest for the local press and other media. If you wish to assist or have suggestions, please contact the division.

Jo Harris, VK2KAA, was appointed as the Divisional Historian. If you have any items such as photos, minutes or other records that tell the history of this division, Jo would appreciate you either donating them or loaning them so we can copy them.

Items discussed at the 7th Conference of Clubs were considered for action by council. These are listed in the report of the conference with details of council’s action to date.

Gordon McDonald VK2ZAB resigned from council.

Stephen Pall VK2PS presented a federal report and WCY 83 and the length of federal tapes were discussed.

Tim Mills VK2ZTM presented a repeater report and applications to establish repeaters from the Orana Region ARC and OTC (A) ARC were approved. A proposal to change the sponsorship of the Sydney Slow Scan repeater was also approved. These applications will now be forwarded to DOC for their approval and processing, following which licences will be issued.

The December council meeting was held at Parramatta on the 9th of December. Council resolved that David Thompson, VK2BDT, be appointed as the Divisional Treasurer. David will prepare the annual accounts of the division.

Nineteen new applications for membership of the NSW Division were accepted.

Four entries were received for the division’s Home Brew competition. One entry was of a particularly high standard and easily won the section for projects which were “Completely Home Designed and Built”. Other entries displayed a high standard making a final choice difficult. After considerable discussion, placings were decided in the “Home Built from a Published Design” section. The applicants have been advised in writing as to the results and awards and presentations will be made at the Annual General Meeting of the division, to be held on the 26th of March, 1983.

Council was pleased to note that the VK2 Division had moved to second place in the Remembrance Day contest. Thanks to all those members who participated and returned a log entry. Merit Certificates have been sent to the top VK2 scorers in the various sections.

The division now has the VHS video tapes of titles from the WIA Video Tape library. These were dubbed by John Ingham, VK5KG, the Federal WIA Video Tape Co-ordinator.

Council decided that the loan conditions were: 1. Only available to Affiliated Clubs, 2. One month borrowing period, 3. Postal borrowings by written request only, 4. Tapes picked up personally must be signed for, 5. Only one tape at a time may be borrowed.

It was decided that $5,000 be invested in AGC Debentures for a period of at least three years. The loan to the Westlakes ARC to purchase a computer for QSL Bureau use was reduced by $300, in accord with a previous motion of council.

REPORT — 7TH CONFERENCE OF CLUBS

Representatives of thirteen clubs and the NSW Divisional Council met at the clubrooms of the Westlakes Amateur Radio Club at Teralba to conduct the 7th Conference of Clubs.

The clubs were: Avondale represented by R. Cottier, VK2ERC, with 1 vote; Bathurst by N. Wiide, VK2DR, with 1 vote; Castle Hill by C. MacKinnon, VK2DYM, with 2 votes; Central Coast by S. Dooger, VK2KSD, with 5 votes; Cofts Harbour by R. Fletcher, VK2BKV, with 2 votes; Hornsby by B. White, VK2010, with 2 votes; Liverpool by J. Ditfield, VK2KDJ, with 3 votes; Orange by...
The NSW WIA Division was represented by councillors S. Brown VK2BSB, S. Pall VK2PS, J. Pages VK2BYY, A. Tilley VK2BAD and P. Jeremy VK2PJ.

Keith Howard VK2AXX was elected as the meetings Chairman and Milton Hall VK2DCU was elected as meeting Secretary.

As the minutes of the 6th Conference had been previously widely circulated to all Affiliated Clubs, the minutes were confirmed as printed. The meeting then considered business from the circulated agenda.

**ITEM A**, concerning duty free availability of amateur radio equipment was amended to read “That Australian amateurs be permitted to obtain free of sales tax, amateur radio equipment to an annual value of up to $1,000”. The motion was carried and this division will now put it as an agenda item to the next WIA Federal Convention.

**ITEM C** requested that the WIA purchase good quality WIA emblems for use on the inside of car windows. Council is presently investigating design and costing of these emblems.

**ITEM D**, suggesting that the twice yearly conferences be changed to an annual conference, along the lines of the Queensland “workshop” system, was carried. This will now be considered by council after investigation.

**ITEM F** recommended that even numbered Conferences of Clubs should discuss and vote on WIA Federal Convention items. These discussions would take place as general business and would guide the VK2 Federal Councillor as to the views of members.

**ITEM G** recommended that the 8th Conference of Clubs be held at the WIA NSW Division building at Parramatta.

**ITEM H** recommended that QSL cards for rare locations be pooled with other VK QSL bureaux for economy. This means that instead of each bureau posting off small, uneconomic packages, all VK cards can be sent in one package to the rarer DX countries resulting in a speedier and cheaper service.

**ITEM J** requested that DOC advise examination candidates clearly of their results. Examples were produced where the official notification gave no indication at all as to how the candidate performed in some subjects. Council has referred this matter to WIA Federal so it can be discussed with DOC.

**ITEM K** recommended that QSL cards held for both members and non-members by the bureau and unclaimed be destroyed after two years after receipt at the bureau. Some amateurs have not collected their cards for many years, resulting in a storage problem of their unwanted cards. Council has adopted this recommendation and advised the VK2 QSL Bureau to implement this policy.

**ITEM L** recommended that the Australian Novice Contest be given improved publicity. Council notes this and is seeking a volunteer to act as the Contest Publicity Officer who will write short publicity items for broadcasts etc.

Under General Business, the Divisional President Susan Brown VK2BSB presented graphs comparing results of NSW examination candidates with those of other states. She reported on discussions with the Sydney branch of DOC on this matter. The conference moved that the WIA NSW Division continue its efforts on behalf of candidates for NAOCP and AOCP examinations in an attempt to remove the apparent bias in NSW results.

The conference expressed its appreciation to the Westlakes Amateur Radio Club for the conduct of the VK2 QSL Bureau.

Motions congratulating the current executive of the WIA NSW Division for the competent manner in which divisional business has been conducted and for the professional manner in which the transition of the divisional headquarters to Parramatta was effected were carried unanimously.

A proposal to allow special interest groups affiliated with the NSW Division use of the division’s facilities for their meetings was lost.

The Westlakes Amateur Radio Club was thanked by the conference for its provision of meeting rooms and conduct of the 7th Conference of Clubs.

Divisional President Susan Brown VK2BSB then presented the “Dick Smith Educator of the Year” award to Rick Fletcher VK2BKV of the Coffs Harbour and District Amateur Radio Club. Sue commented that Rick had conducted eight consecutive classes for the novice licence in the Coffs Harbour area. The presentation of the award was greeted with acclamation.

Susan Brown then presented an award of a certificate and a 10 metre SSB Transceiver to the club which had achieved the highest percentage increase in WIA membership amongst club members since the last conference. The award was accepted on behalf of the Hornsby & District Amateur Radio Club by their President, Barry White VK2AAB.

The 7th Conference of Clubs will be held on Sunday, the 17th of April, 1983 at the WIA NSW Division building at 109 Wigram Street, Parramatta. The host club will be the St George Amateur Radio Society.

Conference Chairman Keith Howard, VK2AXX thanked all delegates for their attendance and declared the 7th Conference of Clubs closed.

As a finale, the QSL Bureau computer selected the winners of the “Westlakes Tryfleter”, the results appearing in the December issue of AR. Proceeds from this contest were used to cover some of the cost of the computer purchased by the club for use by the VK2 QSL Bureau.

Divisional Council wishes to congratulate the Westlakes Amateur Radio Club for the preparation and conduct of the Conference of Clubs.

**ORANGE AMATEUR RADIO CLUB MEETING**

The club Christmas party for 1982 was held on the 27th of November, at the QTH of Vicki VK2EVM, in Blayney.

Approximately twenty-five members, their wives and families attended from the Cobar, Forbes, Canowindra, Bathurst, Oberon and Orange areas. A thoroughly enjoyable, pleasant and informal gathering was held, at which Tony VK2KTO was wished bon voyage, as he is leaving the district and moving to the Tamworth area. A very big thank you is extended to the...
Marsden family of Blayney for providing a pleasant and hospitable venue and to those who attended, despite other commitments.

From Ross VK2BRC, photo by courtesy of John, VK2AMV.

COMING EVENTS
John Moyle NFO Contest: 12/13 February.
Gosford Field Day: Sunday 20th February at Gosford Show Ground.
Nominations for election to Council and agenda items for AGM close: 23rd February.
Annual General Meeting, WIA NSW Division: 26th March at 2 PM.
Urunga Convention: Easter Weekend, 2/3 April.

NSW members and clubs are invited to submit news items for inclusion in these notes to: WIA NSW Division, PO Box 1066, NSW, 2150. Items for April AR must reach us by the 21st of February.

Athol VK2BAD

TWO METRE REPEATER
Keith Perry P29QA of Kieta, Bougainville commissioned a two metre repeater recently which receives on 146.400 MHz and transmits on 147.000 MHz. The repeater is mounted on the Postal and Telecommunications tower at Arawa.

Some of the happy throng enjoying the OARC party.
Those pictured are, from left to right: John VK2AMV, Heather Drady, Wally VK2DEW, Neville VK2DR, Branda Wilde, Ian VK2KMA, Frank VK2ZFE, Bob VK2DSM, Diane VK2DZA, Tony VK2KTO, Vicki VK2EVM, Ross VK2BRC, Trevor VK2ZNU, Ruth Salmon, Marlyn VK2DLD. The front row is, left: Peter VK2DBI and right: Bill VK2BVW.

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AMATEUR RADIO, February 1983 — Page 57
“INTRUDER WATCH”
Steve Phillips VK3JY is the new Intruder Watch Co-ordinator for VK3. Co-ordinator is the KEY word.

It is the duty of Amateur Radio operators to log and report all intruders on our bands. Unless this information is sent to Steve, he will have nothing to co-ordinate.

Report forms and identification tapes will be available from Steve or the VK3 office early in February ‘83.

CONVENTION MARCH 18TH TO 20TH 1983.

The Victorian Division Convention 1983 will be held by the Eastern Zone at Moondarra Reservoir about twenty-five miles north of Moe in Gippsland. This is about an hour and a half’s drive from Melbourne. It will be a family weekend at a reasonable price.

The programme includes: trade display, hidden transmitter hunt, home computers, technical tests, children’s activities including treasure hunts and films, and the first round of the annual morse competition. There will be no radio throwing contest!

The convention will fully catered with lots of good food cooked by Eastern Zone amateurs with your assistance.

Bring your QSL card for the QSL tree.

The gathering starts after tea on Friday with supper for the travellers. Others will arrive on Saturday. Peter Wolfenden VK3KAU will speak on matters of interest after the Saturday night feast. The convention will wind up on Sunday afternoon after an auction and sale.

The camp, at the foot of the Baw Baw’s, overlooks the Moondarra Reservoir and has a swimming pool. The accommodation is in two and three bedrooms.

Victorian amateurs received an insert in last month’s AR. If there was no insert in your AR or if further forms or information is required, or if you have something to offer the convention, ring Stewart VK3BSM on (051) 27 4229, or write PO Box 339, Moe, Victoria 3825.

Accommodation will cost $7.00 a night per adult and $5.00 a night per child between 4 and 15 years inclusive. Registration for the weekend will be $25.00 for adults, nothing for children, and $15.00 for pensioners and holders of health benefit cards. A heap of sleeping, eating, and activity at a very reasonable cost.

MORSE COMPETITION

It is intended to commence a perpetual trophy for competence in Morse Code. It will be hoped to eventually extend this competition nationwide and in each year have a winner declared at each State Convention, the highest scorer being inscribed on a perpetual trophy.

Some general points on the competition are suggested:
1. The competition should be open to amateurs and non-amateurs.
2. The holder of a qualification in morse code such as an amateur or commercial licence could only enter the competition at a level above any licence held by that amateur.
3. Testing on transmission would only be undertaken at the highest level achieved by a competitor. The implication of this is that there would be no certificate given if a contestant could not reach competence in transmission at the speed he could reach in receive.
4. As competitors fall out in receive they will be tested to transmit at their highest receive speed achieved and certificates given.
5. It is intended that receive speed steps should be 5, 7.5, 10, 12, 14, 16, 18, 20, 22, 24 and above words per minute.
6. The examination should be set under the conditions of a DOC examination. This includes a small test transmission and no correction time allowed.
8. The Department of Communication will be asked to co-operate in assisting with this competition as it should be a stimulus to raising the level of competence in telegraphy.

MIDLAND ZONE CONVENTION

The Annual Midland Zone Convention will be held at the Strathfieldsaye Hall on Sunday 20th February 1983 from 10 AM. Lunch will be available and the usual trade displays, also a trading table section. So if you want to have a clean up of all your “junque” bring it along, it may be just what someone else is looking for. Everyone is most welcome and we look forward to meeting you. Enquiries to Margaret VK3DML, QTHR, talk in will be on VK3RCV ch. 11 147.750 input 147.150 out.

Meetings of the Zone are held on the 3rd Friday night monthly at 8 PM at the Eaglehawk and Long Gully Community Health Centre, Seymour St, Eaglehawk. Office Bearers for 1983: President Don Hogg VK3XBL, V/Pres. George Loft VK3AGM, Secretary Margaret Loft VK3DML, Treasurer VK3APB, Ass. Secretary Doug Fairbairn VK3KIT, Committee Ross Pittard VK3YXR (ATV) VK3BL (2 m rptr), Bill Kelly VK3XO, Max Williams VK3APB, Barry Lakey VK3BL.
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There are some very important events coming in the first quarter of this year. First we have a new council to get working. There will be a mixture of old and new faces this year as there is most years. New councillors can be assured of a most rewarding year. The business side of the division ran very smoothly last year and should continue to do the same this year. This will allow councillors to spend more time debating important issues that will arise, and arriving at correct decisions.

Next we have our Radio Club Workshop, an event that grows in interest and importance year by year. This is the chance for club representatives from all over Queensland to get together formally and informally. This year, with few motions to occupy their time, delegates will be able to form into working groups and discuss items of importance to further amateur radio in Queensland and indeed, Australia. The workshop is an expensive weekend, but every cent spent is putting profit into our future.

After the workshop comes the Federal Convention. Our two federal councillors will go to Melbourne very well briefed by the Radio Club Workshop, this being one of the aims of the workshop.

BRISBANE CONVENTION

The whispers are getting louder about a mid-year Convention / Hamfest / Amarama. The venue will be Indooroopilly and a prominent Brisbane club will be the sponsor. Sometime in May?

The Media get together in Brisbane. The day after the Gold Coast Hamfest last November, Queensland Division members enjoyed a picnic at Mt Coot-tha. Bruce Bathols, VK3UV, AR Editor was there. Pictured are Bruce, Jack Gayton, VK4AGY (VK4WIA Station Manager) Bonnie Pounsett, XYL of VK4QY (The Voice of VK4WIA) and Bud, VK4QY (VK4DIV News Editor).

They say that old habits die hard, so I suppose that explains it. Explains what? Last week I had our former Intruder Watch Co-ordinator at my QTH, asking me to please publicise the fact that he is no longer our Divisional IWC AND HASN'T BEEN — FOR 12 MONTHS. Our new IWC is Colin Ralph VK5KCR who is QTHR in the latest call book listings, as well as appearing on page 62 under the IW heading. And for the cynics who are about to point out that the callbook has only been out a few months, I will add that Colin's name and phone number have been in the front of our local 'Journal' for at least eight months. We are constantly being told that very few people bother to report intruders and yet here were at least three people who did bother, and two of them had to make STD calls to do it. So please, in future give Colin a ring — he was only saying the other week that he doesn't get many!

Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens SA 5039

You have every success. I am sure that Graham would appreciate any articles and photographs (via PO Box 1234; GPO Adelaide, 5001) and technical articles would be very much appreciated by our Technical Editor, John VK5NX.

The alterations to the constitution as published in the October 'Journal' were all passed at the November meeting, though not without a great deal of discussion on some clauses. It is hoped that you will all receive a copy of the amended constitution, as part of your February 'Journal'.

We now have our first UHF (voice) repeater on air, and most of the credit must go to Mark VK5AVQ. The callsign is VK5RVP and it is situated on Mount Lofty, next to VK5RAD (Ch. 8). The I/P is 433.525 MHz, and the O/P is 438.525 MHz.

Finally, don't forget those Agenda Items for the Federal Convention as time is running out.

Forthcoming meetings will be held on the 22nd of February and 22nd of March, details of speakers not known at the time of going to press. March 29th will be a Buy and Sell Meeting — starting at 7.30 pm.
Dear Sir,

Now that the RD contest and the results published I feel that we should now evaluate the contest and rules as applying in 1982.

I know how much work was put into the formula and appreciate that the weight factor is there to encourage participation but I feel that the present scoring system will kill the contest because of the following:

1. SSB and CW/RTTY contacts counting 1 point each thus discouraging the longer CW/RTTY contacts — in fact the contest manager virtually states that because the CW/RTTY is a small contribution to the overall scores those contacts are insignificant.

2. No points increase for distance, therefore what is the point of say a VK4 or VK2 trying to work a scratchy signal from VK5 or VK6 when he can work Q5 signals from adjoining states on 80m.

3. Contacts on VHF being worth the same as HF contacts and those contacts being able to be repeated every hour so why work through QRM to score what was to be a reasonable amount by carefully identifying stations, checking for duplicates in case you may have worked that station some hours ago and then making the contact when all you need do is monitor a simplex VHF channel once every hour, work through the list and total up the score. This is very evident in the scores of the top stations.

My suggestion therefore is to retain a weighing factor to increase participation, give double points for all non SSB contacts TO ENCOURAGE THESE MODES, give extra points for distance (surely the idea of contests is to prove ones equipment) and, permit the working of stations on VHF on the same basis as HF that is once only — this should stop the RD contest — the friendly contest — developing into a frenzied numbers collecting game which is all too evident.

Finally, instead of vague inuendos as to the reasons why logs haven't been included in the scores, surely common courtesy should dictate that amateurs who have participated in the contest and submitted a log should be informed either by letter or in print of the reasons their logs have not been included.

Yours faithfully,
F A Parsonage VK6PF

Most years you have kept to one colour for the year, however once in a while the system goes crazy and covers come out "hetero" as to colour.

I, for one, and I feel quite a few other members find it convenient for "filming and finding" to have all of one volume in one colour. It would probably be convenient for printer stocking also.

Hence, the only reason for divergence I can see is possibly "change" on the public bookshelves to attract interest.

As I would guess that your largest volume of sales is to the VK fraternity I would request that you give the above matter some consideration.

Yours — 73 etc.,
John Stone, VK4NZ

ARTICLE A 202

25 Beecroft Parade,
Curramong, 2540
15th. November, 1982

The Editor,

Dear OM,

I have been a licensed amateur with the above call sign since 1936. I had a long lay off and re-activated last year.

However, I encountered an experience (which may be of interest to you) on 13th November which in retrospect made me wonder if amateurs really realise the immense responsibility which can be thrust upon them unexpectedly and do they know how to cope with it. Also, are they aware of the correct and most expedient procedures to adopt?

The following is a very contracted resume of my experience.

On 13th November I called CQ on 14.175 MHz at 0930 local time. A very weak signal 44-5 S2-7 with lots of QSB and a voice with a strong accent replied giving the callsign HP2XBP/MM advising that they needed urgent medical help and advice — could I get a doctor to my transmitter?

They had a person on board unable to breathe and were applying mouth to mouth resuscitation.

My OTH is in a small country village on the coast with the nearest doctor 35 km distant. So it was impractical to do this. Because I live the same distance from the naval station HMAS Albatross, I rang the Officer of the Day for help, who I understand, rang the Marine Surveillance Centre in Canberra. Canberra then rang me to check my bonalide and to find out the nature of the problem.

During all of this I am keeping up contact with HP2XBP who was stressing their crisis situation.

I advised Canberra the nature of the problem and that resuscitation had been in progress for quite some time and that the best fix I could obtain was that the people in trouble were in a small unidentified bay in Vanaua Levin in the Fiji Islands.

Canberra advised Fiji, however, naturally, Fiji authorities said they need co-ordinates. I could not get these. Even though I gave them the frequency of transmissions, local skip would have prevented contact.

I am still, during this time, maintaining contact and also calling for additional aid to an amateur able to assist — negative.

I was eventually able to get a message from Canberra which I passed on to HP2XBP that Fiji was aware of the problem and were trying to help.

Time elapsed was now 2½ hours and mouth to mouth is still being applied.

Around 1200 hours local I lost contact, but regained it a little later to hear HP2XBP talking to someone else.

The reception was poor but the gist of the conversation suggested that help was at hand.

Today — Monday 15th Canberra rang me to advise that the patient was a baby and that the Nadi authorities had taken control of the situation.

In retrospect, I asked myself these questions:
(a) Could I have done more to help?
(b) Did I handle the situation correctly?
(c) Was there a more expedient procedure to follow?
(d) Do other amateurs have knowledge of procedures in crisis situations?
(e) Was there a need for the WIA to maybe publish or update procedures for such situations? (maybe even a loose leaf insert in AR).

Again, on reflection only this morning, I said to my XYL, I may never know if I did the right thing and that my actions were beneficial in an emergency situation.

In fact, the responsibility for the part I played was weighing fairly heavily, however, as intimated earlier in this letter, the authorities in Canberra, very thoughtfully and kindly rang me this morning, advised me of the outcome and put my mind to rest.

Dear Editor,

Is there a lesson in this for all of us related to our responsibilities as amateurs caught up in unexpected situations?

Is there a need for us to be alerted as to the correct and most expedient manner to handle like situations?

Finally the object of this letter is actual case information which may be of use in some future situation.

Yours faithfully
Alex McMurray, VK2AEX

26 Karoonda Road,
Booranong 6154
13-11-82

Dear Sir,

Referring to the item in the column "How's DX" (AR Nov 82) on the subject of the using the AX prefix. I would like to add some comments to this topic.

There might be a perfectly natural explanation why so few Australian amateurs made use of the AX prefix during the Commonwealth Games — perhaps some feel like I do.

New or unknown prefixes will always attract attention and the use of unknown "pseudo-exotic" prefixes — like AX — by stations who are not on the most wanted list will also make other amateurs tune up their transmitters and follow with determination to work that "new" country. At least until they find out that it is no new country at all, but one that they have worked many times before. The net result is disappointment. After all, changing two letters in a callsign does not make it more difficult to work a country.

Finally, the VK who did not know about AX may be excused. He might have been newly licensed and perhaps not a member of the WIA and therefore not in possession of AR or those other privileges which come with the membership.

Yours faithfully
Walter Haenel

Dear Sirs,

I take the liberty of turning to you in a rather difficult matter and trust that you will see my point.

I am an East German radio amateur intending to emigrate with my family to
Australia because of political reasons. For this purpose I contacted the Australian embassy to the GDR in Berlin and Mr David Couch of Perth, WA, whom I know as a radio amateur under the call sign VK6WT, and asked him if he would nominate me for entry to Australia as this was suggested to be the best way to get to Australia. As my sponsor he would have been liable for our first accommodation and our first expenses until we would have got started. This is to ensure that we do not become a burden to the Australian society. On the other hand there is the restriction for us to convert our money into foreign currency when leaving which means that we can take with us only a few personal things, maybe some valuables too. So the difficulty for us is to find an individual or family who is able and willing to support us financially until we can manage things ourselves. After thorough consideration Mr Couch now told me that he would not be able to do this and therefore could not go on with my nomination. As a final possibility he suggested to turn to you requesting to circulate the divisions of the assistance I require so that my appeal would come to the notice of many Australian radio amateurs. I hesitated in following his advice but it occurs to me that this is my last and only chance left. So that is the reason why I ask you to help me solve my problem.

To introduce myself I must say that I was born in 1943, attended secondary school till 1962, worked as a grinder for a year, then did my army service and finally studied from 1965 to 68 at the Nautical College at Wustrow where I got the degree of a maritime radio engineer. Afterwards I worked as a ship's radio operator with the merchant fleet until 1971. At the end of that year the State security service refused to let me go to sea anymore out of political reasons. I was not allowed to work in my job and had to look for a new career as an engineer in the technical department of a furniture factory where I still work.

My family consists of my wife, born also in 1943, who learned the trade of hand-weaving. We have two children, both boys, aged 8 and 15. We are all in a very good state of health I have a good knowledge of English. My family speaks only little English yet. I am a radio amateur since 1960.

Further details about my qualification and my person may be obtained from Mr. David Couch, 9 The Grove, Wembley 6014, Western Australia. He also possesses duplicates of my certificates.

Yours faithfully,
H W Kohler

Editors Note:
Any person interested in the above may write to VK6WT at the address mentioned above.

—VK3UV

Note
John Moyle National Field Day Logs must be received by the Federal Contest Manager by the 23rd March, 1983, to qualify for any awards.
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Obituaries

HAROLD D. ACKLING VK2PX
1892-1982

Many old timers will be saddened to learn of the passing of Harold, VK2PX at the grand old age of ninety years. He was born on Saint Patrick’s Day 1892.

Harry, as he was known to his radio friends, was licensed in 1930, keeping his original call for fifty-two years. I well remember his original gear, all home-brew — a pair of UV262 bright emitters in a self-excited Hartley circuit, complete with stop jar HT supply. For reception an O- v-1 from wet batteries and 133 feet Zepp antenna. Harold worked an astonishing list of DX in his time including AC3YN in Tibet and he used to show me the treasured QSL for this contact.

At the outbreak of World War Two he volunteered for the army signals and left Australia in a large contingent on the Queen Mary. He saw service in Syria and was in Crete when the island was invaded by German paratroops. He escaped to Alexandria.

For many years prior to the war he was Treasurer of the original Lakemba Radio Club in the early thirties. There are unfortunately few of the old members left who will with some nostalgia remember Harry collecting the six-pences for the club funds. Harry has joined the long list of silent keys, 2JT, 2HW, 2CY, 2FY, 2EV and many others of the old club members. Right up to the time of his death in the Repatriation Hospital Concord on 22 November, 1982, Harold was active on our old timers 2 metre net. He is sadly missed.

He leaves behind a son and daughter and a host of friends.

Gilbert Pollock
VK2FU

PETER THOMAS SINCLAIR VK3VZZ

Peter Sinclair VK3VZZ died suddenly at Lakes Entrance, Vic. on the 18th of December 1982, of a heart attack. He was 42 years of age. Apart from being my best friend, he was, I believe, what amateur radio is all about.

Although relatively new to the hobby, Peter was the first to offer assistance to others, and was always there when the antenna needed to come down, foundations needed digging, or simply for just a yarn.

In his job as a sales representative, he was held in high esteem by all who came in contact with him from Sale to the New South Wales border. Peter and I studied every Wednesday night for a pass at that elusive full call theory, and I’m sure that Peter would have made it this February.

He liked to “rag chew” and renew friendships with DX stations whenever possible.

Peter was a gentleman and this was apparent in everything he did, especially his amateur operation. Amateur radio will suffer from the loss of Peter Sinclair, and his passing has left a large space in my life. To his wife Doris, and his children Shane and Joanne, I extend our deepest sympathy. I am proud and honoured to have known him. 73 mate.

Peter VK3VPC

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• Please insert STC code with phone numbers when you advertise.

• Eight lines free to all WIA members. $9 per 10 words minimum for non-members.

• Copy in typescr ipt please or in block letters double spaced to PO Box 300, Caulfield South 3162.

• Repeats may be charged at full rates.

• Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.

• QTHR means address is correct as set out in the WIA current Call Book.

Ordinary Hamdams submitted from members who have deemed to be in the general electronics retail and wholesale deals and trades should be certified as referring only to private articles not being resold for merchandising purposes.

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Conditions for commercial advertising are as follows: The rate is $15 for 4 lines, plus $2 per line (or part thereof) minimum charge $5 pre-payable. Copy is required by the first day of the month preceding publication.

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Microscopes: Motic, Maks, Oakley, 2223. BUSINESS CLOSED DURING FEBRUARY.

CB Radios $50; walkie talks, short wave radio, military, outward, business, amateur, marine, repairs. RTTY Siemens 100A printer $120; base mic., $45, ultrasonic alarm, $35, all ham bands on a single 6 ft. whip, 1.8 to 30 MHz, for base or mobile, $500; serial, installation, demonstrations, 40 ch. CB conversions new and used, Bridal Tops 12 Old Town Plaza, opp. Bankstown Railway Station. NSW. Mail order service and all enquiries to 2 Griffith Street, Roseville, 2065, or phone Sam VK28VS, 7 p.m. to 9 p.m. only, for second-hand, accessories, new rigs weekly. Bridge Disposals.

FR7 HF 25W Tcvr, excellent performer, extras incl RF attenuator, full 28-29 MHz coverage, Fox Tango 2 kHz filter, complete with mic, mobile mount, handset, etc. S500. FT7 very good condition, some extras, $325 ONO. VK3ARZ OTHR. Ph: (03) 584 9512.

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ICOM 551 Tcwr 6 m. all mode 10W with FM board $550. Icom 265A 2 m all mode 10W $390. Glen VK1AAK OTHR. Ph: (02) 5460 8036.


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ICOM HF TS980 Tcvr c/w P and handbook A1 cond. Any trial S430 ONO John VK2ANX OTHR. Ph: (02) 638 4191.

KENWOOD AT 200 GC S135. Kenwood AT 230 as new S180. Yaesu FT 207R, 2 spare Ni-Cd packs, case, YMT4 Mic. 3 - W 1-W 5250. Kenwood TS 180S DFS ED S905, AT 180 S1500 VFO 180 S150, SP 18050. MC 50 S40, PS 30 S150 or S1400 the lot Ph: (058) 584 4144.

QTHR means address is correct as set out in the WIA current Call Book.


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AMATEUR RADIO, February 1983 — Page 63

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CAVITY FILTER for VK7RN W (2 m), or info on obtaining or making. Contact VK7KT V, VK7ZAP QTHR or Phone VK7TS (0041) 37 5240.

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HF SSB/CW Tcvr by genuine cash buyer, fair price paid, OK mods: not necessarily working: all considered! PO Box 505, Bondi Junction, 2022 NSW or Ph: (02) 36 2981.

INFORMATION PLEASE — which radio magazine, CQ. QST. 73 etc published a ham conversion for National 8 — which radio magazine. CQ.

FOR SALE — QL

VALVES: 6GK6, 6GX6, 12AU6, 12BZ6, 13DE7. VK4EF QTHR. Ph: (07) 38 1803.

YPENRA TRANG: AMATEUR RADIO, February 11)8:)
EMOTATOR ROTATORS FROM BAIL

103SAX

502SAX

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1102MXX
1103MXX

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</table>

A: Allowable Antenna wind area
GD*: Allowable Flywheel effect

Controller for 1102MSAX, 1103MSAX

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Amateur Radio

VOL. 51, No. 3 MARCH 1983

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

A "SQUARE ONE" RECEIVER — PART 3
NIGHT TIME VHF PROPAGATION
RON WILKINSON AWARD 1983

REVIEW — RTTY GEAR
JUNK BOX ATU
HIGH RESOLUTION MICROSCOPE
YAESSU'S NEW
HF TRANSCEIVER

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FP-700 AC POWER SUPPLY

countrol are thus improved and simplified beyond the degree previously attainable in amateur equipment.

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VK3BSR
A "SQUARE ONE" RECEIVER — PART 3
BY DREW VK3XU .......................... 11
A VERSE FOR THOSE OVER THIRTY
BY VK5XI .................................. 35
ADELAIDE’S PARTICIPATION IN THE
DEPARTURE OF ANACONDA II
BY IAN VK5OX .............................. 22
NIGHT TIME VHF PROPAGATION
BY GRAHAM VK6GB .......................... 16
THE 22S — A COMMON FAULT
BY IAN VK3BUF .............................. 15
THE CAMBRIDGE UNIVERSITY 600 KV HIGH
RESOLUTION MICROSCOPE COURTESY
VK3UX & VK3ZZS ............................. 19
TWO TONE TEST OSCILLATOR FOR SSB
BY VK5BR ................................. 18
WHERE DO IDEAS COME FROM?
BY IAN VK3BUF .............................. 44
WHO IS THIS AMATEUR? BY PETER
VK4PJ .......................... 13
WORLD COMMUNICATIONS YEAR .... 28
WILKINSON AWARD 1983 .............. 45

A world from your Editor .......... 8
AMSAT Australia ............. 38
AR Showcase — AMC Maritime
Courses, Sea Survival, FT-77
FT-980, YH-1, FT-726R .......... 34
Advertising Index ............... 56
Awards — Award Amendments,
Hainault’s Reward, Helvetia
Award ............................ 30
Book Review — Mini/Micro
Soldering and Wire
Wrapping .......................... 39
Commercial Chatter ............ 45
Contests — Champion Contest
1982/83, 27th CO WW WPX rules,
Helvetia Contest .................. 32
Education Notes .................. 41
Equipment Review — Hall
CT2100 & KB2100 RTTY
Gear ................................ 14
Five-Eighth Wave ................. 50
Hamads .......................... 55
Here’s RTTY .......................... 40
How’s DX .......................... 24
International News ................ 10

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<th>Model</th>
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### Specials! Antenna Products

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### Specials! Jostykit

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<td>IC451</td>
<td>Icon 70CM Transceiver AC/DC</td>
<td>$1113</td>
<td>$750</td>
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<tr>
<td>IC490A</td>
<td>Icon UHF SSB/FM Transceiver</td>
<td>$726</td>
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<tr>
<td>IC551D</td>
<td>Icon 6M Transceiver w/PBT/Vox (No FM)</td>
<td>$919</td>
<td>$555</td>
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<td>IC660</td>
<td>Icon Mobile Transceiver, 6M, SSB/FM, 10W</td>
<td>$643</td>
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<tr>
<td>IC730</td>
<td>Icon HF Transceiver</td>
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### Daiwa — SWR/PWR Meters

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
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<th>Now</th>
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<tbody>
<tr>
<td>CN510</td>
<td>Daiwa SWR/PWR Meter 1.8-60MHz 20/200W</td>
<td>$142</td>
<td>$119</td>
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<tr>
<td>CN520</td>
<td>Daiwa X-needle SWR/PWR Meter 1.9-60MHz</td>
<td>$240</td>
<td>$149</td>
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<tr>
<td>CN540</td>
<td>Daiwa X-needle SWR/PWR Meter 20-150MHz</td>
<td>$290</td>
<td>$219</td>
</tr>
<tr>
<td>CN560</td>
<td>Daiwa X-needle SWR/PWR Meter 44-250MHz</td>
<td>$370</td>
<td>$199</td>
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<tr>
<td>CN565</td>
<td>Daiwa X-needle SWR/PWR Meter 1.8-150MHz</td>
<td>$270</td>
<td>$189</td>
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<tr>
<td>CN5630</td>
<td>Daiwa X-needle SWR/PWR Meter 140-450MHz</td>
<td>$437</td>
<td>$297</td>
</tr>
<tr>
<td>CN5630N</td>
<td>Daiwa X-needle SWR/PWR Meter 140-450MHz, &quot;N&quot; Cone</td>
<td>$370</td>
<td>$297</td>
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<td>CN5650</td>
<td>Daiwa X-needle SWR/PWR Meter 1.2-5MHz</td>
<td>$219</td>
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<tr>
<td>CN720</td>
<td>Daiwa X-needle SWR/PWR Meter 1.8-150MHz</td>
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<td>$307</td>
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<tr>
<td>CN1000</td>
<td>Daiwa Automatic Antenna Tuner 200W</td>
<td>$620</td>
<td>$437</td>
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<td>CAN2002</td>
<td>Daiwa Auto Antenna Tuner 2.5kW</td>
<td>$999</td>
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<td>CN10002</td>
<td>Daiwa Antenna Tuner incl. SWR/PWR Meter</td>
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<tr>
<td>CN7W18</td>
<td>Daiwa Antenna Tuner - HF Bands</td>
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<td>CN5W18</td>
<td>Daiwa Antenna Tuner 2.5kW, PEP</td>
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### Daiwa — Rotators:

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<thead>
<tr>
<th>Model</th>
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<tbody>
<tr>
<td>DR7500R</td>
<td>Daiwa Antenna Rotator, Medium Duty</td>
<td>$259</td>
<td>$249</td>
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<tr>
<td>DR7500X</td>
<td>Daiwa Antenna Rotator, Medium Duty, Preset</td>
<td>$349</td>
<td>$349</td>
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<tr>
<td>DR7500X</td>
<td>Daiwa Antenna Rotator, Heavy Duty</td>
<td>$369</td>
<td>$359</td>
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<tr>
<td>DR7600X</td>
<td>Daiwa Antenna Rotator, Heavy Duty, Preset</td>
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### Daiwa — Linear Amplifiers

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<tr>
<th>Model</th>
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</tr>
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<tbody>
<tr>
<td>L21008A</td>
<td>Daiwa Linear Amplifier 300W 1.8-60MHz</td>
<td>$164</td>
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<tr>
<td>L22004A</td>
<td>Daiwa Linear Amplifier 300W 1.8-60MHz</td>
<td>$124</td>
<td>$99</td>
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<tr>
<td>L23004</td>
<td>Daiwa Linear Amplifier 300W 1.8-60MHz</td>
<td>$142</td>
<td>$105</td>
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<tr>
<td>L24004</td>
<td>Daiwa Linear Amplifier 300W 1.8-60MHz</td>
<td>$289</td>
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</tr>
<tr>
<td>L25004</td>
<td>Daiwa Linear Amplifier 300W 1.8-60MHz</td>
<td>$465</td>
<td>$369</td>
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### Tono — RTTY

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Normally</th>
<th>Now</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSO</td>
<td>Tono RTTY Terminal</td>
<td>$599</td>
<td>$435</td>
</tr>
<tr>
<td>CRT1200G</td>
<td>Tono Video Monitor 12&quot;</td>
<td>$99</td>
<td>$435</td>
</tr>
</tbody>
</table>

All products are available from Vicom, Emtronics and participating Vicom dealers, while stocks last.

AMATEUR RADIO, March 1983 — Page 7
SELLING USED EQUIPMENT VIA HAMADS?

Having difficulty in moving some of that exotic gear? Have you considered the possibilities that you have overpriced that unit you want to update? Just what is the real value of used commercial equipment?

Some research over the past two years has shown that many sellers are not prepared to 'write off' the capital cost of their equipment. Amateur equipment is just like any other commodity, such as cars, TV sets, furniture etc. They all depreciate in value rather quickly, especially in the first twelve months, then settle to a small 'residual' value.

Most businesses amortise the capital cost of equipment over a period of five years, and are thus able to claim certain taxation benefits on its depreciation.

Amateur radio gear also depreciates at a fairly rapid rate, but unfortunately we are unable to claim any taxation benefits. So the capital depreciation value has to be borne by the purchaser.

One would expect a modern transceiver to last well over five years, however, each year new and 'up dated' equipment appears on the market, with the effect that used equipment, even only two or three years old, is almost 'obsolete'. What therefore is the real value?

Let us look at an ICOM IC720A purchased new in January 1982. The all up cost with power supply, external speaker, desk microphone was around $1650. At the time of purchase, it was the 'top line' of amateur transceivers. Now in only a little over twelve months, at least two new models have come onto the market from the same manufacturer. Several factors to take into consideration are:

- The IC720A is 'used', and now out of warranty.
- The second hand market is limited.
- There are other comparable new transceivers on the market from the other manufacturers.
- There is a negligible trade-in allowance available towards the cost of a new transceiver.
- The current economic climate — (there is much buyer resistance at the present time, and many people including amateurs are just 'not spending').

How desperate am I for the money?

If I were to offer my 720A for sale, this is perhaps how I would look at its value.

Firstly, the set, being a little over twelve months old, I would reduce the initial purchase price immediately by twenty per cent, down to $1320. Next I would look at what similar makes are selling for in advertisements (hamads etc.), and also look at prices for the new and comparable models, and those from other makers.

In this case, the new ICOM IC740 sells for around $1250. Therefore my 720A is dearer than the new set, even though the 720A has a few more 'bells and whistles'. To ensure a sale, I would therefore have to reduce the price to be competitive with the IC740, so I would be thinking around $1150.

I have seen some IC720A's being advertised for around $950, so what hope have I in attracting a buyer at $1150?

Not being 'desperate' for the cash, I would probably run an advert listing it at $1350, to test the market. Then if no response, drop the price $100 or so until a buyer was found. However, the disadvantage is that it may take four months or more to sell, and the advert also becomes 'stale'. Further, a new model may come onto the market in the meantime, thus reducing the chances of a sale at an acceptable price even further.

One is therefore in quite a dilemma!

Taking all of the above into consideration, I would be most lucky to attract a buyer at $1000, so therefore in a little over twelve months and selling at $1000, my initial purchase has depreciated by over thirty-nine per cent. This works out at $12.50 per week.

I would expect after three years, and using the above criteria as a guide, the IC720A would probably be worth only $500. However, this is possibly a little unrealistic and $700 could be a more acceptable figure, and I would expect after five years, the value would be around $400-$500.

It is rather clear that to keep up with the 'state of the art', one must be prepared to:

Amortise the total capital cost over no more than four years. Taking the above transceiver as a typical example, this works out at $8.00 per week.

If desirous of disposing of the initial purchase between one and two years, an allowance for depreciation of approximately $13.00 per week should be made.

One however cannot predict the mood of the second hand market, there are quite a number of other variables to be taken into account also. Among these are newcomer ignorance, condition of the equipment offered for sale, and the current inflation rate.

In my own personal case, I would probably be expecting to 'up date' my equipment after three years. Then I might also be thinking about a new linear, beam, VHF transceiver, meters, coax etc. Where does it all end?

Perhaps home brewing is the answer.

How much do I expect to get out of my hobby? Well two things are definite:

a. I intend to remain an amateur.
b. I won't be showing this editorial to my wife.
INQUIRY INTO RADIO MASTS

The following item appeared in the Victorian Government Gazette on 8th December 1982. The Wireless Institute of Australia will be making a submission to the enquiry in due course. Further information will be published as it comes to hand and members will be advised of any action deemed necessary.

In the meantime it is important that all amateurs join the WIA to allow us to present a 100 per cent unified front. Please show this item to any non-member amateur stressing full support is needed NOW.

The outcome of this enquiry could have vast national consequences to the amateur service if not handled in a united fashion.

Parliamentary Committees Act 1968, No 7727
REFERENCE TO THE NATURAL RESOURCES AND ENVIRONMENT COMMITTEE
At the Executive Council Chamber, Melbourne, the seventh day of December, 1982
PRESENT
His Excellency the Governor of Victoria
Mr Roper
Mr Spyker
Mr Simpson

INQUIRY INTO RADIO MASTS

Whereas section 4s (1) (e) (ii) of the Parliamentary Committees Act 1968 provides (inter alia) that the Governor in Council by Order published in the Government Gazette may refer any proposal, matter or thing relevant to the functions of the Joint Investigatory Natural Resources and Environment Committee under the said Act for inquiry consideration and report to the Parliament.

Now therefore His Excellency the Governor of the State of Victoria, by and with the advice of the Executive Council thereof, and in the exercise of the powers conferred on him by the said Act, doth hereby refer to the said Committee the following matter, namely:

To inquire into, consider and report to Parliament, by 30 June 1983, whether the environmental impact of larger radio masts throughout the metropolitan area is of a degree of significance sufficient to justify municipal control over the appearance of such masts in residential areas.

And the Honourable John Cain, Her Majesty's Premier for the State of Victoria, shall give the necessary directions herein accordingly.

TOM FORRISTAL
Clerk of the Executive Council

CABLE TV

The following letter was forwarded to the Queensland Division of the WIA by Mr David Jull MHR in response to a query raised in respect of cable television. This is the Minister of Communication's reply:

Dear Mr Jull,

I refer to your letter of 22 November 1982 in which you made personal representations on behalf of Mr Fred Saunders of the Queensland Division of the Wireless Institute of Australia. Mr Saunders is concerned that problems of electromagnetic compatibility (EMC) encountered overseas may be repeated here unless adequate planning takes place for the installation of cable television.

I am not yet in a position to give you a definitive answer regarding technical standards for cable television hardware. This is a complex issue which involves consideration of the recommendations in the Australian Broadcasting Tribunal Report as well as the report of the Committee of Inquiry into Telecommunications Services in Australia (the Davidson Report).

I would ask you to assure Mr Saunders, however, that I am fully aware of the implications of his question. I am concerned to protect the rights of existing users of telecommunications services and of the radio frequency spectrum. I am giving this matter careful attention in my evaluation of the recommendations of both reports.

Yours sincerely
N A Brown
ONE OR TWO ROTTEN APPLES

In any society, it is an accepted fact some people step outside of the guidelines of the establishment. The reasons for this could probably be summed up as follows:
1. ignorance of the rules
2. downright stupidity
3. personal selfish reasons

The amateur service as we all know, has some very strict rules, and if someone operates their equipment outside of the regulations, it casts doubt on our viability and may have repercussions which could affect us all.

The WIA has fought for many years to win the operating privileges we now possess. The WIA and the amateur service are held in very high regard in official circles, and for a hobby activity, this is no mean feat.

We have got where we are today the hard way, but there is still a lot more work to be done. We shall now allude to an area which is of immense concern to the WIA and the amateur service in general. The offenders are in the minority, but their actions can cause us all harm.

Recently a number of amateurs have expressed to the Federal Executive their concern at the on-air conduct of a small number of other amateurs. I believe these complaints are justified.

Because we believe that it is very important that so far as possible the amateur service is self-regulating, the executive has decided that I should remind all amateurs of their obligation to comply with the conditions of their amateur licence.

Currently, there is much debate in our country as to whether or not a dam should be built on the Franklin below Gordon River in Tasmania. I respect the fact that many people hold very sincere and very strong views on that matter.

However, there is, in my view, no doubt that certain matter has been transmitted relating to this issue by some amateurs that can be described as information of a political character. That is contrary to the conditions under which amateurs are licensed. It also involves the amateur service in a controversy, whatever view one takes of the matter, that has no place in amateur radio. Other frequencies should be sought by those who wish to use radio for such purposes.

Offensive or obscene language is prohibited, yet we have heard such language on certain HF bands.

Radio amateurs have a privileged use of the radio spectrum for purposes that are responsible and non-commercial and non-political. I sincerely believe that if any of us, whether unthinkingly or because of strong and sincere convictions, use the amateur bands improperly, we prejudice all amateurs. We invite new and more restrictive regulations, and stringent policing of those regulations.

The Wireless Institute of Australia’s most important role is to advance the interests of Australian amateurs. I would not like that role to become basically defensive.

Accordingly, I urge all amateurs, the divisions and other organizations to be conscious of the basis of our use of our bands and to encourage each other for all our benefit to use our bands only responsibly, non-politically and non-commercially.

Law abiding amateur operators must be continually alert for breaches of the regulations by others, and point out politely to offenders the errors of their ways. If difficulties arise your division should be advised immediately, so that proper action may be taken.

INTERNATIONAL NEWS

NEWS FROM ARS — INDIA

The Government of India now permits each Indian Radio Amateur to obtain foreign exchange to the value of Rs 10,000/- (approx. $US1000) each year to import amateur equipment.

During 1982 Yaesu offered ‘rockbottom, slashed prices’ for their equipment and as a result there is a sudden growth of VHF activity in India.

There is an IBP beacon operational, from New Delhi ‘around-the-clock’ on 28.295 MHz— callsign VU2BCN. QSL to VU2VIM.

The 80 metre band has been extended and VU amateurs may now operate 3.500-3.540 and 3.890-3.900 MHz. But the new 10, 18 and 24 MHz WARC bands are not yet allotted in India.

By the 1st January 1983 the number of valid amateur licences issued in VU-land was expected to be over 1100.

Over the past thirteen years have you worked an odd prefix emanating from India and wondered ‘why the change’? Here is a list of the prefixes used, the times when operational and the reason.

(A) Month of October 1969... Call prefix VU9 instead of VU2 to mark the Gandhi Centenary Celebrations.
(B) Months of August to December 1972... Call prefix VU25 instead of VU2 to mark the 25th Anniversary of Indian Independence.
(C) Month of May 1979... Call sign VU25ARS instead of VU2ARS to mark the 25th Anniversary of the AMATEUR RADIO SOCIETY OF INDIA, New Delhi (ARSI was born on 14 May 1954 at New Delhi).
(D) Month of November 1981... Call sign AU2CD instead of AU2HV was allotted to mark the annual children’s day celebrations beginning every year on the birthday of late Jawaharlal Nehru, the first Prime Minister of India. (14th November.)
(E) Month of December 1981... Call sign AU2SIF was issued to South Indian Fair at Hyderabad.
(F) Months of August to 15 December 1982... Call sign VU9 instead of VU2 to mark the 9th ASIAN GAMES being held in India at New Delhi, Bombay & Jaipur.
(G) Months 14 Nov. ’82 to 5th December ’82... Call sign VU22AG instead of VU2CG/VU2ARD to begin on the annual children’s day celebrations at the site of celebration and to continue till end of 1982 ASIAN GAMES.
(H) Months of 24 Nov. ’82 to 5th December ’82... Call sign AU9ASG instead of VU2APR (Hyderabad APARS) representing 9th ASIAN GAMES. A group of amateurs from South India, Hyderabad, maintained Communications on HF between Jawaharlal Nehru Stadium, New Delhi and Asian Games stadium at Jaipur.
CONSTRUCTION

For those with sheetmetal working facilities, a suggested form of construction was shown in Part 1. A chassis area of about 330 x 270mm, and front and rear panels of 330 x 155mm will be required. By placing the plane of the main chassis pan about 57mm from the bottom, it will be possible to accommodate the main receiver components upon the top side, and any converters underneath. If metalworking facilities are not available, there are several ready-made instrument cases available from several suppliers. One should be chosen with dimensions similar to those mentioned above.

The components for the RF amplifier, mixer/filter, IF amplifier, product detector/AF/AGC amplifier, VFO and calibrator are accommodated upon the copper side of home-made printed circuit boards. By using this method, considerable effort is saved in not having to drill the boards for components. Troubleshooting is made easier too, as tracks are easily traced, and components can be easily replaced. To delay temperature effects, the VFO circuit board and variable capacitor should be housed in a die-cast box measuring 65mmW x 120mmL x 40mmH, provided the variable capacitor can be fitted into the available space. The hole for the capacitor shaft must allow sufficient clearance so that the shaft does not touch at any point, otherwise annoying little variations in frequency can occur due to this noisy ground path. A 15pF capacitor may not be easy to obtain, so values have also been given on the circuit for the use of a more commonly available 100pF capacitor.

A simple Jabel dial may be used to display frequency. However, aside from a digital dial, a better approach may be in the method employed in the prototype: a 6:1 planetary reduction drive is fixed to a right-angled bracket as shown in the photo in Part 1, and connected to the VFO capacitor shaft via an insulated flexible coupler. A 140mm diameter disc is cut out from 18 gauge aluminium sheet, drilled, and sprayed with white undercoat paint. This will allow Letraset to be used marking the 10kHz dial divisions (resolution to 1kHz will be possible by interpolation). During final assembly, the disc is fixed to the raised boss with the screws supplied with the drive unit. A slot will have to be cut in the chassis to allow the disc to be positioned in the centre of the front panel. An arc shaped window must be cut in the front panel, the radius of which must be just less than that of the disc. The window should be covered by a piece of clear perspex, and held in place by three countersunk screws, two above and one below the window. It was found helpful to drill and tap the screw holes in the perspex to save the difficult job of placing nuts onto the fixing screws in the resultant tight space. The window is scribed down the centre with a vertical line to provide a pointer. A bush...
VFO (Crystal Oscillator)

The bearing must be placed in the front panel where the spindle shaft emerges so that hand weight is not transmitted to the reduction drive.

An eleven position, 3-bank wafer switch should be incorporated in the receiver, preferably on the lower panel area so that other bands, ie converters, may be added later when required.

The trifilar broadband transformers T2 and T3 are made as follows: Take three 350mm lengths of 24 B&S enamel wire. Lay them parallel to each other, twist them together at one end, and place that end of the group in a vice. Starting at the vice end of the group, draw a cloth through them to remove any wrinkles. Now twist the other ends together and fix them firmly in the chuck of a hand drill. Turn the drill whilst keeping the wires taut until there are about three twists per cm, then give the drill a tug to set the twists, and remove the twisted group. Carefully thread the group through a Neosid 4327/2/F25 core until there are about 11 loops. Leave about 2cm of wire at each end of the winding, and remove about 1cm of enamel from each lead. A multimeter (on ohms) can be used to identify the separate windings. It is essential that the end of one winding be connected to the start of another winding to form the centre tap for the secondary of T2, and the primary of T3.

T1 and T4 are made in a similar manner. Once again, it is essential that the end of one winding is connected to the start of the other winding to form the centre tap.

The single layer coils; L1, L2, L3, L4, L10 and L13 are wound upon Aegis 3510 coil formers. Shellac has been found to work well as a cement for this type of coil — even that in the VFO. It should be painted over the full length of the winding and allowed to dry before the ends are soldered to the tag ring provided. About 3cm of elastic (cotton removed) must be inserted with the slug to hold the slug in place.

ADJUSTMENT

If a signal generator is available, many of the assemblies may be built and tested individually. The product detector/AF/AGC amplifier board may be made first. If a frequency counter is available, the BFO frequencies may be set to about 9005kHz with L10, and to 9008kHz with C56. If a counter is not available, the BFO frequencies can be set by ear on a CW or SSB signal when the receiver is complete.

The IF amplifier may be made next. Upon completion and connection to the product detector, a 9MHz signal from a signal generator may be applied to the input via L5. A fairly large signal will probably be necessary at first. With adjustment of C21, 25 and 32, the generator level should be decreased. With the IF amplifier tuned to 9MHz, it should be possible to hear a 1 microvolt signal.

If a generator is not available, the connection of an antenna via the filter to L5 will allow adjustment of C21, 25 and 32 using whatever signal or noise happens to be on 9MHz at that time.

A preliminary adjustment of AGC set pot R49 will be possible at this stage; R49 should be increased until AGC action just begins and no more. This point will probably occur about one-quarter travel from the ground end of R49. The AGC pot can be adjusted later to provide what the user feels is satisfactory AGC action. S-meter sensitivity pot R64 should be adjusted so that the meter does not pin violently upon reception of a strong signal.

Upon completion of the VFO, its tuning range can be set with C68 so that it covers 10.8 to 11.0MHz with a bit to spare at each end. If a frequency meter is not available, the range may be set later using the crystal calibrator. The front panel calibration pot allows about plus or minus 5kHz swing to correct for inaccuracies in the converter crystals and to align the VFO for USB/LSB reception. The remaining assemblies; balanced mixer, RF amp and crystal calibrator may be completed in that order.

If desired, it will now be possible to haywire the assemblies together upon a scrap of aluminium sheet and check that the receiver works as a whole before wiring them into the receiver chassis.

L1-L4 may be adjusted with the use of a signal generator, or with off-air signals from an
Coils and Transformers

Some compromise will probably be necessary in their adjustment so that a flat sensitivity response is obtained across the band.

When the tuning range of the VFO has been established, the calibrator may be used to find the 50kHz points on the dial. With the perspex removed, it will be possible to place Letraset sheet in position from above and behind the panel and rub the figures onto the dial through the window opening. If a stable calibrated signal source is available, such as a BC221 frequency meter, a known frequency can be introduced into the receiver input and used to supply the 10kHz spaced check points for calibration. Send a large SAE to the author for a copy of the circuit board artwork and location diagrams.

Photos — Peter Dalliston.

PARTS SOURCES
Coil formers, toroids, dial drive and many other parts: J H Magrath, 55 A'Beckett St., Melbourne, and Watkin Wynne, 32 Falcon St., Crows Nest.
10k : 2k transformer, CA3028's, 5MHz crystal and many other parts : Ellistronics, 289 La Trobe St., Melbourne.
27MHz CB crystals and many other parts: Tandy Electronics.

Note
John Moyle National Field Day Logs must be received by the Federal Contest Manager by the 23rd March, 1983, to qualify for any awards.

WHO IS THIS AMATEUR???

He is over 80 years old, of slight build but always very well groomed and dressed and he, without prompting, frequently took the part of host at Brisbane WIA meetings in the 1960s.

In the mid thirties he would sit in the vestibule of his workplace, Queen St Brisbane giving members lunchtime opportunity to collect and deliver QSL cards.

For many years he was a scoutmaster, and was also one of the most popular secretaries of the Queensland Division. In 1936 he was a Federal Councillor.


Recently he had the thrill of contacting Taupo, NZ, via the Brisbane 2 metre repeater from his room at Girraween Hostel Redcliffe with a 2 watt hand held.

He enjoys relatively good health and an occasional whisky. Yes he is Bill. VK4WX, VK4WT, 1932, and VK6WT.
Reviewed by, Bruce Bathols, VK3UV

From an operators point of view only

HAL CT2100 COMMUNICATIONS TERMINAL AND HAL KB2100 KEYBOARD

One of the latest pieces of equipment to pass across my bench was the HAL CT2100 Communications terminal and the HAL KB2100 matching keyboard.

Here are some of the specifications as taken from the leaflet accompanying the terminal.

- Send or receive ASCII, Baudot, or Morse code
- RTTY and Morse demodulators are built-in
- RTTY speeds of 45, 50, 74, 100, 110, 300, 600 and 1200 baud — ASCII or Baudot
- Four RTTY Modems: “high tones”, “low tones”, “103 Modem tones”, and “202 Modem tones”
- Three shifts for high and low tones (170, 425 and 850 Hz)
- Crystal-synthesized transmit tones
- Send and receive Morse code at 1 to 100 WPM
- Characters displayed on 24 line screen
- Choose either 36 or 72 characters per line
- 2 pages of 72 character lines or 4 pages of 36 character lines
- Split-screen for pre-typing transmit text
- Audio, current loop, or RS 232 data 1/0
- Printers available for hard-copy of all 3 codes
- On-screen RTTY tuning bar plus LED indicators
- ALL ASCII control characters; half or full duplex
- Brag-tape storage of 8-256 character messages in MSG2100 EPROM option
- Two programmable HERE IS messages

The station transceiver used for testing was the ICOM IC720A for HF, and the Icom IC290A for VHF. All tests were conducted using AFSK only, although it would have been a simple matter to wire up the FSK facility on the IC720A. Only the RTTY 45 Baudot and CW functions were tested, however other Baudot speeds and ASCII codes are an integral part of the terminal (see specs).

RTTY REPORT

Having had some previous experience with RTTY computer terminals, it did not take long to interface the HAL terminal to the HF transceiver. As one would expect, the terminal is no toy and care must be taken to ensure the correct connections are made.

A very comprehensive instruction manual gives explicit detail on the unit’s operation and capabilities.

To the newcomer to this type of equipment, there is a special section in the manual for those that cannot wait to read the manual fully, and gives basic instructions for hooking up the terminal to receive signals in the interim.

After satisfying oneself that all appears to be in order initially, it is then strongly recommended that you sit down quietly for an hour or so and read the operations manual thoroughly. It is a bit like the old adage “If all else fails, read the instructions first”. So HAL have included the initial testing chapter for the impatient. Full marks to HAL for that facility.

After becoming fully accustomed with the terminal, and also soldering up the various connectors (supplied) required for the audio and switching functions, I started looking for weak RTTY signals on 20 metres. The terminal performed admirably and printed up 100 per cent copy from signals which were barely audible to the ear.

The built in tuning indicators were particularly sharp, and in conjunction with the passband tuning system of the transceiver, excellent rejection of adjacent interfering signals was made.

Signals well into the noise floor were printed perfectly and no copy was lost.
Hooking up an old Model 15 Teletype and loop supply to the loop keyer on the rear of the terminal, gave a hard copy of what was displayed on the screen. On transmit, the separate keyboard was most simple to use. The keyboard itself is lightweight and connected to the terminal by a length of 'curly' cord. This enabled operation in comfort with the keyboard resting on my knees. I could have placed the keyboard on the operating desk or any other convenient location.

As a fair majority of RTTY operators are two finger typists, the built-in buffers of the terminal retained each word in memory until the space bar was activated. That means it does not matter what speed you are able to type at, the terminal would send each completed word at a preset rate, then wait for you to make up another word until the space bar was hit again. In the intervening periods, the terminal sent the 'letters' code. This facility makes a 'hunt and peck' typist look like a 60 WPM expert secretary.

Wrap around half screen facilities are included and enable the operator to commence typing a reply into the buffer memory while still receiving the other station. If a quick break was needed in response to a query while typing up the next reply, the buffer could be by-passed at the push of a button, the special query replied to, then back to receiving and typing up the buffer again without disturbing the contents of the original buffer.

Under normal operating conditions 86 milliamps is drawn through the regulator, there is an input-output voltage difference of approximately 4.8 volts, minus the 0.6 volt drop across Q31. There remains 4.2 volts across R141. The resistor therefore dissipates 360 milliwatts.

This means that the resistor in circuit is underrated and has on many occasions burnt out, though usually it just gets very hot. If the set goes out of lock either through a fault condition or if a channel position has been selected, that is vacant of diodes, the idle current shall rise from 86 to 100 milliamps. The extra current will in a very short interval cook the resistor, which shall rise in resistance and simulate many other faults, particularly in the phase-locked loop board by providing less than 9 volts.

This effect may occur more frequently to those who use an "external programmer" comprising eight switches as, through usage, they tend to fall out of lock more frequently.

It is therefore suggested that, whenever routine maintenance to the 22S is being done, that this resistor, R141, be replaced with a ½W version of the same value. It's only a little modification but it could save some major headaches.

The 22S is a very popular 2 metre transceiver, hundreds of them are used in Melbourne alone, their frequency control uses a diode matrix system to select a channel in a 25 kHz increment.

The printed circuit board is very susceptible to intermittent faults which produces an "out of lock" condition, these faults are annoying but can be repaired in time.

This article is not about the "out of lock" fault, but of a secondary fault that may arise from this condition . . . the frying of the voltage regulator.

The circuit Fig. 1 is of a voltage regulator that supplies half of the set with power, RF oscillators, mic. pre-amp stages and the PLL board.

The circuit is duplicated in Fig. 2 in a simplified form. It shows a typical zener reference assigning 9.6 volts to the base of a series regulating transistor via a diode. The transistor has full supply voltage (13.8 typ.) applied to the collector via a 15 ohm ½W resistor and thus 9 volts regulated appears at the emitter.

The 22S A Common Fault

Ian Jackson VK3BUF
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From "Gateway" February 1982

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NIGHT TIME VHF PROPAGATION

A semi-theoretical assessment of the mechanisms involved with support from the author's experience over four years of operation in Darwin (a VHF DX'ers paradise)

1. THE NIGHT TIME IONOSPHERE

The ionosphere is generated by ultra violet radiation from the sun ionizing (or detaching electrons from) rarefied gases in the upper atmosphere. Because of the spectrum spread of the ultra violet radiation striking the upper atmosphere there is a tendency for ionization to occur in several different layers. The extent of the ionization is dependent upon the intensity of the incident radiation.

The ionosphere is also affected by charged particles generated in solar flares on the sun which arrive about a day after a major flare. These particles are deflected by the earth's magnetic field towards the poles and disturb the upper layers of the ionosphere.

Because of the sun being overhead the geographic equator at the equinoxes, it might be expected that the density of ionization would be at a maximum over the equator at these times. Actually two maxima occur and these are centred not about the geographic equator but over the line of zero magnetic dip, or the geomagnetic equator. These maxima begin to form in the morning and a pronounced valley between them becomes observable by noon and lasts till after midnight.

The maxima do not move north and south with the seasons, but with the migration of the sun in summer and winter the system becomes unbalanced with considerable differences between the high density areas which form in the regions approximately 10° to 15° from the geomagnetic equator.

The influence of the earth's magnetic field is marked. Not only are the maxima symmetrical about the magnetic equator, but the ionosphere is set by magnetic storms and influenced by changes in the magnetic field. On magnetically disturbed days the high density areas tend to be closer to the magnetic equator.

The earth's magnetic field in space is not a neat dipole field but is compressed against the earth on the sunny side by the solar wind and is extended far into space on the side away from the sun. The earth and its ionosphere rotating within this field thus encounter a rapid change after sunset. The resultant dynamo action sets up strong electric fields, the lower levels of the ionosphere are sucked up, and the upper levels bulge outwards and reach a maximum about two hours after sunset. The turbulent regions then subside and high density irregularities then align themselves with the earth's magnetic field.

This phenomenon is observed on vertical incidence ionograms as "Spread F". The size of the irregularities is not accurately known but they are thought to be in the order of 10m wide and 1km along the magnetic field lines; larger areas may also exist at the same time.

2. 144 MHz PROPAGATION MODE

There has been much discussion recently about the propagation mode of VHF trans-equatorial signals and I am not in a position to comment on these theories but the following theory fits my experiences reasonably well.

Two aspects need consideration; one is the mode of propagation through the ionosphere and the second is access to or transition from this propagation medium.

(a) Ionospheric Propagation

It is generally accepted that in the evening, VHF signals are propagated across the equatorial regions by guidance between field aligned irregularities along ducts.

This guidance across the equator can be likened to a "sheath" of fibre optic filaments extending to each side of the geomagnetic equator. The "sheath" terminates in a "transition zone" permitting access to the ends of the "fibres" by VHF signals. Once a signal is inside a "fibre" it is trapped until it comes to the other end. Access at intermediate points is prevented by the lack of a suitable "transition zone".

In real terms this guidance is probably in ducts, large waveguide-like structures created by the alignment of ionospheric irregularities by the earth's magnetic field. The requirement for guidance is related to specific ionization densities and abrupt changes in ionization density at the edges of the duct.

The path length depends upon the spread of these irregularities either side of the geomagnetic equator, the maximum propagated frequency on the ionization levels and the gradients present in the irregularities.

Seasonal variations in observed propagation would be due to a non symmetry of ionization on either side of the geomagnetic equator.

(b) Transition Zone

In order to gain access to the ionospheric propagation medium across the equator, access to the ends of the ducts is required. It has been suggested that this transition is simply a matter of entering the ducts tangentially and this can be predicted geometrically by the height of the F layer in which propagation takes place and the area in which a transition zone occurs.

The area in which a transition zone would occur is related to the spread of sufficiently dense ionospheric irregularities from the geomagnetic equator. It has been shown that on magnetically disturbed days the two "bulges" of ionization on either side of the geomagnetic equator are closer together. It can be assumed then that the transition zones in the evening move similarly in response to changes in magnetic disturbance.

The path length of propagation in the Darwin-Japan circuit is much less than the Athens-South Africa circuit and I assume that this can be related to both the spread of the two transition zones and the F layer height at which the ducting of signals occurs.

I do not rule out the possibility of another mechanism for accessing the ducts however.

3. DISCUSSION ON 144 MHz PROPAGATION

(a) Limited area of Reception

The statistical base for determining the geographic limits of propagation of amateur signals from Japan to Darwin is very good because of the large number and distribution density of amateur operators in Japan. On the circuit described the maximum easterly deviation from north-south has been found to be 400 km over a path length of 5000km. Tests run with stations to the north west of Japan in Korea have failed to establish propagation and similar results to the south in Okinawa have also failed.

(b) Focusing of Signals

On many occasions focusing of signals to very small areas within the overall geographical area has been observed. A general drift of focusing from east to centre has similarly been noticed with contact being established with the eastern most stations (in JA3) early in an opening.

(c) SSB Signals

The doppler spread of signals experienced in the Africa/Europe sector is not as apparent in the Australia/Japan Circuit and almost all contacts were established using SSB at perfect readability.

On a small proportion of openings intelligibility at the beginning of an opening
was impaired by an “auroral like growl” rending CW almost uncopyable but this abated after about 15 minutes and strong relatively stable conditions resulted. Marginal openings do not suffer this signal quality degradation, with SSB being copyable immediately.

(d) **44 MHz Propagation without 50 MHz propagation.**

Propagation has been experienced on 44 MHz on a few occasions when signal levels on 50 MHz were severely reduced. However on these occasions amateur stations in southern Australia were always experiencing enhanced 50 MHz propagation at the time. I believe this to be the result of high ionization levels preventing access of 50 MHz signals to the transition zone while 144 MHz signals can penetrate the ionosphere. This I believe is a result of enhanced spread of the ionized areas on magnetically quiet days.

(a) **Variable Flutter on signals**

Prediction of an imminent opening at 144 MHz to Japan by means of the depth and level of flutter on 50 MHz signals received from stations in the 144 MHz propagation zone in Japan can be accomplished. Signals from other areas in Japan do not have the same flutter. This indicates to me that the propagation mode at 50 MHz is different to that for 144 MHz, and I suggest there are in fact three forms of enhanced VHF ionospheric propagation observable in equatorial areas in the evenings.

(ii) **Evening type TEP**

The propagation of 50 MHz signals from various parts of Australia to Japan in the evening at various angles to the magnetic field can be adequately described as evening type TEP.

(ii) **TEP Ducting**

The propagation of signals by means of ducts formed by field aligned irregularities (FAI) from 50 to above 144 MHz appears to be different from evening TEP propagation. The path geometry requirements are different, and different flutter characteristics occur on the received signals.

(iii) **Night time equatorial F2**

The existence of propagation with less flutter than that of normal evening type TEP signals, between Darwin and such places as Guam (KG6), Papua New Guinea (P29), Solomon Islands (H44), Indonesia (YB) Christmas and Cocos Islands (VK9) etc on a regular basis at extremely high signal levels, indicates F2 single hop propagation. I will return to 50 MHz propagation later.

(j) **JA “Beacons”**

Many paging transmitters using continuous carrier and tone modulation are received in Darwin between 146.48 and 146.82 MHz coincident with JA amateur signals. In practice I always listen to a 146.810 MHz beacon to be aware of 144 MHz openings. These beacons are of high power level at good locations and are always observable shortly before and after JA amateur signals on 144 MHz. The beacons appear to be clustered about 146.5 and 146.8 MHz with as many as 30 different transmissions being observable.

4. **PREDICTION OF 144 MHz OPENINGS**

The criteria for 144 MHz propagation on the Australia — JA path are:

1. Geographical position with regard to the geomagnetic equator.
2. Seasonal variation, peak times March and September.
3. Daily time around 2100 local.
4. Magnetically quiet day, K index less than 3 on the WWV solar/terrestrial indices report at 18 minutes past the hour.
5. Solar flux greater than 150.

A noticeable variation from normal 50 MHz TEP flutter rates would indicate the area of possible contact.

5. **50 MHz EVENING PROPAGATION**

(i) **TEP RELATED F2**

The existence of VHF propagation at 50 MHz in the mid to late evening between stations located either side of the geomagnetic equator has been observed for many decades and is well known to VHF operators. Not so well known is the occurrence on a regular basis of night time F2 propagation in the tropical zone.

Propagation between stations in the equatorial zone, at various angles to the magnetic field including perpendicular, occurs regularly. In the Japan — Australia sectors this is such as Guam — Japan, Hong Kong — Guam, Japan — Philippines, Japan — Malaysia, Australia — Guam, New Guinea, Indonesia, Solomon Islands, Malaysia, Cocos Island, Christmas Island exist from time to time.

The path from Darwin to Guam has very high reliability and occurs whenever evening TEP to Japan is observed. Similarly the path from Darwin to Malaysia and the Philippines has high reliability.

These paths can exist without evening TEP being observed particularly on magnetically disturbed days. This indicates the establishment of suitable TEP conditions in only the southern part of the TEP circuit.

Propagation to stations which lie nearer to perpendicular to the magnetic field at Darwin ie. New Guinea, Solomon is., Indonesia and Cocos and Christmas Islands, occurs less regularly and is linked to the spread of high levels of ionization away from the geomagnetic equator.

Ionization can reach very high levels as is indicated by very short skip openings to West Irian from Darwin.

The propagation medium is identified as TEP related F2 by flutter which is less marked than normal evening type TEP to Japan and its correlation to evening type TEP by seasonal and diurnal occurrence.

I believe that this TEP related F2 propagation is linked more precisely with the formation of FAI ducting and the signals are in fact reflected back from the underside of this ducting.

Because of the westward extension of the night time TEP zone caused by the setting sun, propagation using multiple hops along this tropical band occurs. I have observed multiple hop F2 propagation to India and Nepal, Gibraltar and by coupling into the day time F2 ionization peak, to French Guyana in South America long path via the night side of the earth.

(ii) **Evening type TEP**

I have previously mentioned that I do not consider FAI to be responsible for night time TEP at 50 MHz. There is considerable evidence that large scale structures exist in the night time tropical ionosphere current with the smaller FAI and I suggest that it is likely that these are responsible for evening type TEP at lower VHF frequencies.

6. **RELATIONSHIP BETWEEN THE GEOMAGNETIC EQUATOR AND DAYTIME F2 VHF PROPAGATION.**

As mentioned previously, in the morning of days during the sunspot cycle peaks, bands of enhanced ionization form at about 10 degrees either side of the geomagnetic equator. These bands of ionization form ‘freeways’ which support 50 MHz propagation during the day. The paths between Europe and the Caribbean and Japan and South America follow these paths.

The night time path from Darwin to French Guyana follows this “freeway” from India over Israel, Italy, Gibraltar and across the Atlantic to South America. Propagation to India is by double hop TEP related F2.

Propagation from Southern Australia to the Caribbean and the United States uses these freeways but crosses them at an angle and requires additional F2 or Es reflections at either or both ends of the path.

It is a very interesting and worthwhile study to plot the geomagnetic equator on the globe and centre your own location on one axis and its antipodes on the other. By observing where paths follow a course parallel to the geomagnetic equator optimum VHF F2 paths can be determined.

7. **CONCLUSION**

This article is not meant to be a definitive scientific report but rather a summary of special VHF propagation I have observed while in Darwin for the last few years.

8. **REFERENCES USED**

TWO TONE TEST OSCILLATOR FOR SSB

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A two tone generator is a useful item to enable linearity and power output checks on the SSB transceiver and linear power amplifier. This article describes a two tone generator, built by the author, using tone generator devices FX205.

The FX205 is a device which generates digitally, a stable staircase waveform simulating a sine wave (refer Figure 1). Low distortion is achieved by the addition of a simple RC sine shaping filter. Performance tests carried out by the author on the FX205 have produced the following results:

- **Frequency Stability**
  - (a) Less than 2% change over a temperature range of 20°C to 65°C.
  - (b) Less than 2% change over a supply voltage range of 12 to 15V.

- **Output Voltage Stability**
  - (a) No noticeable change over a temperature range of 20°C to 65°C.
  - (b) Output voltage is proportional to supply voltage, (ie output voltage stability is dependent on supply voltage stability).
  - (c) Using frequency adjustment control (RV1 in Figure 2) over its full range, maximum output voltage change is within 0.5 dB.

  *NOTE: This is without the filter which does not have a constant attenuation versus frequency characteristic.*

Using the FX205, as shown in the circuit of Figure 2, an output voltage range of 3.5 dB is provided by the adjustment of RV2 and a frequency range of 10 to 1 is provided by the adjustment of RV1.

**Frequency Range of the FX205 is 30 to 5,000 Hertz.**

**Sine Shaping Filter**

The circuit of the complete two tone generator is shown by Figure 2. Sine shaping is achieved by the two filter sets labelled C2, C3, R4, C4, R5, C5. The filters are set for 1,000 Hz and 1,600 Hz respectively to give a distortion less than 1%. If different frequencies are required with similar performance, the following design criteria are applied:

\[
C_2 = \frac{300}{f}, \quad C_3 = 42, \quad C_4 = 19, \quad C_5 = \frac{38}{f}
\]

where C is expressed in microfarads and f is expressed in hertz.

The values shown in Figure 2 are in nanofarads (nF) in case there is some confusion.

Not that each filter is designed for one frequency operation. If variable frequency operation is required, a low pass filter with constant attenuation in the passband is needed. The predominant harmonic is the seventh and hence the cut off frequency must be less than seven times the lowest frequency of operation with tuning frequency range restricted to about 6 to 1.

**Tone Combination**

The two tones are combined in R8 and RV3 and wired to a standard microphone free socket to replace the microphone feed to the transceiver. A switch to replace microphone press to talk is also provided. Two tone output level is set by RV3.

**Assembly**

Layout of the generator unit is not critical but it is advisable to enclose the unit in a metal box as a precaution against feedback from radiated RF. Furthermore, the output is at low microphone level and this should be shielded to prevent noise pickup.

The author assembled the components on a vero board and housed this in an inexpensive 13 cm x 8 cm x 5.5 cm aluminium box which was available at the local electronics store. RV1A-B and RV2A-B are trim pots mounted on the board. RV3 and the two switches (power and PTT) are fitted as external controls. The 12V supply shown in the circuit diagram is nominal. A supply between 10V and 15V is within the FX205 specified tolerance. (The unit constructed, actually worked well from a 9V battery.)

**Adjustment**

The individual tones are monitored at TPA and TPB with the PTT switch set to short circuit RV3. Frequencies are set at 1,000 Hz and 1,600 Hz respectively by adjusting RV1A and RV1B and measuring at TPA and TPB with a frequency counter or reference oscillator and CRO. RV2A and RV2B are set for equal output voltages at TPA and TPB.

Frequency must be set before adjusting levels as the attenuation of the shaping networks varies with frequency.

Once set up, no further adjustment is necessary and two tone output level is set by RV3.
The main role of the new microscope is to examine a wide variety of crystalline and amorphous metals and semi-conductors, at sufficiently high magnification and resolution to make visible detail on the atomic scale.

Although this is not the first high voltage electron microscope to be designed for high resolution, it has several unique features which make it the most flexible and versatile. The electron gun employs a lanthanum hexaboride cathode which gives such a high brightness that images can be observed on the viewing screen even at a direct magnification of 500,000 times, making focussing and correction of image astigmatism much easier. The microscope, which with the electron accelerator weighs some 7 tonnes, is supported on a three-point suspension system to reduce the effect of site vibrations. The high voltage generator, supplied by the firm of Emile Haefely of Basel to a high specification, has been further stabilized to better than one part in a million by electronic means designed and constructed locally. The basis of the microscope proper consists of the column of electron lenses of the EM-7 microscope developed by AEI. That microscope was partly based on the original 750 kV microscope built in the Cavendish Laboratory in the 1960s. The most important lens, the high-power objective, has been modified to improve its imaging performance. Circuits of the extra high stability required for the lens current supplies have again been made on site.

Preliminary investigations, made by Dr D J Smith VK3ZSS in collaboration with specialists in Cambridge and elsewhere, have already demonstrated the potentialities of the new microscope in a range of problems of considerable scientific and technological importance.
A JUNK-BOX ATU

As promised last month we have details of an ATU that you can build from your junk-box.

Once the optimum settings have been found for each band record them on a card and tape this card to the top of the ATU for future reference.

THE VSWR METER

The VSWR meter is the transformer coupled type. All VSWR meters use a directional coupler usually one of two common configurations. The most common uses two parallel coupling lines. It is frequency sensitive.

That is for a given indication more power is required as the frequency is lowered. The coupler described here gives the same indication for the same power for frequencies from 3-30 MHz

Transformer T1 gives a voltage generated by the current in the line. Fig. 2 shows how

THE CIRCUIT

The tuner circuit is a pi coupler, made from the components of the PA circuit of an old valve AM transmitter, with an additional tuning capacitor in series with the antenna.

The large variable capacitor C1 allows the transceiver to be tapped up the tuned circuit. The tapping on L is set according to the band in use and C2 and/or C3 used to tune to resonance.

TUNING-UP

To tune-up, select an unused frequency close to your desired operating frequency. Set L to the band in use. Turn C1 to half mesh and set C2 and C3 to minimum mesh. Apply 1 to 10 watts of CW and adjust the sensitivity control of the VSWR meter to indicate half scale. Tune C3 for minimum reflected power. Adjust C1 and C3 until reflected power indicates zero.

If a dip in reflected power is not found in the first instance set C1 to a different position (¼ or ⅓ mesh) and tune C3 again. If no dip can be found set C3 to full mesh and adjust C2 and C1 for a dip. Sometimes changing the tap on L will give better tuning. For example when on 80 metres the tap may be set to 40 metres.

Fig. 1 — VERSATILE JUNK-BOX ATU

L — Geloso AM Tx Tank Coil; C1 — Three gang air-spaced tuning capacitor from valve radio 20-1050 pF; C2, C3 — Air-spaced valve transmitter PA tuning capacitors 270 pF 2kV minimum; R1, R2 — 100 Ω 1 watt carbon resistors (or low inductance alternative); M1 — Twn VU meter, 50 μA.
the coaxial line is opened to form a 1 turn primary for T1. Capacitor C4 couples the line voltage to the detector circuit. D2 rectifies the combined signal producing a DC voltage proportional to forward power. C8, R4 and C10 form a filter circuit. A look linear potentiometer is used to set a convenient indication on the meter, M1(b).

If there is no reflected power the combined voltages from T1 and C4 applied to D1 is then zero. If there is some reflected power the diode D1 rectifies this, C7, R3 and C9 smooth this and the result is indicated on M1(a).

By using an inexpensive twin VU meter and a ganged potentiometer for RV1 both forward and reverse power are simultaneously displayed.

If the sensitivity control is graduated it can be calibrated to provide power measurements as well as VSWR measurements.

R1 and R2 provide terminations and DC returns for T1. A network consisting of an RFC and a shunt capacitor is used to adjust the frequency response of the system. To adjust C5 replace the ATU with a 50 ohm dummy load and with power applied at say 14 MHz (or 21 MHz if you can’t produce 14 MHz energy), vary C5 for minimum reflected power indication. Check at 3.6 and 28 MHz and, if necessary, make any small compromise adjustment for equal (if not zero) reflected indications. Use the maximum sensitivity for final adjustments.

CONSTRUCTION NOTES
A metal case is recommended for housing the ATU components. The layout is not particularly critical. Note that C3 is mounted on a bracket and an insulating coupling used. This capacitor can be at a very high RF voltage. For RF powers above novice level C3 needs to be carefully chosen as the voltage across it can be many kV even at 100 watts of output. The photographs show the general arrangement I used. Other builders have used a square front panel and re-arranged the components accordingly.

USING OPEN WIRE FEEDERS
In my unit I have left room for a balun to be installed at a later stage to allow balanced feeders to be used. For the present I prefer to put the balun at the antenna and use a coaxial feeder.

Two inexpensive baluns are shown in Figs. 3 and 4. The one shown in Fig. 3 is an air-cored unit described in the 1982 edition of the ARRL Radio Amateurs’ Handbook. The unit shown in Fig. 4 acts as a 1:1 balun but is in fact a means of preventing any current flowing down the outside of the braid by effectively adding series inductance in the outside of the braid. Currents flowing inside the coaxial cable are not affected.

The core is salvaged from an old TV set. Although the core has been designed for low losses only to a few MHz, negligible loss occurs at 30 MHz.

With this unit any piece of wire from a mattress to a fence becomes a potential antenna.

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ADELAIDE'S PARTICIPATION IN THE DEPARTURE OF ANACONDA II

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Preparation of a yacht for going to sea involves attention to a great many details, but just how much more detail is involved when that seagoing voyage is in connection with a major expedition to a small island over 4000 kilometres distant in Antarctic regions.

In this article it is hoped to give you some idea as to the preparations made for the Adelaide departure of the Anaconda II on the first leg of its trip from Adelaide to Perth prior to heading south west to Heard Island.

Preparing the Yacht

First there is the preparation of the yacht itself. With a myriad of ropes, tackle, winches etc., as well as such things as pumps, sails, engine, refrigerators, generating equipment and a host of other items to be taken care of. Most of this work was carried out by the yacht's 'crew' as distinct from either mountaineers or radio amateurs, however, when aboard it is certainly often a case of 'all hands on deck' and you work together even at dock-side for a common purpose.

The skipper of the Anaconda II, Josko Grubic supervised all activity in his inimitable way, answering questions from several different sources seemingly at the same time, bullying here, cajoling there to get the necessary work done in the most effective way. At the same time he was, no doubt, busy within his own mind planning for the whole of the voyage ahead and yet still so observant to detail that he picked up many little points which seemed to have been overlooked by others, even when they had been working on the very equipment referred to.

The amateurs first assignment was to check out the radio gear. This equipment comprised an Icom IC720A which fed via a Kenwood antenna coupler to an antenna which utilized a piece of solid wire running through the hull of the yacht to feed the base of a sixteen feet fibreglass whip, mounted at an angle of about 30 degrees on the stern. A dummy load and power meter check soon showed that the output of the transceiver was up to par. A visual inspection of antenna connections indicated the expected type of corrosion which occurs in a salt air environment. At the same time the antenna systems for the marine radio equipment were inspected with similar problems noted. Quite some hours were spent to good effect cleaning up the offending connections and a definite improvement in operation was noted in each case. Carrying out of this work entailed some time spent down inside the hull of the yacht in a compartment in the stern where the antenna cables passed through and where remote couplers for the marine gear were located. Time was also spent making repairs to the DF equipment, fixing up and replacing various electrical leads, and assisting in the installation of a new radar and a second satellite navigation system. (It would appear that all the units had landed and were operational from Heard and the radio gear for the amateur bands on the yacht had continued to keep the expedition in touch with the world on the voyage.)

Josko Grubic, the Skipper

Whilst the electronic component was being taken care of much other activity was going on. Those members of the expedition who were embarking at Adelaide had arrived and were bringing aboard various items of personal gear, other equipment and large quantities of foodstuffs. One wondered where this mountain of a miscellaneous nature could possibly be put. The two 4 kVA diesel generators for powering the amateur station on the island were hoisted aboard and stowed on the floor adjacent to a set of sleeping bunks on the starboard side and lashed down. The bunks seemed to actually disappear amongst the load of equipment steadily coming aboard.

Gradually an appearance of tidiness began to take shape in the interior of the
attended and allowed a last minute opportunity for the sale of Heard Island Expedition 1983 tee shirts and other momentos. The presentation included an excellent static display of various items of survival gear, cold weather clothing, special tents, food packs etc, as well as a typical modern amateur radio transceiver and a collection of QSL cards. During an interval refreshments were taken and the South Australian WIA Divisional Council participated by helping with both supply and preparation of much of the supper provided.

During the course of preparations on the yacht there were visits by various representatives of the media including quite a few television cameramen. One visit of note was from the Mayor of Port Adelaide Mr Roy Martens from which port the yacht sailed. Mr Martens wished all members of the party well on their trip and presented the group with an official letter from himself, representing his council and constituents (see page 43, Feb AR). In return Mr Martens was presented with an expedition Associate Membership Certificate and some other items of interest.

Some of the last minute items to be taken care of were a quick taped interview with David VK3DHF for the VK5 Divisional broadcast and a fast run to the city to pick up the spares ordered for the Lombardini diesel engines which power the generators, and then it was time for departure.

You know it’s your day for net control when . . .

From Pike County ARC Capacitor
1. The weather forecast is for lightning storms all day.
2. Your wife/husband says, “Tonight, let’s go out to eat.”
3. You wake up and the power is off.
4. Your child has a special event that only you can help out.
5. Your auxiliary generator wasn’t returned from a Field Day and the power is off.
6. You look for the rig that you took to the QSO party last night as you need it in 30 minutes.
7. The newspaper lists tonight as the last night to see the show you promised you’d take the family to see.
8. The pregnant dog starts to make a nest under the shack table.
9. The linking system to the repeaters suddenly starts malfunctioning.

Reprinted from: ARNS Bulletin - 8 '82

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Reprinted from: ARNS Bulletin - 8 '82
On reading the excellent column “POUNDING BRASS” in February’s issue of AR, reminded me of the multiple calls made by various stations to contact a much wanted transceive operator. Stations have been heard repetitively yodelling the DX station’s call and transmitting their own call only ONCE.

A much wanted station is more than aware of his or her alphanumeric allocation and this habit causes considerable QRM, frayed tempers and places undue strain on the receiving operator. The caller suffers frayed tempers and places undue strain on and this habit causes considerable QRM, station’s call and transmitting their own wanted transceive operator. Stations have of AR, reminded me of the multiple calls that YOU may bring home that valued example and change your calling habits so with the emphasis on the VK generally made by various stations to contact a much genuine reports of 5X9 and your reception brings expedient results. So in 1983 set an log.

HOLIDAY DXING

A note from Bob, VK3AWN advises that he will be on holidays with his XYL, Mandy in the near future. Nothing really extraordinary about the holidays but the prefixes that Bob hopes to use will create much interest to many. Bob indicates that he will be looking for VK Novices from each QTH and hopes to check into the Carribean, ANZA and 14.322 MHz Open House Nets. The proposed itinerary is:

<table>
<thead>
<tr>
<th>Call</th>
<th>Expected Operating Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D2RR</td>
<td>8-17 March</td>
</tr>
<tr>
<td>T2AWN</td>
<td>18-26 March</td>
</tr>
</tbody>
</table>

T30 * 26 March-8 April
T32 * 8-12 April
5W5EB 12-18 April

This is an all band SSB and CW operation, 10 thru’ 80 metres and 160 metre operation from Kiribati. Six metre operations are dependant on the acquisition of suitable portable equipment and will be announced by Peter VK3ABY. Direct QSLs with return postage and envelope will be handled by Alan, VK3DOK, PO Box 6, Newport, 3015 or to Alan via the Bureau.

NEW PREFIXES

Yet another new prefix to remember! The ITU have allocated T7 to the Republic of San Marino to replace the present 9A prefix. It is understood that the M1 will stay for the present.

The XO prefix heard around the bands last month is of VE origin and is to commemorate the “Jeu Canada Games” at Chicoutimi. QSLs to PO Box 212, Chicoutimi, Quebec, G7H 5B7, Canada.

Yet another group of changes come from Portugal. All CT operators may use optional prefix changes for the commemoration of World Communication Year and the following blocks have been allocated. January to March, CS1 and CS4, April to June CR1 and CR4, July to September, CS1 and CS4. October through to December will see the CU1 and CU4 prefixes being optionally used.

For prefix hunters, Alphabet Soup, as appeared in this column in December AR has had more taste added and will be very appetizing this year.

EQUATORIAL GUINEA

That obliging and happy operator Alberto, is back on the bands again, still signing 3C1AB and using 10, 15 and 20 metres. QSLs EA1OF.

DIRECT QSL INFORMATION

A number of requests for direct routes have been requested by VK DXers. Any information that is printed or given directly is checked from at least two different sources. All the information is given in good faith and no guarantee can be given as to its authenticity but it is worth a try to gain that valued card.

Please give QSL managers adequate time to reply, considering that they may have to wait for logs from countries that may have a very irregular mail service or in the case of the VK0HI operation the manager, VK6NE has to wait until the logs are returned at the end of the expedition. It is a help to all, if accurate UTC times and dates are used.

ABU AIL

G5ACI/AA managed some 4000 QSOs in the forty hours of operation from Abu Ail. The operators were Iris W6GL, OM Lloyd W6KG, Christian FOECV and Jean F6GBQ. QSLs will be 100% via YASME either direct or via the Bureau.

ANTIGUA

Three operators from North America hope to operate in the ARRL SSB contest on the 5th and 6th March. They intend to be QRV for a few days both sides of the contest. QSLs will be to the operators KR4C, K4LTA and WA4CDH.

NEW TEN METRE BEACON

Overseas news is that a beacon is due to be erected on in late March or early April. Frequency and technical details are unknown at present.

WHAT PRICE DXCC

A VK5 correspondent, has kept records of all the QSLs sent with such details as the QTHs, managers (if applicable), and most importantly the cost.

Well, achieving DXCC in the CW mode turned out to be quite expensive for this amateur. For the 40 cards received from 63 sent in 1982 directly to the stations or their managers, the IRC cost was $44.85. Forty x 3 IRCs at 65 cents each equals $78.00, add to this the postage, card cost, envelopes etc. That is only for the cards received directly.

Now add the 23 cards that were sent, for the same period and no returns were forthcoming, the IRC cost was $44.85. Some simple arithmetic gives the figure of $122.85 without the extras. If you have kept accurate figures and they are similar, I am sure other readers would like to hear of your experiences or rather your costs.

To the newcomers of the “paperchase”, take heart. If you are very patient, the WA QSL Bureaux are very economical and it is one of the many benefits offered to members of the Institute.

KERGUELEN ISLAND

Mike, F8BXAB, doing a stint at the weather station, offered his hospitality to the VK0HI expedition on the maxi yacht Anaconda II whilst en route to Heard Island. This gesture allowed the party of eighteen to gain their “land legs” prior to the last leg of the voyage and the rigorous landing ahead. Mike’s station should be active on ten metres in the near future.

DX JAUNTS

Dieter, DK9KD, renowned for getting DXpeditions on the road has written to

Ken McLachlan VK3AH
Box 39, Monroolbark, Vic. 3138

Page 24 — AMATEUR RADIO, March 1983
advise of two expeditions scheduled for this month.

ST PETER and ST PAUL ROCKS
In an effort to assist those that did not get in the log last time the Cologne DX-group will be setting the most distant DX-country approximatley the 4th to the 8th of March. Call signs on the trip include DK9KK, DJ9ON, DF9KH, DL8CM and one PY amateur. Watch for PYOS on the usual frequencies.

SPRATLY ISLAND
DJ6SI and DJ3NG will try to activate this lonely area commencing around the 22nd or 23rd of March with activity for approximately five days.

HONOURS
Tom, VR6TC, was awarded an MBE in the Queen’s New Year Honours List. The citation was for his untiring efforts as the island’s radio operator. Congratulations Tom.

The Anaconda 11 successfully landed the VK0HI expedition at Atlas Cove on the island. All equipment was ashore on the 22nd of January and the first contact was made by Hugh VK6FS with AI VK6CW at 12:52 UTC, on twenty metres. I was lucky to follow with a QSO to Dave VK0HI, the leader of the radio component of the expedition, and be the first in his log at 12:58 UTC. They were, at this stage, running “barefoot” and using the vertical antenna. This did not preclude JY3ZH and the navigator, Max, the navigator, seated at the operating position.

UPDATING
Congratulations to David, VK3PBA who has contributed to these notes for a considerable period. David has upgraded and is now sporting the call VK3BY but is still contributing his novice news. Would any Novice operator like to contribute to the much read Worked on the Novice Bands segment of these notes to allow David more time to use his full call. Will someone please volunteer, so that other novice operators may benefit from your log?

CORRECTION
An important correction is that on Page 42, of February’s AR where Chuck Brady’s call sign VK0MD magically got exchanged for Al Fischer’s very active call VK0CW. Unfortunately Chuck never used his VK0 call sign, having to return to the United States. AI has used his VK0CW call sign notching up many thousands of contacts at the time of going to press. Both the VK0HI and VK0CW stations QSL arrangements are in the capable hands of Neil, VK5NE for all places except North America and Japan. A must for a prompt reply is a self addressed envelope with appropriate covering postage. Cards received without return envelopes will be processed last due to the extra work involved.

Apologies to anyone who has been inconvenienced by the typographical error regarding Al’s VK0CW call sign.

ST. PETER & ST. PAUL ROCKS
This DX Country has eluded many VK’s over the years and the last attempt in October was no exception. With hindsight it is probably easy to sit back in the comfort of the “shack” and expound as to how it should have been done and to criticise that such an operation should not be attempted without adequate research.

For an adventurous group to succeed with any expedition, they have before them a considerable amount of research to undertake including the absorbing and solving of problems that previous expeditions have faced and that any operators are all allowances for the unpredictable “MURPHY’S” law that must be taken into account.

One such operation that took place in 1978 has been written up by Rolf Rasp, PY1RO. Actual excerpts from his lengthy and factual summary of the happenings of this trip are printed in the following paragraphs to give all VK DXer’s an idea of some of the difficulties that can be encountered on such an expedition.

Rolf writes “I never really held much hope to ever go to this off the beaten track area of St Peter and St Paul Rocks until I ran across a marvellous group of French ‘hippies’ and their boat at Fernando de Noronha. During a chat with them and the usual questions regarding amateur radio such as ‘Why do you come to this island to transmit’ — ‘Because it is a separate country’ — ‘Are there any over-sea operators around here’ — ‘Yes St Peter and St Paul Rocks, but it is too difficult to get there.’ — ‘Why?’ — ‘Because there are no boats or aeroplanes going there regularly.’ — ‘Oh, in that case we can provide you with transport if you want.’ It was that easy.”

Rolf’s experience, with these people who roam the worlds oceans, mainly existing by the collecting and selling of sea shells, is one of many that have been shared by amateurs world wide, as the simple honest answers to inquiring minds from all walks of life have brought the utmost and generally unsolicited assistance to help an adventurous hobbyist attain his ideals.

Rolf lost no time in getting together a group of participants who could assist with equipment and another operator. The size of the vessel limited the number of operators to two, Jim, PY7BXC and Rolf himself plus the minimum crew of three, Vincent, the captain, his girlfriend Nadine and the navigator, Max.

No time was lost in establishing the charter and making firm plans to take advantage of the offer to use the seventy year old French sailboat “DOUDO DIOP” by her generous owner. Firm dates were made to join the vessel at Recife (on the east coast of Brazil). This would allow heavy equipment to be loaded on board and save costly air charges in freighting to Noronha. Rolf remarks that “this was our first trip in

L to R Rolf, PY1RO, Jim, PY7BXC, Vincent, the skipper, Nadine, Vincent's girl-friend, Max, the navigator, seated at the operating position.

a sailboat and our fears of seasickness and being exhausted by the trip were luckily unfounded even though we took two hourly turns at the rudder and were in excellent spirits throughout the voyage. The trip was relatively uneventful, even though it was soon realised, that the schedule was not going to be kept due to unfavourable winds. The amateur fraternity were given constant updates by the use of the FT101E which was set up under the deck and the makeshift antenna of an eight metre wire attached to the mast.

“Our navigator, Max, because of the expertise in his field and constant observations regularly corrected course each day by energising the diesel motor for a couple of hours and sailing into the wind. On the fifth day he announced that we were twelve miles from our goal. We were unable to see them from deck level at this distance due to their height of twenty metres above sea level but if we climbed to the top of the mast we could view our destination. Max, was correct and we were in the right direction.

St Peter and St Paul Rocks as viewed from the approach of the “DOUDO DIOP”.

“As soon as we had a clear view of the rocky outcrop, we knew we were in trouble, because the lighthouse, in which we hoped to set up our station, as it has been done ten years previously, had completely collapsed and was definitely unusable for our purpose. We were worried, as we had not thought to bring a tent for an alternative operating location. Anyhow, we would think about this after landing.

“The final approach was made on diesel power into the wind. On arrival we found that about half of the fuel that was purchased on Noronha proved too dirty
and would have clogged the engine and thus had to be discarded. I'd hate to think what would have happened had we run out of fuel before our arrival.

"The first view of the rocks is true to their name, nothing but rocks. A few high spots, where water never reaches, are covered with white guano, looking almost like snow caps. There are four major rocks which, in a horseshoe fashion, form a crater, which is somewhat protected from the breakers rolling in with the wind from the east. This 'crater', about 50 metres wide, 90 metres long and 10 metres deep is a beautiful natural aquarium full of colourful fish, lobster and seaweed."

It was decided the safest anchorage would be at the entrance to the horseshoe and the vessel was tied equidistant to the rocks on either side with four ropes and the anchor thrown in for additional stability. The tying up and landing procedures were carried out with the aid of an inflatable rubber boat.

Unloading was completed before darkness, except for the second generator due to its weight of 60 kilograms. Rolf remarks that this operation went smoothly, considering the terrain and particularly the jagged rocks and was due to the French crews expertise.

The first "chore" for Jim and Rolf was to set up the vertical antennae and unpack the gear. In finding a place which was relatively flat for the operating table, that was thought to be above high tide, the boxes were moved to the vicinity. According to Rolf's notes, "Murphy's" law struck and it was impossible to start the generator, the tide was rising fast and the gas lantern was found but no matches were brought ashore so with much difficulty some were secured from the vessel, not before a hurried transport of the equipment was made to higher "rock", just in case. A full moon assisted greatly.

The remains of the Lighthouse at left, the operating position (lower centre) and the "DUODO DIOP" tied and anchored.

It was open at a time and it was futile trying to catch up on sleep during the daytime. We had an average of three hours sleep per 24 hour period, since it was impossible to catch up on sleep during the day due to the lack of a place to lie down in the shade when the sun was out.

"In general it seems that everyone had a fair chance to work us and it looks like those that tried hard enough, really did. VK and ZL stations had a very hard time, since the band would not just open up to those areas with very few exceptions. Also, we worked a surprisingly small number of USSR stations. Our handicaps were the fact that we did not run any power and used "no gain" antennas, verticals, two of them, a 10-40 metre version, placed thirty metres from the first one."

The whole trip took about two weeks, with three days of operating. The log had 5600 QSO's entered, not the number that was originally their goal, but quite a good effort considering the difficulties that were encountered.

The largest rock with the derelict Lighthouse.

One has not got to use the imagination to consider the difficulties that lie ahead for future expeditions. The expedition last year encountered severe difficulties and with the world wide escalation of fuel prices and the difficulties associated with chartering reliable seaworthy vessels that will get one to their destination and a reliable crew to man the vessel, any DXpedition would have considerable research and planning ahead of them. This is without the problems of the workable area on the Rocks themselves, let alone the efforts of getting equipment ashore.

All amateurs, who need this rare facility for a new one, when and if it does come up again, please think of the operators and the conditions that they are enduring to give you that contact. Then of course, there is the amateur who has it already confirmed, and just notches it up to "brag" about how good an operator he is. Fortunately, this type of operator is in the minority, as the majority of DXers are not selfish and do not indulge in the practice of depriving others from getting a new country to their score, in fact it is generally the opposite where they encourage and assist another operator, even if he is ahead of them on the DXCC ladder.
CW SWL-ING WITH ERIC L30042

28 MHz
D3XDJ (1000 UTC), HL2DAK, J1HPLK, VP7ORI.
1 MHz
CT2CB, DL6HAL, FK98AA/P, KH6CP, LAAUL, LU4AC, PY7YUW, SM3BDP, UKO4AB, VK4VMB (XYL).
14 MHz
A35MJ, W6KG/A7 (XYL), ND2GO/DJ2, EA3MG, F08FW, XJ6RE, KV4CI, NP4BN, P29BR, UAOJAN, TL8ER, VE3JTL, VP6LB, XE7X, ZS6BU, 457WP, 9V1TL.
10 MHz
DL2RAJ, N3ET/1U6, DL7AD/EA8, F8VJ, FCBV, H96BXX, HI3PRD (XYL), JA3SVM/MM, KP4CKY, XE2XXV/1, YV5ANE (2030 UTC), 4Z4MK, 5Z4CS, 9J2B.
7 MHz
DL6LY, F8VJ, G3SOOR, H80CKF, ZL21BC, UA4FCM, EZ5FAN, US6UKO, Z54CV.
3.5 MHz
F6FAI, HA5KDQ, 0Z7YY, UK2GKW, UK2PCR, UK3AA0, 3D2DN, 5W1DW, A35TN, DU1EMC, T32AJ, T32AL, CT2CB, DISMAL, FK8KAA/P, KH6CP, LA3UL, LU4AC, A4XJ0, A71AE, AHOC, FROGGL, KV4SZ, UK2FAA.

WORKED ON THE WEST COAST

21 MHz
2D3TN, 3D2WR, 6D5XMT, 9V1TL, A35TN, AP2AP, DU1CK, DF3JSJ, F6BFC/FC, FG7XLI, E80GT, GM4FNE, H80BHJ, HA3XJ, HI9BR, HL1AX, K7LFL, OA4BUU, OK1AVD, P25JW, SM6GR, T30BY, T44HH, T49VT, T5KV, UK4BNM, YS1XJ, ZC4NBB, Z55TE
20 MHz
2D3TN, A35TN.

WORKED ON THE EAST COAST

28 MHz
HATLCM, ZZ2VE, PA0DS, WH2ADE.
14 MHz
E3A3KN, 1191MM, A35MJ, A35PG, A4XJW, A71AD, AP2SP, BV2Z, CE0AE, CE0AE, CE5G, F5BXYB, F5BUS, G4NMG, G4NMG, G4NMG, H3ADII, H71AG1, IK2ARF, JY4CB, K6KL, K71AA, M1M, O23F5, OKXY5, OZ7YY, T30BY, T30CH, VICKI, T30DB, UK7PAL, UL7TM, VK0HI, VK0CW, VU2KMK, VU2TBL, W6KG/A7, XE2BBB, Y11BDD, Y08CF, ZL3PA/C.
* Denotes CW operation.

QSL ROUTES OF INTEREST

A2CCT, via G3HCT, J. Bazley, Ullenhall, Henley in Arden, Warwick.
5H3AA, to LATFAA, PO Box 79, N9372. Gibostad, Norway.
5Y4DA, PO Box 30137, Nairobi, Kenya.
BV2A & BV2B, Tim Chen, PO Box 30457, Taipei.
T15BGA, PO Box 165, Grecia, Costa Rica.

NEWSSHEET.RADCOM.OST, WORLD RADIO. Overseas magazines such as BREAK IN, CQ, cqDX, DX

THANKS

* These notes would not have been possible without the information gained from magazines such as BREAK IN, CQ, cqDX, DX

AMATEUR RADIO, March 1983 — Page 27

MAURIE BATT VK3XEX

Maurie is a relative newcomer to the amateur radio transmitting fraternity, having gained his licence in 1982, however his interest in radio begins before WW2. As a boy he was interested in building model steam engines, photography and short wave listening.

He enlisted in the RAF at the outbreak of World War Two and served with Coastal Command in Beaufighters and later in Sunderland Flying Boats. He was later posted to Africa to serve as Flight Engineer on Sunderlands, Liberators and Douglas DC3’s. His operational tour with the Emergency Operational Unit in Africa took him to just about every country on the west coast of the Dark Continent.

Maurie was demobilised in 1946 and went to work for the Lancashire Aircraft Corporation but the peacetime activities were not to last long. While with the LAC he flew on the Berlin air-lift for 22 months after which he joined British Airways European Branch.

Maurie and his wife Marge, along with their two daughters Sue and Hilary came to Australia in 1950 and first went to Bathurst NSW for 3 weeks. From there they went on to the west coast of the Dark Continent.

Ballarat for 7 weeks and then to Rollwood Junction where they still live. He joined the WIA soon after as an SWL and has been a member of the local radio club ever since, serving as QSL manager for all the local amateurs for most of that time. He has also found time in the past to bulk sort QSL cards for the VK3 bureau. At the 1982 Annual General Meeting of the Ballarat Amateur Radio Group he was awarded Life Membership in recognition of his outstanding contribution to amateur radio.

His photo is shown in the photograph receiving his award from the outgoing President, Dick VK3AEX.

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PHOTOGRAPHS FOR WORLD COMMUNICATIONS YEAR 1983
Although many of you may not have received the February issue of AR, at the time I am typing this column for the March issue, some interesting reactions have been received on my suggestions in February AR on the subject of WCY ‘83, public relations.

Firstly I would like to thank the VK5-Division for forwarding to me a promotion proposal, which is so professionally put together, that, apart from sending a full copy of this proposal to all divisional offices, it will also be used in this column for the use by clubs and individual members.

Our main target must be to improve the image of our amateur fraternity, on air as well as in our daily environment.

On air: by giving a good example to non-members and listeners (and you never know how many there are) by being polite and showing patience during a QSO.

By leaving openings during the overs for others to join in.

By welcoming and assisting “new calls” on the frequencies and introducing them to other amateurs in our QSOs.

Off air: by showing people all about your hobby, invite them to your shack and club meetings.

By explaining to your friends (and neighbours) that we are not unqualified CBers (with due regard to CBers) but that we had to pass an exam (don't tell them how many times we sat) to become a licenced operator, be it novice, limited or full amateur.

By offering your services to your division and local clubs in any public activities (WICEN etc.). If you feel good about your hobby, show it to others. Many of you have children at school and perhaps their teacher could be approached for a demonstration of amateur radio. Your division or club would only be too willing to assist you in such a promotion. Don't forget the children are the members of the future!

In fact, in any case contact your division and let them know what your plans and suggestions are.

Another point I would like to raise is QSL cards. How about having the WIA “diamond” logo printed on your QSL-cards and let the amateurs know that you are proud of your organization.

And ... talking about QSL-cards, if you promised to send one, please do so, and don't wait too long . . .

That’s all for now and don’t forget... try to enroll a new member . . . after having paid your own subs for 1983.

Photo 1 — Radar Antenna at London Airport. (Photo: Marconi, United Kingdom)

Photo 2 — Coastal station Kiel-Radio: coastal stations keep ships all over the world in contact with land, and provide them with meteorological information necessary for the safety of life at sea, and aid maritime navigation. (Photo: Deutsche Bundespost)

Photo 3 — Parabolic antenna at the Kashima branch of Radio Research Laboratories. (Photo: Ministry of Posts and Telecommunications, Japan)

Photo 4 — Radio is the only moon to earth communication link for astronaut Edwin E. Aldrin Jnr walking near module during Apollo II extra vehicular activity. (Photo: NASA)

Photo 5 — Telecommunication testing laboratory in Saudi Arabia. (Photo: Administration of Saudi Arabia)
Awards issued to the 5th January 1983 and amendments made up to 31st December 1982 are listed below. Because of the amount of paper work, I have decided that I will adjust totals, for deletions, once a year. January the first seems to be a good time, at least for me, so the HKO, KS4 and 8Z4 deletions will be picked up in the next DXCC listings.

The number of stations in the DXCC top listings is growing and I notice that there are a number of stations that have not changed their score during the past two years. If you are interested in keeping your call in the lists, and you have not amended your totals during the past two years, could you please drop me a line.

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DXCC TOP LISTINGS

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<td>VK4PR 297/312</td>
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<td>315/360</td>
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<td>VK3AH0 293/326</td>
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<td>VK2APK 293/313</td>
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<td>VK6L</td>
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CW

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VHFCC AWARD

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WAVKCA (VHF) AWARD

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WAS (VHF) AWARD

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The listing of known intruders, from time to time, in this column should, I hope, be a help to those of us who wish to register their complaints of intrusions into the amateur bands by stations operated by Governmental, Military, and Commercial installations. This month we will deal with intruders employing the A3E mode, which is AM broadcasting. Look to future columns for details of known intruders using other modes of transmission.

LIST OF KNOWN INTRUDERS USING A3E (AM) MODE

80 METRE BAND. 3.500 MHz-3.700 MHz

This band in International Amateur Radio Union, Region 3 is NOT exclusive to amateur operators. Fixed and mobile services also are legal, and often appear using RTTY (F1B mode). HOWEVER, broadcasting stations heard in the exclusive amateur segment should be reported as intruders. Examples:

- 3.535 MHz Radio Peking China
- 3.560 MHz Radio Peking China
- 3.640 MHz Radio Peking China
- 40 METRE BAND. 7.000 MHz-7.300 MHz

This band in IARU Region 3 is exclusive for amateur use only between 7.0 and 7.1 MHz. All intruders heard in this exclusive segment should be reported as intruders.

- 7.010 MHz Radio Peking China
- 7.025 MHz Peoples Liberation Army China
- 7.035 MHz Radio Peking China
- 7.055 MHz Radio Peking China
- 7.065 MHz Radio Tirana Albania
- 7.075 MHz Radio Tirana Albania
- 7.080 MHz Radio Tirana Albania
- 7.095 MHz Radio Peking China
- 7.099 MHz Radio Moscow Russia

20 METRE BAND. 14.000 MHz-14.350 MHz

This band is exclusive to amateur operators from 14.0 to 14.25 MHz. The segment 14.25 to 14.35 MHz has USSR fixed stations operating. HOWEVER — AM broadcasting stations heard in the exclusive amateur segment should be reported as intruders.

- 14.050 MHz PLA Radio Foochow China (Harmonic of 7.055 MHz)
- 14.070 MHz Radio Peking China (Harmonic of 7.055 MHz)
- 14.320 MHz Radio Tirana Albania
- 15 METRE BAND. 21.000 MHz-21.000 MHz

This band is for EXCLUSIVE amateur use. All intruders heard in this exclusive segment should be reported as intruders.

- 21.121 MHz Radio Moscow Russia (Spurious of 21.529 MHz)
- 21.238 MHz Radio Moscow Russia (Spurious of 21.529 MHz)
- 21.356 MHz Radio Moscow Russia (Spurious of 21.529 MHz)

All amateur radio operators and short wave listeners are urged to send in reports of these intrusions to their Divisional Intruder Watch Co-ordinator, whose details appear in the call-book, or send reports care of your WIA division.

Next month we will deal with intruders using the A1A (CW) mode.

PLEASE HELP THE INTRUDER WATCH.
MARCH 1983 CONTEST CALENDAR
5-6 ARRL DX Phone Test
12-13 QCWA Phone QSO Party
12-13 YL/SSB CW QSO Party
12-13 RSGB Commonwealth CW (See Feb AR for details)
19-20 BARTG Spring RTTY Test
19-20 Bermuda Test
26-27 CO WW WPX SSB Test

APRIL
6-7 DX-YL to NA-YL CW Party
9-10 CARF Commonwealth SSB Test
13-14 DX-YL to NA-YL Phone Party
16-17 Polish Phone Test (Tentative Date)

MAY
26-27 CO WW WPX CW Test

CONTEST CHAMPION FOR 1982/83 CONTEST
The contests chosen for the VK Contest Champion were: John Moyle, VK/ZL, RD, and VK Novice.

The points awarded are as follows: first place equals 10 points, second 9 points, third 8 points and so on through to tenth position which equals 1 point.

An entrant must be included in three of the four contests. He/she may not score but must have entered.

To win the entrant must be a member of the WIA.

On the completion of all contests the highest points scorer wins the contest champion trophy for one year. The contests for the 1982 year have been completed and the available results are listed below. The results of the VK/ZL contest are not usually available until the June edition of AR. Therefore the trophy is awarded in the latter part of the year and held for the following year.

The contest for the 1983 year is now about to begin with the John Moyle and will be the same set of contests for this year. Be sure to have your entry in for a good position in all the contests for 1983.

THE 27TH ANNUAL CQ WORLD WIDE WPX CONTEST
SSB: MARCH 26-27 1983
CW: MAY 26-29 1983
STARTS: 0000 UTC SATURDAY
ENDS: 2400 UTC SUNDAY

CONTEST PERIOD: Only 30 hours of the 48 hour contest period permitted for Single operator stations. The 18 hours of non-operating time may be taken in up to 5 periods anytime during the contest, and must be clearly indicated on the log. Multi-operator stations may operate the full 24 hours.

OBJECTIVE: Object of the contest is for amateurs around the world to contact as many amateurs in other parts of the world as possible during the contest period.

BANDS: The 1.8, 3.5, 7, 14, 21 and 28 MHz bands may be used.

TYPE OF COMPETITION: 1. Single Operator (a) All Band, (b) Single Band, 2. Multi-operator, All Band only.

MULTIPLIER: The multiplier is determined by the number of different prefixes worked. (a) Single Transmitter (one transmitter and one band permitted during the same time period, defined as 10 minutes, no exception), (b) Multi-Transmitter (one signal per band permitted). NOTE: All transmitters must be located within a 500 metre diameter or within the property limits of the station licensee's address, whichever is greater. The antennas must be physically connected by wires to the transmitter.

EXCHANGE: RS(T) report plus a progressive three-digit contact number starting with 001 for the first contact. (Continue to four digits if past 1000.) Multi-transmitter stations use separate numbers for each band.

POINTS: Contacts between stations:
A) Contacts outside of own continent count 3 points on 28, 21, 14 MHz, and 6 points on 7, 3.5, 1.8 MHz.
B) Contacts with other countries on own continent count 1 point on 28, 21, 14 MHz, and 2 points on 7, 3.5, 1.8 MHz.
C) Contacts within own country count 0 points but are permitted for prefix multiplier credit.

MULTIPLIER: The multiplier is determined by the number of different prefixes worked. A "PREFIX" is counted once during the entire contest regardless of how many times the same prefix is worked.

A "PREFIX" is considered to be the three letter/number combination which forms the first part of an amateur radio call (N1, W2, WB3, K4, AA6, WA8, 4X4, DL7, G3, I9, KH2, AL7, NP2, WP4, 9M2, C79, 4J9, PY7, VK4, JE3, VE3, Y32, Y33, Y45, AN8, AB8, H44, KT4, etc.). A station in a call area different than that indicated by its call-sign is required to sign portable. The portable prefix would be the multiplier. Example: W81MZ/4 would count for prefix W4 only and W81MZ/LX would count for prefix LX0 only.

Special event, commemorative, and other unique prefix stations are also encouraged to participate.

Band Score, total QSO points from all bands multiplied by the number of different Prefixes worked. (b) Single Band score, QSO points on the band multiplied by the number of different Prefixes worked.

Multi-Operated stations. Scoring in both these categories is the same as the All Band scoring for Single Operator.

A station may be worked once on each band for QSO point credit. However, prefix credit can be taken only once regardless of the number of different bands on which the same station and/or prefix has been worked during the entire contest.


AWARDS: Certificates will be awarded to the highest scoring station in each category listed under Section IV. 1. in each participating country.
2. In each call area of the United States, Canada, Australia, and Asiatic USSR.

All scores will be published. However, to be eligible for an award, a Single Operator station must show a minimum of 12 hours of operation. Multi-operator stations must show a minimum of 24 hours.

A single band log is eligible for a single award only. If a log contains more than one band, it will be judged as an all band entry, unless specified otherwise. However, a 12 hour minimum is required on the single band.

In countries or sections where the returns justify, 2nd and 3rd place awards will be made.

CLUB COMPETITION: A trophy will be awarded each year to the club or group that has the highest aggregate score from logs submitted by members. The club must be a local group and not a national organization.

LOG INSTRUCTIONS: 1. All times must be in...
UTC. The 18 hour non-operating periods must be clearly shown.

2. Prefix multipliers should be entered only the FIRST TIME they are contacted.

3. Logs must be checked for duplicate contacts and prefix multipliers. Recopied logs must be in their original form, with corrections clearly indicated.

4. An alphabetical/numerical check list of claimed PREFIX multipliers must be sent along with your contest log. (A prefix is counted one time only.)

5. Each entry must be accompanied by a Summary Sheet listing all scoring information, the category of competition, and the contestant’s name and mailing address in BLOCK LETTERS.

6. Official log and sample summary sheets are available from CO. A large self-addressed envelope with sufficient postage or IRCs must accompany your request.

If official forms are not available, you can make your own with 40 contacts to the page.

**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 multipliers will be deemed sufficient cause for disqualification. Actions and decisions of the CO WPX Contest Committee are official and final.

**DEADLINE:** All entries must be postmarked no later than May 10, 1983 for the SSB section and July 10, 1983 for the CW section. Indicate SSB or CW on the envelope. From rare isolated areas the deadlines will be made no later than May 10, 1983 for the SSB section and July 10, 1983. Logs go to: CQ Magazine, WPX Contest, 76 Stonesboro Dr., Huber Heights, OH 45424 USA.

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**HELVETIA CONTEST**

**TIME** — 23rd and 24th April 1983, 1300-1300 UTC.

**RULES**

Use bands between 160 and 10 metres, less WARC-Bands. Mode CW and/or phone. Send RS(T) plus a three-figure serial starting with 001. Swiss stations will send an additional two-letter designation of their canton. Example: 57 (9) 001 BL. The abbreviations of the cantons are as follows: ZH BE LU UR SZ OW NW GL ZG FR SQ SB SL SH AR AI SG GR AG TG TI VS NE GE JU Each contact with a HB-station counts 3 points. A station can be worked once per band (either CW or phone). The multiplier is the sum of Swiss stations per band (a possible multiplier of 26 per band). The number is the sum of QSO points multiplied by the sum of QSO points counted. Awards will be given to the highest entry from each country. USA and some other call areas are considered as separate countries.

Logs postmarked not later than 30 days after contest should be sent to: G. Stalder, HB9ZY, Tellenhof, 6045 Meggen, Switzerland.

**AMATEUR BAND BEACONS**

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<td>V6SX</td>
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**MACQUARIE ISLAND**

Peter, VK0AC was worked by twenty six lucky VK2s, VK3s and VK7s on 17th December. Since then he has been QRT due to interference to a Riometer. Peter Barclay, VK3FR, has cards and will forward them by return mail. Efforts have been made to get Peter, VK0AP back on air. Filters for the Riometer were despatched on the supply vessel which arrived on Macquarie Island at the end of January. It is hoped that the filters will clear the problem. Peter is also looking at resiting the rig in the hope of reducing interference. Hopefully he will soon be back on air. Some more sporadic E contacts with a few F layer and TEP contacts would be a great achievement. Keep listening on 52.1 MHz, Peter will be back soon.

**HEARD ISLAND**

Dave, VK0HI and Al VK0CW of the Heard Island expedition set up the six metre keyer on Heard Island and had it operational on Saturday 29th of January.

The keyer on 52.008 MHz will run for the duration of their stay. The keyer is running 100 watts. As well as Dave’s TS660 they have an FT 810, which was supplied by Yaesu to drive the 100 watt linear. The beam provided by Werner Wulf, VK3BWW went up without a hitch. If there is any propagation they will be able to exploit it.

Both Dave and Al had an excellent trip to Heard Island aboard the yacht Anaconda II. The Anaconda II made good time thanks to the seamanship of its owner/skipper.
NEW MARITIME ELECTRONICS COURSE AT AMC

In the midst of a growing recession and widespread retrenchments, demand for trained personnel in one area cannot be sufficiently met.

Classified advertisements in the daily papers reflect large numbers of vacancies both in Australia and overseas for electronics technical officers in a wide range of areas such as government departments — for example, Defence, Communications, Transport and Construction; the oil exploration and geophysical survey industries; and marine electronics companies. This shortage could well become more severe as the demand increases for personnel with knowledge of microprocessor technology. The starting salary for these positions is around $16,000.

To help meet the demand for electronics technical officers, in February this year the School of Engineering at the Australian Maritime College in Launceston, Tasmania, is introducing a new, two-year full-time course — an Associate Diploma in Maritime Electronics.

The first year of the course runs in common with the existing Associate Diploma in Marine Radiocommunication. The second year emphasises areas such as instrumentation, digital and microprocessor systems, and advanced communication systems.

Entry to the course is by satisfactory completion of Year 12 or equivalent studies including mathematics and a science subject. Special consideration may be given to applicants aged over 21 who do not necessarily fulfil these requirements.

The Head of the School of Engineering, Dr John Cannell, says the school believes there are many people in the community with an appropriate work or educational background who would be eligible to apply for advanced standing to the course. Such people could complete the qualification in one year or 18 months. Those needing 18 months could begin study in July this year.

those requiring only one year of studies would be able to enrol in 1984 (the first time Year 2 of the course will be presented). The type of people who would be eligible for advanced standing include the following —

• Ships' radio officers, other maritime, coast or land station radio officers or aviation communicators whose qualifications need updating;
• Certain experienced and capable radio amateurs who have a good grasp of basic mathematics and first-year Associate Diploma standard electrical and electronics principles;
• People holding a previous technical college certificate, eg electronics and communications certificates, either Australian or overseas;
• Various service or ex-service technical personnel with an appropriate background who wish to obtain more widely recognised qualifications for new jobs.

For enrolment or further information contact the Admissions Office (003) 26 0731 or the Course Leader, Mr E. Mackinnon, (003) 26 0757.

SEA SURVIVAL '83

Survival has often been described as man's strongest instinct, and the sea one of his greatest foes. Modern technology has reduced many of the dangers of life at sea, and introduced others. Serious accidents and tragedies still occur.

An international seminar to be held at the Australian Maritime College in Launceston, Tasmania, on 17, 18 and 19 May this year, will examine new developments in survival technology and methods of improving standards of training and safety for survival at sea.

The seminar should appeal particularly to service personnel, airline operators, fishermen, yachtmen, manufacturers of safety equipment, ship designers, water police, state emergency authorities, and shipping and offshore industry personnel.

Survival training experts from the UK, Norway, the USA and Australia will address the seminar on topics such as: Growth of the offshore industry and its future training demands; Mass evacuation systems — inflatable life chute and life raft development; Psychological and medical aspects of survival at sea; and Present and future uses of radio communication and radio location aids in distress, search and rescue operations.

The cost of the seminar including documents, luncheons, conference dinner and refreshments, but not accommodation, is $95 (less for full-time students). Accommodation will be available on campus or in the Launceston city centre. Early applications are advised.

For enrolment or further information, contact the Seminar Secretary, Australian Maritime College, PO Box 986, Launceston, Tasmania, 7250, telephone (003) 26 0711.

FT-77 THRIFTY HF TRANSCEIVER

Utilising the new CAD/CAM™ manufacturing techniques, Yaesu presents the FT-77 as the new milestone in reliability, simplicity and economy in HF communications.

Featuring efficient, all solid state, no tune circuitry, this unit offers a nominal 100 watts of RF output on all amateur bands between 3.5 and 30 MHz, including the three new WARC bands. The new CAD/CAM techniques plus the simple design add up to one of the smallest, lightest HF transceivers ever.

The front panel control layout and operation are actually simpler than some VHF FM transceivers, with only the essential operating controls; while the simple circuit design leaves fewer parts that could cause problems. Nevertheless, all of the essential modern operating features for HF SSB and CW are included, along with extras such as dual selectable noise blanker pulse widths (designed to blank the woodpecker or common impulse noise), full SWR metering, and capabilities for an optional internal fixed-frequency channel crystal, narrow CW filter and FM Unit.

Computer-aided design of the circuit boards ensures the most efficient component layout possible in the smallest space, while automatic parts insertion and soldering greatly diminish the chance for human error. Reliability and quality control are thus improved and simplified beyond the degree previously attainable in amateur equipment. This means longer equipment life with less chance of a breakdown.

The extremely compact size and simple control layout make the FT-77 ideal for mobile operation, or as the heart of a complete base station with the optional FP-700 AC Power Supply, FV-700DM Digital...
When used with the appropriate PTT Switch, can be used with FT207R, FT208R, FT780R, FT230R, FT290R, FT690R and FT790R.

For further information contact Bail Electronic Services.

THE FT-980 ALL MODE HF CAT*

This incredible new transceiver incorporates the highest level of microprocessor control ever offered in an HF all solid state radio. Including a general coverage (0.15-30 MHz) receiver with its own, separate front end, this amateur transceiver offers a new dimension in frequency control; whereby frequencies can be entered by either front panel keypad or tuning dial, and then scanned in selectable steps either freely or between any two programmable limits. Twelve memories include four with special protection, and two large digital displays allow full flexibility and control for split frequency operation, while two meters allow full transmitter information.

Additional controls include IF Width and Shift on concentric controls, AMSG (Automatic Mic Gain Control) to set microphone input threshold, RF Speech Processor, ALC Meter Hold function, IF Notch and Audio Peak filters, Transmit Monitor, Noise Blanker and CW Full Break-in. Controls are also provided for FM Squelch and CW Keyer Speed when the optional FM and Keyer Units are installed.

The most important feature of the FT-980 is that practically all of the above features can be controlled by the user's separate personal computer, when connected through an optional interface, also available from Yaesu. Where up to now the few amateur transceivers that offered any kind of computer interfacing at all permitted only frequency control, the FT-980 permits almost total control of all functions from a separate microcomputer, including Mode; IF Width and Shift; Scanner Step, Speed and Limits; and switching of most other functions. Microcomputers are not available from Yaesu.

Further details may be obtained from Bail Electronic Services, 38 Faithful Street, Wangaratta Vic. Phone (057) 21 6260.

* Computer Aided Design/Computer Aided Manufacture.

THE FT-726R V/UHF MULTIBANDER

Combining all of the best features from Yaesu HF and V/UHF transceivers, the FT-726R opens a new world of operating ease and flexibility for FM, SSB and CW on the 50", 144 and 430/440 MHz amateur bands. The design integrates the individual operating requirements of each of the three operating modes into one unit, and the user can then select which of the optional plug-in module bands he desires.

The VFO-A/B scheme has ten programmable memories, and can be tuned in 20 Hz steps for CW and SSB operation, or in selectable steps for FM. FM tuning is accomplished by an indented tuning knob. IF Width and Shift controls are provided for FM and SSB operation, while both preset standard and user programmable repeater offsets can be selected for all modes. An optional Satellite Unit makes the FT-726R into a full duplex cross-band satellite transceiver.

Further information may be obtained by contacting Bail Electronic Services. Phone (057) 21 6260. * 144 MHz Unit installed, other Units available as options according to local regulations.

“A VERSE FOR THOSE OVER THIRTY”

Remember when hippie meant big in the hips
And a trip involved travel in cars, planes or ships?
When pot was a vessel for cooking things
And hooked is what grandmother's rug might have been?
When fix was a verb meaning mend or repair
And be-in meant simply existing somewhere
When neat meant well-organized, tidy and clean
And grass was a ground cover, usually green?
When lights and not people were turned on and off
And the pill was intended to help cure a cough?
When groovy meant furrowed, with channels and hollows
And birds were winged creatures like robins and swallows?
When fuzz was a substance, all fluffy like rosin and clothes?
And a trip involved travel in cars, planes or ships?
When chicken meant poultry and bag was a sack
And junk was just cast-offs and old bric-a-brac?
When a roll was a bun and a rock was a stone
And hung-up was something you did to the phone?
When chicken meant poultry and bag was a sack
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And junk was just cast-offs and old bric-a-brac?
The ordinary manual key can’t be beaten for simplicity and ease of operation, dash for your dot, 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/or 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-auto 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 often a problem in matching the speed 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.

As a child of the semiconductor age, I have very little knowledge about mechanical keys. I have seen them in museums, and often recognized them on air, but have never used one. I would be grateful for any information readers can send me, particularly detailed descriptions or operating instructions.

I’m a lot more at home with electronic keyers, which are of three basic types — manual, single paddle (side-sweeper) and dual paddle (the iambic, or squeeze keyer). Oddly enough, the “manual” electronic keyer is the most recent in development. I’ve 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 one would have to assume that if the “Fist Fighter” can read your sending, a human ear should have no trouble. “Fist” is usually defined as a distinctive sending style, and as such is 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 of most benefit. In other words it enforces a discipline on the user, and ultimately trains one to send code so well that aids are no longer needed.

The second level of electronic keyers generates strings of dots or dashes depending on whether the paddle is swung to right or left. 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 keying method, iambic is of tremendous significance. The keyer is actuated by separate 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’s where the name iambic comes from. It is a term used in poetry to describe a “meter” 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 dactylic if the dash lever is actuated in advance of the dot lever! With a view towards making this all clearer, here is an example of dactylic meter: “In days of old, when knights were bold...”. A technique called scansion is used to analyze the meter, and the line breaks up like this: In days / of old / when knights / were bold... The rhythm is often described as “de duem de dum de dum de dum, or by extension, dit danh dit danh dit danh dit danh... get it?

To send SK with a hand key requires twelve separate up or down movements. To send it iambically, the dot paddle is held over and the dash paddle is kicked in at the end — for a grand total of four movements:

```
1 — press dot
2 — press dash
3 — release dot
4 — release dash.
```

It sounds complicated, but the fewer the required movements, the easier the keying becomes, and great speeds are possible once you get the hang of it. Most people start off using an iambic keyer non-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.

Now that you know all there is to know about iambic keying, we’ll get down to cases next month and talk about paddles and keyers.

Till then — 73.

**EMC (Electro Magnetic Compatibility)**

If radio frequency interference is causing you a problem you are reminded that — “Advice on all types and aspects of interference (PLI, TVI, AFI, etc.) is available from the National EMC Advisory Service”.

**FORWARD DETAILS TO**

VK3QQ, Federal EMC Co-ordinator, QTHR.

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**qsp**

**WATCH YOUR LANGUAGE PLEASE!!**

A letter received from a VK5 amateur has brought our attention to possible breaches of the regulations in respect of unseemly language being used by some novice operators in the 80 metre nightly "Cocktail Net".

Our correspondent writes: "... one particular ‘N’ call amateur leaves a lot to be desired, and whilst I believe I am fairly broadminded having served in three of HM forces in WW2, I really don’t think the verbage used is in the best interests of amateur radio, and our image. Nor is it an example to be followed by newcomers to our bands..."

Gentlemen, be warned “Public Bar talk” will not be tolerated on the amateur bands, and loss of your licence will result if it persists.

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**VK3UV**
OVER THE HORIZON RADAR

My remarks in the January column, regarding the “Woodpecker” or Over the Horizon Radar, has elicited enquiries for the operating times and frequencies, together with the location of the various sites employing this mode. As I stated in my reply, it is virtually impossible to predict the times or frequency usage, as I have been unable to work out a pattern or organization to their operations. They just seemingly plonk down unexpectedly on any HF channel, whether it be occupied or not. Yet there appears to be an effort by all OTHR users to avoid using maritime and aviation HF allocations.

There are several known locations in the USSR and the North American continent, as well as one site pretty close to home. As the sunspot index is declining, the “Woodpeckers” will increasingly be observed on lower frequencies, although they have not been heard much below 5 MHz.

Have we seen the peak of operations of the “Woodpeckers”? They do seem to be dropping off, or alternatively their transmission time per channel is being reduced, in order to minimize communications disruption. With the rapid development of digital pulse transmission techniques, OTHR could be obsolete very quickly. As well, it does need quite a deal of energy. Let us hope that it can be reduced or refined so that HF communications can proceed.

FREQUENCY ALLOCATIONS

As from the 16th of December, the allocations of 18.068 to 18.168 MHz and 24.89 to 24.99 MHz became available to full call amateurs. Both of these bands are shared with the fixed and commercial services, who are the primary service. Amateurs have only secondary rights and should not cause any harmful interference to primary service stations, nor are they protected from any interference from them.

HOME AGAIN

Since my return from holidaying in Queensland, I have only briefly been able to listen on these new WARC allocations. Amateur activity on 18 MHz has been virtually nil, as there are plenty of commercial and fixed stations utilizing this band. And on 24 MHz, the only station I have heard and worked on CW has been Graham, VK6RZ in Perth. When overseas administrations do release these frequencies to amateurs, I expect that interest will pick up.

We are also permitted now on 40 metres to operate up to 7.3 MHz. This is to be shared with the broadcasting service, and there are very few channels vacant in the evening hours. However, contacts are being made with Stateside stations for the first time on their own operating frequencies. The increased band also gives us more room for daytime QSOs.

Also permission has been given for Australian amateurs to operate between 3.794 and 3.800 MHz — the so-called “DX” window. I do believe that some very good contacts have taken place, yet it should be remembered that this, being a narrow allocation, should be kept clear for DX operators and not used as a local chattering channel. That can be easily done further down on the existing allocation.

COMPARISONS

As mentioned previously, I spent the Christmas period vacationing in sunny Queensland. As I did not have much time to do any serious listening, what observations I was able to make, confirmed that there is a difference in propagation between Tasmania and Queensland. For example, signals from the Caribbean region were heard fairly well at 1200 UTC, yet there are signs of propagation to that region from this location. Naturally Asian signals were very strong, coming in a lot earlier than they do here. As well there was propagation on 11 and 15 MHz from SE Asia in daylight hours, plus some Pacific Island outlets on 9 MHz. These are rarely observed in Tasmania in daylight. Sometimes they are heard in the winter months in the late afternoon.

But I found that listening below 9 MHz in the evening hours is out of the question, because the incessant lightning crashes rendered the intelligibility of the signals to zero. As well, one has to be prepared to rapidly make sure that your antennas are thoroughly grounded, in semi-tropical or tropical regions such as Brisbane. Some of those spikes can do quite a lot of damage. I was able to go to one of the local radio clubs whilst there. I attended the Gold Coast Radio Society and was invited by Ken VK4KD, the local President to speak about the Handicapped Aid Programme, of which I am the National Co-ordinator.

CHANGE OF QTH

Radio Australia, the Overseas Service of the ABC recently moved its operations from Lonsdale Street to the outer Melbourne suburb of East Burwood. They were formerly crammed in an old building which, I believe, was at one time a biscuit factory. It now has modern, up to date studios from where they can produce their programmes. As well, the Darwin Relay Site is likely to be re-commissioned in the near future, together with the up-grading of the existing transmitters at Shepparton (Vic) and Carnarvon (WA).

RELAY TRANSMISSION

As you probably were aware, during the Commonwealth Games, Radio Australia transmitted special reports on the activities via the facilities of the BBC in the UK together with some of their relay bases. This could be done again in the future, on a shared basis with another international broadcaster, who would, presumably, gain access to use RA’s transmitters to broadcast to the Pacific region. Such arrangements presently exist with Radio France International for them to send programming in French on a weekly basis. You can hear them on 6.045 MHz at 0945 UTC Fridays after Radio Australia concludes their special programmes directed to Antarctica.

DXPOSITION

The Australian Radio DX Club is holding a DXPosition on Easter Saturday, the 2nd of April. It is going to be held at the Radio Australia studios, which are approximately fifteen kilometres from the city centre. Highlight of the DXPO ’83 will be the attendance of four DXers from the Japan BCL Federation — one of the leading SWL clubs in that country. For further details you should get a registration form from ARDXC DXPO ’83, PO Box 300, Blackburn, Vic. 3130.

SOVIET PROGRAMMES

In the course of listening around the bands, you have probably encountered SSB relays of Soviet Home Service programmes. These point to point transmissions are, presumably, designed for the Soviet Naval and Merchant Marine, or Soviet personnel working throughout the world, including the polar regions. The audio quality of these links is superior to that obtained from the normal AM channels, mainly due to good processing. All programmes are in Russian or other Soviet languages although the North American Service in English has been heard on SSB. One channel with excellent signals is 13.820 MHz at 1200 UTC, where they are strong and clear.

Well, that is all for this month. Until next time, the best of 73s and good DXing!

Robin VK7RH

AMATEUR RADIO, March 1983 — Page 37
OPERATING PROCEDURES FOR THE ‘RS’ SATELLITES

1. The satellite’s own rotation axis coincides with the axis of the dipole and is perpendicular to the plane of the satellite’s orbit. In this case regular changes in the signal are not observed, and the signal level mainly depends on the inclined distance (the straight distance between the Earth station and the satellite) and may vary within 9 dB in zenith orbits.

2. The satellite’s own rotation axis is perpendicular to the axis of the dipole and to the orbital plane. Given this arrangement, a change of signal level is observed with a frequency of twice that of the satellite’s rotation about its own axis. The change in the signal is at a maximum along the sub-satellite path and lessens as the distance from the path increases.

3. The satellite’s own rotation axis is perpendicular to the dipole’s axis, and lies in the satellite’s orbital plane. Under these circumstances the amplitude of regular fluctuations varies continuously. If this is examined from the point of view of the receiving antenna on board the satellite, it becomes clear that precisely in this situation it is easiest of all to communicate with the robot and to record information on the bulletin board.

The above data are approximate only, having been gathered using simple antennas and receiving equipment. A multitude of possible intermediate situations exists, involving a more complicated calculation of signal-level changes. Deep and frequent fading occurs also as a result of the mechanism of radiowave propagation and the satellite’s movement in orbit; here not only the amplitude of the fading changes but also the period, which differentiates this phenomenon from fading due to the rotation of the satellite.

A relatively stable and slowly changing signal level from the satellite beacons implies

RADIO #1/1979 are repeated here:
— A lay-over (transparency) containing a path diagram should be prepared (RADIO #3/1982);
— A timetable of satellite passes over a specific geographical point should be drawn up;
— An overall evaluation should be made of reception conditions, and one should not go on the air if the signal level of the satellite is too low since this will only use up a communication channel for no good purpose;
— Both receiver and transmitter must have well-graduated scales, substantially reducing the time needed to search one’s own signal;
— The receiver must have smooth tuning, permitting the tracking of frequency necessitated by the Doppler effect;
— The transmitter power must be able to be regulated over a broad range;
— Call CQ in 12 to 15 second bursts with pauses of the same length — in the majority of cases you will be called during your transmission since communication via satellite is duplex; on hearing a call you should stop transmitting.

There exist several specific particularities relating to operation via the “Radio-3” through “Radio-8” satellites, principally relating to the presence of regular signal fluctuations characterized by a period of 0.5–1 second and a dip of over 20 dB.

WHEN TO OPERATE VIA THE SATELLITES

To select optimal conditions for satellite operation, one should monitor the regular fluctuations caused by the satellite’s rotation around its own axis (in the course of which the directivity pattern as well as the receive and transmit antenna polarization planes rotate) and also by the rotation of the radiowave polarization plane in the ionosphere (the Faraday effect) and other factors. The rotation axis of the satellite maintains the same position over an extended period of time thanks to the gyroscope effect.

To get a clear idea of the phenomena governing the regular fluctuations in the radio signal, it is necessary to form a precise picture of the movement of the satellite around the Earth and its rotation around its own axis. Let us examine several possible combinations of the position of the satellite’s own rotation axis and the orbital plane, and also examine how the receive signal level changes as a function of this. (We shall not for the time being consider the turning of the satellite’s receiving antenna, which is legitimate in monitoring beacon signals. The turning of the satellite’s receiving antenna will produce analogous changes in the signal received by the satellite, and in the repeater mode fluctuations will be determined by the sum of the inequalities in the satellite’s receiving and transmitting antenna patterns.) We shall assume that the satellite’s transmitting antenna has a distant directional pattern similar to a toroid dipole, with minimum radiation along the axis of the dipole and maximum radiation perpendicular to it.

1. The satellite’s own rotation axis coincides with the axis of the transmitting dipole and is perpendicular to the plane of the satellite’s orbit. In this case regular changes in the signal are not observed, and the signal level mainly depends on the inclined distance (the straight distance between the Earth station and the satellite) and may vary within 9 dB in zenith orbits.

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3. The satellite’s own rotation axis is perpendicular to the dipole’s axis, and lies in the satellite’s orbital plane. Under these circumstances the amplitude of regular fluctuations varies continuously. If this is examined from the point of view of the receiving antenna on board the satellite, it becomes clear that precisely in this situation it is easiest of all to communicate with the robot and to record information on the bulletin board.

The above data are approximate only, having been gathered using simple antennas and receiving equipment. A multitude of possible intermediate situations exists, involving a more complicated calculation of signal-level changes. Deep and frequent fading occurs also as a result of the mechanism of radiowave propagation and the satellite’s movement in orbit; here not only the amplitude of the fading changes but also the period, which differentiates this phenomenon from fading due to the rotation of the satellite.

A relatively stable and slowly changing signal level from the satellite beacons implies

ACKNOWLEDGEMENTS
AMSAT Satellite Report
AMSAT UK
VK5AGR

Basic Orbital Data can be obtained through the AMSAT Australia Net by both participating stations and listeners.

AMSAT PAPERS
‘The Radio and Electronic Engineer’ is the journal of the Institution of Electronic and Radio Engineers (England). It has devoted its entire August/September 1982 issue (Vol 52 No 8/9) to “UoSAT — The University of Surrey’s Satellite (an investigation into cost — effective spacecraft engineering). The journal carries about 100 pages and contains twelve papers by various authors associated with the project.

AMSAT AUSTRALIA
Bob Arnold VK3ZBB
41 Grammar St, Strathmore 3041

INFORMATION NETS
AMSAT AUSTRALIA
Control: VK3ACR
1000 UTC Sunday on 7.064 MHz

AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday on 14.305 MHz

AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday on 28.880 MHz

NATIONAL CO-ORDINATOR
Chas Robinson VK3ACR

Prtie 38 — AMATEUR RADIO. March 1983
that the satellite’s own rotation axis is close to the axis of the transmitting dipole. Monitoring of signals that have passed through the repeater and of the robot’s reaction to incoming signals are indications that the receiving antenna is rotating in a plane perpendicular to the satellite’s own (as described in cases 3 and 4). The more such monitoring results are accumulated, the more precisely it will be possible to determine the interrelationship between the satellite’s rotation axis, its antennas, and the orbital plane, and hence the most favourable orbits for radiocommunication.

OPERATION THROUGH THE REPEATER

Telegraph signals suffer least of all under conditions of deep fluctuations. Practice shows (and theory proves) that the stronger the fading and the weaker the signal, the slower the sending must be. A sending speed of 60-70 characters per minute may be considered normal, occasionally increased to 100 CPM, and when working QRP dropping to 40-60 CPM.

The power radiated toward the satellite must be regulated in such a way as to avoid the peak level of the repeated signal from exceeding that of the telemetry beacon. When this is exceeded, the ARU system of the repeater begins to operate, and the signal level of the remaining station will “breathe” in synchronism with the turning of the satellite and with keying of the powerful station. The level of its own signal will change slightly. Fluctuations affect the intelligibility of SSB signals substantially more. Sometimes whole words disappear. Hence when there are deep fluctuations it is advisable to pronounce words slowly, drawing them out as in a drawl, repeating the most important parts several times.

COMMUNICATION WITH THE ROBOT

Conducting a QSO with the robot is the most complicated procedure. In order for an operator to have a QSO with it, all others must stand by patiently. The slightest interference can interrupt a QSO. Often operators create interference by tuning their transmitters on the robot’s frequency. Correct operation presupposes the presence of a well-calibrated receiver or a digital frequency meter and a table or graph showing the Doppler frequency shift. Variance from the calculated frequency should not exceed ±0.5 kHz.

To make a contact with the robot, it is necessary to fulfill the following conditions:
- There must be no interference in the receiving antenna, and the signal level must exceed the threshold of the satellite receiver;
- The signal level from Earth must exceed the activation threshold of the satellite receiver;
- The signal’s frequency must be situated in the passband of the satellite receiver;
- Sending must be precise and without error.

If due to fluctuations the radiated power cannot compensate for dips in the antenna directivity diagram, it is necessary to stop trying to communicate with the robot in order not to bother others.

It’s necessary to observe the correct procedure for calling the robot; for example “RS5 DE UA3XBU AR”, and by the way the combination AR is sent together. If the call is received incorrectly by the robot, either no answer will follow or an answer will be given in the form of a coded phrase. If the robot received the call correctly, it answers, for example, thus: “UA3XBU DE RS5 UR QSO NR 012 UA3XBU DE RS5 NR 012 OP ROBOT TKS FR QSO 73 SK”. With this the communication is ended, and you should not send the robot 73, thanks for the QSO, goodbye, etc, thereby occupying the channel and bothering others. The robot enters your call-sign in the on-board log, and if the received signals from the on-board log on command from Earth you may check on the correctness of the QSO. The capacity of the on-board log (its electrical memory) is 64 communications, and its memory capacity for numbers is 999. During the transmission by the robot of QO don’t tune in its receive channel, thus creating interference. During the robot’s reply, its receive channel is switched off, so that tuning in this channel is all the more useless.

Communication with the robot may be conducted if the call-sign of the station calling consists of not less than four and not more than six characters.

The nominal input frequencies of the robots are 145.828 MHz for RS-5 and 145.836 MHz for RS-7.

SATellite STATUS REPORT

AMSAT Oscar 8 will celebrate the Fifth Anniversary of its launch on 5th March. At this time the satellite will have completed some 25 471 Earth orbits.

It has been reported that a problem may have developed with the battery charge, consequently the battery condition will have to be carefully monitored. Otherwise the satellite is working well and giving good service.

The A08 Mode ‘J’ transponder is being used in a unique way to test the system for determining Phase IIIB orbital parameters from AMSAT’s own range measurements. The A08 system has moved on occasions but this has not been officially confirmed. USSAT Oscar 9 is still held under tight rein by its controllers. The satellite is now virtually at its planned attitude and its spin has been substantially reduced to a level where early deployment of the booms may be anticipated.

Telemetry transmissions have been reduced to weekends and since new year have been available during the Australian afternoons. An added bonus in recent weeks has been the synthesized speech experiment which has operated alternately with the ASCII.

Through a 120-word speech synthesizer telemeter, orbit ephemeris data and general news can be encoded in ‘English’ and relayed via the general, engineering or 2.4 GHz beacons using nbm. Although the satellite and its controllers are all European the synthesized speech signals have a distinct American accent; it seems that synthesizers are reared and educated in the USA. The SHF and microwave beacons aboard U09 have recently been activated and found to be in good working order. These beacons operate on 2.401 GHz and 10.47 GHz respectively. The SHF beacon will transmit similar data to the VHF General Beacon on nbm. The Microwave Beacon will transmit a steady tone.

NEW CONTRIBUTING EDITOR REQUIRED

After quite a few years of writing these notes I shall relinquish my position as Contributing Editor on satellites effective from the July edition.

This will give me an opportunity to write a series of articles on the subject of satellites with, I hope, assistance from experts in specialized fields.

It will also, and perhaps more importantly, provide an opportunity for a younger enthusiast to make a tangible contribution to this interesting side of our hobby.

If you are willing to assist please let the editor of ‘AR’ or myself know as soon as possible.

BOOK REVIEW

MINI/MICRO SOLDERING AND WIRE WRAPPING

Walk into any electronic parts distributor or computer store, and you can obtain books relating to almost any technical situation, from the simplest to the most complex subjects, and projects.

However, a book not usually found is how one actually goes about fastening individual components together, or how to remove them during repair and troubleshooting.

This book attempts to fill that void. Its four chapters cover information on the three methods of fastening, fastening new circuits, unfastening/refastening existing circuits, and some basic techniques for troubleshooting and repairing electronic equipment.

The book contains one hundred and twelve internal pages and is most descriptive with pictures and diagrams throughout. A most useful addition for your amateur library.

Available from Stewart Electronics Components Pty Ltd, 44 Stafford Street, Huntingdale Vic. 3166. Cost is $6.00, plus postage $1.00.

VK3UV
HERE'S RTTY!

Bruce Hannaford VK5XI
57 Haydown Road, Elizabeth Grove, SA 5112

CHOICE OF RTTY GEAR

Choosing the right RTTY gear is like choosing a wife. A lot of careful thought before hand can save much distress later. I don't intend to tell you what to do but will instead outline the main considerations in a non technical way.

Firstly the choice of a suitable transmitter, receiver or transceiver. On the HF bands Frequency Shift Keying (FSK) is normally used. Some modern transceivers have an inbuilt FSK facility but many SSB transceivers lack this feature. With such SSB transceivers FSK can be generated by feeding pure audio frequency tones into the mic socket or phone patch connections. The result will be a true FSK transmission if no audio distortion is present in the tone oscillator or in the transceiver audio circuits.

When an "audio generated" FSK transmission is used the transceiver must, in addition to having low audio distortion, also have very good carrier and unwanted side band suppression. Most modern transceivers will meet this requirement and thus will be suitable for both SSB and RTTY.

In a transceiver having FSK fitted the carrier frequency will be keyed up and down slightly by the RTTY terminal equipment using DC pulses for this purpose. On HF bands this latter system is preferable as there is much less chance of spurious RF outputs.

In either case, when a basically SSB type of transceiver is used, the power output must be kept low because of the continuous carrier needed for RTTY. Usually the RTTY power output will be a little less than half the normal peak power of CW or SSB.

If you decide to use a linear to raise the transceiver power, remember that the distortion products will also be amplified and this is a most important consideration when using "audio generated" FSK. Personally I doubt if a linear should be used with "audio generated" FSK transmissions, much better to use a "DC switched" FSK system and largely avoid the problems of spurious outputs.

By the way "liners" don't have to work in a linear fashion when amplifying RTTY and it is a good idea to fit them with a bias switch giving extra bias for class C operation when using RTTY.

Before we leave the HF scene two more important points must be mentioned. Firstly RTTY requires very high stability both in transmission and reception. Equipment considered perfectly stable for SSB or CW may not be good enough for RTTY. A frequency drift of say 50 Hz may be enough to lose a RTTY signal with some types of terminal equipment.

Secondly, although in reception RTTY audio tones are normally only 170 Hz apart CW filters may not be workable as the required RTTY tones are normally 2125 and 2295 Hz and most transceivers with the CW filter switched in produce beat notes of about 800 Hz! A transceiver with normal SSB pass band and IF shift may well be more useful than one with a CW filter.

On the VHF bands the situation is somewhat different as most RTTY is transmitted using FM transmissions. The audio tones remain at a constant pitch even when the receiver is well off tune and the volume is thus reduced. This system is called Audio Frequency Shift Keying (AFSK) and in passing you might note that this same type of RTTY and audio fed into a SSB transceiver produced FSK output.

With AFSK transmissions you need a tone oscillator that is keyed by the required RTTY code, however the keying is not on/off keying, it is change of pitch keying of the two audio tones used. At all times one or the other tone is present, the keying merely changes the pitch from one to the other.

Usually FM transceivers can be run full power on RTTY as they are being used in their normal way; however RTTY overs tend to be longer than speech overs and in some transceivers this may cause overheating.

Because of the lack of drift problems using FM RTTY a signal once tuned stays that way. A receiver can be left running unattended tuned to a RTTY channel connected to printing equipment that will automatically start up when a signal is received.

This auto start system is used by many people who even leave equipment running twenty-four hours a day. Messages can then be received even in the absence of the operator who, when he gets around to reading same, can reply in like manner even if the other operator is not available. This is a very interesting system that does not tie you down to exact times like a sked.

The information received can be recorded on paper, a magnetic tape recorder or in a computer memory. I note many people are using mechanical printers for this purpose.

Of course it is also possible to use FSK RTTY on VHF and a few are doing this mainly on 6 metres. If such a system is used it goes without saying exceptional stability is required and most other remarks made for HF FSK will also apply.

Let us now turn our attention to Terminal Equipment. Briefly this is those extra bits of gear needed to make your CW/SSB station a RTTY station.

Terminal equipment may be a single complete unit or a number of separate units. In receiving, the terminal equipment receives audio signals from the receiver voice coil or headphones jack, interprets these and passes them on to a paper printer or VDU screen. When transmitting a type writer type keyboard is used to control the generation of coded signals that either finish up as two audio tones to modulate the transmitter or as DC pulses used to directly shift the transmitter carrier frequency.

Basically there are three types of terminals. A mechanical terminal, a communications computer terminal and a "home" computer terminal.

The mechanical terminal uses a typewriter type machine such as have been used for many years in Post Offices and many of these are still giving good service in amateur stations. The machines were of course designed to work through land lines using a rather high current and voltage so some additional interface equipment is needed for radio use.

For transmission, a modulator is used for generating tones and for reception, a demodulator that converts the received
audio tones to DC pulses to work the printer is needed.

The mechanical printer is by far the cheapest and can give quite good results on a single RTTY speed.

The communications computer is a "dedicated" computer. That is it is dedicated to one task, namely that of sending and receiving RTTY or CW signals. Such a computer normally has all the necessary terminal equipment in the one package except that a VDU is often a separate item. The VDU most often used is a standard portable B/W TV receiver as these are cheaper than a normal VDU.

Comparing the mechanical gear with the computer the computer does offer much greater operating convenience and as a self-contained unit it requires a minimum of interconnecting wires and so is very easy to get going. It will normally operate on several RTTY, ASCII and CW speeds and has memory capacity which can be very useful.

Perhaps the greatest operating advantage of the computer is noted when sending mixed letters, figures and punctuation marks. Eg when using a mechanical system to send a figure in the middle of a group of letters you must first use the figures key then send the required figure and then use the letters key before continuing with more letters.

You will note three key tapping movements were required to send the one figure amongst a group of letters. With the computer there is a separate key for each figure and you simply tap the right key and the computer does the rest automatically. One movement instead of three! A time and motion study type would be ecstatic with delight at such saving of work movements.

The "home" computer does not really offer many advantages over the communications type as far as the actual sending and receiving of RTTY is concerned, however it will be useful in many other ways as well. If you have a use for a computer in its own right, quite apart from RTTY, it might then be well worthwhile considering as a reasonable proposition.

As a "home" computer is not normally intended for RTTY use it will need special interface equipment and a special programme for RTTY use.

In conclusion I trust this has been helpful to those who are considering using RTTY and also informative to other amateurs who like to be well informed concerning all modes available to them. The foregoing has been written in a non technical way using some very generalized statements that are normally true but perhaps omitting some details that my more technically minded friends, might regard as very important. I hope such will forgive me.

At the moment most material has been aimed at non RTTY operators, but it is my intention to become more technical after the ground work has been completed.

From time to time I overhear comments on air about education matters in general and exams in particular. Some of these come directly or indirectly from operators who have recently sat an exam, or from class instructors — others came from members with strong views on such matters. Some are criticism of particular exams or questions, others query the whole exam concept or techniques.

But in the time I have held this position I have had only half a dozen or so direct comments. PLEASE — don't just whistle on air. If you (or a friend) have a genuine complaint about a particular paper or question, let me know about it and I will make enquiries. Write down your complaint, or what you think the question said, tell me why you are complaining, and send it to me (QTHR).

The Wireless Institute has arranged with DOC for me to have access to copies of the exam papers used, so I can check on any that are queried. If there is genuine cause for complaint, the matter will be rectified. However we should all be aware that the recent examinee retains a very biased memory of the exam and questions — in many cases the recalled question is quite different from the original.

Of the papers I have seen so far, I do not think the average of 'doubtful' questions would be any more than two per paper.

If you have strong views about the direction education should be taking — again, please let me know.

The two syllabuses will shortly be undergoing revision — any input will be welcome. Alternatively you can forward your ideas to the executive via your local division. Does your division have a defined policy on education and an active Education Officer? I have had little evidence of such from some states. Perhaps this could be considered before the next Federal Convention.

If I am to be of service to all VK amateurs (or potential amateurs) I need to know what the divisions are doing. One thing I particularly need to know is what classes are being run and where, so that I can direct enquiries to the right contact.

Please make sure that your club secretary or class co-ordinator lets me know if classes are planned or in operation.

I would also like to hear from those selfless souls who are running 'informal' classes for small groups, particularly in the country areas. There may be many ways I can help these enthusiasts.

Now that daylight saving has ended in Melbourne the Education net will run at 1100 UTC, Wednesday evenings about 3.685 MHz.

My idea of this net is to bring together class co-ordinators and education officers for sharing ideas about syllabus, teaching techniques and policies. It is not a 'Braintrust' to answer or pass exam questions. Of course it is not restricted to those mentioned, all ideas and comments are welcomed.

It has been suggested that there is a place for a "Braintrust" or an air class type of net in the Novice Bands. Who would be interested? How many would be willing to participate? Again, I would be interested to hear your ideas.
UNITED STATES GOVERNMENT GIVES FCC POWER TO REGULATE EMI/RFI SUSCEPTIBILITY

House of Representatives Bill HR3239 (5008) Communications Technical Amendments Act of 1982 has been passed by the House, the Senate, and signed by the President — It is now Public Law 97-259. The Bill is similar to S929 the one introduced by Senator Barry Goldwater, K7UGA to amend the U.S. Communications Act of 1934. While the Bill contains several important provisions, one which is of special interest to the amateur service covers susceptibility. The FCC is given the authority to regulate the susceptibility/immunity of electronic equipment to EMI/RFI. This authority is required in order to stem the introduction of electronic devices which cannot function normally in the presence of EMI/RF energy.

UNITED STATES CONGRESSIONAL RECORD
Proceedings and Debates of the 97th Congress, second session
WASHINGTON, THURSDAY, AUGUST 19, 1982
HOUSE OF REPRESENTATIVES

The following extracts from the Congressional Record has the legislative history of Public Law 97-259. The legislation was passed by the U.S Congress as HR Bill 3239, and when President Reagan signed it on September 13 it immediately became Public Law 97-259.


Mr Wirth submitted the following conference report and statement on the Bill (HR 3239) to amend the COMMUNICATIONS ACT of 1934 to authorize appropriations for the administration of such act, and for other purposes.

Short Title
"COMMUNICATIONS AMENDMENTS ACT of 1982"

While the Communications Act of 1934 has been amended several times since its initial passage, it has never received a thorough technical overhaul and clean-up.

The Act still contains numerous instances of obsolete language, while imposing regulatory requirements and responsibilities upon the FCC which are no longer necessary in light of advancements in technology and changed circumstances.

INTERFERENCE WITH ELECTRONIC EQUIPMENT

Section 108(a)(1). The first sentence of section 302(a) of the Communications Act of 1934 (47 USC 302(a)) is amended by inserting "(1)" after "regulations", and by inserting before the period and at the end thereof the following: "and (2) establishing minimum performance standards for home electronic equipment and systems to reduce their susceptibility to interference from radio frequency energy".

(2) The last sentence of section 302(a) of the Communications Act of 1934 (47 USC 302(a)) is amended by striking out "shipment, or use of such devices" and inserting in lieu thereof "or shipment of such devices and home electronic equipment and systems, and to the use of such devices".

(3) Section 302(b) of the Communications Act of 1934 (47 USC 302(b)) is amended by striking out "ship, or use devices" and inserting in lieu thereof "or ship devices or home electronic equipment and systems, or use devices".

(4) Section 302(c) of the Communications Act of 1934 (47 USC 302(c)) is amended —

(A) in the first sentence thereof, by inserting "or home electronic equipment and systems" after "devices" each place it appears therein; and

(B) in the last sentence thereof, by inserting "and home electronic equipment and systems" after "devices", by striking out "common objective" and inserting in lieu thereof "objectives", and by inserting "and to home electronic equipment and systems" after "reception".

A Amateur radio service — The amateur radio service is as old as radio itself. Every single one of the early radio pioneers, experimenters, and inventors was an amateur: commercial, military, and government radio was unknown. The zeal and dedication to the service of mankind of those early pioneers has provided the spiritual foundation for amateur radio over the years. The contributions of amateur radio operators to our present day communication techniques, facilities, and emergency communications have been invaluable.

In the early 1920s, amateurs were relegated to the portion of the radio frequency spectrum that was considered at that time to be virtually useless: the short-waves below 200 metres. These short-waves that once were considered
Amateur radio and its various applications are a vital part of the communication landscape, particularly in emergency and public safety services. Amateurs have been utilizing advanced technology from their relatively simple, inexpensive ground stations. Seven amateur satellites have been built to date by amateurs at their expense. The amateur space activities are playing an important role in attracting the young people of America to scientific fields.

Almost every nation has amateurs who communicate each day with fellow amateurs in other countries and on other continents passing vital emergency message traffic and acting as ambassadors of international goodwill. The modes of communication include Morse code telegraphy, telephone, teletype or teleprinter, television and facsimile. Equipment ranges from home-built transmitters and receivers using parts from discarded radio and television receivers costing only a few dollars, the most sophisticated equipment manufactured for commercial, government, and military use costing many hundreds of dollars.

There are approximately 400,000 amateurs in the United States and almost 500,000 throughout the world. At any time of every day, thousands of amateurs scattered throughout the world are listening to and communicating with fellow amateurs over distances varying from only a few miles within sight to hundreds of miles across the world. The large number of amateurs dispersed around the world operating in the five high frequency bands that has made it possible to provide the first, and for some time thereafter, the only communication links between areas devastated by natural disasters — earthquakes, tidal waves, hurricanes, tornadoes, blizzards and floods — and the outside world.

Entry into amateur radio usually is by having demonstrated his knowledge of radio theory and application, International Morse Code, the Communications Act, and the regulations of the Federal Communications Commission. Entry into amateur radio usually is through the Novice Class. Amateurs are encouraged to increase their knowledge and skills by a series of five classes or grades of licence, all but one with limited operating privileges.

The Amateur Radio Service has been praised for being self-regulated. The Commission has reported that less time has been devoted to monitoring and regulating the Amateur Service than to any other service because of its self-policing and discipline.

One primary purpose of the Conference Substitute is to provide the Federal Communications Commission with the authority to implement various programmes which will result in improvements in administration of the amateur radio service and to cut the cost of the service. The goal is to establish a service to continue its tradition as the most self-regulated radio service in the United States, and to become to some extent self-administered, requiring even less expenditure to government time and effort than in the past.

D. Radio frequency interference rejection standards — Radio frequency interference (RFI) arises when a signal radiated by a transmitter is picked up by an electronic device in such a manner that it prevents the clear reception of another and desired signal or causes malfunction of some other electronic device (not simply a radio or television receiver). While almost any transmitter of any service is a potential interference source, Amateur or Citizens Band (CB) stations are very often associated with RFI problems involving electronic devices in the home.

Particularly since the advent of commercial television immediately following World War II, amateur radio operators have been active in interference control and elimination. The amateurs learned very early that the incorporation of good engineering practices in their transmitter construction, such as electrostatic shielding and filtering, minimized the possibility of interference by preventing the radiation of spurious signals. Such practices and techniques are well understood and are universally incorporated in transmitters manufactured and in use today, irrespective of the service. Appropriate rules of the Federal Communications Commission require all transmitters of all services, including the transmitting sections of transceivers, to suppress spurious radiation.

It has become evident that many interference problems involving home electronic equipment can be eliminated by the use of simple protective devices. The Conference Substitute requires all radio amateurs to take protective steps with the transmitting equipment, but that resolution of some interference problems may require action with respect to receivers and other electronic devices picking up unwanted signals.

Causes for interference to television reception, for example, can be divided into the following categories. First, although least common, is the pickup of a spurious (unwanted) signal having a frequency within or close to the band of frequencies occupied by the television signal. Such interference usually is caused by an interfering transmitter. In many instances, there is what is termed an harmonic relationship between the transmitter frequency and the television channel. That is particularly the case with the 27 Megahertz CB service: the second or third harmonics (multiples) of the 27 Megahertz CB signal fall in TV channels 2 and 5 respectively. It is generally recognized that no TV design can eliminate susceptibility to harmonic interference.

Second is the overloading of the input circuit of the television receiver by an undesired signal so strong that overloading, i.e., malfunctioning, of the circuits generates spurious signals within the television receiver that interferes with the desired signal. Such interference usually is more severe with transistorized receivers and may cause loss of circuit design in the receiver. Third is the pick-up of an undesired signal by circuits within the set or wiring leading to the set. Poor shielding or poor circuit design in the receiver is usually the culprit.

Interference to other electronic devices such as record players, hi-fi amplifiers, home burglar alarm and security systems, automatic garage door openers, electronic organs, and public address systems usually arises from the pick-up of a relatively strong signal by the external wiring, antenna wire, or microphone from the transmitting antenna or to the power source, followed by the rectification of the signal by a circuit, contact or component within the device.

The cures for most such interference have been well known for many years. Often an inexpensive filter in the lead from the antenna to the television receiver will reduce the interference to an acceptable level or eliminate it entirely. For the other electronic devices, the judicious installation of inexpensive capacitors (devices which prevent wiring from picking up undesired signals) may suffice.

Even though the causes of radio and televisions interference have been known for many years, the number of complaints received by the Commission has grown steadily each year. With the rapid, and indeed explosive, growth of the 27 MHz CB service in the mid-1970s, the probability of a home electronic device being located near a transmitter of some sort has increased substantially. The public’s use of home electronic devices has increased, and continues to grow, at an exponential rate.

Many manufacturers of home electronic equipment and systems have been willing to provide, often free of charge, filters for electronic equipment when a particular interference problem is brought to their attention. However, their efforts to voluntarily address the root problem by incorporating such RFI suppression techniques in the design and assembly-line stage have been less than adequate. This is true even though such filtering mechanisms and anti-interference design may only cost a few cents per unit.

Many believe that the Commission does not now have authority to compel the use of protective devices in equipment which does not emit radio frequency energy sufficient in degree to cause harmful interference to radio communications. Manufacturers and retailers also believe that the Commission cannot require a label on equipment or the supplying of a pamphlet of the possibility of interference and outlining corrective measures. The Commission has thus far acted in consonance with this belief. The Conference Substitute would thus give the FCC the authority to require that home electronic equipment and systems be so designed and constructed as to meet minimum standards for protection against unwanted radio signals and energy. Extensive amateur and Commission experience over the years with interference investigation and elimination supports the conclusion that, in most instances, satisfactory corrective measures can be simple and inexpensive. The Conferences by no means intend for major modifications and redesigns of equipment to be required, or that the Commission require steps to be taken which impose substantial additional costs or unnecessary burdens on equipment manufacturers. We do not believe that elaborate procedures will be necessary in order to achieve the desired result. Existing equipment and that manufactured prior to the date of enactment of this legislation will be exempt from any such standards as might be established by the FCC.

The millions of purchasers of television and radio receivers and other home electronic equipment and systems each year deserve protection from interference. Significant reductions in the number of complaints received each year by the Commission should result from enactment of this provision, as should lawsuits against amateur and other radio operators in local jurisdictions based upon interference. Section 7 of the Conference Substitute is viewed by the Conferences as necessary to address adequately this in

AMATEUR RADIO, March 1983 — Page 43
creasing problem, which plagues so many of the nation's consumers. Moreover, by virtue of this section, the Conference wish to clarify that the exclusive jurisdiction of RFI incidents (including pre-emption of state and local regulation of such phenomena) lies with the FCC.

INTERFERENCE WITH ELECTRONIC EQUIPMENT

House bill

The Senate amendment

The Senate amends Section 302(a) of the Communications Act of 1934 and authorizes the Senate amendment to establish minimum performance standards for "home electronic equipment or systems" to take appropriate action in order to protect such equipment from radio frequency interference (RFI).

Conference substitute

The Conference Substitute is intended further to clarify the reservation of exclusive jurisdiction to the Senate amendment and to authorize the Commission to take appropriate action in order to protect such equipment from radio frequency interference (RFI).

The Conference Substitute is further intended to clarify the reservation of exclusive jurisdiction to the Federal Communications Commission over matters involving RFI. Such matters shall not be regulated by local or state law, nor shall radio transmitting apparatus be subject to local or state regulation as part of any effort to resolve an RFI complaint. The Conference believe that radio transmitting operators should not be subject to fines, forfeitures or other liability imposed by any local or state authority as a result of interference appearing in home electronic equipment or systems. Rather, the Conference intend that regulation of RFI phenomena shall be imposed only by the Commission.

Amateur radio needed a solution to the problem of its being blamed for the inability of electronic devices to reject unwanted radio signals. Consumers found it difficult to accept the concept that a TV or stereo could be a "source" of interference. ARRL leaders monitoring the political and technological trends knew that, with time, the RFI situation would only get worse. Amateur radio operators would be more and more subject to malfunction due to RFI. However, the legislation does not mandate Commission exercise of this authority; that decision is well within the technical expertise of the agency.

The Conference amend the Senate amendment to specify that the Commission has the authority to require the equipment design and systems necessary to fully protect against the interference. The Conference expect the Commission to exercise the authority granted herein, as it has exercised the authority granted under section 302 of the Communications Act of 1934, by balancing the cost of improving the performance of a device to particular levels against the benefit to be gained from requiring manufacturers to meet standards of various levels of stringency. In so doing, the Conference expect the number of interference complaints recorded and investigated by the Commission to be significantly reduced.

WHERE DO IDEAS COME FROM?

When you sit down to home brew something new, something that has never been built before, you force yourself to use more of your mind than if you were eating, sleeping or catching a train. Supposing you succeed, you construct a gizmo that has never been built before and it does marvellous things. Why was it not already built? Why did history wait until now for this device to exist when it had been around fifty or a hundred years ago?

For most part this situation exists because new gadgets are not constructed until an immediate need occurs or an innovation is stumbled across. The limiting factor is the human mind, as our educational system impresses itself upon us over a period of time, fixed ideas develop about what is possible and what is sheer fantasy.

Consider a squid that can play a piano, you would probably think that this is not possible but has anyone ever placed a squid on a keyboard and shown it the keys? Personally I could not be bothered, but the first step is to ignore the fact that it cannot be done and take a trip to an aquarium. This type of thinking should be applicable to any sort of problem; when faced with a dilemma forget half of what you have ever learned and try again. Is this what Tesla did when he drop-kicked the lead acid battery and invented three-phase power? Only the ability to forget that a thing is impossible enables you to do it. How else could it be that you can fly a jet around the equator or land on the moon; which is of course absurd as everyone knows, the world is flat.

THOUGHT FOR TODAY:

Low SWR is not proof of a good quality antenna system or that it is efficient. Lower than normal SWR exhibited over a frequency range by a straight dipole or a vertical over ground is a clue to trouble, in the form of undesired loss resistance.

AND . . . A THOUGHT FOR TOMORROW:

The radiator of an antenna system need not be of self resonant length for maximum resonant current flow; the feed line need not be of any particular length and a substantial mismatch at the line antenna junction will not prevent the radiator from absorbing all real power available at the junction.

And now something has been done! The FCC now has the authority to require that all home electronic equipment will have to meet RFI susceptibility standards.

Congratulations to the ARRL and all those involved in this wonderful breakthrough for the Amateur Radio Service.
RON WILKINSON ACHIEVEMENT AWARD

This year's recipient of the award is Dick Norman VK2BDN.

Proposed by the Executive for many years of activity on microwave experiments and a lifetime of dedication to VHF/UHF culminating in a 1296 MHz contact from NSW to ZL in January 1982.

Dick has had several articles published in the amateur press.

This Award was set up in March 1978 funded mainly from interest derived from the investment of $1100 donated by Mrs Mary Wilkinson, widow of the late Ron Wilkinson VK3AKC, in his memory. The qualifications for the Award are as follows:

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 of the art techniques.
- Involvement in Institute affairs.
- Microwave activity.
- Involvement in WICEN, Education Clubs or similar.
- Achievement in using amateur satellites. Notable Public Service.
- These are only examples. As can be seen the Award is extended to cover the whole gamut of amateur radio activities.

(AR March 1978, page 17.)

URGENT!
Please let us know of clubs and schools etc. starting theory classes.
Where, when, how much and whom to contact.
Contact Brenda QTHR

COMMERCIAL CHATTER

VICOM'S CHANGING BUSINESS

Vicom International, the company which has established the Icom name in Australia over a period of eight years will continue to be an Icom dealer, selling from its premises at 57 City Road, South Melbourne.

Vicom's Managing Director, Russell Kelly, said that Icom's decision to set up its own office in Australia would allow Vicom to concentrate on the products which have become more important to it over the last few years. Vicom will continue to ensure however that its amateur customers receive the high standard of service offered since Vicom survey has shown that amateurs are include maintaining the high standard of Icom service it has offered in the past.

Vicom has constantly examined the amateur market to decide where it should concentrate its attention. For example, a Vicom survey has shown that Amateurs are expanding their stations with new accessories rather than new transceivers. It has also found that not only is the number of new amateurs slowing dramatically, but that existing amateurs are not expanding their stations as eagerly as they have in the past. The decline in amateur radio activity in Australia is consistent with a world-wide trend, but also appears to be associated with the depressed Australian economy.

Vicom will continue to support amateurs, but is planning to emphasise the accessories in its range. Daiwa products, many of which feature a unique cross-needle meter, are proving to be of continued importance to amateurs, along with Linear Amplifiers and RTTY equipment from Tono.

Vicom is the exclusive Australian distributor for Tono and Daiwa.

Vicom's business has become increasingly concentrated in its professional division. For several years now, the product range has included a number of very successful products designed for government and commercial use and this has formed the majority of Vicom's business. Many government departments for example, rely on Vicom for sophisticated transmitting and receiving equipment and RF test equipment. Private industry finds Vicom invaluable because of its varied range of specialised test equipment.

Vicom's professional division supplies products from over overseas companies which Vicom represents exclusively in Australia. Companies represented range from IFR of the US which manufactures communication service monitors and avionics test equipment, to Adret and Giga of France, manufacturing signal and sweep generators. A number of other companies around the world have chosen Vicom to represent them in Australia. Vicom, for example, is also making moves into fibre optics and satellite communications.

The electronic communication industry is changing dramatically all the time, and Vicom attributes its own success to its constant review of the areas which are declining or expanding.

POWER LINE NOISE

OVERHEAD POWER LINES AND HIGH VOLTAGE EQUIPMENT

Strong USA representation on the sub-committee preparing the CISPR manual, "INTERFERENCE FROM OVERHEAD POWER LINES AND HIGH-VOLTAGE EQUIPMENT" should result in the manual, particularly part two, being accepted by the United States electric supply utilities and by the FCC.

Canada is conducting interference measurements in the vertical direction over power lines using EMI measurement instruments in helicopters.

MOTOR VEHICLE IGNITION SYSTEMS

Interference from motor vehicles and internal combustion engines is the subject of a report submitted to the CISPR in Stockholm by a Japanese delegation. The report covers three to four years work on broadband antenna measurements.

Also being received by the CISPR is a report from the USA covering four years research on, "Interference from Mobile Radio Communications by Ignition Systems of Individual and Groups of Vehicles."

CABLE TV CONFERENCE

Delegates at a recent two day conference organised by ACASCA (Australian Cable and Subscription Communication Association) in Canberra were surprised by the fact that the Minister for Communications, Mr Neil Brown did not give the green light to the early introduction of cable and RSIV (Radiated Subscription Television) as recommended in the report of the Australian Broadcasting Tribunal.

Mr Brown said that the public (and his government) had still to be sold on the benefits of introducing any new forms of communication systems.

So it seems that Cable Television will not begin as early as the recent Australian Broadcasting Tribunal’s report led us to believe.

A key speaker at the conference — American newscaster Walter Cronkite, disappointed the delegates when he discussed the failure of Cable Television in the United States.
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KENWOOD AUSTRALIA WAS HAPPY TO SUPPLY FREE OF CHARGE A TS-8305 STATION TO THE HEARD ISLAND EXPEDITION.

Dr. David Lewis leader of the 1982/83 Oceanic Research Antarctic Expedition has chosen Kenwood Communications Equipment on board the “Dick Smith Explorer” Where lives and safety are paramount and reliability is of prime importance - the professionals always choose KENWOOD

7 ELEMENT YAGI
KENWOOD ANNOUNCE THE RELEASE OF A NEW LOG PERIODIC!

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QLD: MITCHELL RADIO CO - 59 ALBION ROAD ALBION (07) 57 6830
SA & NT: INTERNATIONAL COMMUNICATIONS SYSTEMS PTY LTD - 8 NILE ST PORT ADELAIDE (08) 47 5807
S A & NT: INTERNATIONAL COMMUNICATIONS SYSTEMS PTY LTD - 8 NILE ST PORT ADELAIDE (08) 47 5807
W.A.: ARENA COMMUNICATIONS SERVICES - 462 ALBANY HWY EATON VICTORIA PARK (09) 361 5422
TRI SALES - CMA NEWCASTLE & CHARLES STREETS PERTH (09) 328 4560
WILLIS ELECTRONICS - 73 STERLING STREET PERTH (09) 376 4500
GRAHAM ROGERS - 18 BANKS STREET BUNBURY (097) 21 1156

Page 46 — AMATEUR RADIO, March 1983
PRESIDENT'S REPORT 1982

For many years, amateur radio has been a growth industry. The magic milestones in VK4 of 500 members, 750, 1000, and now 1400 members have been reached and then left behind as more people join our Institute. With this expansion, the administrative structure of the institute in Queensland has been stretched to the limit. At the 1980 AGM, it was recommended by some life members that members consider appointing a part time paid Secretary/Manager as the workload was too much for volunteers.

Since, council has tried to restructure our organization to avoid paid labour and to maximize the use of volunteer labour. So far we have been successful, and our membership fees as a result are by far the lowest in Australia. However, we will only be able to retain this volunteer status with the assistance of members throughout Queensland.

The institute affairs in VK4 are now divided into the running of the essential daily business and the policy making or management areas.

Council is ultimately responsible for both, but mainly concentrates on the policy areas and allows other volunteer workers to concentrate on chosen specialties.

RETIREMENTS

1982 started with the retirement for a well earned rest for three members who have given their all to our hobby.

Alex McDonald VK4TE — the best treasurer this division has had — who guarded our finances and watched them grow ten times in eight years — our federal councillor for three years and a man who always urged us to think VK and not just VK4.

Tom Austin L40787 — our inwards QSL officer for four years, one of the most essential and yet most routine and time consuming tasks of any in our hobby.

Bill Giels VK4ABG — Bill, transferred from Townsville to Brisbane, saw the Institute's critical need for assistance and took over as secretary. For several years he gave his all in almost singlehandedly running this division's administration.

OUTWARDS QSL

The outwards QSL bureau run by Mick and Chris Bently VK4AMB and VK4AMG despatched over 60,000 cards, including 3000 cards for AX4QC.G. Thank you Mick and Chris for the fifteen hours a week you do not spend on air to ensure that VK4 cards go around the world.

NEWS AND INFORMATION SERVICE

We are a communications hobby, yet one of the hardest things for us to do is to communicate. Communications is a two way process and like most amateurs we sure can transmit well!

Every week Bud Pounsett VK4QY and his XYL Bonnie collate the weekly broadcast from a variety of sources.

This broadcast service, on nine different frequencies would be impossible without the co-operation of our rebroadcasters both in Brisbane and throughout the state.

A new innovation has been the use of page 739 in BTO Ch 7 Teletext service where items of amateur radio interest are displayed by courtesy of that channel's affiliated radio club, another first for VK4 using new technology to publicize our hobby!

The divisional insert QTC has been published since 1927 and is arguably the oldest continuing AR publication in the world.

About twenty-five hours a week spread among more than a dozen members is spent on this division's transmitting service.

The often forgotten but equally important area of communications, receiving, is catered for in four main stages:

1. Our annual Radio Club Workshop where delegates from affiliated clubs throughout VK4 express their club's viewpoint.
2. Our club net every Tuesday 1930 EST on 3.605 MHz allows club representatives to express opinions on current topics. The Queensland net on Thursdays 1930 EST on 3.605 MHz allows individual members to express their attitudes.
3. By mail directly from members and clubs, council is kept well informed.
4. By the weekly HF callbacks after the news broadcast.

A further twenty-five hours a week is spent in this area of the VK4 division's activities.

INWARDS QSL

In January, Dr Murray Kelly VK4AOK, his parents Pat and Melita Kelly and their helpers took over the inwards QSL bureau. The sunspot cycle may be waning but with the natural lag in QSLing, over 80,000 cards were despatched to licencees throughout Queensland. Inwards QSL cards are sorted into callsign order and then distributed through our regional clubs, through the monthly general meetings in Brisbane (if arranged) or through direct mailing where postage credit exists. Because of the vast size of VK4 individual mailing of cards must always be provided.

About sixty voluntary hours per week are given to the inwards QSL bureau.

PUBLICATIONS

Anne Minter VK4NRA has, with incredible efficiency, run the division's bookshop and a healthy profit of $2,600 has resulted on a turnover of over $13,500. Postage costs especially to the far flung areas of VK4 have risen significantly but as far as possible council is trying to provide equal services for our members wherever they live. About twenty hours per week of volunteer time are spent in running your bookshop.

INTRUDER WATCH

Gordon Loveday VK4KL of Rubyvale and his band of helpers have again kept to a minimum the activities of intruders. A common example is the Japanese fishermen on 80 metres. Has you club appointed an intruder co-ordinator?

VHF ADVISORY COMMITTEE

Bill McDermott VK4AZM, for the second year, has ably led his committee, Brian Parckerby VK4RX, George Mclucas VK4AMG, Paul Hayden VK4ZBV, Ed Roache VK4KAA.

Further repeaters are in the final planning stages for Weipa (146.800) Townsville (438.225), Rockhampton (438.025), Gladstone City (147.200), Gympie (147.100), Roma (146.700), and the Rum City Group's RTTY 2 m repeater at Bundaberg is receiving further consideration. Several beacons are under consideration including the Tropical Region VHF Group at Cairns proposed for 144.540, 432.540 and 1296.540 MHz.

The co-operation of the South East Queensland Teletype Group in the formulation of acceptable standards has been greatly appreciated and in this area much more work federally will be carried out in 1983.

DISPOSALS

Dave Laurie VK4DT and more recently Bill Dalgleish VK4UB have capably handled the profitable task of disposals.

About five hours a week are spent in collating, testing and packing these treasures.

HISTORIAN

Peter Brown VK4PJ enjoyed a well earned holiday for part of this year but still has produced an amazing volume of historical notes from information sent to him.

Part of Australia's heritage, in the form of the memories and memorabilia of our early amateurs, is rapidly becoming lost. Please, all you pioneers of radio, ensure your stories are recorded on tape, your photographs labelled, your books stored, and above all, that your relatives know what items are of future historical interest.

AWARDS MANAGER

John Moulder VK4XY and Trevor Knight VK4NXL of Warwick have quietly looked after this area of institute activities and several VK4 Award Certificates have been issued.
CONTEST MANAGER
Bill Sebbens VK4XZ of Townsville has again capably looked after this task. Bill has activated many clubs into participating in the Jack Files Sunshine State Contest but has now relinquished this position.

WICEN
Ken Ayers VK4KD has continued to coordinate WICEN activities throughout the State and the ever increasing activities of WICEN has provided invaluable publicity to our hobby. Congratulations Ken and to all the regional co-ordinators and WICEN officers throughout this cyclone-prone state. Countless numbers of hours are given to WICEN in VK4 and our image in the community has never been higher.

SLOW MORSE
Phil Aldred VK4CA together with a few other dedicated souls have tapped out slow morse for some hours in VK4 for many years. Following an offer by Townsville Amateur Radio Club to assist in this area, council voted $400 for the design, assembly and testing of several interface units to enable any amateur to use computer generated tapes and transmit perfect morse. It is intended for clubs throughout VK4 to transmit on 3.535 MHz a half hour session at 19:30 EST every day of the week.

MEMBERSHIP
Dave Richards VK4UG has, for many years, written to all new licencees inviting them to become part of the Institute. This year, Dave took over the full duties of membership secretary.

CONCLUSION
To serve over 1400 members nearly one hundred and fifty hours of volunteer work is given each week of the year and this massive workload is spread among about 50 members throughout VK4. How about offering your help in 1983 and spreading the load a little further?

COUNCIL ACTIVITIES
Council has concentrated on being a management and policy making body.

MEMBERS
The Annual General Meeting was held in February and only ten members had nominated for the positions. The initial team members were Rod Taylor VK4NBD/YRT, Harold Bemanor VK4HB, Fred Saunders VK4AFJ, Ross Mutzelburg VK4AQK, Claude Singleton VK4UX, Ken Ayers VK4KD, Jack Gayton VK4AGY, John Aarsse VK4QA, Guy Minter VK4ZXZ and Ray Roche VK1JR. Of ten volunteers, only five live in the Brisbane metropolitan area and the other five travelled at their own expense up to one hundred km each way every month to serve their hobby.

HIGHLIGHTS OF THE YEAR INCLUDE
Radio Club Workshop — Delegates from many affiliated clubs in Queensland are invited to attend our annual Workshop in April, and in 1982, thirty-nine club delegates and observers attended the live-in weekend at Griffith University. Assistance is given with travelling expenses for delegates who travel long distances. The cost of nearly $2300 represents $1.65 a member but the benefits to council and to members are immense. In VK4, because of this feedback obtained at the Workshop and on the Club Net, our council makes decisions based on the expressed wants and needs of the members. At the Workshop, our federal delegates have a dress rehearsal for the Federal Convention held in Melbourne a fortnight later and this ensures that the voice of VK4 is heard loud and clear by the rest of VK.

Ionostreric Prediction Service — Division took the opportunity in May to stage a seminar by McNamara of the IPS on ionospheric predictions. Somewhat to our surprise in these days of falling sunspot activity, only twenty members attended the excellently prepared seminar. However, as the majority of our members live outside Brisbane, lecture notes were forwarded to clubs where they were well received. The monthly prediction service compiled by Nev Wright VK4ANW from IPS feedback is a monthly highlight of our news broadcast service.

Federal Convention — Dave Laurie VK4DT and Guy Minter VK4ZXZ attended and had been extremely well prepared by the Club Workshop. Because of prior discussions of the federal motions by VK4 clubs and the direct input available through the Workshop, VK4 members take an active interest in the Federal Convention and know that they play a vital part in THEIR convention.

Education Seminar — Ron Smith VK4AGS led a week end seminar in July to “Educate the Educators” with the objective to improve instructional techniques in our clubs. Education is not just a matter of teaching theory to potential licencees but is a continuing process. Post licence education is essential.

SPECIAL CONGRATULATIONS
to Rod Taylor VK4YRT/NBD for his efforts in the field of further education and to Art and Barb for their efforts to keep more seminars and a progressive uplift in standards generally.

Club Visits — Council members made themselves available wherever possible to visit clubs throughout the state. Clubs from Townsville to Roma had the opportunity to ask about the Institute directly from a member of council.

AX4QCG — The 12th Commonwealth Games were held in Brisbane from 30th September to 9th October. AX4QCG was there and was heard all over the world. An incredible amount of organizing and preparing time was expended together with about $2000 of the division’s funds but immense goodwill was created for our hobby. Congratulations to David Jones VK4NLV and your band of thirty helpers.

Hamfest/Convention November 82 — We decided to invite the Federal President to fly from Melbourne to Surfer’s Paradise for the weekend of our Convention. Bruce Banks VK3UV agreed to come and fly into Brisbane on Friday night. On Saturday, Bruce attended the Hamfest/Convention and circulated among over five hundred amateurs, spouses and harmonics who attended.

At the Convention Dinner, the attendance was disappointing small, but fifty members who attended thoroughly enjoyed the evening. Bruce, was our guest speaker but we were also pleased to hear Art Burton VK4FE talk about his experiences on Heard Island in 1949. Unfortunately, that evening was Art’s last outing. He became a silent key on 30th November.

Political Lobbyists — Council’s greatest success story this year has been in our contacts with Australian politicians. In these times of complicated technology too often we, as technicians, get carried away with the undoubted attractions of an argument based on technical facts. However the majority of decisions in a democracy are made by politicians, and politicians are not technical people. Too many facts confuse people and politicians are no exception.

Using information given to us by the Honourable Mr David Jull MP, Chairman of the Parliamentary Backbench Committee for Communications, the VK4 Council has become a powerful lobby group for amateur radio. In June we arranged for copies of an “Amateur Radio” article on Electromagnetic Compatibility (EMC) to be sent to twenty-five selected Federal politicians. This initiative has now been adopted Federally. As the introduction of the long awaited (and still awaited) Radio Communications Act loomed near, we intensified our efforts to ensure that our hobby would benefit from any changes. Cable Television, a potential disaster area for us all, also received much attention.

However we have maintained constant liaison with Federal Executive so that any action of our supplements discussion that they may be having with the Department of Communications.

Conclusion — This has been a hectic year with many new and useful activities commenced. I thank everyone associated with the Institute for the effort they have put into being part of the team here in VK4.

However, volunteers for the many aspects of running our hobby are required. If you feel you can be of any assistance, please contact the Institute and join the team of people who are making your hobby more rewarding.

Guy Minter VK4ZXZ
VK4 DIVISION PRESIDENT
ANNUAL GENERAL MEETING

All financial members of the WIA NSW Division will receive, in early March, notice and agenda of the Annual General Meeting of the division.

Please consider the items carefully and, if you are unable to attend, forward a proxy nominating either an Ordinary member or the meeting Chairman to act on your behalf. If a ballot is necessary for Council, papers will be included with the notice of the meeting. It is in your interests to carefully consider the candidates you wish to represent you on Council and to return a correctly completed ballot paper. Read the instructions carefully.

As the questions before the meeting are of importance to all members, you should attend the meeting if you are able.

8th CONFERENCE OF CLUBS

This conference will be held at the WIA office in Parramatta on Sunday, the 17th of April, commencing at 10 AM.

Agenda items will close in early March so ask what items your club is submitting. The agenda will be sent to all affiliated clubs about six weeks before the Conference so the items can be discussed at club meetings.

COUNCIL REPORT

Divisional Council met on the 21st of January at the NSW WIA office at 109 Wigram Street, Parramatta.

A quote to produce WIA QSL cards for members was accepted, details appear elsewhere in this column.

Council decided to increase the Correspondence Course marking fees, as they had not been altered for several years.

Annual accounts for the financial year up to the 31st of December, 1982 were discussed and they were adopted. It was resolved that the division's fixed assets of furniture, fittings and radio equipment be revalued and that the Director's Statement be adopted. Purchase of a filing cabinet for storage of club newsletters and publications in the library was authorized.

Thirty one new applications for membership of the Division were accepted, a most gratifying total in view of current economic effects.

Federal Councillor Stephen Pall, VK2PS, presented a federal report. The use of AX2ITU during WCY-83 by the division awaited confirmation and it was decided to redraft the student uniform concession proposal for submission to the 1983 WIA Federal Convention.

Technical articles published in Amateur Radio by NSW members were judged and the best three articles selected for prizes (see AR Oct 82 p 48). This contest is to encourage submission of technical articles to AR by NSW members. The presentation of prizes will occur at the Annual General Meeting of the division on the 26th of March.

The official opening of the Parramatta building was discussed and arrangements and duties were discussed. The Minister for Communications will be performing the opening ceremony and it is expected that amateur radio will receive considerable publicity during WCY-83 arising from this function.

An application by the Albert ARC to establish a repeater to cover the Condobolin area was discussed and approval was given for the application to be forwarded to DOC for processing. Irregularities in some repeater locations and infringements of regulations and conditions were discussed. Council is concerned that these operations will bring discredit upon the amateur movement. Groups operating repeaters and beacons are reminded that ALL conditions must be complied with and systems must not be placed on-air unless the licence has been received from DOC. T Mills is to present a report to council as to breaches of licence conditions and recommended action.

QLS CARDS

Following a suggestion by the Goulburn ARS, council has decided to make a QSL card available for sale to WIA members. They will have the WIA badge on the right hand side and a block for standard QSL information across the bottom. Space will be available so members can arrange to have their cards overprinted with their own callsign and address or use a rubber stamp. As no reference is made to the NSW Division on the cards, they could be used by members in other divisions.

The price is 5 cents per card plus postage and they are available in white with blue or back print, blue with blue or black print, green with black print or yellow with blue or black print. Send orders to PO Box 1066, Parramatta, 2150.

SLOW MORSE PRACTICE SESSIONS

These sessions are conducted by a panel of volunteer operators, on behalf of the NSW Division, every evening throughout the year on a frequency of 3.550 MHz for a period of one hour commencing at 0930 UTC. The call signs is VK2BW1.

The regular operators are:

Monday — Don VK3AKN at Hawkesdale
Tuesday — Keith VK2NRM at Adamstown
Wednesday — Ken VK2BKE at Lord Howe Island
Thursday — Lloyd VK2BLK at Oatley
Friday — Jim VK2NDI at Pymble
Saturday — Steve VK2EG at Deniliquin
Sunday — David VK2NAW at Gollspie

Relief operation was provided by David VK2PRA from Goulburn, Ross VK2BRC from Orange and others.

Speeds commence at 4/5 WPM and increase to about 12/15 WPM. It should be noted that these sessions are primarily to assist those attempting the CW examinations at 5 and 10 WPM.

Panel operators welcome enquiries regarding the sessions, or on matters relating to acquiring skill and expertise in the CW mode. Practice cassettes are available to suit individual inquiries. Such enquiries can be directed through the Institute office at PO Box 1066, Parramatta, 2150 or to the Morse Practice Co-ordinator, Ross Wilson VK2BRC QTHR.

The Institute would like to thank all panel members for their perseverance and skill, throughout the past twelve months. These sessions are indeed a very great service to amateurs, and to those aspiring to the amateur ranks.

Bon Voyage also to Marshall VK5FN (ex VK2DXP), our former co-ordinator, who now resides in Adelaide.

Notes from Ross, VK2BRC

HF SLOW MORSE BEACON

The Hornsby ADARC are interested in receiving comments to their proposal to establish a twenty-four hour automatic slow morse practice transmitter on HF.

The actual band has not been decided upon, but a suggestion made is possibly around 3.7 MHz. Council proposes to place this question on the agenda of the AGM and has suggested that Hornsby present the matter to the WIA Federal Convention and the 8th Conference of Clubs.

Hornsby are interested in comments about their proposal and you can write to the club at PO Box 362, Hornsby, NSW, 2077.

COFFS HARBOUR ADARC

NEW OFFICERS

Following their AGM on the 17th November, 1982, the club committee is as follows:

President — Max Francis VK2BMK
Vice-President — Harvey Ussher VK2DUJ
Secretary — David Harding VK2DUR
Treasurer — Percy Sara VK2QV
Publicity — Brian Lackie VK2DLM
Education — Rick Fletcher VK2BKV

URUNGA CONVENTION

The annual Urunga Convention will again be conducted by the Coffs Harbour ADARC over Easter 1983.

Registrations will be held at 7.45 PM at the Ocean View Hotel, Urunga on Friday, the 1st of April. Cost is $10 for OMs, $8 for the wives and $20 for a family for the weekend. For one day only, the fees are $7.
$5 and $15 respectively. A full programme of radio direction finding events, disposals, displays and quizzes is available.

SATURDAY, 2.4.83 Urunga. 9.30 to 10 AM, Urunga scramble, any Sunday, 3.4.83 at Bellingen Showground. 3.30 to 4.30 PM, 80 m talkin.
2 to 3 PM, 2m 2 transmitter pedestrian. Possibly new gear for sale.
11.30 to 12.00 noon, 2 m 2 transmitter mini quizzes is available.
12.30 to 1.30 PM, Lunch.
10 to 11 AM, 7 MHz hidden TX. 12.30 to 12.30, 2 m 2 transmitter mobile event!
12.30 to 1.30 PM, Lunch of hot meal and sweets finding can be dangerous!!
3.30 to 4.30 PM, open time, think of an event!

COMING EVENTS
OFFICIAL OPENING OF WIA PARRAMATTA OFFICE: 2 PM Saturday 12th of March.
ANNUAL GENERAL MEETING, WIA NSW DIVISION: 2PM Saturday the 26th of March at Granville.
URUNGA CONVENTION: 2nd and 3rd of April at Urunga/Bellingen.
8th CONFERENCE OF CLUBS: 17th of April at WIA Parramatta.
5 PM, Prize giving and finish of convention. Cooking facilities available if you wish to cook tea at showground after convention, meat and supplies will be available.
Accommodation is available at the Ocean View Hotel. Bed and hot breakfast for $16 single and $26 double per day. Early booking essential. Caravan park opposite hotel at Urunga.
The club address for enquiries is: PO Box 655, Coffs Harbour, NSW 2450.

CARE WITH THOSE TOWERS!
The following item appeared in the Radio Bulletin (EMDRC) Nov./Dec. '82.

"Are you having tower problems? If so consult the experts: Dan, VK3DAN, and Gray, VK3DMM. They will tell you how NOT to wind down towers. Dan 'Quixote' Rentree tried to slow his down by slowing his arm in the windmilling winch handle (broken in how many places Dan?), whilst Gray tried to plant his boom in the garden when the winch cable broke when tilting the tower over — stick to planting petunias Gray! Incidentally, both mishaps occurred on the same day. Dan is using his enforced rest to work DXCC. Good luck. Dan."

Although a humorous anecdote, the message behind it is serious. Crank up/tilt over towers can be dangerous!!

Always use BOTH hands, keep children, adults and animals away from the danger area whilst raising or lowering. Have a firm and steady grip on the winch. Ensure cables are regularly greased, inspect each three months for signs of corrosion, particularly the cables.

Prior to lowering the inner section, place a large piece of timber (at least 3" x 4") through the lattice work of the base section, at least eight feet above ground. This will break the 'fall' of the inner section should the cable snap and minimal damage will be caused.

If a mishap does occur, get out of its way quickly, do NOT attempt to stop the falling section by hand, or grasp the winch handle. Serious injury may result.

It obviously pays to be persistent. For two years John Ingham, VK5KG on behalf of the SA ATV Group, has been lobbying the Department via the Federal Executive, for permission to cross-link the two SA ATV repeaters. Firstly permission was granted for WIA broadcasts and WICEN use only, but now permission has been received for open experimental use, until November, when a full report will be sent to DOC.

Wearing his other hat, that of Federal Video Tape Co-Ordinator, John also reports that all programmes held by him can now be copied onto Eumatic, VHS, and Philips N1500 formats. Apparently the saving on postage costs since using VHS is quite remarkable.

We are still looking for volunteers to help Dick Boxall VK5ARZ, with the equipment supplies, at the monthly meetings. You probably think of it as ESC but the 'C' stands for Committee and currently Dick is all the committee we have, and is currently doing the job which was at one stage done by FOUR men. Complaints have been heard about the non-appearance at some meetings of ESC but if Dick is unable to attend there are no other volunteers, what is he supposed to do?

Tom Sears VK5NTJ, who was doing such an admirable job of canvassing advertisers for our journal, has unfortunately had a stay in hospital with a suspected heart attack. I hope that by the time you get to read this you will be well on the road to recovery Tom (and for those of you who have, or were thinking of, nominating to stand for council election — this is not an indication of how hard we work our volunteers!)

We received a request that our local journal be sent to the federal councillors in each division. Currently a copy is sent to the secretary in each Division (alternate months Feb., April, etc.) so if you are not getting to see a copy, ask your secretary which WPB he filed it in.

As the theme for the year is communications, Staunton (Mac) McNamara VK5ZH our Programme Organizer has come up with a series of lectures on some of the things that amateurs get involved in, and all are aimed at 'getting started' in these other aspects. For example, our February meeting will be a lecture by Bill Simister VK5KTV on 'Getting started in ATV' (past tense by the time you read this) Our March meeting will be by Graham Ratcliff VK5AGR on 'Getting Started in Satellite Communication' and in May we hope to have John Mitchell VK5JSM on 'Getting started in RTTY'. One on Processor's has also been suggested.

DIARY DATES:
22nd March Graham Ratcliff on 'Getting started in Satellites'.
29th March Buy and Sell.
26th April Annual General Meeting.
NOTICE OF AGM

Notice is hereby given that the AGM of the Western Australian Division of the Wireless Institute of Australia will be held on Tuesday 19th April 1983 at The Institute of Engineers, 712 Murray Street, West Perth on the conclusion of the General Meeting. Business to be transacted will be:

2. Election of Office Bearers vis:
   a. President
   b. Vice President
   c. Seven Other Councillors
3. Election of two auditors.
4. Appointment of a Patron.
5. General Business which has been duly notified.

Agenda items will be advised on the Divisional Newsbroadcast on the three Sundays prior to the AGM.

Members unable to attend may appoint another member as their proxy in writing in the following form:

I, .............. member of the Institute hereby appoint Mr/Mrs .............. also a member of the Institute to act for me as my proxy and in my name to do all things which I myself being present could do at the meeting of the Institute to be held at The Institute of Engineers, West Perth on the 19th April 1983.

Signature ..............
Witness ..............
Date ..............

WIA INSERTS INTO AR

NOTICE TO WIA ZONES, CLUBS AND GROUPS

WIA Zone, Club and other Group Secretaries are hereby notified that inserts into AR henceforward will be accepted ONLY direct from a Division and then only by prior arrangement with the Secretary.

All inserts must comply with Postal Regulations and must be received not later than the 26th of the month preceding publication date.
The Editor,  
Dear Sir,  
Having read your December issue of Amateur Radio I would like to make a few observations regarding its contents.

I am a recent qualifier in amateur radio but have read your magazine for some two years courtesy of a full call amateur. During this period I have endeavoured to comprehend some of the articles, and there must be many of your readers who, while not admitting to would likewise be in the same category.

Listed below are a few of these:—

1. Ionospheric Predictions — the top line of figures (barely readable) 0 to 24 is this a date?

2. Intruder Watch — I am surprised at your comment, as during the past years.

3. Alphabet Soup — You haven't tried the Heinz variety yet? There have been many changes in several countries prefixes in recent times, it is almost like throwing letters into a pot, and drawing out a prefix as it suits!

4. WICEN — I suggest you write again to the VK5 WICEN Group. Your letter may have gone astray. There is no restriction on Novices becoming involved. In fact Novice participation is more than welcomed.

5. Print size — yes other complaints have been made, we are endeavouring to enlarge same.

(***VK3UV***)

Your faithfully,  
R A Davey VK6NND

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The Editor,  
Dear Sir,  
For some years I have been frustrated by the lack of availability of information on which consumers of amateur radio equipment can base their buying decisions.

In my case, this has proved a positive disincentive to buy.

I am a regular reader of Amateur Radio, the VK5 Journal and Electronics Australia. Occasionally I read Amateur Radio Action. I want a tri-band beam. "KLM" and "Wilson" seem to be highly regarded. It took a visiting American amateur to inform me that "someone in Sydney" distributes KLM antennas, but I have no idea who it is, nor do I have any idea where I might find out about the Wilson range.

I would like to get into "glass RTTY", "HAL" is certainly advertised, but dear. "Xitex" seems to be popular, and cheaper, but I can't find information anywhere.

Looking for a 70 cm multi-mode transceiver, all I can find is "IC251A S850", which doesn't mean a thing. Indeed, I suspect it may even be a 2 metre rig. Perhaps these makers have advertised in some of the journals mentioned, but it is certainly not regular.

Yaesu equipment is reasonably well described. Kenwood is a poor second, and all other makes are a disaster.

I suppose to some extent it is a case of too much merchandise chasing too few amateurs, but I am sure that more gear would be sold if more amateurs were given more information.

Yours faithfully,  
Al Rechner VK6EKL

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Eugen-Huberstrasse 25  
8048 Zurich  
Switzerland  
24th December, 1982

Dear OMs,  
I am sending my SA20 for 1983 "Amateur Radio". Thank you very much for sending me the "AR" during the past years.

I like to say your Journal is the best Amateur-Radio Journal all over the world.

I made my licence this week and hope to QSO with VK soon and come to Aussie-land.

With best wishes for 1983  
Yours sincerely,  
Fri Zwingli  
HE5OZH

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The Editor,  
Dear Sir,  
I note the same problem in the recently issued new bands, some frequencies are to be kept clear by many SSB operators are forgetting their sidebands extend some 2.5 kHz from the indicated frequency.

Hopefully this letter will remind such SSB operators that when on LSB the indicated frequency need be kept frequency the pleases.

Mr. West of V8 only allocated to be one channel 24 kHz lower. This was done to give band and that the lower limit is about 2.5 kHz lower. On USB the indicated frequency is the lower limit and the upper limit is some 2.5 kHz higher.

(After reducting the frequency.)

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Bill Martin, the Federal Intruder Watch Co-ordinator, came near to it in his open letter (December AR, page 72) when he said that the results and satisfaction (of reporting) are not immediate. He is right. He also said. "When we eventually do manage to force an intruder to QSY, you can then derive some satisfaction in the knowledge that it was done with your assistance. Wrong! You never know. The simple fact is that there is little or no feedback. All the reports that I posted could have been sent straight round to the local rubbish tip for all I knew.

If a man joined a rifle club and simply blasted away at a distant target without ever being told what his score was — or whether he had even hit anything — his enthusiasm would gradually dissipate and he would give up. This is what happened in my case, and I suspect it has happened to others, too.

Why not use the time, space and effort currently wasted on futile appeals, to run a monthly column similar to "How's DX", listing intruders reported each month, asking for reports on certain stations and giving news of successful removals from our frequencies. Invite those useful people, short-wave listeners, to take part. Try to pack in as much information as possible to make it a really interesting department and give various reporters for their efforts. It may take a while to build up, to quote once more from the open letter: "the benefits may take some time to become apparent".

That as it may, simple psychology will always get results where other methods have failed.

Yours cordially,  
Jeff Jeffrey VK6AJ

---

Page 52 — AMATEUR RADIO, March 1983
In any field of endeavour, when contributions are solicited, the resultant return is more often than not unsatisfactory. Mr Jeffrey is of the opinion that the continuing requests for more intruder reports ('bordering on harassment') are a threat to the effectiveness of the Intruder Watch. This is not so. The ratio of reports received to the number of active amateurs is encouraging, and, of course, I realise that we will never receive reports from all amateurs. Mr Jeffrey states that no reports would be received if none were solicited! Any way, I wonder? I think it goes without saying that we must continue to ask for reports on intruders. Apparently, Mr Jeffrey sent in reports for a couple of years, and received little or no feedback. I believe that Mr Jeffrey is still aware of the existence of the Intruder Watch, and I think that he IS AWARE of it, because of the continuing requests for help.

However, the feedback question, I think that most people would certainly realise that they can't expect a reply to every report that they submit, as the cost would be prohibitive. Even now, the cost is a major consideration. As far as I am concerned, I suggest that possibly he would care to act as my assistant for a short while, and give me a hand to answer all the letters, etc. which arise AS A RESULT OF THE FUTILE APPEALS. Mr Jeffrey suggests that better use could be made of the AR Intruder Watch column, for example: list all the current intruders reported, and perhaps give the credit to the various reporters for their efforts, etc. Naturally, I must agree with Mr Jeffrey on this, as it is good constructive criticism — however, unfortunately, I would need about three pages each month of AR for this. I didn't think that the old editorial page was fit for me. Space does not permit the listing of all reported intruders. However, we do always ask for reports on specific intruders, and will continue to do so. Mr Jeffrey goes on to say, "invite those useful people, SWLs to take over the affairs of the contest". I have done this many times, and to my knowledge, not one SWL has taken over the affairs of the contest. Mr Jeffrey's comments and suggestions are noted, and we are always ready to listen to ideas and suggestions to improve the effectiveness of the Intruder Watch.

However, as with any hobby, time is limited. Most of my leisure time is now accounted for due to the duties associated with the Intruder Watch, FOR WHICH I VOLUNTEERED, and certainly no complaints about doing the duties. If Ididn't want to be bothered with it all, I just have to say so, in short, the intruder Watch is doing the best it can, with the resources at hand, and, at the risk of being accused of yet another hysterical outburst, I must say once again that the whole effectiveness of the Intruder Watch is SOLELY DEPENDENT on the average amateur letting us know what he hears in the way of intruders.

In closing, I think that the average Intruder WatchObserver knows that we are grateful for his/her report, and help, and when we do publicise the fact that such-and-such an intruder has disappeared from the amateurs benda, then the reporter can say to himself, 'well, I did just as much as that one. I sent in a report on one that a ham heard, and I certainly hope that Mr Jeffrey will reserve sending in his reports, and can assure him that they will be received most gratefully, and, of course, the writer is always standing by to answer any queries regarding intruders, or the Intruder Watch. Very 73

Bill Martin VK2EM
Federal/VK2 Intruder Watch Co-ordinator

4/4 Talpa Cres
Corio, 3214
10 January 1983

The Editor, Dear Sir,

Might I enquire by what process are the rules of the WIA sponsored contests changed? I refer specifically to those of the John Moyle Memorial Contest as published in AR of January '83. It appears that the rules are set and altered arbitrarily at the whims and fancies of the Federal Contest Manager or a very select and anonymous few without opportunity for prior comment by interested parties.

Furthermore, the actual changes are not necessarily to everyone's liking. For instance, why was the starting time for the contest brought forward by two hours into a period where propagation on the lower HF bands is marginal? What was wrong with the old starting time? Why was the X2 multiplier removed for CW-CW contacts? That certainly improves the CW performance of the aural CW. Why now the must the how allow a minimum of four hours to elapse between VHF contacts with portable stations? Originally the 2-hour rule for VHF was included to stimulate activity on these bands — particularly 6 and 2 metres SSB. It's hardly worth the effort of taking these two bands now.

Surely the sensible thing would be to inform readers of AR by publishing any proposed changes well in advance, by say May or June in the Contests department. This would allow an opportunity for discussion and comment by intending contestants.

Lastly, why is acknowledgement rarely made — and then selectively — of suggestions for changes to future contests? I can think of only one occasion when a suggestion was published for discussion — when a VK4 group wanted the date of the field weekend changed to late autumn or winter. I believe, whatever came of the suggestions which other entrants made? I know the contest group with which I participate regularly did, as we do every year, include with our log sheets a list of suggestions which we would improve the Field Weekend contest. I'm sure others do the same. It would of course be pretentious to expect these changes to be adopted out of hand, but what about discussing them, through AR?

The John Moyle contest is a great fun fight and I would like it to remain so for the world, this total removal of a sensible multi-operator section. But I would like an opportunity to comment on rule changes before they are adopted, as would many others. I am firmly opposed to change for change's sake.

Charlie Graccecarini
VK3BRZ

EDITOR'S NOTE: Many thanks for your interesting comments, rule changes are made only by suggestion from a majority of participants, and agreed must not the executive. Only by trial and error can we sort out the bugs. I hope you enjoyed this year's contest, and would be pleased to receive further comments.

Pat Mulligan
FKM

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AMATEUR RADIO, March 1983 — Page 53
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**Silent Keys**

It is with deep regret we record the passing of —

RON JARDINE  
H. R. G. MORRIS

VK3PR  
VK4VLM, G4ZMI

---

**Obituaries**

KEN ALLEN VK3UH

"How are those sheilas treating you?"—an opening query I shall miss from Ken Allen, VK3UH who became a silent key on 20th January 1983.

Ken was a country lad, born early in the century. He discovered the wonders of radio at a very early age, at times catching and selling rabbits to support the hobby.

It was through his early interest in radio which led him to a very worthy period of service as a radio operator in the RAN, mostly serving in "N" class destroyers, one of which was sunk under him in the Mediterranean.

He was a cool with a memory to match his wide experience, and an ability to discuss things in the finest detail (a very rare commodity in the world of today).

Ken was a reliable source of Australian culture and character anecdotes which he greatly enjoyed sharing. The type of bloke we can ill afford to lose — a gentleman who will be sadly missed.

Alan Heath VK3KZ

GERRY BAHRE VK4YB

It is with deep regret the passing of Gerry Bahre is recorded on the 11th January 1983 after a lengthy illness.

His passing is mourned by his XYL Ann, his daughter Johanna and sons Gerard and Tony and six grandchildren. Also many friends and acquaintances made "on air" over a period of twenty-six years.

A native of Holland, Gerry and his wife came to Australia in 1953 and first settled in Coolangatta, Queensland. After about three years he opened a radio repair business in Mareeba.

Having brought a PA0 callsign with him from Holland, he took out a call sign in Queensland which became widely known as VK4YB—phonetically "Yogi Bear". In 1959, when television was first introduced in Queensland, he and his wife and family came to Redcliffe and became firmly established as a radio and television repairer, relinquishing to his son only a short time before he died.

In 1967 he joined the Lions Club of Redcliffe Peninsula and in the intervening years he held many positions, including that of President, with an unblemished attendance record.

He was a lounder member of the Redcliffe Radio Club and was a source of inspiration and practical guidance to many Club members. He will be sadly missed.

Dave VK4UG

RON JARDINE VK3PR

Ron Jardine of Leongatha, Vic. passed away suddenly on Friday 21.1.83. Following a service in the packed Uniting Church on Jan 24, he was interred at Leongatha Lawn Cemetery.

The service was attended by Ron's very many friends including large groups of Church fellow members, Masonic Brethren and fellow amateurs.

He was a very well known popular amateur, active on air, in zone affairs, and with the Old

---

The late Ron Jardine VK3PR.
Timers club with fifty-three years of regular operating on most bands both phone and CW and setting an example of consistently good operating practices. He had filled over 30 large log books containing over 50,000 contacts with 167 countries.

One ambition was to work every DX country — obviously he nearly made it.

He is survived by his good wife Vernie, who was famous for her support of Ron's amateur activities, and especially the production of chocolate cream sponges, (known as Mrs Jardine's CCs) which would invariably appear at zone get-togethers and conventions, and two sons. One, another Ron, is currently preparing to pass the AOCQ exam. We all hope we will secure the call sign VK3PR.

Amateurs who attended our last farewell were:

John Butler VK5NX

Keith VS Jim 3JEB

Keith 3SS Jack 3AJK

George 3HV Stewart 3BSM

John 3BR Len 3DLN

Fred 3OH Peter 3DDL

My lasting memory of Ron was in 1937 when on a simple home brew, I first called CQ and was promptly answered by VK3PR. Years of ambition ended with this exciting first phone contact. We will all remember the long friendship, technical exchanges, the pleasure of his company at amateur gatherings, the many photographs he took and presented to us all. I am requested to extend on behalf of the amateur fraternity our sincere sympathy to Vernie and sons.

May we all share your fond and happy memories.

ROSS TREHARNE VK5IQ

It is with deep regret that I report the passing of Ross VK5IQ at the age of sixty-three years, on the morning of 30th December 1982.

He attained his licence in Sydney at the age of fifteen years, and was the youngest to have done so at the time. He then held the call of VK3QR and became very involved in the activities of the Zero Beat Radio Club, particularly their field day activities. One of his close associates at the time was the late Maurice Brown VK2QI.

Post war, Ross and his family moved to South Australia, in fact Adelaide, living for the first seven years at Plympton, then moving to live in Clearview until his passing.

Amateur wise, Ross was a solid supporter of Jambooree On The Air weekends, where he and his XYL Norma tried to satisfy the Cubs seemingly unsatiable food and radio appetites.

Ross leaves many friends, both from his amateur radio activities, and his business world, Defence Research Centre Salisbury, from which he recently retired.

Our deepest sympathies go to his wife Norma, his four sons Douglas, Edward, Ian and David, and his brother Eger VK5ED.

His son Douglas has taken over the call of VK5IO to it live on, Ross will be missed by many amateur friends both here and overseas.

John Butler VK5NX

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During the three years since the first publication there was a surprising burst of solar activity which drove the sunspot count to be the second on record since the Swiss Federal Observatory began keeping records in 1749. This made it necessary for the authors to rewrite the entire chapter on Sunspot Cycle Predictions.

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150 pages plus indexes published by CQ Publishing, Inc.

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ARTICLES

American OTHR—A New Woodpecker by Bill Martin VK2EBM 59
An Englishman in Australia by Deryck Buckley G3VLY/VK2EB2Z 32
Anacoda Returns 49
Heard Island Expedition '83 by Neil Penfold VK6NE 50
Hints and Kinks for Contest Operating by Jack Swiney VKGJS 18
How Dangerous is RF Radiation — Part I Reprints from QST 26
Making the ICOM IC-551 Blanker Work by Andrew Martin VK3KAQ 24
Membership Form 43

DEPARTMENTS

A word from your EDITOR 9
Advertisers Index 80
ALARA 61
AMSAT Australia 66
Awards - Lake Goldsmith Steam Rally 54
AZ Rainbow Trout 19
Club Corner — Midland Zone & SERG 65
How's DX 46
Commercial Chatter 69
Contests — VK/ZL/O 1983 RTTY & Sangster Shield Rules 64
Education Notes 57
Five-Eighth Wave 73
HAMOYS 79
Here's RTTY 56
How's DX 46
International News — Soviet Diplomas — Ionospheric Predictions 31
Letters to the Editor 76
Magazine Review 48
Main QSP 10
National EMC Advisory Service — “A Fair Go” 60
Novice Notes — Are you ready for the AOCP exam? 55
Obituary — VK4AYZ 79
Pounding Brass — Keys & Keyers Part 3 58
QSP's 58, 72, 78
Silent Keys VK3XV, VK6BB & VK4PR 79
Spotlight on SWLing 70
Thumbnail Sketches — Ralph Pepper, Jack Wooster & Vern Kenna 52
Try This — Cassette Player/Tcvr Interface Device by Stephen Gard VK2PMF 34
VHF UHF — an expanding world 67
VK2 Mini Bulletin 72
VK4 WIA Notes 73
WIA News 11
WICEN News — Review of past, look to future 71

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- **Type:** FM & AM
- **Frequency Range:**
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  - b) 58-88 MHz Space...12.5 kHz
  - c) 108-180 MHz Space...5 kHz
  - d) 380-514 MHz Space...12.5 kHz
- **Sensitivity:**
  - FM a) 26-180 MHz 0.4uV S/N 12 dB
  - b) 380-514 MHz 1.0uV S/N 12 dB
  - AM a) 26-180 MHz 1.0uV S/N 12 dB
  - b) 380-514 MHz 2.0uV S/N 12 dB
- **Selectivity:**
  - FM More than 60 dB at —25 kHz
  - AM More than 60 dB at —10 kHz
- **Dimensions:** 210 (W) x 75 (H) x 235 (D) mm
- **Weight:** 2.8 Kg
- **Clock Error:** Within 10 sec/month
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- **Scan Rate:** Fast 8 Channels/sec
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This is a compilation of the many useful Circuits, Technical Tips or just practical approaches to solving odd problems which are contributed to the "Ham Notebook" column of Ham Radio Magazine.

This book has many practical, bench-tested circuits and construction ideas which covers amateur radio from low frequencies to microwave.

AMATEUR TELEVISION HANDBOOK — by John L. Wood, G3YQC and Trevor Brown, G8CJS.

This is an amateur TV book with the emphasis on subjects such as Modern Receiving Systems, Electronic Video Sources, Vision Processing and Colour Television. There is a chapter for the newcomer and also guidance on aerials, feeders and simple receiving equipment.

All books are available from your division or direct from MAGPUBS (publication department of the WIA) PO Box 300, South Caulfield, Vic 3162 or 3/105 Hawthorn Road, North Caulfield.
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AMATEUR RADIO, April 1983 — Page 7
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Bankcard Welcome
Stan Roberts
VK3BSR
At the beginning of February Gil VK3AUI relieved Bruce VK3UV of the Editorship of AR to allow Bruce more time to devote to his position as Federal President of the WIA. Although Gil has been a member of the Publications Committee for many years this is his first contribution as Editor.

a word from your EDITOR

Taking over as editor of Amateur Radio is quite an experience. The computer which prints the labels chose the changeover as an ideal time to throw a tantrum. Schedules were thrown into disarray as data entries and programme were checked and rechecked.

Thanks to the good work of Reg, the office staff, Ken, Bett, and Automail, the March issue was mailed only a little later than usual. Amateur Radio follows a very tight schedule to reach you at the start of the month.

The whole production team will be working to get it out on time for the rest of the year.

During all this time disastrous bushfires were raging in South Australia and Victoria. Many amateurs have once again provided a much needed service setting up and maintaining emergency communications.

Amateur radio has had some favourable publicity as a result of this. We do not go and offer assistance and provide operators and equipment just for this publicity. The publicity comes from a job well done.

Many WICEN operators had only taken part in exercises such as the "Murray River Canoe Marathon" — see February AR.

When the real thing came the training helped in getting efficient nets into operation.

WICEN operators provided communications to relief organisations such as Red Cross, in addition to the up front organisations fighting the fires.

Think also of the amateurs who have lost everything. Certainly insurance may help to re-establish a station but you can never replace the personal mementos, QSLs, logs and treasured equipment of sentimental value. Let us hope that the lost stations will be re-established, even though the past will be only memories.

On a happier note is the return of the Heard Island operators who have satisfied, for a while, the need for this rare one. Other expeditions will be needed in the future: The need for Heard Island — now satisfied — will be back in a few years.

Articles and photographs are always needed. Amateur Radio needs your contributions. Whenever you go on a field day, go to a convention, raise a new antenna farm send a photo to Amateur Radio.

Gil Sones VK3AUI
Editor AR

Devastation wreaked by the Bushfires on Ash Wednesday.

Photographs by Greg Noakes — photographer Southdown Press.

Supplied courtesy of Dulcie Boling — Chairman and Chief Executive of New Idea.
BUSHFIRE EMERGENCY
"ASH WEDNESDAY"
WEDNESDAY 16th February, 1983

The desk calendar informs me that this date is "Ash Wednesday". It would even appear that the people who printed the calendars may have been psychic. On that day, the southern part of Australia literally exploded into ash — from the foothills of Adelaide, through the coastal and forests regions of Victoria to the Victorian/New South Wales border in the east.

The cause — 'Bushfires'. With temperatures in the mid-forties and hot northerly winds exceeding 80 kph in places, the countryside tinder dry from a prolonged drought, the scene was set for a disaster — and it happened! — THE DREADED BUSHFIRES — Seventy people dead, twelve hundred houses destroyed, thousands of hectares of prime land burnt and several towns wiped out. There is probably not one person reading this who is not already aware of the disaster that occurred.

Emergency services went into full swing and as can be imagined the task was formidable. There are many stories of untold heroism, and I am proud to have been associated in some small way in assisting some of those who provided assistance to the Police, State Emergency Service, Country Fire Authority, Red Cross, Salvation Army and other community welfare groups.

What of the 'Amateur Radio Service'? You may ask, as only little publicity has been given. No, we are not looking to pat ourselves on the back, we were just there, using our communications capabilities and expertise for those requiring it.

Victoria's WICEN was activated on the evening of the 16th of February, primarily to provide a back-up communications service to the State Emergency Service and Police.

Approximately two hundred amateurs became involved over a period of five days — during the initial disaster and in assisting mopping up operations.

Three VHF repeaters and 80 and 40 metre nets were used, using the WICEN call sign VK3AWI. Volunteer operators were stationed at the WICEN Control Centre and at SES head office, Red Cross HQ, police stations and at over thirty locations in the disaster areas. All manned on a twenty four hour basis in eight to ten hour shifts. Some operators worked four and five shifts continuously and volunteers were not in short supply. It appeared that nearly every amateur operator in the state wanted to offer assistance. It was a very heartening and overwhelming response.

It would be unfair of me to single out any one particular person involved in the WICEN bushfire emergency communications, as there were many dozens of operators deeply involved in many aspects of the emergency — from the initial setting up, all providing expert and efficient service for the benefit of our community.

A debriefing session for all people concerned in the amateur operation was due to be held on the 5th March. There will be a further debriefing session of key personnel from various areas at a later date.

It will possibly take many months/years before those affected return to normal living. For some people, probably never, particularly the families who lost loved ones in this disaster.

The amateur service has once again done itself proud, and can hold it's head up high. It has proven its willingness and abilities in providing an expert and efficient communications service for the benefit of our community.

We do not look for disasters, we do not want them, but they happen anyway.

One thing is for certain, the amateur radio operator will always be ready if required.

I would like to convey my personal thanks to all amateur operators who rendered assistance in this tragedy.

Alan Noble VK3BBM
PRESIDENT, VICTORIAN DIVISION, WIA

Page — 10 AMATEUR RADIO, April 1983
DEPARTMENT TO END INVOLVEMENT IN BROADCASTING EXAMINATIONS

The Minister for Communications, Mr Neil Brown, has announced that his Department’s role in conducting two broadcasting technical examinations would end at the close of 1983.

“This is a further step in deregulating the industry and means that more responsibility will be placed on the industry itself to ensure a supply of competent technical operators,” the Minister said.

The examinations were for certificates known as the Broadcasting Operator’s Certificate of Performance (BOCP) and the Television Operator’s Certificate of Performance (TVOCP).

Training arrangements would in future be left in the hands of the industry and appropriate tertiary institutions.

Mr Brown said that although the qualifications would be phased out at the end of 1983 persons responsible for transmitter performance would be required to have technical qualifications incorporating certain units specified by the Minister.

Candidates who passed BOCP and TVOCP examinations conducted by the Department before 1 January 1984 would be deemed to meet this requirement.

A number of tertiary institutions already conducted courses for technical operators. His Department would be consulting with the Broadcasting Council and various institutions concerning the suitability of their courses.

“The broadcasting industry will need to make training arrangements either in-house or in conjunction with the colleges to meet its needs,” Mr Brown said. “My Department is ready to assist in establishing these.”

STANDARDS ASSOCIATION OF AUSTRALIA: COMMITTEE ON ELECTROMAGNETIC INTERFERENCE

The WIA now has a representative on the Standards Association of Australia, Committee TE/3: Electromagnetic Interference. He is Mr A Foxcroft, VK3AE, who has had wide experience in this field as a practising engineer.

The prime objective of the committee is to prepare Australian Standards relating to appropriate levels of electromagnetic interference emanating from all types of electronic and electrical equipment such as electric machines, motors, welders, computers and a wide range of other industrial, scientific and medical equipment. It does not cover unwanted emissions from licensed radiocommunication transmitters such as harmonics, out-of-band intermodulation products, etc.

Of particular interest to amateurs are factors such as levels of radiated and mains-injected signals from TV and BC receivers and TV recording devices (line oscillator, beat frequency oscillator, etc), domestic and industrial motors, ignition interference from motor vehicles, radio diathermy equipment and the like.

This activity can, in some cases, have impact on the WIA EMC programme and therefore the WIA TE/3 committee representative works in conjunction with the Federal EMC Coordinator, VK3QQ, as well as the Federal Executive.

The SAA Committee provides guidance to the International Electrotechnical Commission (IEC) Special Committee on Radio Interference, (CISPR), where international standards are formulated on related subjects. Wherever possible these standards are adopted by Australia. The WIA has now, therefore a much enhanced capacity to contribute to work in the RFI/EMC standardisation area at both national and international levels.

1983 FEDERAL CONVENTION

The Institute will be holding its forty-seventh Annual Convention on 23, 24, 25 April 1983.

Motions received to date are:

• Two items from VK1, that the Executive revise and promulgate all WIA band plans and that the Executive approach DOC again to obtain the issue of amateurs licences for longer periods of currency than one year.

• An item from VK2 requires that the concessional pensioner and student subscriptions be reviewed on a Federal basis rather than divisional.

• Items from VK5 require that the WIA involvement with WCY 83 and PR be discussed and that the Federal Executive be requested to change the words CW only to telegraphy only in all future gentlemen’s agreement band plans.

DEADLINE

All copy for June AR must arrive
PO Box 300, Caulfield South, 3162 no later than 25th April.
The devastating bushfires which swept across South Australia and Victoria in mid-February saw the Wireless Institute Civil Emergency Network (WICEN) providing vital communication links.

The fires began on Ash Wednesday 16 February, and reached their peak in Victoria that evening as strong northerly winds turned gale force southerly with the passage of a cold front.

On Wednesday night WICEN in Victoria swung into action as the extent of the fires and their destruction was becoming known. The worst damage and loss of life had not occurred at that time.

WIA Victorian president Alan Noble VK3BBM played a leading role in pulling the WICEN operation into shape and stayed with it during the disaster. Before the bushfires Alan had been given the job of examining WICEN’s role and its long-term reorganisation in Victoria.

About 160 amateurs took part in the WICEN operation which ran from Wednesday night through until the following Monday when it was scaled down. Another 150 amateurs had volunteered to help but were held in reserve.

WICEN covered the five major fire areas — the Southwest, the Otways, Macedon Ranges, Warburton, and the Dandenong ranges. The official WICEN callsign VK3AWI was used from the shack of Kevin VK3YPL in Melbourne’s eastern suburb of Donvale. This was the initial command centre for the WICEN operation. Later a caravan was borrowed and stationed on a water tower hill in East Ringwood, and this remained WICEN control until the operation was scaled down.

Alan Noble made a telephone call to the Department of Communications asking for the allocation of callsigns from the suffix WIB-WIZ and these were “given on request”. He said the use of these callsigns greatly assisted in the running of the WICEN net and he thanked DOC for its help.

Apart from being in the fire areas amateurs manned VK3SES on a round-the-clock roster at the Melbourne headquarters of the State Emergency Service. VK3SES backed up the communications of the State Emergency Service and messages for SES were handled on 2 and 80 metres. Communications were also provided at Red Cross headquarters South Melbourne on a twenty four hours a day roster system which saw a large volume of traffic being handled. The Red Cross does not have its own communications and traditionally calls on WICEN.

Among the types of messages handled were the location of evacuees, missing persons, medical advice, and relief supplies.
TEST OF FIRE

Jim Linton VK3PC
4 Ansell Crescent, Forest Hills, Vic 3131

WICEN co-ordinator Peter VK3ANX and Vic Div President Alan VK3BBM.

Gwen VK3DYL operating in the WICEN control caravan with planning board in background.

During the height of the bushfires some amateurs stayed at their QTHs in the Gembrook-Emerald area in the Dandenong Ranges at risk to their own safety to provide communications.

WICEN control operating from a caravan atop a water tower hill.

Apart from communications there were other skills supplied during the disaster by amateurs — which reflects the wide cross-section of the general community represented within the Amateur Radio Service. Through the WICEN net a doctor gave urgent medical advice and, expertise in the automotive trade was given when a mechanical breakdown occurred. Peter Mitchell said: “There were many lessons to be learned” from the bushfire disaster. One of them was that more training was needed to “verse amateurs in message and information handling”. Peter said out of the operators involved only thirty would be from the hard-core of WICEN operators who regularly take part in exercises.

The exercises he’s referring to are the annual Red Cross Murray River Canoe Marathon, the Alpine Rally, and fun runs. He said while the amateur fraternity really pitched in during the disaster he was hopeful it results in more amateurs becoming WICEN regulars.

“I hope those who were involved will continue an association with WICEN by participating in exercises,” said Peter. “It was also under serious consideration to have local WICEN exercises with make-believe disasters and prepared messages for handling.”

This would test the call out system of amateurs and give them experience in handling messages, and develop WICEN
Debriefing after the fires.

Michael wished to also thank those amateurs who manned the Brigade's communication centre during the disaster. A strong relationship has obviously developed between WICEN and the St John Ambulance Brigade, and moves are certain to be made so it can grow even stronger.

Michael was heard in high praise of WICEN while being interviewed about the Brigade's activities on a commercial radio station. In fact WICEN did very well on the publicity side with the Red Cross explaining often to the news media how amateur radio operators had served during the emergency and newspapers, radio and TV news bulletins carried mentions of operators playing their part during the emergency.

The worth of WICEN was proved by its overall performance under great pressure — and at the risk of a pun: "It passed the test of fire". The thoughts of some that the role of WICEN had been diminished because the communications of other services have been upgraded must surely now be dispelled. The 1983 Victorian Bushfire Disaster clearly showed that amateurs are prepared and willing to serve their community in time of need.

AMATEURS LOSS IN THE FIRE

Among the approximately 2000 houses destroyed in Victoria some were the homes of amateur radio operators.

One of those was of 78-year-old Harry Duggan VK3XI who lost everything when his house was destroyed by flames in the south western district fires. Harry and his wife Clarice were lucky to escape with their lives. Apart from the Duggan's home and personal belongings, Harry lost extensive radio equipment including three transceivers and his antenna system. Their home was on the Garvoc-Laang Road, at Laang.

Harry VK3XI and XYL Clarice.

Harry said on "Ash Wednesday" he saw the smoke to the north-west but did not believe the fire would reach his area. But the fire moved rapidly, and by the time he had gone inside to get his wife the fire had hit. Harry and Clarice got into their car and started heading south, driving through the fire. But after they had travelled about a kilometre the fire had cut the road in front of them and built up behind them. Harry said: "I made a wild swerve and went back through the fire that I had originally gone through. There was no visibility but I knew the road so well I just kept going."

He said he got back to a cleared area, stopped and then found it was actually in front of his own home. A number of people had gathered in the dairy of Harry's neighbour's house, just across the road. The flames at the time were about 100 metres to the west and to the north of his home.

Harry and Clarice watched their home burn as the house exploded from the intense heat before the flames reached the building.

Despite the trauma and heartbreak suffered by Harry he said: "My loss was nothing when you see what has happened to others."

WICEN IN SA

In South Australia WICEN was called out by the Country Fire Service when local telephone exchanges became overloaded. VK5 WICEN co-ordinator Bill Mitchell VK5JM says communications were provided for CFS and an HF link was established between Mt Gambier and Adelaide on 7 MHz during the day and 3.6 MHz at
night. Because of skip conditions the 40 metre operation had to be relayed through VK1 stations.

Bill says about four hundred official messages were handled. He says the State Emergency Service asked for communications assistance when the fire operations began quieting down. WICEN was given a place at SES headquarters and a number of operators were sent into the field.

WICEN was commended for its effort by both CFS and SES and now has a permanent place at SES headquarters and amateur antennas are being installed.

Bill wishes to thank those amateurs who were not previously WICEN members but helped out during the emergency. A number of these have since become members of WICEN.

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Phone MELBOURNE (03) 546 5076
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Jim Joyce VK3YJ
44 Wren St, Altona, 3018

From listening on air over the last few months, there seems to be some interest in the new HY-GAIN Antenna the TH7DX. However by the tone of most comments little is known about the technical side of the antenna, and very few are aware there is also a kit available to convert your existing TH6DXX into a TH7DX.

After losing my tower and TH6DXX in a storm (see article April 82 AR) I wrote to HY-GAIN in the States for a replacement price. They sent not only the data for the TH6DXX but also the technical data for the new TH7DX, plus the information that one may convert a TH6DXX with a kit (No 392s) into the new broadband version. Good points about the antenna or kit are the broadbanding without any apparent loss in gain, improved front to back, and in particular the fact that all the fittings are now stainless steel. Anyone who has had to hang by one leg and arm 30 ft up in the air like I have trying to undo rusted up fittings on a beam that had only been up eighteen months will know that zinc or cadmium plating leaves a lot to be desired, particularly in seaside locations! In my opinion the TH7DX is an expensive antenna landed in Australia (then what isn’t expensive these days, unless you have a good tax dodge like some). But the kit could offer a viable alternative to the many TH6DXX owners in VK. The following are extracts from HY-GAIN’S form No 5314 which reports on both antennas. I leave it to you to decide.

MULTI-BANDING TECHNIQUES:
There are two commonly used techniques for isolating sections of a multi-band antenna. One is the “lumped-constant” L/C circuit which is commonly known as a trap. Basically a trap is a parallel resonant circuit consisting of a capacitor and an inductor. The most common configuration of a trap is a wire coil enclosed within an aluminium tube. The capacitor is formed by the outer tube and the coil inside.

Other types of traps may use linear-loading techniques to replace the coil by a long length of rod or tubing. These traps result in the same amount of inductive loading as a conventional trap, since the shortening effect on the elements is the same. As a general rule-of-thumb for both driven and parasitic elements, the shorter the element is, the more loading and less efficient it is. The second technique is a circuit commonly known as “stub-decoupling”. This circuit utilises ¼ wave stubs to isolate certain portions of elements and is considered very efficient. In a multi-band parasitic array such as the TH7DX, the use of lumped-constant traps is the most desirable. Preassembled and tested traps substantially reduce on-site assembly time, which is a fact that all of us can appreciate. These traps allow half driven element lengths of 0.225 wavelength on 10 metres, 0.203 wavelength on 15 metres and 0.185 wavelength on 20 metres.

The TH7DX also features a combination of trapped and monoband parasitic elements. Extensive research by HY-GAIN’s engineering team indicated that a higher average front-to-back ratio could be maintained on each band by using this combination. Besides the two driven elements, there are two singly-trapped parasitics on 20 metres, one monoband director and one singly-trapped reflector on 15 metres, and one singly-trapped director as well as a monoband director and monoband reflector on 10 metres. Two of these singly-trapped parasitics are capacitively end-loaded to minimise the shortening effect and resulting in higher efficiency there would be possible with inductive loading.

DUAL-DRIVEN ELEMENTS FOR LOW VSWR ON ALL THREE BANDS
The new TH7DX utilises a combination of two driven-elements, one resonant low in each band and the other resonant high, to produce VSWR less than 2:1 across each of the 10, 15 and 20 metre amateur bands. This dual driven element system uses a standard 50 ohm BN-86 balun and covers the entire 10-metre band from 28.0 to 29.7 MHz. These features are standard only on HY-GAIN’S TH7DX. This makes the TH7DX ideal for OSCAR satellite reception when the other HF bands may be useless due to low sun spot numbers. The TH7DX is also ideal for “all-mode” operation, especially with the increasing popularity of RTTY terminals and code-readers in the CW band segments.

GAIN AND RADIATION PATTERN MEASUREMENTS:
In the amateur radio service it is virtually impossible to measure HF antenna gain and defend your results. This is a highly controversial subject for most manufacturers, publishers and consumers in the amateur radio field. The problem stems from the fact that most amateur radio operators cannot afford the time and equipment necessary to individually verify the advertised gain specifications. Also, no amateur radio publication has the capability to measure and verify antenna gain.

In an effort to avoid controversy and still quantify the gain performance of the new TH7DX, it was decided to simply compare it to the best known high-performance tribander in the world — the TH6DXX. Both antennas were measured against the same reference dipoles using the same test set-up, and under exactly the same conditions. The TH6DXX was selected at random from stock and assembled by an antenna technician. Standard assembly procedures were also used in assembling the new TH7DX. The test antennas were measured at 70 feet (23 metres) above ground and approximately 1500 feet from the transmitter. The gain figures stated for the TH7DX are the measured differences between it and the TH6DXX. “Average gain” numbers were obtained by averaging three measurements for each band — top, bottom and band-centre.

The antenna radiation patterns of the TH7DX and the TH6DXX were also...
FRONT-TO-BACK RATIOS:

*TH6DXX

10 METERS

FREQUENCY (MHz)

TH7DX

10 METERS

FREQUENCY (MHz)

15 METERS

FREQUENCY (MHz)

20 METERS

FREQUENCY (MHz)

VSWR:

10 METERS

FREQUENCY (MHz)

10 METERS

FREQUENCY (MHz)

15 METERS

FREQUENCY (MHz)

15 METERS

FREQUENCY (MHz)

20 METERS

FREQUENCY (MHz)

20 METERS

FREQUENCY (MHz)

*THE TH6DXX WAS ASSEMBLED TO THE "LOW PHONE" SETTING.*
LISTENING in on some of the "big gun" contests around the bands might deter some amateurs from becoming involved when they discover the overwhelming rapidity of callsign and report exchanges; a newcomer to the scene would perhaps describe it as "massive QRM"... Let's admit it, during a big contest it isn't easy to find a clear spot for that weekly rag-chew with your old mate. Here's a little eavesdrop...

"...I think you put it over to me, Joe, and I didn't hear a word you said on that last over some KW guy came right over the top of you calling CQ Test but he's gone now... WHAT TEST?... Break, break."

"Well, Bill, it's one of them World versus The World contests this weekend so I guess we have to make the best of it... Hi!... By the way, I heard a JT0 out there just before you came up on frequency and I'd sure like to get him in the log for my DXCC... do you mind if I take off and hunt him down? Break."

"Not at all, Joe, go for your life... I think I'll track him down myself... I need JT0 too, as you know, and we might come across some more rare ones... see you later."

That's just one of the interesting aspects of contest operating... catching that rare one! Getting a QSL from him is usually no problem; he's in there either to give you a new country, zone, prefix or whatever or he's chasing you for his own reasons. He would obviously have considered and accepted the responsibility of QSL'ing... we hope! The name of the game is "grab him when you can!"

Of course, there's a bit more to contesting than just that. My personal approach is that it is foremost a "fun" activity... a good chance to meet old friends (no reason why you can't have a quick chat between contest numbers!)... a test of one's operating skills and the ability to put in a respectable score.

Preparation for the contest is all important. There's nothing worse, on switching on the rig, to find an interesting 'test' underway. You vaguely recall having read about it somewhere as you glance up at the calendar and decide it's not too late to have a go. Now ensues a hurried attempt to locate the magazine that published the rules... pin it up on the shack wall. So let's summarize the basic requirements for an enjoyable and satisfying participation in a contest:

If you read of a contest that attracts your attention, write it down on a card showing dates and source to relocate the rules... pin it up on the shack wall.

On the evening before the commencement of the 'test, prepare your blank "contest" log sheets... depending on the number of bands you intend to operate on, make up a separate one for each band.

Check your shack clock against WWV and adjust if necessary. Use of a digital type is recommended... it's much quicker to read and jot down. Mine is a "12-hour" displaying local time but this is altered to UTC when the Fair's copies are written up.

Have a couple of sharpened pencils handy at the operating table... breaking a point at a critical time could lose you a few vital points! And don't forget an eraser to correct those callsigns you hastily scribbled down that might be indecipherable later!

Check your manual key or auto-keyer... get that wrist flexing! I find that an auto-keyer with a multi-speed facility is very handy; in addition to the normal variable "Speed" pot, I have installed a four-position switch on mine for pre-set speeds of 12, 18, 24 and 30... the higher speeds for those UA stations who "send like the clappers!"

Pull out your latest propagation charts and map out your strategy. Pick the best start and finish times for each band, with beam headings, and tabulate them on a card. These don't always turn out to be quite correct but, at least, it gives you a chart to work from.

Now you should be ready to go! Make sure that you're tuned up and ATU'd about twenty minutes or so before the commencement of the 'test on the band of your first operation... tune around and listen to some of the signals... there's usually quite a few guys "flexing their muscles" with last-minute QSOs before the contest to give you a good idea of band conditions.

We're off... the shack clock shows the precise time of the start and all hell breaks loose! (This only applies to the "big gun" stuff, of course). DON'T call CQ at this point but tune slowly up the band from the lower end. Grab as many "CQ" stations as you can in the first ten minutes... by this time you've found that there are some vacant frequencies so get in on one and start calling "CQ TEST". But be prepared for a number stations calling you at once... pick the strongest one or the "tail-end" and work through the pile-up till the frequency is clear again. If there are no returns to your further CQs for the next three or four calls, give it up and go back to chasing those calling CQ as you did earlier. Repeat this process as often as you like.

From VKCW QRP Club Bulletin Nov '82.
We are conducting a survey of World War II Military Sites and have come up against a puzzle which can't be solved locally. We are hoping that you may be able to help us.

Printed are some photographs of a piece of equipment which obviously was housed inside a relatively small building when it was destroyed by fire. The equipment is now resting on its front face. The building was on raised piers with additional piers and strengthening to the floor beneath the equipment.

The photographs show a leaf spring suspension system below the cabinet, the top control panel which had a slight inclination from the horizontal and some (three) remaining condensers.

Adjacent to the building is what appears to be the concrete base of a tower.

The location of the installation in World War II parlance would be one (or all) of the following — 10½ mile, 11 mile, Cemetery Plains, Knuckeys Lagoon or Knuckeys Siding. The mileages are the distances from Darwin.

We are hoping to identify the purpose the equipment served and which branch of the Services operated it and perhaps something about the equipment itself and when and for how long it was used.

Incidentally the area in general appears to have had a multitude of radio installations. It is presently opposite the RAAF 11 mile Transmitting Station and adjacent to a recently abandoned DCA radio navigation aids site.

The photographs show aerial bases and the fallen masts which had a double taper with the nicest section being in the middle and flange bolted at that spot. The masts must have been approximately 22-25 metres high and were wire braced from the top and from an intermediate point.
SHORT-WAVE LISTENING ON RTTY

Fred Robertson-Mudie VK1MM and Forward Bias

One of the interesting aspects of short-wave listening that was covered in 'Amateur Radio' (July '82) was that of monitoring HF Marine Communications stations. These Marine stations form a part of what is generally known as the utility services. The utility, or commercial services include fixed and mobile services, aeronautical, maritime, radio-navigation, standard time/frequency, point-to-point, meteorological, press etc, and occupy somewhere in the order of seventy five per cent of the HF spectrum. The utility stations use virtually every type of modulation technique, including radio-telephony, radio-telegraphy and radio-teleprinter, as well as some of the more exotic formats such as facsimile, four-channel teletype and other multi-channel transmissions (though most of the latter are almost exclusively military).

 Whilst few, if any amateurs in Australia have the facilities to copy the more exotic formats, an increasing number are becoming involved in RTTY, making it probably the third most common form of amateur communication. This interest can be further enhanced by using the same equipment to monitor the utility RTTY stations on the short-wave bands, and it is an aspect of short-wave listening that can become quite absorbing. There are, for example, more than eighty press agencies using in excess of six hundred frequencies in the HF bands, and literally thousands of other types of utility stations using RTTY.

Not all the commercial/utility stations on the bands can be printed of course, a fact that will have been noticed by those amateurs already involved in this area. The stations which cannot be copied may, for example, be encrypted due to their traffic being of a military or diplomatic nature. Some, like the Arabs, whilst still using the standard CCIT2 five unit baudot code, have a quite different alphabet. Others, like the Russians and Greeks etc have, due to their somewhat larger alphabets, a 'third shift' on their machines allowing for the printing of 78 characters. The Japanese get round this problem by using a six unit RTTY code.

Other RTTY stations that cannot be printed on standard machines include, for example, VIS in Sydney which uses the CCIR seven unit SITOR code; the Australian Antarctic stations which use the CCITT5 seven unit ARQ code on their circuits; and the very few stations which use the CCITT5 eight unit ASCII code. The latter code is not very popular due to its high rate of data loss in QRM and QRN.

Most of the commercial traffic on HF use the standard shifts of 170 Hz, 425 Hz, or 850 Hz, others are using odd shifts of up to 3 kHz. The speed of commercial traffic is not usually a problem as most use either 50 or 75 baud. It is rare to find a station on HF using speeds in excess of 110 baud, again due to too high a data loss in QRM and QRN.

The monitoring of press agencies is possibly, the more interesting side of this aspect of the hobby. Some of these stations broadcast in French, Spanish etc. but the majority are in English (some things in life are meant to be easy). The quality of the material broadcast tends to vary considerably due to the fact that the greater majority of press agencies, those in the Communist bloc and in most of the developing countries, are owned and operated by their governments. This results in, for example, the somewhat biased news broadcast by the Telegraph Agency of the Soviet Union (TASS), and the rather crude propaganda. broadcast by the (North) Korean Central News Agency (KCNA). However, the better known press agencies like Reuters and Associated Press (AP) broadcast the news that appears in the international pages of the daily newspapers, although it is surprising just how much of this news is either abbreviated or just not printed by the daily press. The advantage of printing the press agencies is that not only do you get 'all' the news, but it is a bit like getting the news before it happens!

Lists of frequencies, call-signs, schedules etc of many of the utility stations can be purchased from various outlets and can, in some cases, be quite comprehensive. However, you may prefer to save your money to purchase other things, including more amateur gear. To help you get started in this interesting aspect of amateur/SWL activity, I have compiled a list of 100 press agencies monitored during 1982. Whilst it is not intended to be comprehensive, and does not contain details of schedules, it could well form the basis of a detailed list of your own. Moreover, covering as it does a range of frequencies from 4 to 27 MHz, it could also form the basis of an interesting study of HF propagation.

As can be seen, the list only covers the essentials (where known) of station name, call-sign(s), shift and speed. You will note that the most common shift and speed used by the press agencies is 425 Hz and 50 baud. A list of the acronyms of the various agencies included in the table is also given.

At this point, it might be a good idea to mention a few aspects of the practical side of monitoring commercial RTTY stations. It is, for example, essential to use a receiver with a high order of stability otherwise it will be almost impossible to copy these stations. However, most modern receivers are stable enough after a short warm-up period. If your demodulator cannot be switched for the various shifts, it is still possible to copy the different shifts by straddle tuning, particularly of a 425 Hz shift. If you cannot copy different speeds, I can only suggest that you get hold of one of the many technical articles on using a UART for speed changing.

The following table shows the 'normal' mark and space frequencies for both the high and low tones used for the more usual shifts:

<table>
<thead>
<tr>
<th>SHIFT</th>
<th>HIGH TONES</th>
<th>LOW TONES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MARK</td>
<td>SPACE</td>
</tr>
<tr>
<td>170</td>
<td>1275</td>
<td>2295</td>
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<td>425</td>
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<td>2295</td>
</tr>
<tr>
<td>850</td>
<td>1275</td>
<td>2975</td>
</tr>
</tbody>
</table>

Commercial stations do not necessarily comply with the norm, and may well have the mark and space tones inverted. If your demodulator cannot invert the tones for you, all you have to do is to change to the other side-band. If your demodulator can switch from high to low tones this is all to the good as commercial stations use both. However, many, if not most demodulators 'don't care' which tones are being used.
In addition to minor frequency variations by the stations themselves, it will be appreciated that there will be slight variations depending on the side-band and set of tones used for monitoring. Regardless of the method used, the stations in the table should all be within ±1 kHz of the listed frequency.

Of course, once you have your RTTY gear set up and running, you can start to monitor the many RTTY intruders that appear on the exclusive amateur bands. These intruders are mainly from Russia, China, East Germany and North Korea and can sometimes be copied and identified. However, even if you can’t identify them, they should still be reported to your Divisional Intruder Watch Coordinator.

Finally, if there is sufficient interest, it is intended to publish, at a later date, a similar list of the other types of utility RTTY stations. It is also intended to publish, again if there is sufficient interest, details of international meteorological stations. This utilisation could vary from a general interest in the weather in various parts of the globe to being able to draw up weather maps and plot temperature inversion data — a useful facility when trying to determine propagation in the VHF/UHF bands.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Station</th>
<th>Call-Sign</th>
<th>Shift</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.525</td>
<td>BTA</td>
<td>L21</td>
<td>425</td>
<td></td>
</tr>
<tr>
<td>4.804</td>
<td>ANSA</td>
<td>ISZ48</td>
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<tr>
<td>5.027</td>
<td>CETEKA</td>
<td>OLC7</td>
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<td>5.035</td>
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<td>5.972</td>
<td>AGERPRES</td>
<td>YDG59</td>
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<td>6.984</td>
<td>AP</td>
<td>GIC26B</td>
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<td>7.542</td>
<td>AFV</td>
<td>ZEN33</td>
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<td>7.778</td>
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<td>ATP65/ATB68</td>
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<td>7.960</td>
<td>IRNA</td>
<td>—</td>
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<tr>
<td>8.020</td>
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<td>—</td>
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<td></td>
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<tr>
<td>8.022</td>
<td>AFV</td>
<td>FTA</td>
<td>425</td>
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<td>GB232/GBW34B</td>
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<td>OLF5</td>
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<td>HMK21</td>
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</tr>
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<td>ATUA</td>
<td>—</td>
<td>425</td>
<td></td>
</tr>
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<td>9.867</td>
<td>INIA</td>
<td>YIZ74</td>
<td>170</td>
<td></td>
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<td>10.258</td>
<td>TASS</td>
<td>RDZ71</td>
<td>425</td>
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</tr>
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<td>10.270</td>
<td>TASS</td>
<td>—</td>
<td>425</td>
<td></td>
</tr>
<tr>
<td>10.319</td>
<td>APF</td>
<td>—</td>
<td>425</td>
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<td>10.407</td>
<td>ANSA</td>
<td>9VDF63</td>
<td>850</td>
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<td>10.434</td>
<td>ATUA</td>
<td>ZAY</td>
<td>425</td>
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<td>10.438</td>
<td>TANJUG</td>
<td>YZD7</td>
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<td>10.465</td>
<td>TASS</td>
<td>RKA71/RNN51</td>
<td>425</td>
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</tr>
</tbody>
</table>

Note: All stations use 50 baud except those marked * which use 75 baud.

**PRESS AGENCY ACRONYMS**

<table>
<thead>
<tr>
<th>Agency</th>
<th>Acronym</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADN</td>
<td>East Germany News Agency</td>
</tr>
<tr>
<td>AFP</td>
<td>Agency France Press</td>
</tr>
<tr>
<td>AGERPRESS</td>
<td>Romanian Press Agency</td>
</tr>
<tr>
<td>ANSA</td>
<td>Italian Press Agency</td>
</tr>
<tr>
<td>AP</td>
<td>Associated Press (London)</td>
</tr>
<tr>
<td>ATA</td>
<td>Albanian Telegraph Agency</td>
</tr>
<tr>
<td>BTA</td>
<td>Bulgarian Telegraph Agency</td>
</tr>
<tr>
<td>CETEKA</td>
<td>Czechoslovakian Telegraph Agency</td>
</tr>
<tr>
<td>INIA</td>
<td>Iraqi News Agency</td>
</tr>
<tr>
<td>IRNA</td>
<td>Iranian News Agency</td>
</tr>
<tr>
<td>JANA</td>
<td>Jamaahira News Agency (Libya)</td>
</tr>
<tr>
<td>KCNA</td>
<td>Korean Central News Agency</td>
</tr>
<tr>
<td>KUNA</td>
<td>Kuwaiti News Agency</td>
</tr>
<tr>
<td>KYODO</td>
<td>Japanese News Agency</td>
</tr>
<tr>
<td>MENA</td>
<td>Middle East News Agency</td>
</tr>
<tr>
<td>NDNA</td>
<td>New Delhi News Agency</td>
</tr>
<tr>
<td>PRENSA LATINA</td>
<td>South/Central American Pool</td>
</tr>
<tr>
<td>REUTER</td>
<td>Reuters News Agency (London)</td>
</tr>
<tr>
<td>RFI</td>
<td>Radio France International(?)</td>
</tr>
<tr>
<td>SANA</td>
<td>Syrian News Agency</td>
</tr>
<tr>
<td>SPA</td>
<td>Saudi Press Agency</td>
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<td>SUNA</td>
<td>Sudanese News Agency</td>
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<td>TANJUG</td>
<td>Yugoslav News Agency</td>
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<tr>
<td>TAP</td>
<td>Tunisian Press Agency</td>
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<td>Telegraph Agency of the Soviet Union</td>
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<td>UPI</td>
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<td>Voice of America</td>
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<td>Vietnamese News Agency</td>
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<td>Palestine News Agency</td>
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<tr>
<td>XINHUA</td>
<td>Chinese News Agency</td>
</tr>
</tbody>
</table>

Notes: Some agencies, like TANJUG, act as pool agencies for the smaller agencies such as WAFA, JANA, TAP etc. PRENSA LATINA acts as a pool for some of the South and Central American Countries. Some of the larger agencies have overseas transmitters.

**MONEY WORRIES**

It’s difficult to save money when your neighbors keep buying something you can’t afford.

•••

Tall men can be just as short at the end of the month as anyone else.

•••

Overheard: “We can stop worrying about keeping up with the Joneses — they’ve declared bankruptcy.”

•••

If you think you have no friends, just rent a cottage on the beach.

•••

Inflation: A period when a man goes broke in a prosperous way.

•••

High school girl to father, “You think you had it away.”

ARS Bulletin Sept. 1982

AMATEUR RADIO, April 1983 — Page 21
SIMPLE EXTERNAL FREQUENCY SELECTION
FOR THE ICOM IC-22S

Reg Fookes VK2AKY
Courtesy “DRAGNET” St George ARC

Although the IC-22S is now “out of print” it is still a good, no-frills 2 m transceiver. Its PLL frequency synthesiser provides 144 channels between 144.4 and 147.975 MHz. By soldering diodes into an internal matrix board up to 22 of these channels can be selected by the front panel switch.

This leaves 122 channels which can only be accessed by the rather laborious procedure of changing matrix diodes. A convenient method of selecting these other channels is needed. A published method, G Percy, VK3ZQP, (now VK3PE) Amateur Radio January 1978, p 9 is electronically elegant but complex and covers only 80 channels. The technique to be described is about as simple as possible. It is probably not new and no originality is claimed.

In the IC-22S channel selection is achieved by feeding +9 V through the selected row of matrix diodes to the appropriate inputs of the programmable divider of the PLL. One channel (eg No 22) is set aside for external programming by a series of 8 miniature toggle (or slide) switches and Si diodes. These are mounted in a small metal box mounted above the IC-22S on the plain face of the mounting bracket supplied with the rig, see Fig 1. Label the switches D7 to D0 and/or 128, 64, 32 . . . 1 to correspond with the handbook. In this configuration the bracket functions as a good tilting mount for table top use. As an optional extra a standard phone jack can also be mounted in the switch panel, connected by thin coax to a miniature plug for the “Ext Spkr” jack.

Electrical access to the interior of the transceiver is via the 9-pin socket on the rear panel. Disconnect the tuning meter lead, by-pass capacitor and earth connection. With ribbon cable or thin hook-up wire connect the socket to the channel No 22 row of holes in the diode matrix board, allowing sufficient length of wire to permit removal of the board for future changes in other channels. The circuit diagram is given in Fig 2. Be careful to keep track of each connection so the sequence of the switches will be covered.

To set up a channel not available with the main selector, turn the switch to Channel 22 and with the procedure given in the handbook, and with due regard for the requirements of simplex or repeater operations, set up the row of diode switches. Closing a switch is equivalent to inserting a diode in the matrix, and vice versa.

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- 10 MHz - 9 MHz 4 MHz

**IC-2KL Linear Amplifier**
- 100 - 150 kHz
- 18 MHz - 10 MHz
- 200 W

**AT500 Automatic Antenna Tuner**
- 100 kHz - 50 MHz
- 500 W capacity

**IC-SP3 External Speaker**
- 80 W

**IC-40 HF Transceiver**
- 100 kHz - 50 MHz 800 kHz
- 10 MHz - 9 MHz 4 MHz

**IC-2KL Linear Amplifier**
- 100 - 150 kHz
- 18 MHz - 10 MHz
- 200 W

**AT500 Automatic Antenna Tuner**
- 100 kHz - 50 MHz
- 500 W capacity

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- 80 - 10 MHz
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- 200 W

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**IC730 HF TRANSCEIVER**
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**IC505 6M x PORTABLE**
- 100 kHz - 50 MHz 800 kHz
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**IC5100 AUTO TUNER**
- 100 kHz - 50 MHz 800 kHz
- 10 MHz - 9 MHz 4 MHz

**ICAT500 AUTO TUNER**
- 100 kHz - 50 MHz 800 kHz
- 10 MHz - 9 MHz 4 MHz

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**IC720A HF TRANSCEIVER**
- 10-10 meters
- 200 Hz - 50 MHz 800 kHz
- 10 MHz - 9 MHz 4 MHz

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**PS15 Power Supply**
- 12 VDC 20A

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**KENWOOD**

**TS430S**

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**ICM CR70**

**ICR70**

**$719**

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**IC720A HF TRANSCEIVER**
- 10-10 meters
- 200 Hz - 50 MHz 800 kHz
- 10 MHz - 9 MHz 4 MHz

---

**IC730 HF TRANSCEIVER**
- 100 kHz - 50 MHz 800 kHz
- 10 MHz - 9 MHz 4 MHz

---

**IC740 HF TRANSCEIVER**
- 100 kHz - 50 MHz 800 kHz
- 10 MHz - 9 MHz 4 MHz

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**IC-R70 HF RECEIVER**
- 100 kHz - 50 MHz 800 kHz
- 10 MHz - 9 MHz 4 MHz

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**IC251A 2M x ALL MODE**
- 100 kHz - 50 MHz 800 kHz
- 10 MHz - 9 MHz 4 MHz

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- 10 MHz - 9 MHz 4 MHz

---

**PS15 Power Supply**
- 12 VDC 20A
HOW TO MAKE THE ICOM IC-551 NOISE BLANKER WORK ON LOW LEVEL IMPULSE NOISE
©1983

Andrew Martin VK3KAQ.
Woodside, 14 School Road, Ferny Creek, Vic. 3786.

The IC551 noise blanker suffers from having a very high blanking threshold and, consequently, only works on impulse noise that is generated next door. However, much of the impulse noise that is received on 6 metres is of a lower level where the IC551 noise blanker has no effect.
One way to make the IC551 blanker work more effectively is to use a receiver preamp with about 20dB of gain but this leads to a poorer receiver cross-mod performance. So, as I did not like the preamp idea, I began to wonder what other means could be used to improve the noise blanker performance.

While perusing the IC551 circuit it became apparent to me that when the pass-band-tuning unit is installed, the receiver IF strip of the main PC board is disconnected. My next thought was "why not use this redundant IF strip to obtain the necessary gain to make the noise blanker work at lower thresholds?"

This modification basically involves inserting the disused IF strip on the main PC board between the IF sampling point and the noise blanker amplifier. To complete this mod you must have installed the pass-band-tuning unit. Carry out the mod as follows (reference to the IC551 schematic and board layout diagrams will help):

1. Remove the top cover.
2. Locate the IF strip which is up against the large tin box.
3. Cut R89. This disconnects the AGC drive to the "S meter" but note that the signal level is provided from the pass-band-tuning unit and we do not want the "S meter" being driven from two different sources. (The components to be cut form a key to photo — A-R89, B-D12, C-C92, D-L38, E-J2, F-J3.

4. Cut D12. This is the input switching diode for the IF strip.
5. Cut C92 on the end towards the rear of the IC551 and lift C92 up to the vertical position. Be careful to leave enough lead on the PC board and C92 so that the input and output leads can be attached.
6. Install a shielded wire between the now free end of C92 and the now free end of D12. C92 is necessary for IF coupling and DC blocking. This now connects the input to the IF amplifier. (Use the can of L38 for a ground.)
7. Install a 1/8 watt 100 k resistor between the junction of D12 with the input lead from C92 and ground. This allows D12 to be biased on.
8. Install a shielded wire between J2 pin 2 and the lead end of C92 that was left on the PC board. This connects the output of the IF amplifier back to the noise blanker input. The can of L35 can be used for a ground.
9. Remove P1 (P1 goes to the pass-band-tuning unit) from J3 which is located about 25 mm towards the rear from the crystal filter.
10. Install a small wire link between pins 6 and 7 of J3 (on the PC board counting from the side nearest the IF strip). This applies the correct +9V supply to the IF strip.
11. Replace P1. The modification is now complete. Now find some suitable impulse noise (preferably low level) and adjust R65 (threshold adjustment) to obtain optimum blanking. L19 may also require a small amount of adjustment. The AGC on the IF strip is still connected and serves to optimise the blanker input level.

This modification has successfully been applied to several IC551's in the Melbourne area and I hope you meet with equal success. Good luck and better DX.
HOW DANGEROUS IS RF RADIATION? — Part One

From time to time, we receive requests from amateurs and even people in the commercial field, to give a view on the hazards of RF radiation. Of particular interest to radio amateurs are the VHF and UHF hand held transceivers. Newer models coming onto the market have the capacity to run up to ten watts of RF out.

The WIA is most interested in any reports in respect of RF radiation hazards. Microwave radiation is also a most important discussion area.

To give a fair view of what results have been ascertained in tests overseas, we have collated several articles from QST, and Radio Communication to help educate the Australian radio amateur in the possible hazards in the operation of VHF and above.

The articles are self explanatory, and the WIA or 'Amateur Radio' magazine assumes no responsibility for any of the statements made. The articles will be published as a series for the next three issues, and we would appreciate your thoughts on the matter when all of the articles have been published.

Here are the first of three articles in the series.

RF HEATING IN THE AMATEUR BANDS

By A. Peter Ruderman, PhD, *VE1PZ

Reproduced from QST June 1978

A non-ionising radiation in order to distinguish it from the ionising radiation that is associated with X-ray equipment and nuclear power plants. There are important differences: ionising radiation, for example, can have a cumulative effect. (This is why atomic plant employees and uranium miners have a lifetime total safe dose to worry about.)

Non-ionising radiation can hurt people when it causes a build-up of heat by agitating the molecules in some part of the body. An increase of 2 degrees C in the temperature of the testicles can cause temporary sterility. An increase of 10 degrees C in the temperature of the eye can cause cataracts to form. This damage is permanent. Greater increases in temperature can be fatal by literally cooking your insides.

Normally, the effect of RF exposure is not cumulative unless tissue damage occurs, since whatever heats up can cool down. The damage caused by RF radiation depends on the amount of power, distance of the individual from the power source, amount of shielding, and above all the frequency. The frequency determines how much heat will be generated in the body from a given amount of RF power. It takes only some simple commonsense precautions to protect amateurs from RF damage in most cases.

A LOOK AT THE AMATEUR BANDS

From 1.8-30 MHz most of the radiation passes right through you without any after effects. Only a small amount is converted to heat. If you consider that a 1 degree C rise in temperature is tolerable (i.e., like the low fever of a mild cold), you might have to spend an hour or more just three feet away from the feed point of an antenna radiating 500 watts of power at 8 MHz to achieve this effect.

At 144 MHz enough energy is absorbed to cause more rapid heating, and a body close to the energy source at moderate power over a prolonged period can suffer harm.

At 420 MHz about half of the RF energy is converted to heat in the body. This is probably a real danger point. From 1000-3000 MHz the RF energy is almost completely absorbed in the body. Microwave ovens fall in this range.

At 10 000 MHz we are back to half the energy being absorbed. Still higher frequencies tend to be reflected instead of passing through, as at communication frequencies. The wavelength is such that the energy can just hit the nerve endings in the skin and provide nature's warning signal of feeling the heat.

SAFETY STANDARDS

If you are operating in the 10 metre band with 1 kW of radiated power, and the operating position is 10 metres from the antenna, the power density on the operator would be about 0.8 mW/cm². This looks safe enough, and in fact the radiation pattern from the vertical, dipole or beam, would be such that an amateur 10 metres below the feed point would be receiving less than the theoretical radiation.

Unless there were serious leaks, poor shielding, lots of RF in the shack from radiating feed lines, unbypassed leads, etc., there does not seem to be much of a problem.

2 METRES AND UP

At 144 MHz and higher, the picture is quite different. First of all, more of the RF energy is converted to heat in the body. Second, although power is generally lower, a mobile antenna on the car roof is very close to the operator. And a handie-talkie with a built-in microphone brings the operator within a couple of inches of the antenna.

If a mobile operator were transmitting with 10 watts of radiated power, and the antenna was on the left (right in Australia -Ed.) front fender, less than one metre from the driver's seat, you could easily get a power density of 10 mW/cm², which might be hazardous in the case of long uninterrupted transmissions. With a handie-talkie, a built-in microphone, and only one watt of radiated power, the density would be three or four times as great.
HOW DANGEROUS IS RF RADIATION?

Workers at Motorola have recently conducted experiments of great interest to most amateurs. Their results have been published in several IEEE publications. The experimenters constructed a simulated human head and torso and exposed it to the radiated fields from 150 and 450 MHz 6 watt, handheld transceivers. Both radios were equipped with helical or "rubber duck" antennas. In addition, tests were performed with a 1/4 wavelength antenna installed on the 450 MHz unit. A thermal probe was used to measure temperature rise due to exposure. These experiments were performed because of concern that the newer, high-power units might pose a health hazard. Previous measurements of the field strength surrounding these radios had indicated that an incident field intensity exceeding 10 mW/cm$^2$ might exist. This is a safety standard for human exposure to RF energy at higher frequencies.

Because the field would be concentrated by a probe causing nontypical localised heating, the probe was removed while the transmitter was operating. The "dummy" was exposed from 15 to 60 seconds. After power was removed, the probe was again inserted and the temperature change determined. Steps were taken to prevent thermal transients caused by insertion and removal of the probe. It would have been possible for heating to occur in small areas not being monitored by a probe. To look for "hot spots", an IR (Infrared) scanner was used to take thermograms of the dummy. Assuming the transceiver was positioned as it would be during normal operation, no significant heating effects were noticed on either band. Even at 450 MHz, the temperature rise was slight. At a shallow probe depth (0.2 inch or 5 mm), the greatest temperature rise was less than 1°C. At deeper probe penetrations the temperature rise was less. Attempting to determine possible hazards from a measurement of radiated field intensity may cause misleading results. The low total energy and high field impedance which exist when such radios are brought in close proximity to the body will result in lower energy transfer than field-strength measurements alone would seem to infer. For example, at a point two inches (50 mm) from the helical antenna of the 150 MHz transmitter (Fig. 1), a Narda field probe measured a maximum field intensity of 168 mW/cm$^2$. This value greatly exceeds the 10 mW/cm$^2$ exposure standard. Measurements based on the penetrating effects at the same point indicate a maximum power flow density in tissue of 2.8 mW/cm$^2$. On 450 MHz, with the same spacing from the 1/4 wavelength whip antenna (Fig. 3), a maximum radiated intensity of 16 mW/cm$^2$ was found. Power flow density was only 2.5 mW/cm$^2$. The radiation meter indicates a hazardous condition, while actual measurement of the effects shows this is not the case. Power absorption in all cases was less than 1 mW/cm$^2$.

IR thermograms did not detect any unusual hot spots. A health hazard exists when the tip of the antenna is close to the eye (within 0.2 inch or 5 mm) and the transmitter is operated. In this case, and RF burn will result on the cornea. The thick plastic cap on the tip of the antenna makes this unlikely to occur. When the radios are held in the normal position for use, no eye hazard exists.

While these tests were performed at 150 and 450 MHz, I think it is safe to assume we need not fear our portable 220 MHz rigs either. These tests point out the fallacy of using radiated field intensity as a criterion of safety. Some consumer publications have begun to measure the field strength radiated from CB radios. Consumers have been warned not to stand close to the mobile whip while a 5 watt CB transmitter is operating, due to the high field strength! These papers have shown that radiated power may greatly exceed that which is absorbed and converted into heat. Amateurs should continue to exercise prudence when using UHF and microwave equipment, of course. It does seem that our portable transceivers pose no threat to our health.

— J. E. Kearman, W1XZ, RFD, Collinsville, CT 06022.

Fig. 1. This drawing shows the position of the 6 watt 150 MHz radio in relation to the head of the dummy. In this configuration, with the transmitter operated for 60 seconds, the temperature increases noted were observed.

Fig. 2. Position and thermal effects of a 6 watt, 450 MHz radio equipped with a helical or "rubber duck" antenna. A "hot spot" exists near the tip of this antenna. The eyeball is shadowed in its recess and receives very little exposure.

Fig. 3. The same 450 MHz rig, this time with a 1/4 wavelength whip installed. Power density in the eye is greater, but still very low.
ANOTHER VIEW

The article, "RF Heating in the Amateur Bands", which appeared in QST for June, 1978, includes some statements which, in light of extensive experiments performed in our research laboratories, are not correct. Although Dr. Ruderman properly warns amateurs to use caution to avoid unnecessary exposures, the power-density levels he quotes are too high to be realistic.

At a distance of 10 metres from a half-wavelength 10 metre dipole connected to a one kilowatt output source, the power density in the horizontal direction is about 0.08 mW/cm², not 0.8 mW/cm² as stated by the author. This last value would be found at a distance of 10 metres in the bore sight direction of a 10 dB-gain beam antenna.

Turning to the VHF bands, Dr. Ruderman states that a mobile installation transmitting 10 watts effective radiated power (ERP) from an antenna mounted on the left fender, less than one metre from the driver (how much less isn’t specified), could expose him to a power density of 10 mW/cm². This value is not corroborated by experimentation. Some research departments at Motorola Inc., have conducted careful measurements of power density inside the cabins of cars equipped with mobile transmitters. The Narda model 8310 radiation monitor, calibrated for VHF operations, was used. In the situation described by Dr. Ruderman, at a distance of 1.1 m between driver and antenna, the maximum power density measured was 0.05 mW/cm², substantially lower (23 dB) than the 10 mW/cm² level quoted by Ruderman. The 0.05 mW/cm² level is slightly less than the power density one would find in free space (in the direction of maximum gain) at about one metre from a VHF dipole connected to a 10 watt output source.

In the matter of portable transmitters, Dr. Ruderman states that 30-40 mW/cm² power densities exist in the immediate vicinity of a 144 MHz antenna connected to a 1 watt-output transmitter. These values are not supported by experimental evidence either. First of all, it is difficult to define, let alone measure, power density so close to an RF source. At a point near the radiator, different parts of an antenna contribute fields propagating in completely different directions, precluding any obvious indication of power flow. In these conditions, one can measure only energy density (mJ/cm²), by separately evaluating the E and H fields with appropriate instrumentation. In the near field, however, the electromagnetic energy density does not have a simple relationship to power flow. Unlike the far-field case, part of the energy is stationary (static type) and part is propagated. To avoid these difficulties, we measured power deposited in simulated humans, by operating a 5 watt-output 150 MHz portable radio equipped with helical antennas. Helicals were selected because they caused much higher energy density readings in field probes than did quarter-wavelength telephonic antennas. The results of these measurements were presented in a recent paper. The experiments have shown that, at VHF, electromagnetic energy in the immediate proximity of a portable radio antenna does not penetrate into muscle or brain tissue of the human body. There is energy deposition only in the very surface fatty layers. In addition, it was found that if a user operates a 1 watt portable radio with the case 0.2 inch (5 mm) from his mouth, the maximum absorbed power density (which can be measured from heating effects) is less than 0.2 mW/cm². This value is much lower than the deposition levels (8-10 mW/cm²), due to an incident power level of 30-40 mW/cm² which, Dr. Ruderman states, exist near a portable transceiver.

I would like to reassure radio amateurs of the absence of any detected thermal radiation hazard from commercially available mobile and portable radio transmitters. If such equipment is properly installed and operated in accordance with simple common sense.

— Quirino Balzano, PhD, Manager, Antenna Systems Research Laboratory. Communications Division, Motorola, Inc., 8000 West Sunrise Blvd., Ft Lauderdale, FL 33322.

REFERENCES


PROGRESS!!

Long, long ago in a land where steam power and stump-jump ploughs were at their height of creation a man sat blowing bubbles.

An observer would have seen a vast array of strangely grotesque measuring equipment lining the walls, a selection of rare metals and heating elements strewn across the bench and bits of molten glass in the carpet as the first ever electron tube was developed.

Within a decade the world had changed, long ago in a land where steam engines and stump-jump ploughs when words like 'pentode' creep into conversation.

It is a great pity this gap exists as the workings of modern electronics is simplicity itself, for the first time ever circuit design has been spared all of the complexities of component values and voltages so that greater effort may be directed to doing the job better.

These techniques enable the designer to draw a block diagram of a project and directly proceed to build it optimistic of success, very much like drawing a picture of a chocolate cake, then eating it

As more people come to realise that a change in materials with which people work does not mean an early retirement but an opportunity to expand a field when the gap that presently exists will be seen to disappear.

by Ian Jackson VK3BUF

Courtesy GATEWAY'
MODERN MILITARY SURPLUS EQUIPMENT

Colin MacKinnon, VK2DYM
P.O. Box 21, Pennant Hills, NSW 2120

In the past couple of years some relatively modern military communications equipment has appeared on the local surplus market.

Over the next few issues I will describe this equipment and its adaptation for amateur use.

This instalment should enable you to recognise the various units and the accessories needed for operation. Future instalments will describe individual units and ways of getting them on air.

GENERAL INFORMATION

The equipment to be described is of English origin and was used by the Australian Army in a variety of transport vehicles and Armoured Fighting Vehicles (AFV). It was replaced several years ago by US designed radio equipment and now turns up in disposals throughout Australia.

The sets can be recognised by the dark green colour of the ribbed aluminium cases and the following nomenclature, generally shown on a tag on the front or top of the case:

<table>
<thead>
<tr>
<th>NAME</th>
<th>FUNCTION</th>
<th>FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless Set B47</td>
<td>low power FM Transceiver</td>
<td>38-56 MHz</td>
</tr>
<tr>
<td>Wireless Set C42</td>
<td>high power FM Transceiver</td>
<td>36-60 MHz</td>
</tr>
<tr>
<td>Wireless Set C45</td>
<td>high power FM Transceiver</td>
<td>23-38 MHz</td>
</tr>
<tr>
<td>Wireless AM, CW, FSK</td>
<td>high power AM, CW, FSK</td>
<td>2-16 MHz</td>
</tr>
<tr>
<td>Wireless Receiver</td>
<td>AM, CW, FSK</td>
<td>2-16 MHz</td>
</tr>
<tr>
<td>Set R210</td>
<td>Power Supply Unit</td>
<td>Supply Unit Power Supply Unit for C42 or C45</td>
</tr>
<tr>
<td>Supply Unit</td>
<td>Power Supply Unit for C11</td>
<td>Supply Unit Power Supply Unit for C11</td>
</tr>
<tr>
<td>Vibratory No. 12</td>
<td>formerly Rotary 24V</td>
<td></td>
</tr>
<tr>
<td>Aerial Tuning</td>
<td>for B47</td>
<td></td>
</tr>
<tr>
<td>Unit No. 8</td>
<td>Aerial TCR Ener TCR for C45 &amp; C42</td>
<td></td>
</tr>
<tr>
<td>Unit No. 6</td>
<td>Aerial Tuning</td>
<td>Aerial TCR for C11</td>
</tr>
<tr>
<td>Unit No. 7</td>
<td>Aerial Tuning</td>
<td>Aerial TCR</td>
</tr>
</tbody>
</table>

As you can see, this equipment can be quite useful on various amateur bands, particularly 6 metres FM.

The equipment was manufactured in 1959-60 and used miniature 6.3V valves with vibrator or dynamator power supplies. It is obviously top quality and despite being a bit bulky and power hungry it gives a very reasonable performance even by today’s standards.

The condition of the available sets varies from brand new in sealed cartons, to some that must have been in the Yarral Normally the sets are sealed and could be under slight vacuum, so if you find one that has a small black metal cup covering the head of one of the Allen screws which hold the set in its case, and if, when you open the set, you hear an inrush of air, you probably have a unit that has not been tampered with.

Because the sets (except C11) are virtually watertight the interiors are generally as new, even if the outer case is pretty grubby. The C11 and C45 PSU have vents that open for air circulation during operation. If the set has previously been opened, check for missing valves and crystals, particularly as all have 1 MHz/100 kHz crystal calibrators. Any mud, corrosion etc. inside is a big problem as the solder joints are probably affected and will break readily. The front panel knobs are a special collet type and should all be there. The dial scale is a photographic negative film with sprocket holes and is prone to damage and deterioration. Rotate the tuning knob while examining the dial scale and listen for noises which could indicate missing sprocket webs or damage.

The sets use a common connection method and even if you propose to deviate from this it is not a bad idea to acquire the basic connecting harnesses.

Vehicle installation required two core power lead from a 24 volt battery to the Power Supply Unit PSU where used, or direct to the set. A short harness connected the PSU to the set. A control harness type A or B connected each set to a master control box known as the J1 box, or J2 or JD9. From there cables ran to each operator’s station where the audio output bus.

The correct plug and socket connectors and harnesses can be determined by examining the pin layout and shape but check that the threads on the connectors match as there are some harnesses around with non-compatible thread sizes.

The plug and socket connectors and harnesses can be determined by examining the pin layout and shape but check that the threads on the connectors match as there are some harnesses around with non-compatible thread sizes.

The antenna was generally a 2.4 metre rod screwed into a base mounted onto the vehicle. 75 ohm coaxial cable with British Pattern, 4 sockets, not compatible with PL259/S0239, connected to the aerial tuner and to the set. Some vehicles also had a portable 8.7 metre telescopic mast with a variable length whip on top and used rope guys for support. This was fed with about 11 metres of smaller diameter co-ax (RG58/U size).

It is quite feasible to connect up and operate the sets using the various harnesses and a J box and headset; however in the series I shall consider:

(a) Alternative power sources.
(b) Description of the circuitry so that troubleshooting, alignment or modification can be studied.
(c) Methods of getting the sets on air without the complexity of the harnesses etc.
(d) Modifications to improve performance. I will not give step by step details as there is often more than one way of achieving the end result.

As you can see, this equipment can be quite useful on various amateur bands, particularly 6 metres FM.

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The sets use a common connection method and even if you propose to deviate from this it is not a bad idea to acquire the basic connecting harnesses.

Vehicle installation required a two core power lead from a 24 volt battery to the Power Supply Unit PSU where used, or direct to the set. A short harness connected the PSU to the set. A control harness type A or B connected each set to a master control box known as the J1 box, or J2 or JD9. From there cables ran to each operator’s station where the audio output bus.

The correct plug and socket connectors and harnesses can be determined by examining the pin layout and shape but check that the threads on the connectors match as there are some harnesses around with non-compatible thread sizes.

The plug and socket connectors and harnesses can be determined by examining the pin layout and shape but check that the threads on the connectors match as there are some harnesses around with non-compatible thread sizes.

The antenna was generally a 2.4 metre rod screwed into a base mounted onto the vehicle. 75 ohm coaxial cable with British Pattern, 4 sockets, not compatible with PL259/S0239, connected to the aerial tuner and to the set. Some vehicles also had a portable 8.7 metre telescopic mast with a variable length whip on top and used rope guys for support. This was fed with about 11 metres of smaller diameter co-ax (RG58/U size).

It is quite feasible to connect up and operate the sets using the various harnesses and a J box and headset; however in the series I shall consider:

(a) Alternative power sources.
(b) A description of the circuitry so that trouble shooting, alignment or modification can be studied.
(c) Methods of getting the sets on air without the complexity of the harnesses etc.
(d) Modifications to improve performance. I will not give step by step details as there is often more than one way of achieving the end result.

POWER SUPPLY ALTERNATIVES

All sets ran on 24V DC at currents ranging from 1.8 amps for the R210 up to a whopping 22 amps for the C11. They are tolerant of wide voltage fluctuations — from 20V to 30V input; although power output drops off at low voltage. All the power supplies have a relay which operates when low voltage is sensed and shorts out a resistance, or changes transformer taps, so increasing voltage into the sets.

There are a number of options for providing the required power:

1. Buy an armoured car at a disposals auction. This gives you adequate 24V DC capacity and also commands a certain amount of respect when operating mobile.
2. Use a 24V truck battery or connect two 12 volt car batteries in series. This method has the usual problems associated with lead/acid batteries.
3. Build a 24V DC supply using commercial or junk box parts. This can be a very simple unit comprising a large transformer, diode rectifiers (perhaps auto alternator diodes?), and a large smoothing capacitor, say 10,000 microfarads at 40V DC. The vibrator or dynamotor are to a large extent self-regulating and will even run off raw unfiltered DC.
4. Adapt one of the many ex-computer power supplies that are on the market. There are a few 240V units that give 24V and 32V outputs at adequate amperage but most seem to be 110V input. However, if the transformer is ferro-resonant, as evidenced by a winding connected to two capacitors rated at about 6 microfarads and 600V each, it can probably still be used. Disconnect the capacitors and feed 240V AC into the winding. Hopefully the 32V DC output circuit will show 24 to 28V DC. Take precautions.

AMATEUR RADIO, April 1983 — Page 29
with the primary as it will have 80-90V induced in it. You should also check that the 24V wiring is large enough to carry the current. Some supplies provided 5V at heaps of amps but only low current to the 24 or 32V circuits.

See fig 1 and photo 1

5. Dispense with the existing PSU circuit and build up a power supply for the necessary HT, filament and control voltages. This is more work but gets away from the vibrator noise and hash or the dynamotor's lack of efficiency. A large transformer from a valve type TV set, particularly one that has a valve rectifier would make a good start. Details of the voltages necessary will be given in the description of each set.

6. For the R210 there is another neat alternative which I shall detail later.

MODIFICATIONS IN GENERAL

The circuitry of the sets is very conventional and consequently modifications suggested for other valve circuits will work equally well here. Some of my suggestions for one set will also apply to others in the series.

REMOVING FRONT PANEL KNOBS

The existing knobs are a collet type, called Boot-proof, but the potentiometers and switches have standard shafts. You may wish to fit normal knobs or change the pots or switches. The procedure to remove the knob assembly is:

1. Remove the large centre screw and spring washer.
2. Remove the knob and replace the centre screw 5-6 turns.
3. Tap the screw gently and you will find the collet comes loose.
4. Remove the large nut, sleeve, collet and washers, then remove the second large nut.
5. You will now be able to get at the control.

DESICCANTS

All the sets have a quick-lime moisture absorber in a red tube of aluminium mesh. It cannot be recycled so can be discarded if you choose. As the coils and IFs are not impregnated you should try to exclude moisture but do not use silica gel inside the set.
SOVIET RADIOAMATEUR DIPLOMAS²

The name Vera Stepanovna Sviridova² is well known to Soviet radioamateurs. For almost two decades now she has headed the QSL Bureau and the Diploma Service of the Central Radio Club of the USSR named after² E T Krenkel'. "Thousands of Soviet and foreign QSL cards and thousands of applications for radioamateur diplomas pass annually through her hands. Today Vera Stepanovna² is a writer for our magazine. In the article published here she acquaints readers with diplomas issued by the CRC of the USSR named after E T Krenkel'.

In our country radioamateur diplomas were first established in 1949 by the Central Radio Club of the USSR. These were the diplomas R-100-0 and R-16-R (since 1957 conditions for the R-150-S diploma were established); three more diplomas, R-150-S, R-100-0, and W-100-U were issued for radiocommunications carried out on any amateur bands (1.8, 3.6, 7, 14, 21, and 28 MHz) by telegraph or telephone separately (except for the "R-6-K" diploma, which is also issued for QSO's on SSB).

The "RAEM" Diploma is awarded for completing QSO's by telegraph, beginning 24 December 1972, with Soviet amateur radio stations located beyond the polar circles. To receive it, 68 points must be accumulated. For a QSO with radio station RAEM (only with E T Krenkel'), 15 points are added, with radio stations in Antarctica and floating in the Arctic — 10; located on islands in the Arctic, on Cape Schmidt, Chelyuskin, Dyson, Petev, Tiksi, Ust'-Olenëk, and at points north of 70° latitude — 5; located beyond the Arctic Circle — 2. For radioamateurs of South America, Oceania, and Africa points are doubled. With a given populated point only one radiocommunication is counted.

The "RAEM" Diploma is issued for QSO's completed since 7 May 1962 with amateur stations in the six continents of the world (Europe, Asia, Africa, North and Central America, South America, Australia and Oceania). In addition, it is necessary to complete QSO's with stations in the European and Asiatic parts of the USSR. R-6-K has three levels: First — for QSO's on the 1.8 and 3.5 MHz bands, second — on 7 MHz, third — on any amateur bands.

To receive the R-10-R² and R-15-R² diplomas, it is necessary to complete, within 24 hours (for foreign radioamateurs within any period of time beginning 1 July 1958), QSO's with stations in the 10 radioamateur districts and the 15 union republics of the USSR, respectively.

The R-100-O Diploma is awarded for completing QSO's, beginning 1 January 1957, with amateur stations in 100 different oblasts of the USSR. It has three levels: The first for QSO's on the 1.8 and 3.5 MHz bands, second — on 7 MHz, third — on any amateur bands. For QSO's with 150 oblasts and with all oblasts existing at the present time, "150" and "All Oblasts" endorsements are issued.

The R-150-S Diploma¹¹ is issued for QSO's completed beginning 1 June 1956 with amateur stations in 150 different countries or territories of the world (according to the list confirmed by the Federation of Radio Sport of the USSR), including stations in the 15 union republics of the USSR. For QSO's with each 50 new/additional/countries (territories of the world endorsements are issued). The last endorsement is "325".

The W-100-U Diploma²² is awarded for completing QSO's, beginning 1 January 1959, with 100 amateur stations of the USSR, including five stations from the 9th radioamateur district — the birthplace of A S Popov. For QSO's with 300, 500, and 1000 radioamateurs (only those completed not earlier than 1 January 1974), endorsements "300", "500", and "1000", respectively, are issued.

The "Kosmos" Diploma is awarded for QSO's completed, starting 12 April 1961, with stations in the 144 MHz band. It has three levels: The first — for 30 QSO's with different radioamateurs, including 15 countries (territories) of the world (foreign radioamateurs must have 10 QSO's with different Soviet stations and five different territories), second — for 40 QSO's including 10 different countries (foreign radioamateurs must have 10 QSO's with Soviet stations and three with different countries), third — for 5 QSO's with different countries (foreign applicants must have two QSO's with Soviet stations and two with different countries). Special endorsements are issued for QSO's with each subsequent five countries (territories) of the world.

Article signed by V Sviridova.

NUMBER CODE
1. Since diploma is the word used in Russian, we use it here rather than the more common English equivalent certificate.

AMATEUR RADIO, April 1983 — Page 31
An Englishman in Australia

When I go abroad on holiday, I try to continue my hobby and get on the air, despite the (occasional) protests of the VXL. Sometimes this can be done by visiting a friend but it is usually more satisfactory to take some gear along. With a certain amount of planning, therefore, I have operated at various times as F0AV, G3VLX, PA9TO, G3VLX/DL and 9H3AM.

With the departure of my son for New South Wales over two years ago and a month's holiday in VK planned, the chance to operate there seemed too good to miss. The first task was to organise the licence to operate there, which oblasts and other larger units are subdivided — something akin to our counties. The single world Imenl sounds much more natural in Russian than does "named after" in English; an alternative translation would be "E T Krenkel Central Radio Club of the USSR".

As noted later in the article, Ernst Teodorovich Krenkel was a famous Soviet arctic explorer; he was also a philatelist and radio amateur. The Central Radio Club was named after him following his death in 1971. He held call-sign RAEM and, as an exception to the rules governing construction of amateur call-signs, used it on the amateur bands.

Most of the diplomas bear Cyrillic (Russian) letters, but the "RAEM" and W-100-U use Latin letters. The fact that all of the Cyrillic letters used to designate the diplomas happen to be the same as Latin letters leads to possible confusion. The article does not say, but it is assumed that the abbreviations of the diplomas have the meanings given in subsequent footnotes.

In the early post World War II period Karelia was a separate Soviet Socialist Republic, of which there were 16, Karelia was then downgraded to an Autonomous SSR within the RSFSR, making the total 15 and explaining the redesignation of the diploma.

Possibly "Rabotal 6 Kontinentov" — "Worked 6 Continents".

Popov's birthdate, on which "Radio Day" is celebrated annually in the USSR.

Possibly "Rabotal 10 Rayonov" — "Worked 10 Districts". As used here, rayon refers to a call-sign district. A more common use by far is to designate a geographical and political unit into which oblasts and other larger units are subdivided — something akin to our counties.


Possibly "Rabotal 150 Stran" — "Worked 150 Countries".

Possibly "Worked 100 U-stations". This is one of the diplomas whose abbreviation is expressed in Latin letters. (The other, "RAEM" is more easily explained, since as noted earlier this was Krenkel's call-sign and Soviet call-signs are usually expressed in Latin letters even in texts written otherwise in Cyrillic script.)

The foregoing article appeared on page 17 of the March 1981 issue of RADIO magazine, accompanied by a photo of Mme Sviridova. A briefer description of the diplomas was given in an article "Diplomas Await You" in the newspaper SOVETSKIY PATRIOT for 13 January 1982, in connection with the launching, on 17 December 1981, for six Soviet amateur satellites.


Deryck Buckley G3VLX/VK2EBZ

16 Wood Ride, Petts Wood, Orpington, UK

but I was somewhat disappointed to find that most power lines in Australia are at roof height. This was undoubtedly responsible for most of the mush which masked the weaker signals.

Even so I had some interesting QSOs on phone and if we had more time would have been keen to accept some of the hospitality offered. Operating abroad is always an experience: one of the tasks I could not do without a struggle was to keep the log in UTC. (Do I take off eleven hours? If it's 0800 here what is it in London? Is the date different? I almost gave up.)

I think you are lucky to have the band up to 7.3 MHz. In Region 1 we are limited to 7.1 MHz and the phone section from 7.040 MHz to 7.100 MHz is nearly always clogged with QSOs — when it's not occupied by (illegal) broadcasters. If we want to work W on phone it has to be split frequency.

Despite the handicaps it was fascinating to work to VK and I am grateful to several VK stations who gave me encouragement. Next time I am able to activate VK2EBZ, the locals may be even kinder and lend me a trap vertical, or a three element beam!
A SENSITIVE SWR METER

A low SWR is very important, particularly to the QRP operator, as high efficiency is one of our goals. Some transceivers have circuitry to reduce the output when a poorly matched load is used. SWR indicators normally available are quite insensitive at low frequencies, particularly 1.8MHz, and generally require in the order of 10 watts for a full-scale reading in the forward direction. The meter to be described requires only one watt on all HF bands for full-scale forward indication. The final circuit was derived after investigating several similar arrangements from various publications. Locally available components are used.

Theory

The signal travelling from in (TX) to out (ANT) establishes an electric field between the inner and outer conductors, and a magnetic field around the conductors. The coax line forms the primary of transformer T1, and so the alternating magnetic field induces a voltage in the centre-tapped secondary winding, which is loaded by R2. C1 samples the electric field, and is so adjusted that when the load on the outside is 50 ohms resistive, the voltage injected into the tap of T1 aids the voltage in one half, and exactly cancels the voltage in the other half. Now, any load which departs from 50 ohms resistive will cause less cancellation of the voltage in the other half, and so an indication may be given as to the degree of mismatch. The remainder of the circuit is self explanatory.

![Diagram of SWR meter circuit](https://example.com/simulated_diagram.png)

- **C1**: 5-25pF TRIM CAP
- **C2**: 270pF ±5%
- **C3**: 0.047μF >63V DISC. CERAMIC
- **R1**: 1KΩ - ½W - 5%
- **R2**: 56Ω - ½W - 5%
- **R3**: 10KΩ D. VARI
- **D1, D2**: AA218 OR EQUIV. (SEE TEXT)
- **T1**: 15 TURNS 208$/S ENAM. ON NOSID 4327/2/F25 CORE
- **M1**: 0-50μA
- **S1**: SPDT TOGGLE
- **J1, J2**: UNF FEMALE COAX CONN

Meter, pot. and S1 are mounted in lid of case.

5.5 x 3.5cm PCB or sheet metal held in place with 4 lugs under connector securing nuts.
**Construction**

The diagram and photograph show a suggested method of construction. The coax (jacket removed) fits snugly through T1 as shown. Care must be taken to ensure that the enamel on the secondary is not scratched by the coax braid. The components are self supporting, and may be accommodated upon a suitable piece of sheet-metal or PCB. AAZ18 diodes were found to yield the best sensitivity. Alternatively, OA91 or OA95 diodes may be used at slightly less sensitivity.

**Adjustment**

C1 is adjusted so that little or no reverse reading is obtained when the out connector is terminated with a purely resistive load. A satisfactory load may consist of two 100 ohm 1W Philips cracked carbon resistors in parallel, and soldered to a suitable connector. Apply about one watt of carrier on the highest HF frequency to be used, and adjust C1 for a null as indicated on M1 with S1 in the REV position. If the meter is to be calibrated, calculate the degree of mismatch for various terminations, e.g. 33 ohms or 75 ohms represents an SWR of 1.5, 25 or 100 is 2.0, 18 or 150 is 3.0 and so on. The sensitivity calibrate pot. must be adjusted so that a forward reading of full-scale (50 microamps) is obtained before checking the reverse reading. The sensitivity is quite constant from 1.8 to 30 MHz, so the instrument may also be employed as an in-line wattmeter after appropriate calibration.

First Published in the VK CW ORPp Club Bulletin.

Photos: Peter Dalliston.

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**TRY THIS**

**A CASSETTE PLAYER/TRANSCEIVER INTERFACE DEVICE**

This simple circuit allows an ordinary cassette player which has an external speaker socket, to key a transmitter in its ICW mode. The idea comes from Don Smith, VK2BDU.

The small AC voltage from the player's speaker socket is stepped up, then rectified, and used to close a normally open reed-relay, across which is the transmitter's keying circuit, taken from the key socket at the rear of the transceiver.

The circuit is shown here:

![Diagram of the circuit](image)

- **Output from extension speaker socket**
- **T1**: speaker transformer, primary approx. 7 kilohms secondary to match impedance of cassette player
- **CR 1-4**: EM 401 or similar
- **C1**: .1 mF polyester (at least 50VW)
- **K1**: reed relay, normally open.

(Tener diode BZXC51 or similar)

The transformer was salvaged from an old mantel radio, and should have an impedance to match the cassette player's output. The reed relay should be rated for the current in the transmitter's keying circuit.

The unit works well on 3.5, 7 and 14 MHz, but at higher frequencies, rectification in the audio circuits of the cassette player proved troublesome: the output was unusable.

An audio oscillator is used to prepare the message on the tape, but a high record level is advisable ("in the red"), and the audio output should be at a high level also (8/10).

The circuit can also be used with the Zener diode shown to provide input (from the transceiver's audio output) to a RTTY demodulation programme in a computer system.

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**The Radiocommunications Act**

Communications and Electronics have progressed dramatically since the Wireless Telegraphy Act was written.

After many attempts to re-write the old Act, there is now every indication that the Bill for the new Act will be "tabled" in Parliament.

The National EMC Advisory Service would like to remind all Amateurs of the importance of this — "Bill for the New Act" — and the direct effect this new Act could have on the Amateur Radio Service.

The "Bill" is the "Act" in draft form; therefore it can be amended many times, before it becomes an Act... Copies of the Bill should become available at the Government Printer's Office.

If, after studying the contents of the Bill, you feel that you have a contribution, or may be in a position to assist the committee with any facet of this important response, please write to your Division, or direct to:

Chairman, Caspar,
(Communications Act Special Planning and Response),
Committee, PO Box 300, Caulfield South, 3160.
The Australian Maritime College was established as a Commonwealth tertiary education institution in 1978 to cater for the education and training of personnel for the Australian shipping industry and the general maritime industry both ashore and afloat.

The main campus is situated at Launceston, Tasmania, with a Seafarer's Centre at Beauty Point near the mouth of the River Tamar about 50 km north of Launceston.

The College's two training vessels are berthed at Beauty Point — 'Bluefin', a thirty-five metre purpose-built, fisheries training vessel which is the largest stern trawler in Australian waters and the 1300 ton, sixty-four metre navigation and seafarer's training vessel 'Wyuna', the former Port Philip pilot vessel. 'Wyuna' (VKVS) has been completely refurbished and refitted by the College.

The School of Engineering, situated on the main campus at Launceston, is involved in many aspects of maritime related engineering education, including training radio officers for the shipping industry and technical officers for the wider field of maritime electronics.

At an early stage in the College's development it was felt that amateur radio had a role to play in the education of professional communicators and it was decided to install an amateur radio station, whose callsign became VK7AMC. Owing to the pressure of establishing a new College and new courses the amateur station was used only intermittently until recently and VK7AMC was a comparatively rare call to hear on the air.

During October 1982 lecturing staff and technical officers finally found time to organise a field trip for radio students. The location was a chalet 1200 m up Ben Lomond mountain. The party of about twenty people comprised several experienced radio officers attending a Radar Maintenance Course at the College, several members of the 1983 Antarctic Expedition attending a Communication Officers Course, students from the Associate Diploma Course in Marine Radiocommunication, College lecturers and the writer's family.

Among those present were Vince Kitney VK6VK, Peter Stickland VK6AST, both of whom will be operating VK0 callsigns in 1983, Colin Whale VK4CU, Gio Donk VK7GO, Geoff Harrison VK7LA, Mike Collinson AMC Lecturer VK7MA, Broder Tuff VK7XX, Christine VK7CC and Stewart VK7II, Broder's wife and son.

The aerial group erected a 7 m high TH5, rotated by two vice grips on the mast, a 220 m long wire from the top of a convenient mound of rocks about 40 m high (via the fork of two trees) to the chalet roof, an 8 element 2 m beam and a 14 element 70 cm beam, along with various dipoles, etc.

By 9.00 PM there were 3HF, a VHF and UHF stations stations established and on the air. The party operated continuously over forty-four hours and contacted over two hundred stations in thirty-two countries. Many of the QSO's were quite long and very interesting. During a brief interlude that weekend three separate parties climbed to the 1572 m summit of Ben Lomond and operated a two metre portable with some success.

The QTH on Ben Lomond.

The party arrived on site at 5.00 PM and promptly split into separate groups, one to wire up the chalet with power supplies, lights etc, from the 4.5 kilowatt generator we had brought along (the 600 watt standby was never used); another to erect aerials and a third to organise equipment.

The next opportunity to air the College callsign arose in December 1982. 'Wyuna' was scheduled to make a voyage to Lord Howe Island, Middleton Reef, Newcastle, Sydney and back to Launceston from 5 to 17 December.

Four radio students, an electronics technical officer and the writer participated on the voyage with twenty-seven Nautical Science cadets and members of the School.
VK7AMC/MM aboard the training vessel 'Wyuna'. Pictured are L to R — Robin VK7RA (student), Magella Robinson (student), Broder Tuff VK7XX (lecturer), Tony Robertson (technical officer) Nick Lindsay (student).

Lord Howe Island as seen from the deck of the 'Wyuna'.

The spirit of amateur radio showed its very best in these and many more incidents including the patience and understanding of many operators with the inexperience of some of the students on the microphone and key. Thanks to all. You'll be happy to know that you really won a few converts to the ranks.

We were very pleased to have the opportunity to make all the contacts. The only frustrating part of the exercise was to lie at anchor half a mile off Lord Howe Island and not get ashore to use the VK2/LH call. Maybe another year the radio students will get put ashore for a few days with some equipment as a DX expedition.

Now that the installation of equipment and establishment of courses at the College has passed the initial hectic period, it is expected that VK7AMC, the Australian Maritime College, will be heard much more often on the radio amateur bands. We look forward to holding regular skeds and nets.
END OF FINANCIAL YEAR AND STOCKTAKING SALE

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TR-7800
25 WATT OUTPUT

PRE DEVALUATION PRICE

$380

TR-7850
40 WATT OUTPUT

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$399

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WITH FREE BATTERIES

DM-81
DIP METER

The DM-81 dip meter is intended for adjustment of radio equipment and antennas. It is self-excited oscillator designed for external coupling to the equipment being tested.

FEATURES

- Measurable frequency range of 700 kHz - 250 MHz in seven bands
- Capacitive probe for measurements without removing coil shields
- Storage compartment for all seven dip meter coils, capacitive probe, earphone and ground clip lead
- Convenient for both indoor and outdoor measurements, all solid-state unit built-in battery

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ALL SYDNEY HAMS

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THIS UNIT AVAILABLE FROM TRIO-KENWOOD SYDNEY OFFICE ONLY

BE EARLY — SALE ENDS JUNE 1ST.

FREQUENCY SELECTION IS EASIER THAN EVER, AND THE TRANCEIVER INCORPORATES ADVANCED MEMORY DEVELOPMENTS FOR STORAGE AND RECALL OF REPEATER OFFSETS, PRIORITY AND SCAN.
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The TS-130 Series is an incredibly compact, full-featured reasonably priced, all solid-state HF SSB/CW transceiver for both mobile and fixed operation. It covers 3.5 ~ 29.7 MHz (including the three amateur bands) and is loaded with optimum operating features.

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TS-930S SOLID STATE
HF TRANSCEIVER

COMPLETE WITH FREE MC-42S
UP/DOWN SCANNING MICROPHONE
AND MC-60A BASE MICROPHONE
TS-930S HAS AUTOMATIC
ANTENNA TUNER

Kenwood Australia was happy
to supply free of charge a
TS-830S station to the
Heard Island Expedition.

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TS-430S
EXPORT MODEL

INCLUDES UP/DOWN
SCANNING MICROPHONE —
MOBILE MOUNTING BRACKET —
ORIGINAL "ENGLISH"
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Rain Check Policy

All items are available from stock at the time of preparing this catalogue. If during this offer period (1.4.83 to 1.6.83) we sell out and a firm order and deposit have been paid, the article or articles will be supplied to you at the prices shown in this catalogue. Except Models TR-7800, TR-7850, ST-1, SMC-24 and SC-3.

Further, all Kenwood articles imported and distributed by Kenwood Australia to the dealers listed in this catalogue are guaranteed for 12 months from date of original purchase. Beware of dealers not authorised to sell Kenwood offering dubious deals and service.

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20 WATTS CONTINUOUS
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15M-6M ALL-MODE TRANSCEIVER
A must for Novice and Limited License operators.

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HC-10 CLOCK
The HC-10 is a highly advanced world clock with dual display which can memorize 10 major world cities and two additional regions. This world clock incorporating a precise quartz and digital display system, as well as a built-in micro-computer, can also recall and display the starting time of QSO for logging purposes.

PS-10
POWER SUPPLY
The model PS-10 is a regulated DC power supply and speaker designed to match the TR-8400 reliable fixed station operation.

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TS-830S
SOLID STATE HF TRANSCEIVER
The TS-830S is a high-performance, very affordable, HF SSB/CW transceiver with every conceivable operating feature built-in for 160 through 10 meters (including the three new bands).

COMPLETE WITH FREE MC-30 MICROPHONE

AMATEUR RADIO, April 1983 — Page 39
KENWOOD

TR-7950
2M FM TRANSCEIVER
- New, large, easy to read LCD display
- New 21 multifunction memory channels
- Long life lithium battery memory back-up
- 45W and 25W versions
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THIS UNIT AVAILABLE FROM TRIO-KENWOOD SYDNEY OFFICE ONLY

TR-7730
2M FM TRANSCEIVER
The KENWOOD TR-7730 is an incredibly compact, reasonably priced 25W, 2 meter FM mobile transceiver with plenty of convenient operating features such as five memories, memory scan, automatic band scan, UP/DOWN manual scan, etc.

TDC-140
DC CONVERTER
24V INPUT
13.8V OUTPUT
PRE DEVALUATION PRICE
$199
$140

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DIGITAL FREQUENCY CONTROLLER

TR-9130
2M ALL-MODE TRANSCEIVER
The TR-9130 is a powerful, yet compact, 25 watt FM/USB/LSB/CW transceiver providing increased versatility of operation on the 2 meter band.

Dr. David Lewis leader of the 1982/83 Oceanic Research Antarctic Expedition has chosen Kenwood Communications Equipment on board the "Dick Smith Explorer". Where lives and safety are paramount and reliability is of prime importance - the professionals always choose KENWOOD.

$530
45W OUTPUT

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The R-600 is a high performance general coverage communications receiver covering 150 kHz to 30 MHz in 30 bands. Use of PLL synthesized circuitry provides highly accurate frequency control with maximum ease of operation.

SP-100
The SP-100 can be used in place of the receiver's built-in speaker for greater clarity and improved tone.

TR-3500
70CM FM HAND-HELD

TR-2500
2M FM HAND-HELD

NEW R-2000 RECEIVER
COMPLETE WITH SET OF HS-4 HEADPHONES
WITH MEMORY SCAN, PROGRAMME SCAN & MEMORY MODE RETENTION
OPTIONAL VHF CONVERTER AVAILABLE

TR-2400 OWNERS

ST-1
AC/DC BASE STAND

SMC-24
SPEAKER MICROPHONE

SC-3 SOFT CASE ONLY $20
ROTATORS

KR-400. Complete with top and bottom mast clamps plus 16 metres of 6 wire control cable. Usually sells for much more than this.

KR-250. Light duty for TV and FM aerials. Complete with top and bottom clamps and 16 metres of cable. Real value at this price.

KR-600RC. Complete with above fittings and cable. A must for all serious hams.

All Rotators purchased from Trio-Kenwood are fitted with approved 3 core AC lead and plug.

All units include Control Box and full Instructions.

ANTENNA TUNERS

Don't fight with back yard home brew types!! Get the real thing — Commercially made, designed and resaleable with your Kenwood station.

AT-230

The AT-230 antenna tuner includes the three new bands and functional features such as a through-line wattmeter, SWR meter and antenna selector switch.

AT-130

The AT-130 is a compact and lightweight antenna tuner designed for base or mobile use (includes the three new bands).

PLUS FREIGHT

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VK7 — PO Box 1010, Launceston, 7250.
VK8 — (included with VK5). Darwin Amateur Radio Club, PO Box 37317, Winnellie, Northern Territory, 7897.

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VK9 & 0 — Federal QSL Bureau, Mr Neil Penfold, VK6NE, 388 Huntress Road, Woodlands, WA 6018.

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On Sunday, 13th February 1983, members of ARs Publications Committee ventured into the You Yangs, a mountain range close to Melbourne, to participate in the John Moyle Field Day Contest. Graphically, with photographs taken by Bill Rice VK3ABP, technical editor and John Hill VK3DKK, advertising manager from the Federal office we will attempt to describe their day of operation under the callsign VK3W1A/P.
This month, to provide the opening remarks to this column, Ken G3NBC, has submitted the following observations by invitation. Ken G3NBC, has been an amateur and member of the RSGB for nearly a quarter of a century, and past Certificate Manager for the RSGB in the 1980s. Ken has a DXCC score in excess of 326 countries confirmed and has entitled his remarks “THE OTHER END OF THE QSO”.

“For almost a quarter of a century of amateur radio operating I have always had a considerable interest in finding out a bit about the other end of a DX contact, either by radio or occasionally when one has the opportunity of a personal contact with an overseas amateur.

Through our hobby, we are able to gain much knowledge of the world in which we find ourselves, its geography, its history, its people, etc. . . A great deal may also be learned about aspects of amateur radio as seen from the distant operators point of view.

Unless one is fortunate enough to be able to travel and operate from various parts of the world it is unusual to us to understand operating conditions in any other way than it is known from our particular location. This of course is far from the case and what is one operators DX may be anothers ORM. Therefore a little knowledge of how things are, radio wise, may help when wishing to work into that part of the globe.

“With this in mind an attempt will be made to provide a picture of how the DX bands are seen (or heard) from here in the UK. As my own activity and interest is mainly confined to the 10, 15, and 20 metre bands these will be considered in this illustration with just a brief look at 40 metres.

TEN METRES

Very little activity during our summer months is usual, apart from the occasional European short skip, although sometimes South America and Southern Africa may come through. With the exception of the in between years, the period from September to April can produce some exotic and interesting results.

There is however, a usual pattern of day to day propagation with the opening of the band shortly after 0800 UTC until it closes with the coming of darkness in the early evening. The morning, until about 1200/1300 UTC sees easier propagation from north to south permitting communication (depending on how good the conditions are) with JA, ZL, UA0, KH2, VK, VS6, P29, H44 etc . . . Africa and the Middle East may also be worked. At the same time very strong single skip signals from Europe UA, UBS and YU stations are normal. Such signals are numerous, and often S9 plus, creating considerable problems when one is trying to work a DX station.

After 1300 UTC propagation rapidly changes to the west with activity from North America and Canada followed closely by South America until the closing of the band. Contacts into the Pacific area are fairly rare, but an interesting condition sometimes occurs, when the long path opens to VK and ZL around 2200 UTC from an otherwise dead band. This is, however, a short lived condition. Propagation on the 10 metre band is invariably on the short path.

FIFTEEN METRES

This is a very interesting band with generally all year DX propagation although often closing in mid evening (1900-2000 UTC) during the winter months. The paths that are open from the UK can be very varied throughout the day and sometimes all parts from all Continents may be heard simultaneously. There is, however, a pattern of propagation which usually provides contact with ZL, VK, UA0 and the Pacific area until 1300 UTC. Asia and Africa 1500 to 1700 UTC, North and South America hold from early evening until the band closes. ORM due to strong short skip signals is far less of a problem on this band, making DX working easier.

The best time for VK/G station QSO’s would seem to be between 0700-1200 UTC and maybe sometimes on either path. During the summer months very good openings occur to the south and south west with ZL possible at that time.

TWENTY METRES

The 20 metre band carries most of the DX traffic throughout the year and except for a period during the winter months is often open 24 hours per day. A propagation pattern is very noticeable making the winter-time doldrums, early morning (up to around 0500 UTC) Prop working a westerly direction from north to south which includes the long path to VK and the direct paths to the South and Central Pacific area. During the larger part of the day DX working is very difficult as the longer distance paths are usually poor and short skip conditions predominate until 1700/1800 UTC. The evening often opens the short path to VK and sometimes ZL, FK8 and the Pacific Ocean, and of course North and South America.

The 20 metre band in this part of the world is very heavily congested, ORM can be unbelievable and behaviour of some operators leaves a lot to be desired. One often has to attempt to hear a DX station with an S9 + 20/40dB signal a few kilohertz away, or be tuned up on in the middle of a contact if one is lucky enough to make themselves heard. Many European stations are permitted to run a much higher power limit that is permitted in the UK and antenna planning constraints are not so rigorously applied. These factors leave the “G” stations with a disadvantage in the competition for DX contacts. So an appeal to all DX stations, if you have a pile up, please listen carefully as there may be “G” stations calling from a few layers down.

FORTY METRE OPERATION

The activity from this QTH, on this band, is limited by the use of only a dipole antenna at present which is, of course, very useful for working around the UK and Europe but from time to time has brought some DX results, UA0, YBO, PY, EA8, EA9, VP2, VP8, etc having been entered in the log.

Many DX signals may be heard in the early morning hours until about 0900 UTC and again in the evening after 2000 UTC although they have to be found among the highpowered broadcast stations which plague the band until the early morning hours. Throughout the daytime, big signals from within a few hundred kilometres occupy the band.

UK operators are always very glad to have contacts with VK and it is obvious that many good and long lasting friendships have resulted from our hobby. It is hoped that the above notes will give the VK amateur an insight as to the state of the bands in this country and will be of interest to any amateur wishing to make contacts with this country.

Please remember that operating with the ORM often experienced in this part of the world is not always easy, so PLEASE, have patience with the “G” who may be struggling with all kinds of noise to hear his DX contact.”

Have you heard Heard? This was the cry of the multitude from all continents when one swung across twenty metres at any hour of the day or night when the band was open. Fifteen metres didn’t give many a chance and ten does not even rate a mention as the monitoring at this QTH drew a complete blank on signals from anywhere.

Perhaps it is one of “MURPHY’S LAWS” that intervened when the most wanted country on the DXCC lists was activated by two DXpeditions. Anything from massive solar flares and total radio “blackouts” to
sheer deliberate QRM marred many more contacts being made by both groups.

The antenna at this QTH spent most of its time looking at VK0 Heard, except, when serious local wind storms by our standards were forecast and there were a few. Many hours were spent monitoring the excellent operating of both Dave VK0HI and Al VK0CW whilst engaging myself in other chores. It was interesting to note, the number of stations who had previously "boasted" that they had Heard Island confirmed and then lined up for a contact prior to the stations who needed it for a "new" one, not only once, but a number of times. It seems people really take "safety in numbers" too far.

Full marks must be given to the operators on the island for their patience, reliability and dedication to assist those that do not possess the luxury of "split operation" facilities, also for their assistance to the Australian Novice in allowing them to participate and gain a new country. Many novice operators have indicated their appreciation of the courtesy shown.

Apparently the hardy inhabitants of Heard Island had their problems with the weather which destroyed some of the property and sand blasted everything in sight. Most stations, after they have worked an expedition, have only the thought of when they are going to receive the card. Very little thought is given to the safety and safe return of the people that have taken innumerable risks and spent their saved up hoi iday time or taken leave of absence from their daily chores to give the DXer a new country. Think, have patience and please don't publicitise, particularly on air, leaving many to add their own connotations to the story and start unnecessary rumours.

With this Australian possession now down the list of much wanted countries, will the number of BY stations active on CW, as promised, use the sideband mode leaving many to add their own connotations to the story and start unnecessary rumours.

The amateur who has recently attained his licence will probably be interested in the following inactivity list which was compiled by Denny K8DB in a submission to the Northern Ohio Amateur Radio Society, of which he is a member. The submission concerned Honour Roll status but the activity list is of interest.

**SUDAN**

Roger, who has been operating 9Y4RD/SU, anticipates being in ST towards the end of March for a few weeks. If you catch Roger, who hopes to operate when time is available, QSL to Roger's home call.

**HARD WORKED**

The ARRL in their DX awards system have, since 1947, issued a mammoth number of 39,291 certificates. In 1981, alone, 3,527 new certificates were issued and 7,159 endorsements went through the doors. In the 1981 period five amateurs were disqualified for submitting "altered, phony or counterfeit cards". One amateur who was almost on the Honour Roll, was disqualified for altering cards to suit the mode or class he was applying for.

The total cards handled at Newington, as one can imagine, is astronomical and can be understood when there was in excess of ten thousand applications in 1981. It is interesting to note, that the ARRL DXCC rules allow any one who is disqualified, to commence all over again after a five year period by submitting all new cards.

Would the alteration of cards to obtain that valued certificate be worth all that trouble and the embarrassment of disqualification plus the monetary loss of starting again? I personally don't think so.

**INACTIVITY**

The above list is in order of prefixes and last authentic operation and spans some twelve years. The current DXCC list now stands at 315 countries and it is going to be a miracle for some of the newcomers over the last five years to attain the 300 figure yet attain the Honour Roll figure of 305 countries which is determined as being ten countries less than the maximum attainable. Asterisks denote probable operation in the future.

Of course there are others where there is little hope held for a fully fledged operation to be launched from their boundaries and these include some of the remote areas which will cost a small fortune to activate considering the world wide escalation of fuel and charter expenses.

Two groups of amateurs could gain access to a number of the much wanted areas. Namely the "Globetrotting" Covins with their persuasiveness and track record and Erik, SM0AGD with his connections...
CW, RTTY. A special card with first day stamps of World Communication Year will be obtainable with one contact on any band and mode. For any other information write to ARRS Box 1, Rep San Marino 47031.

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**7 MHz**

A71AD PO Box 4747, Doha, Qatar.
A2W3K PO Box 752, Bahrain.
C53CR PO Box 2282, Serekunda, Banjul.
EA8JV PO Box 100, Melilla, North of Africa, Spain.
J88AR PO Box 106, St Vincent.
J88BC PO Box 835, St Vincent.
J7GAL PO Box 180, Ulan Bator, Mongolia.
HV2VD G. Gotnich, 10GYP, V Gigne Morena, 90, 00040 Roma.
J76QAB PO Box 844, Ulan Bator.
K8XPO PO Box 915, Majura, Republic Marshall Islands, 99660.
MIV PO Box 1, San Marino.
PVDJ PO Box 680, South Africa.
PY0SP to 48639 Katherine PI, La Mesa, CA 92041 USA
SU1AA PO Box 109, Giza, Egypt.
SU1ER PO Box 33, Int. Airport, Cairo, Egypt.
T2GSH Gordon, C/P PO Tuvalu, Central Pacific.
ZD7BW G Smillie, St Helena Island, Sth Atlantic Ocean.
5V7HL PO Box 8072, Lome.
6W6CC PO Box 1258, Dakar, Senegal.
7P8CR PO Box 212, Maseru, Lesotho.
9Y2RD/ SU Roger de Weever, UNTSO, PO Box 20, Grand Central Station NY, NY 10163.

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C30OH — DL0BH, CE0ZAD — W6WOD, CN5AT — OE3NH, CO2HS — W66PG, CP2Y — K7SB, CT2DL — G4KJF, DF1MM/C6A — DJ2BW, EA4LH/CE3 — EA4JF, ED9CM — E9AVJ, DK7F/HEB0 — DK7F, EN6A — UK6AAG, HH2CB — K9WJU, HH2CQ — K4JPD, PY0CW — PY7CW, PY02Z — PY7ZZ, V2AO — OE3ALW, V2AZL — W2HMS, VK0CW — VK6NE, VK0H — VK6HE, ZK1XX — K8OZL, SH3M — SM5KD, SH3Y — SM6SBW, ST5TO — F6BUN, SW1DW — VK5J, 5Z4CS — J1V1LV, 7X4DL — DF9EP, 7Z2AP — IBP6J, 8PE6J — N6T1, 9X5SL — DL8BF, 9Y50JW — K20IE.

**CW WORKED ON THE WEST COAST**

5Z4C5, 5Z4CS, A4XJO*.* A4XJO*, DL1TRK, FB8VJ, FB8ZQ*, FB8ZQ, GD6ZG, G3ZSP, J87BD*, OH1XX, OK0DXS/A, SM5MDA, U3APN, UK2DX, UX5BO, U2C4AM, V69J, V8JOS*, V8JOS+, VS6BD, XT2AW*, Y05AES, ZC4BI*.

* Denotes 3.5 MHz.
* Denotes 7 MHz.

All others 1 MHz.

**SSB WORKED ON THE EAST COAST**

3A3EE, 3A2LF, 3B0DA/3BP, 457EA, A2J4S, SH3H, 5NOATW, 5Z4DA, R07AZ, 9G1HT, 9H1U, 9K2KA, 9N3B, C21B, C21EF, CEEAE, CE0ZAD, CE0ZAM, CESSG, CFP100, CRPADE, CO4UA, DL0BH, DJ7RLC, EI4A, E86GA, F6KHL, FB8WW, FB6W*, FB6XAB, FB8ZQ, FB8ZQ, FR7ZS, GN5BC, G4RTI, GW68S, HAK4, H89CB, HICMC, I2ZJH, 185AT, J82AZ, JY5KB, K6GBLH, K8X5PO, K8X5SO, PADIG, SM4GFL, ST3810, TA1MO, TI2EELW, T1BCC, UAO6DA, UAO9KA, UK2BBX, UP2BGK, VK0CW, VKOH, VSOI, VSOX, VSOE, VK4I, YA0TO, YO3AD, YS4AK, Z21GJ, Z52HP.

* Denotes 7 MHz.
All others 1 MHz.

**CW SWLing WITH ERIC L30042**

28 MHz
0J6RX, G3KHZ, JH0WGN, UK5DAC.

21 MHz
C120, FK3CE, FHSIC, OH4ML, P4Y7S, UK7PAL, U7LXE, UK5HMAC, VET7IN, XE2XX, YC1CPG, SB4LY.

14 MHz
C01CBU, CT2ON, G6ZY/AE6, FB8BZ, FB8BEJ, FKDOAN, FM7WA, FB8D1U, G3DAM, HK0BXX, HLT1XX, KV4C1, T3A0C, T12PI, VK0HI, V0KNI, VU2KKI, XE3LPY, YB5ON, YV1AD, DL0GDZ/L5, Z32ER, SB4LY, 9M20K.

10 MHz
C120U, DK6PB, EA3EF, F5PC, G6HL, G3CVH, JE15IPY, KH9AT, KV4C1, P3A3TH, V08RU.

**7 MHz**

DL32ZI, E17Q, FB8PH, G6DN, F8BMD, H89APJ, HZ1AB, H0HCJ, L3J1RU, KG0RT, OE300G, OK1KJ, OA1SP, T3A0F, T2BEV, UA9KAI, U06CN, UNB3AA, U050WN, U2REE, V65FUX, V6ZTCC, V270G, YU1RL, ZK2BGD, 4N9YU, 4XW.

3.5 MHz
0J9GW, HA9RT, HA9RPU, JAIKYE, OH2VD, YU1FU.

**QSLs received (Feb)**

C2IN, AM01BAD (Spain), G3JQ (10 MHz), F6WAG, PA3BTH (10 MHz), T2AGD, T30CB, VP2MIX, K2NY (10 MHz) 6V5AG.

**THANKS**

To the magazines cqDX, DX NEWS SHEET, DX NEWS, RADCOM, QST, SHORT WAVE MAGAZINE, WORLD RADIO and the QSL MANAGERS GUIDE, grateful thanks for interesting reading. Amateurs including DJ9KD, G3NLC, 185AT and VKS 1 MM, 3UX, 2EBX, 3YJ, 9M20K.

Sincere thanks for making the column possible. Good DXing and a happy Easter to all.

**WHO IS THIS AMATEUR?**

Because of ill health he has not been seen at a radio meeting since those held at Celtic Chambers, George St, Brisbane and he has had little to say at anytime. However he is very well known for his writing on subjects generally related to amateur radio as he contributes to several journals including AR (see Dec. p. 28).

In 1937 he commenced as a broadcast technician with the ABC. For most of his early amateur radio career he was a dedicated morse operator but of latter years he may sometimes be heard on SSB. His operating activity may be measured by the number of QSOs that he has earned, in fact few operators in VK would have more. Apart from writing he is well known for his comparatively extensive collection of early radio artifacts, including a fine collection of morse keys. His call sign is sweetness itself. Yes he is Al VK4 Sugar Sugar.
ANACONDA RETURNS

NEIL PENFOLD VK6NE
VK6 DX Group

After one of the most successful voyages of her career, Anaconda returned to Australia on Wednesday, 9th March. Aboard were a jubilant group of men and women returning from an adventure of a lifetime; VK0H1 and VK0CW with over 30,000 DX contacts to their credit, and the second successful assent of Mawson’s Peak to the mountaineering party. Photographs and film footage yet to be viewed, should have remarkable and beautiful scenes to behold.

The voyage home was without incident, except for the exhilaration caused by some speedy sailing. Anaconda clocked eighteen knots for some parts of the trip, when helped along by the waves and wind. It must have known that it was homeward bound.

Amateur radio played its part exceedingly well for the duration of the expedition. From leaving Adelaide till the return, contact was maintained almost daily, only missing out during the solar disturbances. From the feedback received, people at both ends of the link are grateful. This includes the link to America, for our friend Al was able to keep in contact, and his call VK0CW was regularly received by his liaison people. Having only married just prior to leaving for the expedition from America his wife was reassured almost daily of his location and health.

The sked frequency of 14.110 MHz became well known right from the start of the expedition. And almost without exception, the skeds were maintained without interference. This was greatly appreciated by all concerned with the safety and well being of the group.

We knew many were waiting, as when the skeds were finished, VK0H1 would then be “fair game” and the numbers who then called, gave an indication as to how many waited in silence before VK0H1 called “QRZ”.

For QSL’s
NORTH AMERICA — N2DT
— JAPAN — The DX Family Foundation PO Box 12, Shinjuku-Kita, Ochiai, Tokyo 161 Japan
REST OF WORLD — VK6NE

In Adelaide, many excited friends and relatives greeted the expeditioners. The young women aboard were easily recognised, but most of the men were hidden behind great clumps of facial fungus. This is an Antarctic Region disease that most males catch when working in these very cold latitudes.
By now the world of DX should be happy with the efforts of Dave VK0CW and Al VK0HI. Despite solar disturbances, which reduced their operating time, approx thirty thousand contacts were made, world-wide.

As one of the team who put the expedition together, and now opening the incoming mail it is with satisfaction to read the notes on the QSL cards. The QSLing is being handled by three organisations so the project should not be too onerous. But please, do include a SELF ADDRESSED ENVELOPE with your card. The process of replying will be done on return of the logs, around 15th March, as the entries conclude. N2DT will handle North America. The JA DX family Foundation for Japan, and VK6NE, the rest of the world.

Communications with the advance camp at Spitz Bay were tenuous at the best of times, even though they were only thirty kilometres away. The NZ radios used successfully on NZ mountains seemed to object to being away from home. Fortunately the operations at the advance camp and the climb up Big Ben went as planned and no problems were encountered that were not surmountable.

At base camp in Atlas Cove, on the 5th Feb, our men welcomed the arrival of the Cheynes II, which was carrying a group of people with similar aims to our expedition. They set up operations, two hundred metres away but mutual interference took place, till the 15th of March when the ex whalechaser departed for Hobart via Albany. Their arrival had been delayed by weather off southern Tasmania, and at the second attempt, a stop at Albany was made for refuelling. This was due to excessive fuel consumption, which was cured before it left Albany in West Australia. Then a stop at Kerguelen was made for water, finally arriving just as a solar flare caused a weekend blackout of propagation.

As expected, the return of the expedition to Australia is expected to be around 15th March, and at the time of writing, whether it returns to Adelaide or Perth is unknown.

And so now comes to an end, an amateur expedition which many organisations and amateurs may regard with some pride, as once again amateur radio shows that it could be done.

DONATIONS WHICH HAVE NOT BEEN PUBLISHED IN AMATEUR RADIO TO THE DECEMBER ISSUE.

<table>
<thead>
<tr>
<th>CALLSIGN</th>
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<tbody>
<tr>
<td>VK2XBT</td>
<td>12</td>
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<td>VK4DK</td>
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<td>VK6AJW</td>
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<td>GSNOF</td>
<td>9</td>
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<td>DUTCH AMATEURS</td>
<td>105</td>
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<td>JH5ECN</td>
<td>33</td>
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<td>DXFF (Japanese)</td>
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<td>JH8GWW</td>
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Radiation, Antennas, then what?

One of the first things that a radio operator is likely to notice after picking up a microphone is that the further away the other operator is the weaker his signal becomes. This startling revelation is due to the effect of a phenomenon known as ‘the inverse square law’.

At some point in time the concept of the ‘isotropic radiator’ was thought up, which as theory goes, is an antenna that radiates equally in all directions simultaneously. Two examples of this that can be readily observed are the sun, around which our planet revolves and fresh lemon being squeezed on fish. In each case the radiation effect is reduced to one quarter of the point distant from the transmitter the signal source is doubled. (In the case of the lemon waves are still fashionable we may find nobody linked to each other via some gigantic telephone network controlled by four or more huge geo-stationary satellites hovering over strategic points of the globe. This would certainly make amateur radio obsolete, the nearest thing to exotic ‘DX’ may be dialing phone numbers at random.

Will there be any marked changes in communications in the future? If radio waves are still fashionable we may find everybody linked to each other via some gigantic telephone network controlled by four or more huge geo-stationary satellites hovering over strategic points of the globe.

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AMATEUR RADIO, April 1983 — Page 51
Ralph Pepper, N742, 2VH, 1922.

Ralph’s interest in radio began in Tamworth in 1922 when a PMG technician, Lionel V G Todd, who operated 2CR, taught him CW to pass the test with the local postmaster at 12 WPM, and an application for a “Wireless Experimenters Licence”, N742, was granted.

The renewal, roneo Form “F”, on 23/8/1923, cost ten shillings and came from Melbourne signed by J Malone, Chief Manager, Telegraph and Wireless. At this time Ralph used receiving equipment only, all parts of which were “homebrew” only, and crystals used were the best of experiments with minerals brought from various areas by his father. The best combination was “zincite” with “bornite”.

Ralph and Lionel used “wireless” to time motor cycle races at Tamworth, possibly for the first time in Australia, in 1923.

One evening Ralph heard an “SOS” from the “Stirling”, off NZ, a ship which eventually sank.

A bad shock from a “B” battery ended Ralph’s wireless experiments.

Ralph was an RAAF photographer during WW2, and became Photo Intelligence Officer at McArthur’s Headquarters.

Post war Ralph has been overseas forty five times, mainly as tour escort, and has a fine collection of slides. Brisbane has been Ralph’s home for some thirty three years.

In 1938 he began on DF equipment and in 1938 completed a DF installation for the RAAF at Tulagai just before Japanese intervention. Vern was a Divisional Engineer of Radio, Qld, 1942-7, and in 1950 accompanied the Engineer in Chief to the International HF Conference in Florence Italy, and later spent some time in the UK. In 1954 he moved to Central Administration, Melbourne and became responsible for the planning, installation and development of National TV in connection with which he visited Britain, Europe and Nth America. In 1961 he was appointed Technical Director of the Australian Broadcasting Commission. In the light of his participation and notable contribution in both fields he could reasonably be considered one of the outstanding foundation members of the National Radio and TV services.

Vern has been able to contribute valuable information to VK4 history.
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Vic. 3116. Phone: (03) 726 7353.
Many thanks to those readers who send me details of awards they receive on QSLs or over the air. My policy in selecting awards for this column is to give first priority to any Australian award. For overseas awards, I try to check whether the club issuing an award is affiliated to its National Society and that this National body is a member of the International Amateur Radio Union. Hope-fully by following this policy, if things do go wrong, one should be able to get problems resolved. Generally, difficulties arise over awards issued by non affiliated overseas bodies.

LAKE GOLDSMITH STEAM RALLY AWARD
The Western Zone of the Victorian Division of the WIA will be operating from the Lake Goldsmith Rally using the call VK3BWZ. Power for the station will be obtained from a steam driven generator and an exhibition of old time radio equipment will be held.

WHEN: 0200 UTC 30th April to 0200 UTC 1st May.
REQUIREMENTS: One contact with VK3BWZ on any mode band.
SSTV frequencies are: 7.103 and 14.230 MHz.

The cost of the award is $2.00 or equivalent and applications should be sent to: Maurice Batt, VK3XEX, RSD, Rokewood Junction, Victoria 3351.

The following award information has been received from Jim Hogan ZL1AJQ.

THE INTRODUCTION OF RAINBOW TROUT TO NEW ZEALAND CENTENNIAL AWARD
The Rainbow Trout (Salmo gairdneri) was transported to New Zealand from the Sonoma River (California) and arrived in New Zealand early April 1883. Since then this species has become well adapted to New Zealand conditions and world famous as a sporting fish as well.
During 16-23 April 1983 Taupo will be host to guests from all over the world to celebrate the event with processions, beer fest, fishing contest, golf, art fairs, country and western events etc.

NZART Branch 60 sponsors the Centennial Award. The Award is an attractive colour picture on card suitable for desk stand or wall mount. Well worth the effort to get the Award.

RULES:
1 Contacts with stations in the vicinity of Lake Taupo between and including the dates 13th April to 23rd April 1983.
2 Same station on different day is a new contact.
3 Same station on a different band or using a different mode on the same day is a new contact.
4 Use of repeater(s) is allowed but counts as one band.
5 Have to say the name of the Award during the contact.
6 Basic Award is ten contacts. Gold stars for every ten after that.
7 Overseas Awards, three contacts.
8 Enclose $1.00 with copy of log to Centennial Award, Box 910, Taupo.

Branch 60 members will be active in all bands, all modes, and intend to cover the ten days.

THE WORKED AUSTRALIAN STATE POLICE AWARD
A request for information from any reader who knows where to apply for this award. It appears that applicants, to an address given in 1981, are not receiving replies. If anyone knows anything about this award I would be grateful if details could be sent to me.

Until next month Happy Hunting, 73 es DX, Mike VK6HD.
So you are considering sitting for your AOCP soon. Just to see how your study is going why not try to answer the following questions. Some questions have two correct answers and both are required.

1. The peak value of an AC voltage may be determined by:
   (a) The RMS value x 1.414.
   (b) The RMS value x 0.707.
   (c) The RMS value x 2.

2. When an alternating EMF is applied across an ideal capacitor the current will:
   (a) lag on the applied EMF.
   (b) lead on the applied EMF.
   (c) differ in phase by 90° from the applied EMF.
   (d) differ in phase according to the magnitude of the applied EMF.

3. The inductance of an inductor is 1 henry if:
   (a) a voltage change of 1 amp/second produces a back EMF of 1 volt.
   (b) a change of current of 1 amp/second causes back EMF of 1 volt.
   (c) a current of 1 amp is produced in the circuit by a potential of 1 volt/second.

4. In radio frequency tuned circuits:
   (a) the impedance of a series tuned circuit is minimum at resonance.
   (b) the current in a series tuned circuit at resonance is maximum.
   (c) the current in a parallel tuned circuit at resonance is maximum.
   (d) the current and voltage in a resonant parallel tuned circuit are in phase.

5. Indicate which of the following statements are true:
   (a) a forward biased junction diode has a negative temperature coefficient of resistance.
   (b) the currents and voltages developed in a temperature stabilized transistor amplifier can be used to temperature stabilize other transistors.
   (c) an emitter swamping resistor minimizes variations in emitter current caused by variations in the emitter-base resistance.
   (d) emitter-base junction resistance increases with increasing temperature and causes decreased emitter current.

6. Silicon diode type rectifiers for power supply use have the following advantages compared with valve rectifiers of comparable power rating:
   (a) internal resistance is very low.
   (b) peak inverse rating are very much higher.
   (c) only a small amount of heat is generated.
   (d) they easily withstand transient voltage peaks.

7. Class A amplifiers are commonly used as:
   (a) low power linear amplifiers in transmitters.
   (b) audio and radio frequency amplifiers in receivers.
   (c) oscillators in receivers.
   (d) frequency multipliers.

8. The primary purpose of a buffer stage in a transmitter is:
   (a) to isolate the final stage from the aerial.
   (b) to increase the frequency.
   (c) to isolate the oscillator from the modulated or keyed stage.
   (d) to increase the audio voltage input to the modulating stage.

The answers are on page 78
to the frequency difference between the two carrier frequencies. Listening to either one of the keyed carriers you will note it is CW on off keying but not using the Morse code. However even if you have memorised the RTTY code you would not have much success reading it as it is normally at 60 wpm or one word per second.

Each RTTY character that is sent (letters, figures, punctuation marks etc) are all the same length, all have seven parts, all start with what is in effect a synchronising start pulse and conclude with a stop pulse. All the parts are equal in length except that the stop pulse is often slightly longer. The five parts between the start and stop pulses are used in the form of a code to represent the different letters and figures etc. All seven parts are either one of two conditions eg plus or minus, on or off, current flowing or not flowing, a high pitch or a low pitch audio tone or a high or low RF frequency etc.

The change from one state to the other is nearly instantaneous, there is no appreciable delay or gap between parts of a character or between letters in a word (if you can type fast enough). These alternate states are called mark and space, this coming from the early days of recording telegraphy on paper when a pen moving across the paper marked it when current flowed and left a space when there was no current flowing.

Nowadays normal amateur convention is mark means circuit closed, current flowing, a low pitch audio tone or the higher of the two RF carrier frequencies. Space means circuit open, no current flowing, a high pitch audio tone or the lower of two RF carrier frequencies. It is rather unfortunate that the high/low audio and RF frequencies are at cross purposes but that is the present convention and we have to live with it.

The difference between the two audio tones or the two RF carriers is known as the shift frequency and in present amateur use is normally 170 Hz, a decade or so ago it was normally 850 Hz but this is very rarely used today. Many commercial stations use a shift of 425 Hz and a few use 170 Hz. The normal tones used by amateurs are 2125 mark and 2295 space. If you want to use the same RTTY equipment on HF and VHF you need high tones equipment.

By tuning first one then the other of the separate carriers to zero beat you can then listen to the keying of the other one and also the beat note remaining will be equal

and this is why low tones were first introduced. However as amateur shift soon after became 170 Hz there is now little reason for using low tones as high tones 2125 and 2295 Hz are well within the pass band of typical SSB filters.

Looking at all the odd figures for mark, space and shift frequencies I decided there must be some reason for using these odd values and sought to find it. I discovered that each frequency is a multiple of 85 Hz, in other words 85 Hz can be regarded as an unused fundamental and then all RTTY audio frequencies are harmonics of this frequency.

On the HF bands using an SSB transceiver with "audio generated" FSK it does not matter much what tones are used provided the shift is correct. This is so because the receiving station can tune to get any desired beat note but of course this will not change the shift in the original signal transmitted. A transceiver using low tones equipment sending to a receiving station using high tones equipment will have no difficulty as both have the same shift. Of course this is not the case with Audio Frequency Shift Keying (AFSK) where the tones are used to modulate a FM or AM transmitter.

When this is done it is obvious that both sets of equipment need to be using the same audio frequencies.

The normal frequencies used for VHF/ UHF are high tones 2125 mark and 2295 space. If you want to use the same RTTY equipment on HF and VHF you need high tones equipment.

A RTTY signal consists of a single FM or AM carrier alternately modulated by two audio tones that are arranged according to the RTTY code.

HOW CAN I IDENTIFY RTTY COMMERCIALS?

Amateurs without RTTY equipment often wonder if this is possible on the HF bands and I give the following tips. Firstly commercial stations usually send very long messages without a break, often thirty or more minutes in length, on the other hand amateurs rarely use overs longer than about five to ten minutes in length.

Commercial stations often send RTTY at faster speeds than amateurs and commercial stations rarely use hand sent RTTY as they normally pre-record their messages to save valuable transmission time. Amateurs may also pre-record part of their overs but if you keep listening you will note that some parts of it are at a slow hand typing speed. With hand typing you will at times hear a continuous tone as the operator pauses to think what he will say next etc but this rarely happens with commercial RTTY.
Commercials often use 425 Hz shift and amateurs normally use 170 Hz, you can check the shift by tuning one of the two RTTY carriers to zero beat and listening to the pitch of the remaining beat note this would normally be 425 Hz for a commercial and 170 Hz for an amateur station.

It is possible to educate your ears to detect the difference between amateur and commercial RTTY by listening and comparing them. Tune commercial RTTY outside the amateur bands and compare with amateur RTTY on about 14,000 MHz (seldom any commercials there).

Of course these tests are not infallible but if a RTTY station sends for hours on end using no hand typing and using 425 Hz shift you can be 99% sure it is a commercial.

**A RTTY PIRATE**

There is a RTTY Pirate active on 80 metres and sometimes on 40 metres as well. I call him a pirate as he never gives a call sign even when asked to do so. He comes on using RTTY and complains about RTTY being used in the Gentlemen’s Agreement CW Only portion of the bands.

When the Pirate confronted me with his usual question “Why are you using RTTY in the Gentlemen’s Agreement CW Only Portion of the band?” I answered “If you give me your call sign I will tell you”. However as usual he declined to do this. In the hope that this “Gentleman” reads this article I will now tell him and others that also think this way why I sometimes use RTTY in the CW Only portion of amateur bands.

VK RTTY presently has no Gentlemen’s Agreement allocated band segments in which to operate as up to the present time the WIA has not seen fit to allocate an RTTY segment.

RTTY is a form of telegraphy closely akin to CW Morse telegraphy, it can even be sent as CW using a single keyed carrier. In a recent Sunday morning WIA broadcast (22/8/82) a Federal WIA representative said “RTTY would usually be found in the CW only portion of the bands.”

Although commonly used amateur band RTTY frequencies were listed in the 81/82 WIA Call Book to the best of my knowledge the WIA has never asked amateurs to keep these frequencies clear for RTTY and generally speaking this is very seldom done by other mode users. As RTTY operators are often denied the use of their commonly used frequencies by other mode users and are presently receiving no guidance from the WIA re where they are expected to operate they then do the best they can under these circumstances.

In conclusion RTTY operators are just as much amateurs, WIA members and gentlemen as other mode users and until the WIA gives definite guidance to all amateurs as to what part of the bands they want set apart for RTTY it seems a perfectly perfectly gentlemanly thing to put our RTTY telegraphy in the telegraphy portion of the amateur bands. In fairness to the WIA I must add that the Federal Technical Advisory Committee (FTAC) are presently considering these matters and perhaps might even have made a decision by the time these words are published.

As most elementary subjects have now been covered I plan to make future articles somewhat more technical thus better serving those already using RTTY.

---

**EDUCATION NOTES**

I have not yet had a lot of response to the request for information about classes planned or in progress. If you know of any classes about which you have not been notified, please forward details to me or the Executive as we do get requests for information about availability of classes in particular areas.

I would also like to build up a list of schools where some radio theory is being taught or some radio operating is carried out. I know there are many schools with licences and call signs, but do not know how active they are.

I wonder if this is an area where we could do a little more recruiting.

Amateur radio activity in schools seems to depend on the presence of an enthusiastic licensed operator on the staff. If that staff member transfers, becomes too busy, or loses interest, a group of potential amateurs is lost. I wonder if it would be possible to involve non-school amateurs in activities of this sort. I know of a couple of amateurs who regularly give some of their time to a school or group of children. I’m sure there are others as well that I do not know about, but I think there is probably scope for many more.

Many secondary and technical schools introduce electronics and computer technology at a fairly early stage, and many students would appreciate the opportunity to see some of the theory put into practice. Many schools also have a weekly ‘activities’ session where a visiting amateur could be fitted in with a small group of students.

At the more senior level there is also the possibility of involving the students in some experimental activities which may be accepted as part of a Senior Certificate course.

Even in the primary schools there are opportunities to offer an occasional or regular visit. Being the only contact is with a station a few streets away, it is an experience which the children will remember. We all know the enthusiasm which the Jamboree on the Air generates. Perhaps there is room for something of the sort in the schools even just on a local basis, or organised by a club within its own area.

Many schools now have licensed operators among their students. These students may need the support and assistance of older amateurs to maintain their interest and make use of any gear which the school may have. In many cases, the school principal and staff may be completely unaware of the potential value of amateur radio, and may not even know that they have novices among their students. They will certainly not have given much thought to the possibilities of using radio to broaden the scope and effectiveness of the existing curriculum. Perhaps we can help expand a few horizons.

I would be interested to hear readers views on this matter especially from any amateurs who have tried to establish some such programme. It could be an interesting project for World Communications Year.

Finally I would like to repeat my plea from last month. If you have a complaint about exam procedures, questions, or results, PLEASE bring it to me instead of just complaining on air. I cannot act on third hand or overheard information.

---

**Brenda Edmunds VK3KT**

**FEDERAL EDUCATION OFFICER**

56 Baden Powell Drive, Frankston, Vic. 3199

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**URGENT!**

Please let us know of clubs and schools etc. starting theory classes.

Where, when, how much and whom to contact.

Contact Brenda QTHR
KEYS AND KEYERS (Part III)

An iambic keyer is driven by dual paddles, and there are various ways to go about engineering them. The simplest consists of two paddles which are held by spring tension so that they can be swung inwards against a common centre post. This principle is used in paddles such as the HK1, which is used external to the keyer, and the same 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 arrangement looks something like this:

![Bencher Paddle Diagram]

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 Heathkit keyer, but a less expensive alternative is based on the kit marketed by Dick Smith some years ago (it originated with WB4VVF in QST and was later published in Electronics Australia). Unfortunately, the kit as such is no longer available, but Mr Smith still has the circuit board, the Galbraith paddle (GK111) and, I presume, the instructions. The IC’s and other components are readily available. In the original design the paddle was built into the keyer, but I prefer a separate paddle, so was able to put all the controls on the front panel, and jacks for all the externals on the back. 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 was also simple to add a rectifier circuit so the keyer could 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 and a few hours to knock it together.

If you are thinking of buying 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 to a Bencher paddle.

Beyond the basic keyer circuit, which gives you dot and dash memory, automatic spaces, and variable speed and weight, the main attraction of advanced keyers is memory. A memory is very handy during ordinary operation, 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 PO Box 2160, Lynnwood, WA 98036 USA. Their top-of-the-line "Morsematic MM2" keyer has been to be believed. Featuring two micro-computers, the MM2 will act as a contest keyer (automatically generating serial numbers), a beacon (sending a programmed message at programmed intervals), and a trainer in addition to "ordinary" keyer functions. In trainer mode, MM2 can be programmed to start at any speed between 2 and 98 WPM, and, after an elapsed time of 0.1 to 59.9 minutes, it will have increased to any higher speed between 2 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 an Answer Book. The prices for these keyers are amazingly low if you can get them from the US. If you get one from the Australian agents, you will pay the importer's mark-up, the importer's mark-up and sales tax — you will pay almost twice the US price, but you'll still be getting a bargain.

Next month's column will be about signal reporting, and I promise some real food for thought. Till then, 73 and keep pounding.

EXPLODING INTRUDER

In May 1978 the Soviets concluded the third of a series of killer satellite trials. They had tested slow, similar orbit, interceptions, fast bob down from above, and finally the very efficient fast pop up interceptions from below.

For four years European observers have waited for the next step and early in March 82 the familiar spread spectrum test signals with their covert telemetry were heard around 144.3 MHz.

As in previous tests things went slowly for a while and there was a break while the observing satellite changed from afternoon descending to afternoon ascending. Then after an isolated test on 25 May 82, tests proper began on 6 June. From then until 18 June 82 a series of about ten test runs were carried out culminating in two tests where target telemetry ceased abruptly (a point subsequently confirmed by US Secretary Haig).

There is a possibility that there may now be a continuous series of tests at intervals of two or three months. Observers should listen for wide band spread spectrum FM multi carrier signals centred on 144.3 MHz and extending up to 1.5 MHz either side of that frequency, on orbits transmitting azimuths 010 to 090° from UK. Orbital parameters are altered in flight and periods range from 100 to 110 minutes with targets usually at the higher period. Most tests are afternoon UTC Wednesdays, Thursdays and Fridays. Clocking pulses are superimposed on some telemetry.


QSP

Marshall Emm VK5FN
Box 389, GPO Adelaide SA 5001

POUNDING BRASS
The idea of over-the-horizon radar was first conceived in 1946. However, as every radio amateur knows, the idea is in fact now a reality, with evidence appearing daily on the amateur band of frequencies, and formerly all were originating from the USSR.

However, we must now steel ourselves for possible evidence of a new source of radio interference emanating from the United States of America. Conventional line-of-sight radar uses frequencies in the gigahertz bands, and the radiation passes largely unimpeded through the ionosphere into outer space. With the OTHR system, which employs HF frequencies, a significant part of the much lower frequency is reflected down towards the earth's surface, reaching it at a distance well beyond the visual horizon. Hence the title, 'Over-The-Horizon Radar'.

The radar system is called a 'backscatter' system, meaning that the radar return pulse is reflected back to a receiving antenna reasonably close to the transmitting source. In this case, 110 miles. A certain portion of the transmitted energy is not backscattered towards the receive antenna (via the ionosphere) but is rather reflected 'downrange' for a further 'up-down' radar. Whilst theoretically this could be used to extend the range of the system to something like 3,600 nautical miles, the contractors describe the reliability of signals beyond the first hop zone as 'marginal'.

Skywave OTH radar has MINIMUM detection range of 400 nautical miles. Experimentation and feasibility testing began in June, 1980, and recently a $US66.7 million contract was awarded to the General Electric Co, to begin a full-scale development of the project. The transmitter is situated at the Moscow Air Force Station, in Maine, USA.

The full range of the frequency bands will be:

- **BAND A**: 5.00 — 6.74 MHz
- **BAND B**: 6.74 — 9.09 MHz
- **BAND C**: 9.09 — 12.25 MHz
- **BAND D**: 12.25 — 16.50 MHz
- **BAND E**: 16.50 — 22.25 MHz
- **BAND F**: 22.25 — 28.00 MHz

The range of the system is from 500 to 1800 nautical miles. The operating range 6.7-22.25 MHz is selectable in 1 Hz segments. An FM/CW waveform is used, and bandwidths of 2.5, 5, 10, 50, and 100 kHz can be selected, as well as waveform repetition frequencies of 20, 30, 45 and 60 Hz.

A Hewlett-Packard 141T spectrum analyser is used in the transmitting control room to aid in the selection of frequencies THAT NO-ONE IS USING. (We hope that the efficiency of a channel is clear, the radar system is brought up to power. Operators have a priority list of "most useable" frequencies for signal propagation.

Transmitter engineers use a 5 kW ionosphere sounder, excited by a computer-controlled signal generator, as a check on the ionosphere, the sounder sweeping from 2-30 MHz at a 100 kHz sweep rate. It returns from the ionosphere and is evaluated at the operations site. The main transmitters have a self-calibration check mode that requires about eight seconds to complete a calibration routine. A performance assessment operator is provided with a CRT display of range and amplitude, enabling him to compare the amplitude, of radar returns with the noise floor. This ratio provides an instant assessment of radar performance. Target lines on the display appear as verticals when the return maintains a constant doppler frequency; the upper portion of the line slopes to the left if the target is accelerating, and to the right if the target is slowing. The FET receiver front-ends are digitally tuned by means of mercury-wetted reed relays and provide a dynamic range of 114-124 dB.

**THE ANTENNA SYSTEM**

The transmit antenna, situated at Moscow Air Force Station, Maine, (not USSR), currently consists of four separate 12-element sub-arrays, each designed to cover a different band of frequencies between 6.74 and 22.5 MHz. The radiating element consists of T-shaped dipoles, either vertical or centred 45 degrees with a length varying between 24 and 60 feet, according to the frequency band. The transmit arrays have a common mesh backscatter ranging in height from 45 to 100 feet, and a common ground screen extending out some seven hundred and fifty feet in front of the arrays. Total transmit array length in the experimental installation is 2,265 feet. This will be extended to 3,630 feet in the full-scale system.

The new system will give uninterrupted coverage (apart from guarded frequencies) from five to 28 MHz. At the Moscow (Maine) Air Force Base, the station has its own 7.5 MW power sub-station. The 12 elements of each sub-array are fed simultaneously by 12 Continental Electronics transmitters, each capable of producing up to 100 kW average power. Total effective power delivered from the array is up to 100 MW.

The receive antenna site at Columbus Falls Air Force Station, Maine, contains an experimental receive array presently consisting of 137 triangular elements, each 17 feet high. The receive antenna has both a backscreen 50 feet high, and 750 feet wide groundscreen. Total length of the experimental receive array is 3,906 feet, with planned extensions to 5,230 feet. The received signals are digitised and formed into four simultaneous beams covering the same area as the range-azimuth sector illuminated by the transmitter. The four beams are processed almost simultaneously by the signal processor, which resolves each beam into 4,096 time delay (range) and Doppler frequency (radial velocity) cells. Processor functions include interference suppression and clutter blanking, peak detection and integration over a period of time. After processing, target 'hits' are passed to the operations processor which initiates and maintains tracks, registers them with geographical co-ordinates, formats the information for display and assesses the significance of the radar data, besides providing the operator with a variety of automatically-processed data-bases.

No north-looking radar is planned, due to ionospheric irregularities centred on the North Magnetic Pole. Longer-term plans, however, call for an installation looking south. Radio amateurs will be looking with interest at the development of this project.
Communications is what the Amateur Radio Service is all about. Communicating by use of electromagnetic energy has its problems. One problem is simply that all radio receivers and all radio transmitters are potential sources and victims of interference for many reasons. When it comes to interference the average radio amateur just wants a fair go.

Over the years in almost all countries of the world radio amateurs have been blamed for causing interference to everything from television to garden mowers. With the advent of television the general public became most critical of interference. Anything which, even in a minor way, disturbed their viewing ritual was sure to be given the 'twelve gauge shotgun' treatment. Televion receiver manufacturers had little difficulty convincing the general public that any interference experienced must be due to an external source rather than their product, because if you turn off the external source, the interference is removed — anyone could see this. What the manufacturers did not wish to make too public was that their equipment was very capable of receiving signals which were well outside its licensed operating bands with just as much clarity as those signals to which the equipment was intended to receive.

From time to time owners of record players, audio amplifiers and the like have complained about the reception of radio signals on these devices, usually from nearby radio transmitters. Devices of this nature are, or should be, designed to amplify audio signals such as music and speech and not respond to radio signals.

Again, manufacturers of such equipment can fob off complaints of interference by saying that if the radio transmitter is turned off, and the interference disappears, any interference must be the fault of the radio transmitter. The general public find this answer easy to understand. The truth is, of course, the audio equipment should not respond to radio frequency signals, if it does, then it should be licensed as a radio receiver.

Domestic equipment manufacturers were, and to a certain extent still are able to get away with the production of equipment which works well in a hostile free environment.

With the growing world of electronic gadgets the hostile free world is becoming smaller and smaller, to the extent that one piece of domestic equipment can, and quite often does, interfere with another.

In the early days when television was a new and novel form of home entertainment, government authorities had very little information or political power to deal effectively with the real cause of the interference problem. It was much easier and less controversial to close down the amateur station or to restrict its operations to outside TV hours.

Government action, or lack of it, has done little more than sweep the problem under the carpet. With the growing world of electronics the 'buck' has to stop somewhere, and soon!

Fortunately a number of countries have seen the 'light' and have embarked on a full programme of standards, regulations and mandatory legislation to cover the design, production, operation and import of domestic entertainment equipment and consumer products in respect of EMC and EMI.

In CANADA the steering committee on electromagnetic interference and electromagnetic compatibility of the Canadian Standards Association produced an in-depth study of radio interference and its impact on Canadian use of sensitive electronic and electrical equipment has concluded that standards are needed incorporating guideline limits both as to levels of radio interference which are tolerable and the levels of immunity which must be built into electrical/electronic systems. The committee has concluded that failure to develop and apply appropriate technical standards could result in a serious deterioration in most Canadian electronic systems and could increasingly threaten Canada's position in the domestic and world markets.

NORWAY insists that equipment showing insufficient immunity be modified by the manufacturers or importers — fitting any necessary filters.

SWEDISH manufacturers supply free upon request high pass filters and/or mains filters; radio dealers are authorised by the Swedish Electrical Testing Authority (SEMKO) to make minor modifications to equipment to increase its immunity to electromagnetic interference.

WEST GERMANY has perhaps the most positive control of all forms of interference problems. The very involved and complex DIN/VDE Standards and Regulations seem to cover almost all situations, including being retrospective.

The West German Law requires that an EMC information sheet be included with the instruction manual of all radio and television receivers, also audio and Hi Fi equipment.

The instruction sheet informs the purchaser that the equipment has been approved by the German Post Office as a "sound radio/audio system/television receiver" and complies with the current regulations of the German Post Office . . . "see FTZ test number attached to the equipment".

"The FTZ number is your insurance that this equipment will not cause interference to other telecommunications services. The suffix letter S or SK indicates that the equipment has a high degree of immunity to unwanted signals (amateur, CB, etc.). Should interference be experienced please contact your local interference measuring service office."

In last month's Amateur Radio we reported on one of the latest countries to tackle the EMC problem . . . The United States Government has given the FCC power to control susceptibility/immunity.

The United States Communications Act of 1934 has been amended by Public Law 97-259, 1992, to read as follows:

Communications Act of 1934, as amended by Public Law 97-259, 1992
§302(a) The Commission may, consistent with the public interest, convenience, and necessity, make reasonable regulations (1) governing the interference potential of devices which in their operation are capable of emitting radio frequency energy by radiation, conduction, or other means.
in sufficient degree to cause harmful interference to radio communications; (2) establishing minimum performance standards for home electronic equipment and systems to reduce their susceptibility to interference from radio frequency energy. Such regulations shall be applicable to the manufacture, import, sale, offer for sale, or shipment of such devices and home electronic equipment and systems, and to the use of such devices.

(b) No person shall manufacture, import, sell, offer for sale, or ship devices or home electronic equipment and systems, or use devices which fail to comply with regulations promulgated pursuant to this section.

(c) The provisions of this section shall not be applicable to carriers transporting such devices or home electronic equipment and systems without trading in them, to devices or home electronic equipment and systems manufactured solely for export, to the manufacture, assembly, or installation of devices or home electronic equipment and systems for its own use by a public utility engaged in providing electric service, or to devices or home electronic equipment and systems for use by the Government of the United States or any agency thereof.

Devices and home electronic equipment and systems for use by the Government of the United States or any agency thereof shall be developed, procured, or otherwise acquired, including offshore procurement, under United States Government criteria, standards or specifications designed to achieve the objectives of reducing interference to radio reception and to home electronic equipment and systems, taking into account the unique needs of national defence and security.

Note: Any minimum performance standard established by the Federal Communications Commission under section 302 (a)(2) of the Communications Act of 1934, as added by the amendment made in subsection (a)(1), shall not apply to any home electronic equipment or systems manufactured before the date of the enactment of this Act.

In Australia we ask our Department of Communications to look after the radio frequency spectrum with their hands tied behind their backs.

With the proposed new Radiocommunications Bill (Telecommunications Bill) in the pipeline, isn’t it time that the Australian Government gave our Department of Communications the power and the staff to do the job for which they were appointed.

As we all know this is World Communications Year (WCY ‘83) and the editorial in January AR asked us all to make some small contribution to ensure it’s every success. Last week the members of WICEN made a very large contribution to help those involved in the bushfire areas in VK3 and VK5. Some of our members live in these areas and I would like to publicly thank all WICEN operators for their time and efforts on behalf of all ALARA members. This has shown how very necessary and valuable amateur radio can be.

Welcome to new members
Suzanne VK2PSC joined 20.10.82
Lorraine VK4KLJ joined 20.11.82
Bron VK3NTD joined 6.11.82
Dale VK3PEH joined 26.11.82 (100th VK-YL)
Sponsored Members
Joanie KA6V joined 16.10.82
Cathy ZL2ADK joined 30.10.82
Christel DF1LV joined 11.12.82
Jeanne ZL2BOD joined 26.12.82
Kazuko JD1BBH joined 20.10.82
Denise WH2ADG joined 22.11.82
Lynn ZL2PO joined 25.12.82
Maxine N6GGR joined 28.12.82

Congratulations
Congratulations to Margaret VK3NZD; a member of ALARA since 1981 and is the XYL of VK3DBJ.

And to Joy VK2EX previously VK2VJV and 2KJC. Sorry about the error in the list in AR. I will compile a complete and up to date list and publish it again, apologies to those I omitted and for the errors.

Thank you to all who have sent me photos and news. It does make my column easier.

Nice to meet some of the OMs and their XYLs at the Midland Zone Convention on Sunday 20th February at Strathfeldasaye. We felt it was very successful and hope you all enjoyed the day.

Mavis VK3KS is waiting for your application for the award, so look through your log book and see if you have talked to enough members to send for one. Rules are on page 40 June 1982 AR.

Until next month 33/73/88s to all.
Margaret VK3DML
Many thanks to all who submitted logs. Compiling these is time consuming and no easy task. NZART does not ask for logs to be "re-written" — carbon copies of an operating log are sufficient — but of course, legibility must play a part too.

Only one problem developed from the rules — the summary requires "prefixes worked on that band". This is an integral part of the summary and is of importance in log checking. Too many merely indicated the new prefix in the log. Maybe the listing in the summary is superfluous — even though it helps in checking — both for the operator and for the contest manager!!

Logs from VK/ZL arrived in good time, as have most, but Eastern Europe presents a problem. To delay the receipt date presents further problems. It is important to promulgate the results as soon as possible.

The scoring system with a differential for different bands (introduced by NZART some time ago) once again received favourable comment. It must be stressed that with such a system (already giving full credit to users of different bands) that any multiplier system is quite out of order and can only provide distorted results.

The points allocated for operation on different bands might well be investigated however. Are the ratios reasonable when one compares the QSO rate on say 15 metres with that on 80? It must be kept in mind however that these "ratios" could vary from "year" (or group of years) to "year" depending on conditions.

Results are tabulated in "scoring areas" as this is the basis of the awards programme and so is logical. Additionally, individual band scores are tabulated and certificates will be issued to these place winners too.

Rule 8 (begin with any serial number between 001 and 100) is a "hangover" from the "good old days". Maybe we could all start at 001! Does it really matter?

The "all band" situation is covered elsewhere.

Clashes with other contests is always a problem and will get worse before it gets better! There seems to be more and more "international" contests — some of which fill roles which are difficult to understand.

A growing problem could be that of stations operating in an area which is different to the prefix! At present, NZART policy accepts the PREFIX for ZLs and not the location for the VK/ZL/O.

In many countries the prefix is no longer changed when a physical move is made.

This and that — "my first DX Contest — GREAT! ... plenty of prefixes but many that I missed ... ZL2SQ has lost none of his EP2BQ prowess! ... model logs from youngest competitor Charlene VK1NEJ and from contest doyen AX4XA.

Finally ... thanks to so many for the personal notes with logs — much appreciated.

A final final — the certificates which are typical and appropriate have presented a typing problem. I hope all concerned will understand.

SOMETHING TO TALK ABOUT ...  

What constitutes an "Open Section" entry in the VK/ZL/O? For years this has been accepted as the "highest score" and there is much to support such an opinion. It could be debated that the manner in which you make your points is your own affair — no one else's. Let's be fair and admit that this is a simplistic attitude nevertheless. Now we are in trouble. Should then a contestant in the "Open Section" operate on say two bands? — or on four? — or five? If on four — which four?; or if on five — which five? I don't think it would be fair to say 10, 15, 20, 40, and 80 — any more than 15, 20, 40, 80, and 160 would be fair. So where are we? I'm quite sure that most — if not all — so called "All Band" scores in the major DX Contests are NOT "all band" scores at all. Undoubtedly they will be more than "one band" — but ALL BAND, I'm sure NOT! Interesting isn't it. I'd like some opinions ...

RESULTS ...  

Full VK and ZL results will be mailed to all award winners in VK and ZL. These results as well as "Overseas" results will be published in "Amateur Radio" and in "Break-In".

Trophies are the responsibility of WIA for VKs and NZART for ZLs. (NB — certificates will be mailed by NZART to all concerned — both VK and ZL — as well as overseas winners.)

*** Suggested change in rules for OVERSEAS STATIONS: In addition to VK and ZL prefixes, to include ALL Oceania prefixes as multipliers.

*** WIA will organise the VK/ZL/O in 1983 and in 1984.
RESULTS

VK PHONE

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No VK1 entry

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No VK1 entry

VK & ZL INDIVIDUAL BAND SCORES

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SWL

| ZL-1287 | —   | —  | 3480 | 21525 | 11214 | 9504 | 45723 |
| ZL-1294 | —   | —  | 1150 | 196  | —    | —    | 1346 |

AMATEUR RADIO, April 1983 — Page 63
CONTEST CALENDAR

APRIL
6-7  DX-YL to NA-YL CW Party
9-10 CARF Commonwealth SSB Test
13-14  DX-YL to NA-YL Phone Party
16-17 Polish Phone Test (tentative date)

MAY
7-8  CQ M Russian Test***
7-8  World Telecom Phone Test***
14-15  World Telecom CW Test***
14-15 Sangster Shield Test
17  World Telecommunications Day
28-29  CQ WW WPX CW Test

JUNE
11-12  6th VK/ZL Oceania RTTY Test
11-12 ARRL VHF Test***
18-19 All Asian Phone***
25-26 ARRL Field Day***

JULY
2-3  Venezuela Phone Test***
9-10 NZART Memorial Test (June AR)
16-17 International QRP Test***
23-24 Venezuela CW Test***

The contests marked with *** are not yet confirmed.

6TH VK/ZL/OCEANIA 1983 RTTY DX CONTEST

DATE:  11th to 13th June, 1983
TIME:  0000-0800 UTC Saturday 11th June 1983
1600-2400 UTC Saturday 11th June 1983, and
0800-1600 UTC Sunday 12th June 1983

CLASSES:  Three classes: (a) single operator,
(b) Multi-operator, and (c) SWL operators.

BANDS:  All Amateur Bands. 3.5-28 MHz.

SCORING:  As per CARTG Zone Chart, multiplied by the number of
continents worked, multiplied by the number of
continents worked (maximum six).

COUNTRIES:  Country count as per ARRL list of
countries, except that each VK,
ZL, JA, VE, VO, W/K districts
are considered as separate countries.

CLOSING DATE:  Logs must be received by
the Contest Committee by 1st October
1983. The address for logs is: W J
(Bill) Storer, VK2EG, 55 Prince
Charles Rd, Frenchs Forest, 2086,
NSW, Australia.

AWARDS:  Awards will be issued for 1st, 2nd
and 3rd on a world basis and also
on a country basis.

The judges decision regarding the placings in the contest will be final and no correspondence will be entered into regarding the same. The logs become the property of the Contest Committee on completion of checking.

SUMMARY SHEET:  Summary sheet must show, call
sign of station, name of operator/s, and address of same.

LOGS:  Logs must be in this order: 1) Date, 2) Time (UTC), 3) Callsign
of station worked, 4) Serial number
sent, 5) Serial number received,
and 6) Points claimed.

AWARDS:  Awards will be issued for 1st, 2nd
and 3rd on a world basis and also
on a country basis.

The judges decision regarding the placings in the contest will be final and no correspondence will be entered into regarding the same. The logs become the property of the Contest Committee on completion of checking.

RULES

1 WHEN?  14-15 May 1983, between the hours
of 8 PM and midnight on each day. The
maximum period of operation will be eight
hours.

2 POWER? To compete for the Sangster
Shield the input to the anode of the final
amplifier and/or any other stage in the
transmitter must not exceed 5 watts.

3 CW to CW contacts only are permitted.

4 (a) Contacts with any one station permitted
between 0000 to 2400, thus permitting
contacts 24 hours a day.

(b) It is not permissible to QSO the same
station within one hour's period and
at the beginning of the next.

(c) Except that this is permissible when
one of the two stations concerned has
contacted a different station between QSOs
concerned or when there is a delay of
at least five minutes between the contacts.

5 All ZL entrants must be financial members
of NZART.

6 All radio regulations must be observed.

8 In the event of any dispute, the ruling of
the Executive Council will be final.

9 LOGS:  (a) On QUARTO size paper —
preferably NZART log sheets.

(b) It is permissible to keep the
logs of other operators.

(c) On SEPARATE SHEET a summary to show —
(1) Call sign, name and address in
BLOCK LETTERS.

(2) Number of contacts with stations
using 5 watts or less.

(3) Number of contacts with stations
using more than 5 watts.

(4) Number of contacts with overseas
stations.

(5) List of different Branches worked
with name and call of the Branch in
order as given in the Call Book,
with the callsign of the station.

SANGSTER SHIELD CONTEST

Presented to the amateurs of New Zealand by Mr Ralph Sangster in 1927, the Sangster Shield is for annual competition to be won by the most efficient station. In this respect it should be pointed out that in addition to the efficiency of the transmitter itself, the efficiency of the operator is of utmost importance. To win this contest marks an operator as one who not only knows how to obtain the most output from low power but also as one who is most proficient in the art of telegraphic communication.

CONTESTS
claimed as a multiplier for that Branch.
(6) Total Score — (total points multiplied by different Branches).
(7) Description of equipment used and POWER used.
(8) Declaration that all contest rules have been observed.
(d) UNDERLINE each new Branch claimed as a multiplier. (Underline all entries for that QSO)

10. CYPHER SYSTEM: (a) RST followed by Branch Number followed by Power input — eg 569/11/04. This would indicate a 569 report; Branch 11 and Power of 4 watts. Power will always be given as TWO figures — over 100 watts will be given as 99 while below 10 watts will be preceded by 0.
(b) Overseas stations need give RST only but must receive the full cypher from the ZL station.

11. SCORING: (a) All Overseas Contacts — 10 points.
(b) ZL contacts with power given as 5 watts or less — 5 pts.
(c) ZL contacts with power given as over 5 watts — 1 point.

FINAL SCORE is total of points multiplied by number of different NZART Branches contacted.

NOTE: Contacts with a contestant’s OWN Branch are OK for O5O points but NOT as a multiplier.

12. Mobile or Mobile/Portable operation is not permitted. The station must be operated from a fixed location for the duration of the contest.

13. AWARDS: (a) Sangster Shield to the highest scorer using 5 watts or less.
(b) Transistor Trophy to the highest scorer observing the rules as enumerated, but in addition who has been licensed for 12 months or less. Entrants must give Operator’s Certificate number together with the date of issue.
(c) Certificates to the first three contestants using 5 watts or less, similarly to “newly licensed” entrants.
(d) Certificate to the contestant using over 5 watts with the highest score made from QSOs with stations using 5 watts or less.

(e) Certificates to Overseas Stations to the highest scorer in any call area.

14. Logs must be posted to REACH the Contest Manager ZL2GX, 152 Lytton Road, Gisborne, New Zealand, on or before 2 June 1983.

15. To give QRP Contestants a fair chance (particularly with DX stations) higher power stations are requested to operate ABOVE 3.530 MHz.

This contest has been opened to entrants from VK, with certificates to the highest scorer. The NZART welcomes all entrants from the VK areas and a good turnout is expected. Information on the other awards is available from the NZART Contest Manager, ZL2GX, 152 Lytton St, Gisborne, NZ. Please note the date for logs to be posted.

CLUB CORNER

MIDLAND ZONE CONVENTION

The executive and committee of the Midland Zone would like to thank everyone who attended their annual convention at Strathfieldsaye on Sunday 20th February.

From reports heard all who attended had an enjoyable day and we look forward to your attendance again next year.

Special thank you to Stan Roberts of Bail Electronics, George Summer of Summer Electronics, Keith Haslem of Eastern Communications and the boys from Ballarat Amateur Radio Group for their attendance and providing interest for our visitors.

Thank you to Bail Electronics, Scalar, Minnie (Bendigo) for prizes and to GFS at the Bendigo Premier Town committee for literature provided.

Thank you also to the ladies of the zone who helped with the catering both in providing food and helping in the kitchen on Sunday.

At the meeting on Friday night Ross VK3YXR gave an interesting talk on the ATV repeater in Bendigo and answered numerous questions from members. The repeater is working well and is being watched by a number of people in the Bendigo area.

Next meeting of the Zone is on Friday 10th April a family day barbecue lunch has been arranged at “Burnewang House” Elmore out near the field day site. Directions on the day via ch 11 147.150 MHz.

MOUNT GAMBIER CONVENTION

The South East Radio Group Inc in Mount Gambier will be holding its 19th Annual Convention on the Queen’s birthday weekend the 11th, 12th and 13th of June.

To maintain the popularity of this convention the South East Radio group is scheduling some new events which should prove interesting to all who attend. As was the case last year the events will start on Saturday afternoon to be followed by the excellent SERG dinner which will be followed by a night fox hunt and some terrific entertainment.

The Sunday of the convention will be filled with many scrambles, fox hunts, sniffer hunts, beam heading competitions and hidden transmitter hunt. The prizes will as usual be of excellent standard with an aggregate prize and trophy to be kept by the person who turns in the best overall performance. Another new innovation this year will be the encouragement of club participation. Every person who wins an event will not only score personal points and prizes but will also accrue points for his or her club. The best club performance at the end of the convention will gain them a trophy to take home.

Trade exhibits in the past have been excellent and have attracted much interest. This year will be no exception, and any one requiring trade space should let the Convention Registrar know as soon as possible at the address below.

The catering will, as usual be terrific. Convention registration forms will be available from most VK5 and VK3 clubs or from the Convention Registrar by sending a SAE to PO Box 1103, Mt Gambier, SA 5290. Any enquiries can be made by checking into the SERG Net, Monday nights at 1000 UTC on 3.585 MHz.

D Edwards VK5FF
PUBLICITY OFFICER

All welcome, BYO.
Friday 15th April meeting; guest speaker Neville VK3ACN — “More handy hints”.
Friday 20th May meeting; guest speaker George VK3AGM — Digital readouts.
Friday 17th June Annual Dinner at Bendigo Club.
73/88 Margaret VK3DML
Secretary

PUBLICITY OFFICER

AMATEUR RADIO, April 1983 — Page 65
INFORMATION NETS:

AMSAT AUSTRALIA
Control: VK3ACR
Time: 1000 UTC Sunday
Frequency: 7.064 MHz Summer
         3.680 MHz Winter

AMSAT PACIFIC
Control: JA7ANG
Time: 1100 UTC Sunday
Frequency: 14.305 MHz.

AMSAT SW PACIFIC
Control: W6CG
Time: 2200 UTC Saturday
Frequency: 28.880 MHz.

AMSAT OSCAR 8

Satellite tracking

All frequencies

AMATEUR REPORT

AMSAT OSCAR 7 and RS 1 and 2
Following reports that these satellites had been heard again after a long period of silence, a careful watch has been maintained in both the northern and southern hemispheres. Unfortunately no reports of activity have come forward but should anyone have information, supported by suitable evidence such as tape recording, please let VK3ACR know without delay.

UOSAT U09

Early in February the tip - mass release pyros (explosive bolts) were fired without disturbing the satellite and in preparation for boom deployment; this step appears to be taking longer than anticipated. The Navigation Magnetometer is out of calibration and once this has been re-calibrated a complete list of equations will be issued. For the information of those decoding the telemetry it should be noted that Channels 5 and 6 with Channels 15 and 16 are reversed ie Ch 5 is HY-Coarse, Ch 6 is HX-Coarse, Ch 15 is Hy-Fine and Ch 16 is HX-Fine.

ORBITAL INFORMATION

Far more people use the Orbit Period and Longitude Increment figures to predict satellite passes than the more accurate Keplerian elements. However we have a problem as so many authorities publish their own unique figures; for instance in the current edition of Amateur Satellite Report no less than three different figures are quoted for two of our satellites! What is the simple amateur to do when bemused by the experts? In traditional Aussie fashion we will take a bet both ways by shooting down the middle and give the following figures with thanks to KA9Q.

NODAL PERIOD

SATELLITE  MINUTES
Oscar 8  103.16911
UOSAT  9  94.76881
RS  3  118.51867
RS  4  119.39409
RS  5  119.55500
RS  6  118.71619
RS  7  119.19495
RS  8  119.76366

LONGITUDE INCREMENT

DEG WEST/ORBIT
25.794574
23.691313
29.756458
29.795570
30.015748
29.805877
29.975609
30.068025

FUTURE PROJECTS

No positive indications have been forthcoming on future amateur satellite operations which may include:

• The ARNET proposal for two geosynchronous satellites.
• Amateur operation by W5LFL during the flight of the Shuttle 'Challenger'.

AMSAT AUSTRALIA

Bob Arnold VK3ZBB
41 Grammar Street, Strathmore, 3041

THE RISE AND FALL OF ISKRA 3

Russian Amateur Spacecraft ISKRA3, also known as RK03, was launched from spacelab SALYUT 7 at 0756 UTC on 18 November 1982, see Amateur Radio, January 1983.

The satellite was at the relatively low altitude of 364 km at launch and without onboard boosters was destined to have a short life. This situation was ideal to study the decay characteristics of the satellite and consequently every effort was made to determine regular orbital times and to plot this parameter against the day of the year.

Initially orbit times were measured every three or four days ie whilst the rate of decay was fairly steady, but when the orbit time became less than 90.5 minutes and the rate of decay increased substantially observations were recorded two or more times each day. Contact was lost on day 350 (16th December) and I understand that this is the day of re-entry recorded by NASA. However some authorities claim that the satellite was heard on orbits up to 25th December.

The whole project may be delayed due to the problem of hydrogen leaks on Challenger.

• The proposal to launch Phase IIIC with a DSCS satellite of the USAF.

The launch of Phase IIIB is now believed to be scheduled for 27 May 1983.

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The launch of Phase IIIB is now believed to be scheduled for 27 May 1983.
THE SAD STORY OF VK5VF

VK5VF on 53.000 and 144.800 are both off from the beacon list this month. First is the air due to bushfire damage. After nearly thirty years as a Fire Control Officer I still find major bushfires a very traumatic experience, and are to be feared.

There have been a number of deletions other than an unconfirmed report of VK3XI source of power etc. However, they will go QTH previously after testing, so at least we knew. Fortunately, Mark VK5AVQ had taken the new solid state beacons back to his cubicle, so that's the end of that story!

At this stage I have not heard of losses sustained by amateurs in the bushfires, other than an unconfirmed report of VK3XI losing all his antennae; but there must be some who have suffered severely in the two southern States. Maybe we could help if we knew.

To view the absolutely total destruction around the summit of Mount Lofty is a terrible spectacle, and this is the area where the VK5VF 6 and 2 metre beacons were installed. The flames passed through the towers of the transmitters of the television stations on Mount Lofty, and in so doing, destroyed a building which supplied power to the beacons, so putting them off the air. I went to the beacon site today (22/2) but didn't have the heart to wander amongst those people who were cleaning up the site (I would never want to be classed as a sightseer!). However, looking from the outside it appears the two antennae are gone, and probably the transmitters would have been roasted in their cubicule, so that's the end of that story!

Fortunately, Mark VK5AVQ had taken the new solid state beacons back to his QTH previously after testing, so at least we still have something, but a lot of work will now be needed to get the beacons back on the air, a new tower, two antennae, feedlines, power supplies, together with a source of power etc. However, they will go back!

At this stage I have not heard of losses sustained by amateurs in the bushfires, other than an unconfirmed report of VK3XI losing all his antennae; but there must be some who have suffered severely in the two southern States. Maybe we could help if we knew.

BEACONS IN VK2

Tim Mills VK2ZTM, the State Repeater Co-ordinator, has written advising VK2BNT (mentioned above) was not yet on the air, with the sponsoring group, Hunter Branch Radio Group, in the final stages of submitting the various required details preparatory to licencing.

Tim also mentions the beacons VK2WI at Dural use a common callsign generator, and to date there are three bands covered, 10, 6 and 2 metres. Jeff VK2BYY is waiting for the licence for 70 cm to come through. Later in the year it is planned to change the callsign to one from the "R" series which will be in line with identification requirements.

BEACONS IN VK1

A letter from Ron VK1RH advises it is proposed to change the frequency of the VK1 2 metre beacon to conform to WIA beacon band plan. The crystal for 144.410 has been purchased, but it is necessary to wait until the Department of aviation radar on Mt Majura is switched off for maintenance before changes involving aerials and swapping the crystal can be made. The work involved is to change the antenna boom and replace the 2 metre vertically polarised on Mt Ginini antenna (used to be part of the VK1RAC repeater set-up) with 2 and 6 metre horizontally polarised omni-directional antennae.

These changes should allow the present 2 metre beacon to be heard much further afield, and ultimately lead to the establishment of the 6 metre beacon, a licence for which has been held for several years, but equipment is mostly in the design stages.

VK1 REPEATERS

Ron also mentions VK1RGI on Mt Ginini continues to give faithful service, no changes are proposed at the moment except perhaps cross linking to the 70 cm unit when it gets to Ginini. VK1RAC on Black Hill also continues with reliable service although its antennae took a lightning strike a few months ago which called for repairs. VK1RUC, the 70 cm repeater is to be located at Black Hill. Enquiries have been made to the VK5 ATV people regarding repeaters, particularly the mid-north repeater which has a level of sophistication the Canberra group would like to achieve also.

FORWARD PLANNING

Ron VK1RH draws my attention to a short article a couple of years ago in "AR" in which he proposed that the VHF bands be progressively "opened up" by first installing beacons as standard signal sources then progress first to wide band modes (FM) repeaters as necessary then to narrow band modes and linear translators (repeaters in the true sense). Coupled with this would be a progressive policy of curtailing outmoded facilities, with suggestions that no more 2 metre FM repeaters be sited in cities, and in five years no more in the country areas. Ron says the article largely fell on deaf ears, but he would still like the principle applied wherever possible. He has looked into the matter of 1296 MHz heacons and would like to see something along these lines in service in Canberra and other places in the future. There's only one way to go — and that's up in frequency!

THE SIX METRE SCENE

Six metres continues to provide a few...
surprises. It is quite surprising the number of times JA stations are heard, mostly on 50 MHz of course, but occasionally the band opens to 52 MHz. Bob VK5ZRO has again opened the 6 metre scene Gil VK3AUI

...
bands, 52, 144, 432, 576, 1296, 2304 and 3456 MHz.

"The most dramatic DX was the establishment of the Perth to Exmouth (North West Cape) path of 1130 km on 144 MHz as a regular part of our summer pattern. Steve VK6ASF previously active on FM put up a beam and operated SSB. I worked him on SSB for the first time on 11/11/82 and then during the Ross Hull Contest at 1547 on 4/12, 1348 on 15/12 and 2226 on 20/12, and on 24/12 at 1222 hours. Steve's Sunbury Repeater which is 100 km south of Melbourne was hearing this yagi on 24, just before Christmas and reverted to two 5/8 wavelength verticals in phase for FM operation. Earlier that UCT day (the previous evening) Steve could not avoid triggering simultaneously repeaters along the north west coast to Karratha (310 km) and Port Hedland (500 km) as well as to the south such as Geraldton (760 km).

Other stations worked to the north from here included Andy VK60X on both 144 and 432 at 1311 on 11/11, 1412 on 15/12, 1340 on 23/12, and on 144 only at 1338 on 16/12 and 1309 on 24/12.

"Country activity during the Ross Hull Contest was good. Regulars on 144 and 432 were Tony VK6BV at Northam (85 km), Max VK6FN Manjimup (250 km), Alan VK2ZH Busselton (200 km), Beth VK6EL Busselton, and Wally VK6WG Albany (380 km). Others who appeared on 144 SSB included Wally VK6ZWO Mullawma (390 km), Ken VK6AK Katanning (240 km) and Laurie VK6GL, John VK6IM and Doug VK6ZDR, all at Bunbury (140 km).

"Apart from a good opening to Japan on 4/12 from 0500 to 0700, 52 MHz was relatively quiet as far as DX was concerned. My best day was on 29/12 when VK1, 2, 3, 5, 6 and 7 were worked. There was a 50 MHz band opening as far as Ross Hull points were concerned.

"My portable work this summer was limited to a brief holiday period in Busselton (200 km south of Perth) and the best DX on 144 and 432 was to Andy VK60X in Carnarvon (988 km). On 576 and 1296 MHz I worked Don VK6HK over a 193 km path. This contact on 576 MHz will be the basis of a claim for a new Western Australian DX record.

"Wally VK6KG tells me that the Albany/Adelaide path has been very poor and that the Albany to Melbourne path almost non-existent on 144 MHz this season.

"By the way, the Indonesian to VK6 path on 144 MHz has frequently allowed stations along the north west coast to work on FM some Indonesian stations. I haven't many details. Maybe your column could seek out more data on this path. I got a contact to PV7A in Hedland. As of 14/12/82 Steve VK6ASF in Exmouth had had one contact on 22/10/82. It is possible language is a formidable barrier. (if anyone who has knowledge of these contacts would like to write to me with details I will be pleased to pass it on for others to read... VKSLP).

"During my overseas trip I visited the 1296 MHz beacon site on Mauna Loa in Hawaii this past fall with Paul K6HME, the beacon keeper. It was built by Chip NC6A in Los Angeles, and runs 25 watts to an antenna system of four 25 element loop yagis mounted one above the other. The takeoff at the 2400 metre level is fantastic. Later again in the company of Paul I visited the Los Angeles end of the 1296 MHz path from where Chip had heard that beacon. The beacon has an inbuilt receiver and the idea is to disable the transmitter to receive. Frequency is 1296.000 and CW keying. I listened to the Chip N6CA recording of the beacon signal and there is no doubt in my mind that the world record on 1296 MHz between Chris VK5MC and myself (VK6KZ) will eventually be extended in excess of 3900 km. New Zealanders please take note and look out for VK6KZ.

"The Central States VHF Conference in Louisiana was tremendous with about a hundred and seventy fans attending. However, the conference opened my eyes to the strong role played by that simple challenge of 'worked All States'. This achievement has resulted in stations gradually improving their gear and operating habits. Firstly, tropospheric conditions provide the nearby States. Therefore, to obtain and then meteor scatter and maybe Es. Then comes a stage when further States can only be added to the tally by moving to moonbounce. This requires better receivers and higher power transmitters. The serious operator is now using gas FET preamplifiers with noise figures on 1244 MHz well below 1 dB and below 1 dB on 432 and 1296 as well. Both USA and Japanese devices are common. This interest in VHF conference are noise figure measurements of preamplifiers and antenna gains. One of the fascinating antennas had a 26 foot boom, and it was one of 16 in the operators array. No wonder 'QST' talks of antennas being damaged by wind and snow and the motto 'if it didn't blow down it wasn't large enough!'

"More than half of those attending the conference had, or were working on preamp amplifiers. International participants were G3P0, LU3DCA, VE7CRU, ZS1FE, ZS1KE and VK6KZ. ZS1FE/KE had been working with AMSAT on Phase B and Tom Clark W3IJW President of AMSAT was there too.

"I found little or no activity on 2304 MHz and higher, but interest in 2304 was emerging. At present the activity was linked to 'Amateur TV' reception of 'cable TV' being distributed between 2000 and 2300 MHz! There was a lot of action in Los Angeles when I was there with private individuals being accused of 'stealing' pay TV.

"All in all, I felt we have much to be proud of in Australia with some remarkable achievements accomplished without easy access to new components, engineering samples and surplus components ex manufacturers and military. Certainly they have some sophisticated repeaters and phone patch arrangements through them with appropriate codes.

"I was in Tokyo for two full days and spent a lot of time in the suburb of Akihabara. This has many electronic/electrical outlets. Impressions were very favourable. Components were readily available from hosts of 'cubicles', about 2 metres deep and 2½ metres wide and loaded with items from the side and back walls plus ceiling. There were many of these in the one building and similar buildings were adjacent eg one four storey building had these arranged around a U-shaped aisle, each cubicle had a different entrepreneur and many specialised in a particular area, eg transformers or hardware or instruments or computer chips etc. And there were many customers. Either there is a strong cottage industry or some very active home hobbyists!

"The Amateur Radio stores in Akihabara had a fantastic range of equipment. The most dramatic to me was the availability of 1296, 3020 and 5760 transverters! And loop yagi antennas for 1295 and 2304 MHz! The 1296 and 2304 transverters were all mode devices, the 5760 MHz FM and not on display. With the recent licensing of repeaters for the 430 to 440 MHz and 1.3 GHz band in Japan I guess we will see more commercial equipment for those bands, plus Phase B or for 1.3 GHz.

"The 144 to 146 MHz region was crammed with JAs on SSB and FM and the paging systems above 146 MHz certainly provided good beacons for those in northern Australia and elsewhere.

"If the language barrier was not so great I am sure I could have learnt a lot about the state of the art for 1.3 GHz and above!

"Well, there are some observations. I could go on, but I clearly enjoyed myself and learnt a lot but still think VK is the best! Thank you Wally for allowing us to share in your experiences, I am sure there will be something of interest for most in your letter, and many would have liked to accompany you!

"Wally also enclosed details of the equipment used for the reception of the 1296 MHz signal from Hawaii, and next month I hope to find enough room in this column to give you all these details.

**CONCLUSION**

Sorry about the lack of VHF notes last month. It takes a lot to knock me down but the throat infection which went through my whole system certainly made life difficult for five weeks. Not even the clacking of the typewriter could be tolerated at the critical time! However, I have survived and managed to turn the transmitters on once again.

"Thought for the month: "In the good old days, the man who saved money was a miser; nowadays he's a wonder!" 73.

"The Voice in the Hills.

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**COMMERCIAL CHATTER**

**VK2DIK HELICOPTER MOBILE**

Dick Smith is off on the next leg of his around the world helicopter adventurer. He hopes to leave Sydney on the 1st June 1983 and head to North Queensland around the 2nd to 5th June. Then it will be off to Indonesia 6-12 June, Philippines 13-17 June, China 18-26 June, Japan 28 June-4 July, Alaska 6-14 July, Canada 17-19 July and finally back to the USA on 19-22 July.

Equipment aboard is a Collins HF220 rig using upper sideband only. Frequencies will be 3,757, 7,225, 14,285, 14,146, 21,385 and 21,185 MHz.

**AMATEUR RADIO. April 1983 — Page 69**
Well, a quarter of the year has passed and it is already apparent that HF conditions have deteriorated rather markedly. Propagation has been very poor on some long distance routes, mainly the east-west path. Some of the weaker stations closer to home, that are not normally observed because they are drowned out by the higher powered outlets from Europe or America, have been noticed, particularly on the 41 and 49 metre bands. The lower frequencies are also improving gradually, with the disappearance of the atmospheric electrical activity. Signals from the Latin American regions should be making their presence felt on the 60 and 90 metre band allocations by now.

One interesting trend I noticed this summer, was Asian signals coming in much earlier, presumably because signals from Europe were down from normal. For instance, the Home Service from Pyongyang (North Korea) was monitored here as early as 0700 UTC on 11.350 MHz. Several Chinese outlets of their domestic and foreign services were also noticed, but not at the same strength, peaking a little later at about 0800 UTC. On a lower frequency, a Soviet station with Domestic programming has been heard on 4.485 MHz as early as 0900 UTC. It is located in the Petrovsk region. I expect that this propagation will not continue, as the days lengthen in the northern hemisphere.

INDOCHINA

Those interested in trying to receive several low-powered stations in the Indochina region might give the range of 6.3 and 7.1 MHz a thorough scan. The best time to listen is between 1100 and 1300 hours UTC. One noticeable characteristic is the lack of stability on their transmitting frequencies, and have been drifting over 30 kHz or so. For example, Radio Vietiane in Laos has been logged between 7.035 and 7.050 MHz in Laotian and at 1200 UTC in English. Several provincial Lao and Vietnamese stations have also been heard about 6.5 MHz. However, don't get confused with several powerful Chinese stations also around these frequencies. Their transmissions are extremely stable. One aid in identification of some of the broadcasters is to listen at 1110 and 1230 hours UTC and also on 12030 kHz. However, I do find the announcers' diction very hard to follow at times.

HELP INTRUDER WATCH

Recently, Bill Martin VK2EBM, our Federal IW Co-ordinator wrote to me, asking for help from SWLs in identifying and reporting intruders in the amateur bands. Some SWLs would have experience in identification of some of the broadcasters, and I personally feel that they could contribute to Intruder Watch. I recommend that they contact their State IW Co-ordinator (from the latest Callbook) and obtain some observer log sheets and forward them monthly.

One intruder I heard and logged recently on 14 MHz, was the Vietnamese Newsagency on CW. On the 23rd of February, it was heard on 14.070 MHz at 1130 approximately with copy in English about possible troop withdrawals from Kampuchea (Cambodia). This station has been observed previously on 14 MHz with copy in Vietnamese and French. Its operational frequency does seemingly vary, due to how occupied the CW portion of 20 metres allocation is.

Incidentally, the Voice of the Khmer Rouge guerillas is easily observed here on 15.165 MHz and 11.680 MHz approximately at about 1030 UTC. The programmes emanate from Chinese transmitters and are quite loud. Naturally they broadcast in Khmer, the language of Kampuchea. This station has been easily heard here just above WWV on 15.190 MHz and 11.700 MHz. However, I do find the announcers' diction very hard to follow at times.

REBROADCASTS

Recently, I made the observation that the BBC Caribbean Relay was being heard at 1200 UTC on 9.510 MHz. Well, I was right about the hemisphere but wrong on location. These programmes are being re-transmitted from the CBC transmitters at Sackville, New Brunswick and are on between 1100 and 1330 hours UTC for listeners in Canada and the United States. The BBC have for many years also retransmitted Radio Canada International from their Daventry site for European listeners.

NEW AMERICAN STATION

The new American commercial station located at Saipan in the Marianas, KYOI "Super Rock", I heard on 15.190 MHz and it has continuous "rock" music with the occasional I/D in either Japanese or English. It appears to me that the same tapes are being used repeatedly, and there appears to be a lack of commercial advertising.

This compares with WRNO in New Orleans, the other American commercial station, although on weekends it is virtually indistinguishable from one of the many religious broadcasters that are about. For KYOI suggest you try either 15.190 MHz at 0500 UTC or 11.900 MHz at 1200 hours UTC.

COMMERCIALS

Speaking of commercials, recently I got a shock listening to the Chinese Second Network on 8.320 MHz one night, when I heard Chinese ads for various goods and services manufactured in the PRC and available throughout SE Asia. This is certainly a change from hearing quotations about the Cultural Revolution in the PRC on the 9.020MHz and in the United States on the 9.020 MHz and in the United States on 9.020 MHz.

Incidentally as from 1st January, Radio Peking has changed its call to Radio Beijing. This has now brought it into line with the Chinese spelling, which reflects more accurately the Chinese pronunciation. Other place names have also altered their spelling for example Guangdong (Canton), Fujian (Foochow) etc. However, Shanghai the largest city in China is unaltered. It has twelve million inhabitants.

Well that is all for this month. Until next time, the best of 73 and good DXing!

Robin VK7RH

JOIN A NEW MEMBER NOW

Robin Harwood VK7RH
5 Helen Street, Launceston, Tas 7250
A REVIEW OF THE PAST AND A LOOK AT THE FUTURE FOR WICEN

ORGANISATION

WICEN has come a long way organisationally over the past few years, principally because of closer and continuing liaison with the disaster control agencies in each state. Matters such as accreditation, insurance and compensation have been taken up mostly with acceptable results. Divisional activities have fallen into clear levels of responsibility and duties of coordinators established at local, regional and state levels.

Future organisational objectives must address simple state chains of command and insurance/compensation coverage for small groups and single amateurs who don't feel they have to belong now that third party traffic is authorised.

ACCEPTANCE

Whilst there is no denying that acceptance of amateur radio by disaster control agencies has improved due to the efforts and liaison of WICEN, that acceptance is very fluid and frequently heavily dependent upon personalities on both sides.

Our objective here is to formally record that acceptance in some detail in the relevant state disaster plans and make it more independent of personalities of the day. Ideally it should be possible to initiate WICEN involvement from that plan and its contact lists.

Human nature being what it is we amateurs will only be called upon for help when other resources are exhausted and things look desperate. Then we will be expected to step in at full speed to stop the gap in a professional way and that's the challenge facing WICEN.

ACTIVATIONS

With any volunteer organisation it's difficult to achieve a balance of activity and effort. Some operators will answer all and every call for assistance and do it for years (or until divorce strikes!) others will respond to real emergencies, still others can only "monitor the repeater from home for a couple of hours". A small turnover of members prevents stagnation but on the other hand providing exercise communications for everyone soon leads to cries of overwork and underpayment. Besides, should many civic organisations get free communications whilst so many of our numbers are unemployed?

Our future objectives here are to know our operators and their availabilities and select civic aid exercises with care so that they do have training, PR or public exposure value. A guide is not to be interested in groups who are not genuinely interested in us.

CAPABILITIES

The capabilities of WICEN have changed over the years, keeping pace with advances in communications. The HF crystal locked, valve battery powered equipment of the 50s has been replaced progressively by SSB transceivers and crystal locked FM gear which has itself been replaced by synthesised equipment. The use of repeaters has also enhanced capabilities. However old skills have been lost, such as CW message handling, filling the gap from the extremes of VHF FM repeater range to the first HF skip distance and working through interference both man made and natural.

For the future our capabilities/objectives must include matching current capabilities to disaster plan needs then testing and proving new techniques eg RTTY, portable repeaters, field antennas, field power supplies to name a few. In a phrase be progressive and not stagnate — remember our strength is our flexibility both equipment and frequency wise. Here's a thought to bring you down to earth, "how much overwork and underpayment. Besides, has been the opposite as the amateur movement could easily sustain a basic traffic system whilst others have decreed its lack of SES standard operating procedure. Personally I feel it's too soon to know just what will happen, perhaps the WICEN members who have seen no need to disaster plan, an approach which was used frequently in the past, let's be more progressive and see if we can solve their communications problems. To do this it's necessary to analyse the disaster plan, or if one does not exist, carry out a threat analysis, grouping threats into probability of occurrence and severity of disaster effect classes. Then we must aim to satisfy the most likely or frequent occurrences whilst still retaining some ability to meet the rarer circumstances. Such an approach perhaps conducted as a "think tank" of members retains their interest and sense of purpose in WICEN.

PURPOSE

Closely coupled with capabilities, which are really the response, is purpose or demand. Rather than tell the authorities what we can do and leave them to fit it into their plan, an approach which was used frequently in the past, let's be more progressive and see if we can solve their communications problems. To do this it's necessary to analyse the disaster plan, or if one does not exist, carry out a threat analysis, grouping threats into probability of occurrence and severity of disaster effect classes. Then we must aim to satisfy the most likely or frequent occurrences whilst still retaining some ability to meet the rarer circumstances. Such an approach perhaps conducted as a "think tank" of members retains their interest and sense of purpose in WICEN.

AWARENESS & TRAINING

Historically, semi-closed groups went about training and provided WICEN communications in some isolation but in recent times the need for awareness and recruiting has led to a greater openness and exposure. Some training activities, both civic aid exercises and WICEN only sessions can be used to provide on-air awareness and for recruiting of new operators. Training in the past has been in voice procedure and message handling whilst neglecting our two great assets, flexibility of frequency and equipment.

Future awareness objectives must be targeted to get every Australian amateur aware of the existence and need for emergency communications, the role of WICEN, the existence of WICEN calling frequencies, net discipline and how to use basic voice procedure.

Training objectives for WICEN operators will need to be expanded into frequency management considerations and into field operations. The first can be associated with IPS instruction, interstate nets and ON hunting whilst the latter can be achieved through field day and public display stations.

COMMUNICATIONS

A never ending challenge, accomplished in the past through close-knit groups, printed news sheets and personal liaison. Regrettably printing and postage costs have taken their toll of late so our communications objectives must be to achieve amateur awareness through our magazine Amateur Radio, divisional broadcast items and regular WICEN networks supplemented by divisional and club meetings. But are you aware that only half the Australian amateurs belong to the WIA and receive AR, and a lesser number listen to broadcasts. The challenge then is to make them all aware of our existence and activities and perhaps reduce the on-air tuning up on working emergency networks.

THIRD PARTY TRAFFIC

What has been the impact of third party traffic privileges? Not to fill all our bands each night with networks passing amateur-grams of trivia around the nation as some diehards feared and predicted. Sadly perhaps it's been the opposite as the amateur movement could easily sustain a basic traffic framework, particularly to isolated islands (I am aware of the useful VK0 traffic). Some have suggested that WICEN could provide a framework for a national traffic network system whilst others have decreed its lack of SES standard operating procedure. Personally I feel it's too soon to know just what will happen, perhaps the WIA missed the bus by not appointing a national traffic manager however they did produce a Policy Statement and operators' guide lines in keeping with their low key approach.

The effects on WICEN have been generally good, for despite the lack of formal changes to the regulations, far more civic aid exercises have been conducted. On the negative side however are the lost WICEN members who have seen no need to continue their affiliation and are now potentially exposed to personal risk liabilities whenever they become involved in emergency communications.

This gives rise to the last objective to make membership of WICEN attractive and advantageous to the civic minded amateur who is willing to assist with communications in emergencies.
COUNCIL REPORT

Divisional Council met on the 11th of February 1983 at the WIA Parramatta building.

The motion carried at the December meeting to invest $5,000 in AGC debentures was rescinded as they had been suddenly withdrawn from the market. Other investments will now be considered.

A Yaesu FT107 was purchased to replace the existing HF transceiver at Dural. This will provide greater reliability for HF broadcasts and callbakes.

Fourteen new applications for membership for February were accepted.

Federal Councillor Stephen Pall, VK2PS, presented a report on WCY-83, identification changes for RTTY and ASCII transmissions, Melbourne mast enquiry, callbook entries, VK/ZL Contest Manager, 1983 WIA Federal Convention and subscription renewals. Five federal convention agenda items from VK2 were discussed; uniform concessions for students and pensioners, discounts for students and pensioners and voting representation at conventions. It was decided that this division would be represented by the Federal Councillor, Stephen Pall VK2PS and Alternate Councillors Wally Watkins VK2DEW and Tim Mills VK2ZTM.

Tim Mills presented a report on repeater applications, interference and breaches of regulations. It was noted that four Sydney repeaters had no identification, others had inadequate identification and four country repeaters were not at the site for which they were licensed. Council resolved that a letter be sent to each club involved advising them of their breach of regulations.

All amateurs should be aware of the need to observe regulations as breaches detract from the image of the Amateur Radio Service being responsible and self policing. Investigating the above breaches involves the DOC in considerable time and increases their costs, with a consequent rise in licence fees.

It was decided to reschedule the official opening of the WIA building at Parramatta to the 28th of May, 1983. Due to uncertainties as to the Minister for Communications' attendance, no other alternative was possible. When the Federal Election has been decided, new arrangements will be made and members advised.

LIVERPOOL FIELD DAY

The Liverpool & Districts Amateur Radio Club will be holding its field day on the 24th of April, 1983 at the Fairfield Showgrounds.

The programme of events is:

8.45 to 9 AM — all band scramble.
9 AM — start of observation trial.
9.30 to 10 AM — 10/12 m DF foxhunts.
10.30 to 10.45 AM — VHF/UHF scramble, repeaters can be used.

11 AM — disposals open.
11 to 11.30 AM — audible children's beeper hunts.
11 to 11.30 AM — junior (under 17) 2 m pedestrian foxhunts.
11.30 to 12 noon — senior (over 17) 2 m pedestrian foxhunts.
12 to 1.30 PM — lunch.
12.15 to 12.30 PM — meet the people contest.
1.30 to 2.30 PM — 2/10 m 2 transmitter DF foxhunts.
3 to 3.30 PM — talkin foxhunts on 2 m, 10 m, 70 cm (minimum of two starters needed for each band).
3.45 to 4 PM — 2 m pedestrian talkin hunt.
All 10 m events are on 28.47 MHz; all 2 m mobile, talkin, pedestrian talkin events are on 146.55 MHz; 2 m pedestrian events on 144.475 MHz; 70 cm talkin event on 439 MHz.
A grand raffle with the prize being a Commodore VIC-20 computer with cassette and game joystick (value $472) will be held. Tickets are $1 each or 3 for $2.
Entry fees for the field day are; adults $3, children attending school over 12 years $0.50, families $5.
Trade displays of amateur gear and home computers will be held and there will be technical and general interest quizzes, children's crossword and coloring competitions and other attractions. Food and drink will be on sale.

For advance purchase of raffle tickets or enquiries about the club or field day, write to PO Box 690, Liverpool, NSW, 2170.

PUBLICATIONS

A new publications price list was included in the AGM booklet posted to all financial members. Please be sure to refer to it for your purchases.

8TH CONFERENCE OF CLUBS

The next Conference of Clubs will be held at the Parramatta WIA building at 109 Wigram Street, Parramatta commencing at 10 AM on Sunday, the 17th of April.

Agenda for the meeting has been sent to all VK2 Affiliated Clubs so that they can discuss the motions with club members as a guide for their delegate. Agenda items for the 1983 WIA Federal Convention will be discussed under General Business and the VK2 Federal Councillor, Stephen Pall VK2PS, will note members' views as a guide to his vote at the convention.

These Conferences of Clubs are an advisory policy making body of this division and all affiliated clubs should obtain the views of their members on agenda items and attend the Conference of Clubs.

Any member is entitled to attend as a spectator and you would certainly gain an insight as to the workings of the conferences and the important place they occupy in the operation of this division.

WIA QSL CARDS

As you will see from the sample, WIA QSL cards are now available from this division. You can arrange with your local printer to have the cards overprinted with your own callsign or you can use a rubber stamp as the cards are smooth non glossy finish. They are available from the office in lots of one hundred for $5 or $6 posted.

Card colors are white with either black, blue or red print; blue with black or blue print; green with black print; yellow with black or red print.

Please indicate a second card color/print preference as some combinations may sell out. Send orders and cheque to PO Box 1066, Parramatta, NSW, 2150.

COMING EVENTS

8th Conference of Clubs: 17th April at WIA Parramatta.
Liverpool Field Day: Sunday the 24th April at Fairfield.
WIA Federal Convention: 23 to 25th April in Melbourne.

NSW members and clubs are invited to submit news items for inclusion in these notes to WIA NSW Division, PO Box 1066, Parramatta, 2150 and mark the items "For Mini Bulletin". Items for June AR must reach us by the 22nd of April.

Athol VK2BAD

KEEP THAT NOSE TO THE GRINDSTONE

The longer you work, the longer you live, suggests a study by the US Social Security Service. It found that among men who retired at 62, some 81 per cent were alive six years later. But among those who kept on working, 86 per cent survived for at least six years.

Business Review Weekly
April is Radio Club Workshop Month in Queensland. On the weekend of the 9th and 10th, delegates from many parts of the state will assemble at Griffith University, where they will stay until Sunday afternoon. They will eat, sleep and work at the university for something like 20 hours of work time.

Griffith University, not far from the famous QEII stadium, was the Games Village last year and only ten minutes on the Freeway from downtown Brisbane. It is the perfect location for our Radio Club Workshop.

The Radio Club Workshop is an expensive exercise, but it is money very well spent. The total cost is estimated to run to about $2.00 per member of our total membership of some 1200 or so members. The workshop is the forum where clubs, affiliated with the division, can convey the views of a large proportion of the amateurs of Queensland to our state council. The discussions have a large bearing on decisions made by council, not just for one year, but well into the future. The workshop can convey the views of a large proportion of the amateurs of Queensland to our state council. The discussions have a large bearing on decisions made by council, not just for one year, but well into the future. It also briefs our federal councilors in preparation for the forthcoming Federal Convention.

It is a two-way affair, the delegates take back a wealth of information regarding the council, the services offered members of the division and most important, the fact that council is a body of amateurs, ordinary amateurs, just like themselves. Some time back a very popular slogan was “BREAK DOWN THE BARRIERS”, this is just what the Queensland Radio Club Workshop does.

In a letter to Queensland Club Secretaries recently, David Jones, VK4NLV, had this to say: “It should be noted that the highly successful concept of policy-investigating committees we triedlast year’s Workshop. Federal Executive has evaluated successfully and the division has correctly continued work on this year’s Workshop. Federal Executive has taken great notice of the policies developed by last year’s Workshop, and we are certain that they are eagerly awaiting this year’s results. That the Federal Executive are now reviewing basic Federal Policies in so many areas is a direct result of the input of your delegate at last year’s Workshop.”

Some of the club motions to be debated will be:

- That RTTY segments be proposed on the HF bands as follows: 3.545 ± 5 kHz, 7.045 ± 5 kHz, 14.090 ± 10 kHz, 21.090 ± 5 kHz, 28.090 ± 10 kHz, 28.490 ± 10 kHz.
- That training kits be made up to assist the uniformity and quality of training by club instructors in the amateur operator licence courses.
- It is interesting to note that two clubs, Mackay and Gold Coast have similar motions restricting frequencies within bands for all contests.
- There is also the perennial proposal regarding the expansion of novice bands. There will be some very lively debating!

The NSW Division has expressed some interest in a similar workshop in that state. The Queensland Council has invited an observer from VK2 and it is pleasing to note that this has been accepted. Guest speakers at the workshop will be Mr David Jull, MHR; Mr Sam Voron, VK2BS; Mr Kev Whiting, the State SES Director and an officer from DOC.

A report on the 1983 Radio Club Workshop will appear at a later date.

IT’S HISTORICAL

Peter Brown, VK4PJ, VK4 Division Historical Officer hosted another successful luncheon at Coorparoo RSL in February. Included were Perc Wood, Ex 4RO, 1927 from Benora Point, NSW; Steve Fittell, VK4YF, 1929, Gympie; All Bauer, 4AT, 1926; Archer Walz, VK4AW, 1926; Ralph Pepper, 2VH, 1922; Jack Wooster, VK4AV, 1930; and Norm Odgers, VK4ANO, 1924. Many were the stories told by all these “OLD TIMERS” and a lot more material was gathered by Peter.

Do any of you living in other states have memories of incidents of historical value to Queensland. Maybe you lived here in the 20s and 30s and can contribute to Peter’s files. Peter Brown, VK4PJ, is QTHR or: Via Box 638, GPO, Brisbane, Qld 4001.

Bud VK4QY

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

DIARY DATES

- 23-25th April Federal Convention
- 26th April Annual General Meeting
- 24th May Getting Started in RTTY — John Mitchell VK5JM
- 31st May Buy and Sell

AMATEUR RADIO, April 1983 — Page 73
NOTES ON THE PREDICTIONS

The mode of propagation used by IPS in compiling their predictions are reflected in the bar charts used to convert the Graflex symbols into a graphic picture.

When generating the Graflex charts (reproduced in a number of publications) the following symbols are used.

1. “.” — Propagation is possible but probably less than 50% of the days of the month.
2. “%” — Propagation is possible between 50% and 90% of the days of the month.
3. “F” — Propagation is possible by the first F mode on at least 90% of the days of the month unless there is a severe ionospheric disturbance.
4. “M” — Propagation is possible by both first and second F modes. The strongest mode is normally the first mode, but the vertical aerial pattern may influence the mode received.
5. “A” — High absorption, i.e., above the absorption limiting frequency but probably too close to it for good communication.
6. “X” — Complex mixtures of modes including the second E mode.

These are the most significant types we encounter. The full lines or bars on the chart cover 2, 3, 4 taking 5 into account. The broken lines or bars are depicted by 1. 6 is extremely hard to verify and is not taken into account.

The paths from Eastern Australia are based on Canberra. The paths from Western Australia are from Perth. Suitable allowance should be made on Eastern paths for geographical differences. Times, as much as 1 hour difference between Victoria and Queensland in band openings occur. Often there is no signal available in one State, whereas the opposite effect occurs in the other State, they get the lot. Marginal differences produced by layer tilt and varying degrees of ionisation can be very frustrating.

Generally the predictions show that time of day when the path should be open between the two areas. All other factors notwithstanding.

LEGEND

FROM WESTERN AUSTRALIA

FROM EASTERN AUSTRALIA

BETTER THAN 50% OF THE MONTH, BUT NOT EVERYDAY

SP SHORT PATH

LESS THAN 50% OF THE MONTH.

Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC.
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Oakleigh 3166

Melbourne (03) 570 1698
Sydney (02) 519 5188
Brisbane (07) 52 7600
Dear Sir,
I have written a computer programme for my TRS-80 which sends and receives Morse Code. My FT 101 transceiver has been keyed by the computer which can send at virtually any speed. Or air reports have been good.

However, while the computer prints on the screen, anything that I send to it through a hand keyer audio oscillator— I have not had much success in decoding signals off air.

There appear to be two problems. One is that the received Morse needs to be pretty well perfect to be reproduced. The other is that the computer appears not to be able to differentiate between Morse signals and random noise and static.

Perhaps the first problem could be solved by having the Morse sent by another computer using my programme— but the second probably needs a good filter which removes, from the signal, everything but the Morse.

I wonder if there is anybody who would like to get together with me and help solve my two problems.

I would also be interested to contact with anyone who could assist me to get the computer going on RTTY.

If anyone is interested I'd be glad to hear from them at the above address or by phone on (03) 598 9467.

Yours etc.
Alan Maclean VK3ASL

562 Kooringal Road,
Wagga Wagga, 2650
5-1-83

The Editor.

Dear Sir,

I enclose a cutting from “QST” of December 1953 issue, with an estimation of the Novice situation in Australia after 10 years of experience with this class of licence. While the Novice experience in USA may be somewhat different from the Australian situation, there are sufficient points of major benefit and interest common to both national areas to justify a copy of this article that you might publish some or all of the “QST” article for benefit of the Australian Amateur Service.

I realise that in the USA the Novice class was introduced prior to the CB “explosion”, which had severely detrimental effects on the American Amateur development. Here we had the CB and pirate invasion BEFORE the Novice Licence was introduced to counter the massive unlicensed operations of the so-called CB movement. There were some benefits from the CB invasion in that CB and pirate usage provided a certain number of recruits to amateur radio and an increase in the Institute membership. However, we did lose an entire HF band without compensation by invasion and the subsequent conning of such reprehensible action by the Federal Government. Since then, other services have been ejected from their allocations to make room for the insatiable demands of the local CBRS and its big PIRATE brother, under the leadership of BIG BUSINESS interests for which the benefit the radio spectrum appears to be an area for exploitation to ensure that “already wealthy” citizens are made “still wealthier”.

Yours faithfully,
Rex Black VK2YA

Editors Note:
If any reader needs a copy of the QST cutting please send an SASE and a donation to cover photocopying costs to PO Box 300, Caulfield South, Vic 3162.

PO Box 93, Toongabbie. NSW 2146
8-2-83

Dear Sir,

Congratulations on the “new-look” AR. I am finding every issue of great interest and look forward to receiving my copy each month, in fact I mark distinct mumbling sounds if it is delayed in the post.

Yours faithfully,
Jim Swan, VK2BGS

Hughesdale 3166
2-3-83

The Editor.

Dear Sir,

So everything’s up to date in Latrobe City (VK7OW p 20 AR Feb 1983) Does the “improved Mark II GSRV” really sparkle? Metinks something is wrong. Here in downtown Hughesdale we haven’t seen a horseless carriage for sixty years. Modern automobiles purr rather than chuff along the sealed streets. The length of the flat-top and the 300 ohm feeder, using a velocity factor of 0.85, is equivalent to 98.5 feet. Referring to the RSGB Amateur Radio Handbook (fig 13 p361) we find that at the feed point for the coax we have:

- on 3.5 MHz—a fairly large inductive impedance on 7.0 MHz—a low capacitive impedance on 14.0 MHz—a high inductive impedance on 21.0 MHz—a high capacitive impedance on 28.0 MHz—a low slightly inductive impedance

For the original genuine G5RV design the combined feed line lengths from the coax we have:

- on 28.0 MHz—a high inductive impedance on 21.0 MHz—a low inductive impedance on 14.0 MHz—a low capacitive impedance on 7.0 MHz—a high capacitive impedance

Hence the “original” appears to present high VSWR for 14 and 21 MHz and a worse (compared to the original) VSWR on 3.5 MHz. Nothing much of an aerial system work better than putting it up higher.

Yours sincerely
Ronald Roy

513 Bluff Road,
Black Rock. Vic 3193
23-2-83

The Editor.

Dear Sir,

I wonder if there is anybody who would like to get in touch with me, from the WIA, with a sample copy of AR. I have not met a great number of amateurs yet, but most I have found friendly, courteous and helpful. The odd “old spark” who may have even started the WIA told me that I was not doing my “patriotic duty”, etc, unless I joined, plus various other comments.

I have made some friends amongst the early amateurs already and I am writing to ask of all experienced amateurs, their patience, indulgence and advice.

Please forgive us for not knowing what was in AR in 1979 or those many unwritten conventions. Just be patient with us and in forty years, we may be as good at it as you are now.

TNKS FR YR LPL
Noel, VK2YXM

61 Ashwood Dve.
Ashwood 3147
31-1-83

The Editor.

Dear Sir.

Reference the cover photograph of AR Feb 1983. What on earth is the soldering iron wielding male doing to the receiver? Is he soldering a component to the board? Could not be as all component leads are on the other side of the board. Is he assembling a connecting lead? No, there are no leads visible under the iron. The iron appears to be just for some sort of show. If this be true then the magazine is treating readers amateurishly. Further, the cover photo shows an apparently finished receiver, yet I see a few components lying in front of the set. Some toroids which appear to be front end coils are shown soldered in place yet there are two toroids spare? While I cannot see a mains cord connected, I can see that the mains switch is on. And this, while the operator is soldering surely the use of the depicted mains operated soldering iron went out with valve receivers? Why could not a more suitable iron for the task, such as a temperature controlled iron, have been shown. And, is that a piece of grass I see at the top right of the picture? Tch, tch, what an odd bench! And look at that length of solder from the tip of the iron to the solder spool. What a waste of solder, surely no amateur would do that in these hard times.

However I do like the piece of packing used for the top of the bench upon which the receiver is resting. The piece would really stand up well to the average amateur’s work shop use. Especially if he smokes.

After all that, I read the article on the receiver and found it excellent. Keep up the good work and let’s see more of these articles and perhaps less of the amateur pictures.

Peter Frederick
VK3BSF

Editors Note:
Many thanks for your comments, Peter, but the chap I am more concerned about is the photographer who used 240 V flood lighting whilst standing barefoot on the wet grass.

88 New North Rocks Road.
North Rocks 2151
1-2-83

The Editor.

Dear Sir,

When I obtained my licence, I was grateful to the WIA who printed some of the books I read. I knew nothing of it other than that, I asked many people, most of whom said they knew as little of the WIA as I did.

I was about to write to the WIA and ask questions, when I received the answers and an invitation to join, from the WIA, with a sample copy of AR.

I have met a great number of amateurs yet, but most I have found friendly, courteous and helpful. The odd “old spark” who may have even started the WIA told me that I was not doing my “patriotic duty”, etc, unless I joined, plus various other comments.

I have made some friends amongst the early amateurs already and I am writing to ask of all experienced amateurs, their patience, indulgence and advice.

Please forgive us for not knowing what was in AR in 1979 or those many unwritten conventions. Just be patient with us and in forty years, we may be as good at it as you are now.

TNKS FR YR LPL
Noel, VK2YXM

25 Beecroft Pde, Currajong 2540
1-2-83

The Editor.

Dear OM.

I was indeed pleased to discover that my letter to you (15th Nov 82) concerning the distress call by
HP2XBP/MM was of sufficient interest to warrant publication (Page 60).

Additionally, the article "Emergency and Distress Calls" on Page 36 is absolutely first class.

However, one minor error, in the publication of my letter was the misspelling which was shown as VK2AEX — my call is 2AEV. Only a minor thing, but may cause embarrassment to 2AEV. (I guess it's my poor handwriting.)

73 Yours faithfully,
Alex McMurray, VK2AEX

Sorry for the unfortunate error Alex.

Gil Sones, VK3AUI
Editor AR

10 Moorabinda Street,
Buderim, Qld. 4556
28-1-83

The Editor,

The WIA has always urged members to "use your bands or lose them". Do you know, sir, that there is 25 kHz of the 15 metre band virtually never used by VKs?

I wish to make a plea on behalf of the Novice CW operators. That the WIA endeaour to get this segment — 10 MHz to 21.125 MHz — allocated for Novice CW operators — CW only — and would back my submissions up with the following points.

1 This 25 MHz segment is rarely used by VKs. I have monitored this segment of the band over the years and can only once recall hearing a VK being called. At my radio club of some 45 members not one used this segment. Therefore, it is not being utilised to the full by Australian amateurs.

2 When the band is open the present 25 kHz novice segment is always very crowded. Overseas stations know it is the VK novice portion and know that they will always find VKs there. The JAs and KAs who call CQ VK for hours on 21.100-21.125 MHz and don't get answer are the newcomers who have not learnt of the VK frequency allocations.

3 Despite the 'Gentlemen's Agreement' there are still SSB operators in the CW segment. And, regrettably some of these offenders are full call operators.

Maurice Woodpecker seems to have a particular liking for the CW segment too — many evenings there is barely 5 kHz clear for CW operation. Oddly he is not often on 21.100 to 21.125 MHz.

5 When rare DX appears in the Novice segment, full call operators soon appear — quite rightly so — since they allow the full 50 kHz to Novice CW?

6 The American Novice CW operators appear to go down to 21.100 MHz.

I know many Novice CW operators share my views but there must be many more so please speak up let me hear your views.

In conclusion, sir, I would like to reiterate my findings, that there is 25 kHz of our valuable 15 metre band NOT being used by VK stations.

73 Tom Dowling, VK4NUN

11 Kyle St, Wembley Downs, WA 6019

The Editor,

I would like to enter a plea for LARGER circuit diagrams in AR technical articles.

As an example, please see Page 15 of Feb83 AR. I have excellent eyesight but I consider that each of the circuits on this page could easily and profitably be enlarged x 2 in horizontal and vertical dimensions. I hasten to mention that the difficulty of this case by Lizz Klime) is immaculate and that SIZE is the issue at present.

Considering that the Feb issue of AR contained 64 pages and only four involve technical construction I feel it is unreasonable to expand this aspect of AR.

I would suggest about $30 per page subject to the editor's discretion if it is considered that an article has been paddded out to fill extra pages or was considered to be too trivial to be paid for at this rate. At $30 per page you would still be getting many hours of research at a bargain price. If someone was likely to be insluced by being paid(!) they could always say so when submitting the article. Maybe we could end up with 8 or 10 technical articles per month!

Hope you can find time to consider implementing the above ideas. I'm sure the magazine would benefit from them.

Best wishes.

Mike Murphy, VK6KRO/2ZCX

Amateur Radio does not normally pay for articles. However payment has been made for specially commissioned articles.

Editor AR

Southport Avenue, Eagle Heights, Qld 4271
31-1-83

Dear Sir,

I have, under a separate letter, just made a claim for a VK4 record on 432 for a QSO on 432.1 MHz. 2 x SSB with ZL2TAT on 24/11/82 at 1220 UTC.

Recent QSOs have been, ZL2TAT on 144, also 2 x SSB, ZL2VHT, ZL2UEC, ZL1TWR.

VK4TAT on 10-1-83 2 x SSB 144.100 MHz.

VK2ZAB on 26-1-83 2 x SSB 144.015 MHz. It also have regular QSOs at 1000 UTC on 144 MHz with VK42WH at Bundaberg.

Bill Hempel, VK4LCL

The Editor,

A colour strip has been placed on the spine of the 1983 issues of Amateur Radio. Colour on the cover however is chosen to compliment the cover photograph.

Editor AR

The following advertisement appeared in our local rag, and gave my day a real lift:

CB Radio, 18 channel, $40; 15 ft cable, $7; TV Eye filter, $3 etc

Now, with the standard of BCTV programmes, an eye filler must be a necessity — and cheap at the price. God Bless the phone-in classified ad. Lewis Caroll has nothing on them.

Regards,
Stephen Gard, VK3ESG

50 Lenna St., Burwood East 3151, Vic.

Dear Sir,

I would be grateful if an officer from the WIA or the repeater committee would clarify the current situation at the VK3RMM repeater. I have heard many stories that mention interference caused by VK3RMM. or interference to RMM by other services.

More seriously, I have heard there is a chance that the repeater may never be restored to normal use. If this is true, it will be of grave concern to many amateurs who rely on this repeater for communication, especially those in country areas.

While none of this information may, in fact be true, I ask the WIA to make a statement as the amateur service is not benefited by erroneous stories floating about the future of the repeater.

Your faithfully,
Terry Fraser VK3RT

The VK3RMM repeater has been voluntarily turned off in the interests of good public relations with the Victoria Police who's sice we share franchise and frequency. There are currently some co-siting problems which will be resolved as soon as possible.

An explanation has been given on divisional broadcasts. 

Victoria Division

AMATEUR RADIO, April 1983 — Page 77
PLEASE NOTE

Letters to the Editor should be short and to the point. They will be easier to read and will not require shortening or summarising.

Amateur Radio is produced under a very tight budget. Space for each item printed in the magazine is at a premium.

Editors Note

Correspondents should note that letters requiring local divisional attention or federal policy are more effectively dealt with when addressed to their local division.

Federal Policy is formulated after discussions by divisions and by the agreement of divisions. See Amateur Radio, February 1983, page 11.


Answers to Novice Notes

AOCP Test

Score 10 points for each correct answer, subtract 10 points for each question not answered and subtract 10 points for each incorrect answer.

1 (a), 2 (b) & (c), 3 (b), 4 (a), 5 (a), 6 (a) & (c), 7 (a) & (b), 8 (c).

If you scored less than 80 — back to the text books.

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The winner will receive this camera

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Contest Keyer

Speed Range (WPM) 1 99
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Message Partitioning Soft
Automatic Contest Serial Number Yes
Selectable Dot and Dash Memory Yes
Independent Dot & Dash (Full) Weighting Yes
Calibrated Speed, 1 WPM Resolution Yes
Calibrated Beacon Mode No
Repeat Message Mode Yes
Front Panel Variable Monitor Frequency Yes
Message Resume After Paddle Interrupt Yes
Semi-Automatic (Bug) Mode Yes
Real-Time Memory Loading Mode Yes
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This month’s specials:

Isopole Antenna 144 Junior — $45.
Superseded demonstration Model
Morsematic MM-1 was $269 — now $198

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Quality Communications
Ask for it by name: “HAMTANNAE” or “Bush Bandit”

‘THE’ ANTENNAE that has taken the 10 mtr band into the 80s. The ONLY Mobile Whip to cover the WHOLE Band allocation. Under 1.5:1 VSWR. Available in 60” and 40” sizes.
Silent Keys

It is with deep regret we record the passing of—

COLIN ANDERSON VK3XV
JOAN FUDGE VK7ZYL
DOUGLASS JOHNSON G60W
R McFarlane VK4AYZ
J C PARK (Life Member) VK6BB
W J RAFTER VK4PR

Obituaries

Richard McFarlane VK4AYZ

It is with deep regret that we advise the passing of Richard McFarlane, of Mount Isa, on the 19th of January, 1983. He was thirty-six years old.

Richard’s interest in electronics and radio dated back to his school years in Perth, but it wasn’t until he was settled in Mount Isa that we talked each other into sitting the Novice Exam. Richard’s callsign VK4NYZ/2SR came from the August 1979 exam with VK4AYZ the following year.

Richard’s interest in computers inspired others of our community along the same path, and he was always ready to help and advise when needed. Likewise, his enthusiasm for 2 metres helped the repeater project.

Richard was a quiet, unassuming person and ‘wasn’t heard on air’ very often; his interests were on the work bench experimenting and building, but everyone was welcome in his shack.

Our sympathies go to his wife Claire and young daughter Alice and also to his parents Dixie and Val.

Richard was a true gentleman and he will be missed by his many friends.

Roger Wood VK4ARZ
Sharen Wood VK4AWE

WARNING!!

Disposing of your old rig??

Please ensure it goes ONLY to someone licensed to use it on YOUR bands.

HAMADS

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.

- Please insert STO code with phone numbers when you advertise.
- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters double spaced to PO Box 300, Caiitfeld South 3162.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication.
- OTHR 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 certificated as referring only to private articles not being resold for merchandising purposes.

TRADE HAMADS

Conditions for commercial advertising are as follows: The rate is $15 for 4 lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the first day of the month preceding publication.

AMIDON FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE to: R. J. & U. S. Imports, Box 157, Mordialloc, NSW 2223. (No enquiries at office: 11 Macken St. Oakley, 2223.)

CB RADIOS $69: walkie talksies, short wave radios, military, outback, business, amateur, marine, repairers. RTTY Siemens 100A printer $120; base mic. $45: ultrasonomic alarm, $35: all ham bands on a single 6 ft. whip, 1.8 to 30 MHz, for base or mobile, $360: aerials, installation, demonstrations, 40 ch. CB conversions, accessories, new rigweekly. Bridge Disposals. 12 Old Town Plaza, opp. Bankstown Railway Station, NSW. Mail order service and all enquiries to Mike VK2BMR QTHR. Ph: (02) 639 8643.


OWNERS OF MOD I, MOD II, & SYSTEM 80 COMPUTERS. Use your computer to transmit and receive Morse. RTTY & ASCII. Programmers delve into the secrets of your ROM. Amateurs. The RICHCRAFT books are the least expensive way of using your computer in these modes. Disks also available. Send SASE for full details. NORTHERN DIGITAL, BOX 333, CHARLESTOWN 2290. Ph: (049) 43 8981.

WANTED — NSW

CRO TUBE. 9 pin loctal and/or circuit diagram for the Cossor. Minicoerce CRO. VK2BGL OTHR. Ph: (047) 54 1096.

CW TRANSMITTER. High Power. VK2BOA OTHR or Ph: (049) 43 8981 AH.

LINEAR RF POWER AMPLIFIER HF 80-10 m. capable of maximum legal power. USA manufactured, pre-ribbon, by genuine cash buyer, all others to PO Box 120. Vaucluse, NSW 2030 or Ph: (02) 371 8654.

WANTED — VIC

COLLECTOR — Historian requires any old Morse keys or bugs (semi-auto devices). EX-services, PMG etc. Will pay cash. Maurice. VK3CWB. Ph: (03) 49 4167. PO Box 155, Fairfield 3076.

HEAVY DUTY ROTATOR — Emotator or similar. Enquiries to Trevor VK3KEG. Ph: (03) 789 4911.

MAGAZINES — ARs containing operating procedure incl CW. Portable. Mobile operation. ØRP and HF antennas for limited space. G F Harris, 9 Lomas St, Ringwood East 3135.

WANTED — QLD

HALLICRAFTERS TX/RX. Also Hallicrafters general coverage RX SX-71 or earlier. Roland Clark VK4EG. OTHR. Ph: (079) 54 6631.

RTTY ART: Copies of pictures or tapes of RTTY art. Also circuits of CW and Baudot ident labels. EPROM or Diode Matrix. To suit RTTY ident. Contact Col VK4BGP OTHR.


FOR SALE — NSW


CALLBOOK 1982 Foreign S10. Spider quad hub W6S6AI design strong construction $30. VK2DET Blackheath NSW OTHR. Ph: (047) 87 7003.

F1-T, no mods. txafs for 10 m, mobile bracket $350 or xchg for 2 m handheld plus cash adjust. Also Yaesu mobile who system for 80. 15, 10 m $75 complete. Stephen. VK2FSG Ph: (049) 81 9675 AH.

HF LINEAR AMPLIFIER. Over 100 W O/P, broadband, rugged Philips transistors, as new. commercial unit, ideal for F17 or TS120V. $100 VK2BGL OTHR. Ph: (047) 54 1096.

ICOM 701. HF Tx/cvr. with power supply and desk mic. Bought from Vicom. Excellent condition $730 — Mike VK2BMR OTHR. Ph: (02) 639 8643.

ICOM IC740 under warranty $570. TS8205 two months use as Rx. New condition with workshop manual etc $650. Ph: (02) 467 2354.

KENWOOD TR7400A 2 m Tcvr, 25 W. 800 ch. Perfect cond. Covers never been off used only as base xchge lor 2 m handheld plus cash adjust. Also Yaesu mobile who system for 80. 15, 10 m $75 complete. Varcluse. Ph: (02) 371 8854.

KENWOOD TS-120V TRANSCIEVER. Mint condition. MB-100 mobile bracket. 26.5-28.0 MHz. Operators.

AMATEUR RADIO. April 1983 — Page 79
ANTENNA CE35DX
5 el triband Yagi. 3 el 20 m and 15 $250 ONS. Philip VK20PN QTHR. Ph: (049) 43 4220.

Oskerblock SWR 200 $50; Ham III rotator S100; Rak $65; 2 x Orake TV 3300LP TVI filters $30 ea.

cond in orig box $650; Shure 444 SSB mic new cond
Charles VK2VSH QTHR. Ph: (067) 54 9328.

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Stay in touch with world events, monitor weather, press, ship traffic, and radio amateurs. Connect to your receiver and display shortwave radio teleprinter and Morse code transmissions with the new receive-only.

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$247 NOW $199

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High quality SWR/Watt meter designed as SWR and power can be measured independently at a time. With meter illumination and “On-the-Air” indicator lamp.

$85 NOW $45

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PM-5V is designed to cover VHF band. Illuminated meter is convenient to the use in mobile operation. A complete set to be in display carton.

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The MCLA-1 incorporates both a Mike Compressor and Linear Amplifier.

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By connecting the AAF-1 between a receiver and an external speaker (or earphones), you can reduce unnecessary or undesired audio signals from your receiver.

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The MM-1 is a high quality 20K-ohm/VDC Multimeter usable as the SWR Power Meter as well by connecting with the directional coupler unit included.

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The IC-740 from ICOM offers extensive versatility for the serious operator at a realistic price, contains all of the most asked for features, in the most advanced solidstate HF base station on the amateur market...performing to the delight of the most discerning operator.

Study the front panel controls of the ICOM IC-740. You will see that it has all of the functions to give maximum versatility to tailor the receiver and transmitter performance to each individual operator's requirements. Features of the IC-740 receiver include variable width and continuously adjustable noise, blanker, continuous, adjustable speed AGC, adjustable IF shift and variable passband tuning built in. In addition, an adjustable notch filter for maximum receiver performance, along with switchable receiver preamp, and a selection of SSB and CW filters. Squelch on SSB Receive and all mode capability, including optional FM mode. Split frequency operation with two built in VTOs for the serious DX'er.

The IC-740 allows maximum transmit flexibility with front panel adjustment of VOX gain, and VOX delay along with ICOM's unique synthesized three speed tuning system and rock solid stability with electronic frequency lock. Maximum versatility with 2 built in as standard, plus 9 memories of frequency selection, one per band, including the new WARC bands. With 10 independent receiver and 6 transmitter front panel adjustments, the IC-740 operator has full control of his station's operating requirements. See and operate the versatile and full featured IC-740 at your authorized ICOM dealer.

Options include:
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amateur radio

in this issue

Modern Military Surplus Equipment — Part 2
— The R210 by Colin MacKinnon

VK2DYM .................................. 28

Photo Competition .......................... 6

Regulated Power Supply for 13.8 Volts by Des
Greenham VK3CO .......................... 14

Stolen Equipment .......................... 47

To Heard and Back by Dave Shaw VK3DHF/
VK0HI .................................. 10

VK/ZL/Oceania DX Contest 1982 Overseas
Results by Jock White ZL2GX ............. 40

Who is This Amateur? by Peter Brown VK4PJ 24

World Communications Year by John Hill
VK3DKK .................................. 19

DEPARTMENTS

Advertisers Index .................................. 56

ALARA .......................... 30

AMSA Australia .......................... 31

Awards — Brazil DX, 3 Nigerian Awards,
DUF & Diploma del Milennero .................. 42

Book Review — 100 Basic Projects,
Microcomputers in Amateur Radio ............. 39

Contests — Asian DX (Rules of 24th, Results
of 23rd), European DX, Ross Hull '82 ......... 37

Education Notes .......................... 41

Equipment Review — VoCom Telescopic 2m
Antenna .................................. 27

Five-Eighth Wave .......................... 49

HAMADS .................................. 55

Here's RTTY — Mechanical Generation of

RTTY .................................. 26

How's DX .................................. 20

International News — New Focus for 73
Journal, ARRL National Convention
'84 .................................. 9

Intruder Watch .......................... 24

Ionospheric Predictions & Geomagnetic
Activity 1982 .......................... 52

Letters to the Editor .......................... 50

Listening Around .......................... 18

Magazine Review .......................... 46

Main QSP .......................... 5

National EMC Advisory Service — Radio-
communications Bill ..................... 44

Obituaries — G3TR & VK3IE ............. 55

Pounding Brass — Signal Reporting ......... 55

Silent Keys — VK3PH .......................... 55

Spotlight on SWLing .......................... 46

Technical Correspondence — Static
Charges .................................. 43

VHF UHF — an expanding world ............ 32

VK2 Mini Bulletin .......................... 48

VK4 WIA Notes .......................... 47

WIA News .......................... 6

WICEN News .......................... 22

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amateur radio, May 1983 — Page 1
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Department of Communications has granted the use of the special AX prefix and ITU suffix on the occasion of the World Telecommunication Day Contest.

Approval is given to the WIA to employ one station per division using the AX prefix and ITU suffix on 17 May 1983. No objection is seen to the use of the AX prefix by all amateur stations on this day.

RADIO COMMUNICATIONS BILL 1983

The CASPAR Committee has studied the new Bill in detail, input has been received from several divisions and interested individuals.

By the time that you read this, CASPAR’s report will be with the Federal Executive to form part of the WIA submission to the Department of Communications.

Following on from this, Michael Owen, VK3KI will present a paper at the IREE Radiocommunications Workshop, on behalf of the Wireless Institute, in Sydney on 26th and 27th April.

SCRAMBLERS

Amateurs may have noticed that Scramblers have been advertised in a number of magazines. This equipment may be totally acceptable on frequencies allocated to some services, however both International Regulations of the ITU and the Australian Regulations require all transmissions by amateur stations to be in plain language.

It is our understanding that the utilisation of a scrambler by amateur stations would be in breach of these regulations and amateurs are advised not to use scrambler devices in the amateur bands.

50-50.15 MHz

The Institute has replied to the Department of Communications request for comments on three options of amateur use of the 50-50.15 MHz segment.

The Institute has opted for option one with reservations and observations in an effort to get amateurs on the air and then continue negotiating.

DOC MEETING

A joint DOC/WIA meeting was held on the 30th March and the following items were discussed. Visitor’s callsigns, 50-50.15 MHz, Chess-on-the Air, Age limits, Examinations, Amateur Operators Handbook, Radio Communication’s Bill 1983, 12/14 WPM Morse tests, ATV and Reciprocal Licensing.

PHOTO COMPETITION

To increase the interest and participation of members of the Wireless Institute of Australia in AMATEUR RADIO and through the courtesy of AGFA GEVAERT LIMITED, a competition with a difference will commence in the July issue of AMATEUR RADIO and run through to the June issue of 1984.

The competition is based on the best photograph that is reproduced in the magazine for this period pertaining to the hobby and may be a front cover, a photograph included with a story or technical article, or just a photograph of interest, suitably captioned.

The basic rules for this competition which will be known as the AGFA COMPETITION are:
1. Only financial members of the WIA and their immediate families are eligible.
2. Professional photographers, members of Federal Executive, the Publications Committee, employees of the Wireless Institute of Australia, Agfa Gevaert Limited, Waverley Offset Printing Group and Quadricolor Industries and their immediate families are precluded from entering the contest.
3. Only photographs submitted in the form of colour transparencies, colour prints, B&W prints or negatives taken after the 1st March 1983 are eligible.
4. The prize, a superb Agfa Optima Flash camera that has been kindly donated by Agfa Gevaert Limited, will be awarded to the entry judged from the best photograph in each issue by the management of Agfa Gevaert Limited, Waverley Offset Publishing Group and Quadricolor Industries in July 1984. The lucky winner will be announced in the September 1984 edition of AMATEUR RADIO.
5. No correspondence will be entered into by the judges or the editor of the magazine regarding the competition at any time.
6. All transparencies, negatives and prints whether printed in the magazine or held in abeyance will be returned to the sender if suitably identified and marked.
HOW DANGEROUS IS RF RADIATION?

— Part Two

Here is the second in our series of articles on this most important subject. It is reproduced from Radio Communication February 1982 and is printed in its entirety. Next month we will publish the final item in this series covering Microwave RF hazards.

RF HAZARDS AND THE RADIO AMATEUR

by Roger P Blackwell, BSc, GB8IZV*, and Ian F White, MA, PhD, G3SEK*

Reproduced from Radio Communication February 1982

The biological effects of RF radiation and their practical implications have received a great deal of attention in recent years. Papers on these subjects in professional and scientific journals abound. Unfortunately the echoes of these papers in the amateur radio press have often been ill-informed and in some cases sensationalised. The average radio amateur is left wondering whether RF hazards are truly a cause for concern and, if so, what to do about them.

The authors are radio amateurs who are professionally involved in radiological protection, one being a biologist and the other an environmental scientist. In this article they examine the potential hazards of amateur radio from the viewpoints of radiation biology, RF engineering and commonsense.

Normal good RF engineering practice automatically tends to control potential hazards to the station operator. At fixed stations the normal use of high antennas leads to very low environmental RF power densities in accessible places. Even in the less common cases where areas of relatively high RF power density are potentially accessible, the operator can still control the hazard by preventing access. The authors see no reason for treating RF hazards any differently from other hazards of amateur radio that are better-known, accepted and controlled.

EFFECTS OF RF RADIATION

The quantum energy of RF radiation, which determines what manner of interaction with matter takes place, is very low; orders of magnitude smaller than that required to cause ionisation of atoms or molecules. RF radiation is thus totally different in properties from the ionizing radiations such as gamma and X-rays. The most important effect of RF radiation on biological materials is the induction of rotation of electrically-polarised molecules, such as water. This rotational energy manifests itself as heat. This principle is employed in medical diathermy and the microwave oven.

A great deal of research effort is currently directed towards understanding the biological effects of RF. While the authors would not wish to discourage anyone from taking an interest in this work, they must emphasise that the interpretation of the experimental results is difficult for the layman, and that it is all too easy to jump to the wrong conclusions. The view of the overwhelming majority of Western scientists working on this topic is that heating is the only biologically significant effect of RF. There are often reports, mostly emanating from Eastern Europe, of "non-thermal" effects occurring at extremely low power densities. Such reports must be regarded with suspicion, for they fail the basic test of scientific credibility: when independent workers have repeated the experiments the claimed results have not been observed. More credible effects have indeed been observed at RF power densities which, while not extremely low, seem low enough to suggest "non-thermal" origins; but close examination has shown that they too can be explained by heating, and that what has been detected is the body's reaction to compensate for a very small thermal change induced by the RF field. Although such effects are of scientific interest, they have not been shown to be hazardous, bearing in mind that a "hazard" is a risk of harm. Heating of a part of the body can be considered a hazard if the heat cannot be removed by the body's normal temperature-regulating mechanisms quickly enough to prevent a temperature rise sufficient to damage tissue. Perhaps the most critical organ in this respect is the lens of the eye, because it is near the surface of the body, has no blood supply to remove heat, and has no capacity for repairing damage. Hence the oft-repeated warning about looking down waveguide. There is no evidence whatsoever that RF radiation produces long-term damage of the kind associated with ionising radiations, i.e. cancer or genetic damage.

RF EXPOSURE LIMITS

The Home Office and the Medical Research Council recommend that the maximum for continuous exposure is a power density of 10 mW/cm²; this limit may also soon appear in the form of a European Community (EC) Directive. The figure of 10 mW/cm² was arrived at over 20 years ago¹ and remains essentially valid today, despite close examination in recent years. Very similar limits are used in the USA and some other countries. Eastern Europe and

AMATEUR RADIO, May 1983 — Page 7
Russia has somewhat tighter standards — for example, 10 μW/cm² — but there is no valid reason for these from the Western viewpoint.

Very sensitive measurements can be made of the E-field (or less commonly of the H-field) but their interpretation is ambiguous. If one assumes that the two components are at right-angles the power density is simply calculated from the equation:

\[ W = \frac{E^2}{Z} \quad \text{W/m}^2 \]

where \( E \) is the E-field in V/m and \( Z \) is the ‘impedance of free space’ (377Ω). Although this represents the maximum possible value of \( W \), and may be a considerable overestimate in the near-field region, derived standards of the maximum permissible power density near E-field for particular circumstances can be calculated on this conservative basis.

A less ambiguous measurement of RF power density is based on direct detection of the heating effect, but instruments employing this principle are not very sensitive owing to the difficulty of measuring the very small temperature rises involved.

Even under laboratory conditions, accurate measurements of RF power density call for specialised instruments and great care. It is not possible for amateurs (or indeed professionals) to measure near-field RF power density with normal communications test equipment.

However, common sense suggests that situations in which RF power density may be high are best avoided as a matter of principle, even if they may not prove unduly hazardous in practice. Generally speaking, the larger the quantity of RF energy and the smaller the area in which it is confined, the higher the RF power density. Fortunately most of the undesirable situations represent bad engineering practice for other reasons, and some of the authors’ strictures are as much against the practice for other reasons, and some of the authors’ strictures are as much against the bad practice as against the RF hazards that might result.

**SITUATIONS TO AVOID**

1. **RF exposures leading to an actual sensation of heating** are far in excess of 10 mW/cm² and should thus be avoided.

2. **Looking down a waveguide**

   The classic example in which RF energy is confined into a small area (about 3 cm² for WG16), and applied to sensitive tissues (the lens of the eye). NEVER look down a wave guide unless you are quite sure there is no RF source at the other end!

3. **Working on high power VHF/UHF equipment**

   Quite apart from the potential RF and high voltage hazards, testing an amplifier with a power on the anode circuit is unlikely to be useful, for the patterns of circulating RF currents may be entirely changed.

   Sadly there is no substitute for the use of a large number of securing screws, or for the tedious of removing and retightening them all, each time a change is made. Note that even a narrow gap between two covers can make an active slot radiator if it is an appreciable fraction of a wavelength long. Never peer through such a gap. If access or viewing ports are essential, round holes are best; for example, a hole of about 2 cm diameter results in very little RF leakage at 144 MHz.

4. **Using a small antenna in the shack as a dummy load**

   This is very bad practice; the use of a proper screened dummy load is essential. Quite often RF power densities can be achieved close to small antennas such as VHF/UHF dipoles if the RF power level is a few tens of watts or more.

5. **Adjusting energised antennas**

   This is also bad practice. “Live” adjustment is very convenient, but it can and should be done at very low power levels.

6. **Using handy-talkies with “rubber duck” antennas**

   This is not necessarily to be avoided as being unduly hazardous, but it does lead to higher RF power densities in sensitive tissue (the eye) than almost any other activity in amateur radio, and it is of course a very common practice.

   The E-field at the end of a foreshortened antenna such as the “rubber duck” (or “normal-mode helix, to give it its proper name) is greater than that at the end of a full quarter-wave, and on a handy-talky the end-cap of the “rubber duck” can come quite close to the eyes and face. Extremely close contact with the end of the antenna is usually prevented by a very thick insulating end-cap on commercial antennas of this type. The authors strongly recommend amateur constructors to take similar precautions, for direct contact with the uninsulated end of a “rubber duck” could cause a corneal burn at power levels of only 1–2 W.

**ENVIRONMENTAL RF FIELDS**

So far in this article the authors have concentrated mainly on potential RF hazards at the station operator. In order to obtain some indication of typical RF power densities generated in the environment of amateur radio stations, they also made a limited survey of fixed stations.

**STATION A.** 300 W PEP RF output on 144 MHz, to a 16-element Yagi on an 11 m mast beside the house. Maximum power density near ground level occurred at 35 m from the base of the mast in the direction of maximum radiation, where the antenna was near-cap on commercial antennas of this type. The authors strongly recommend amateur constructors to take similar precautions, for direct contact with the uninsulated end of a “rubber duck” could cause a corneal burn at power levels of only 1–2 W.

**STATION B.** 400 W PEP RF output on 144 MHz, to a 16-element Yagi 3 m above the centre of the roof. Inside the loft, at the peak of the ridge directly below the antenna, the indicated RF power density was 0.2 mW/cm². Otherwise the results were very similar to those for station A.

**STATION C.** 400 W PEP RF output on 432 MHz, to a 20-element loop Yagi on an 11 m mast beside the house. No RF field was indicated (ie less than 0.0003 mW/cm²)
in the shack, anywhere outside near ground level, or even when leaning out of the bedroom window.

**STATION D.** 400 W PEP RF output on 28 MHz to a TH6DXX multiband beam, which behaves as a four-element Yagi on 28 MHz. The beam is mounted on a crankup tower, 20 ft. from the house. When the beam at a height of 11 m, pointed at the house, the power density at the nearest upstairs bedroom window, 7 m below the plane of the beam, was 0.01 mW/cm². The greatest power density observed outside, close to ground level, was 0.06 mW/cm² at the foot of the tower.

Although the above information is circumstantial, and could not be used to accurately predict RF power densities at other locations, the general conclusions are clear enough. In all cases the measured power densities were very much less than 10 mW/cm², even though the stations concerned were using powers up to the UK legal limit. Two of the stations had kilowatt permits for experimental work, and it is clear that the increase in power beyond the normal limit would introduce no appreciable hazard. In this survey the highest RF power densities encountered were where the height differences were small: in the loft at station B, and upstairs at station D when the tower was retracted.

In order to obtain any appreciable environmental RF power density, therefore, one needs the rather unusual combination of high RF power but a low antenna. Virtually all fixed stations have antennas high enough to preclude the possibility of anyone approaching them closely; this is another example of the way that normal good practice tends to control potential RF hazards without any special precautions to that end.

One possible exception to this general rule is the ground-mounted λ/4 vertical antenna, especially on 28 MHz. A recent calculation has shown that standing very close (20 cm) to a 27 MHz ground-mounted λ/4 vertical fed with 140 W of RF can lead to the same energy absorption as would standing in a 10 mW/cm² plane-wave field. However, the energy absorption is considerably reduced if the subject is not perfectly grounded.

**MOBILE OPERATION**

In mobile operation the antenna is low, but in most cases the RF power is also low. There is an effective limit of about 100 W RF output because of the drain on the battery while stationary, and in the UK the legal power limits are only a little above this level. Even when using such power levels, the operator can still control any RF hazards simply by making sure that nobody remains close to the antenna while the transmitter is in use, or by refraining from transmitting high power if anyone is close by; and of course the problem disappears when the car is in motion.

**CONCLUSIONS**

Heating appears to be the only biologically-significant property of RF energy, and is only a hazard if the heat cannot be removed quickly enough by the body’s thermostatic mechanisms.

Absorption of RF energy by the human body diminishes rapidly with frequency in the HF region, and is relatively constant in the microwave region. The slightly enhanced absorption occurring near the resonant frequency of the human body is not a major cause for concern.

Normal good RF engineering practice automatically tends to control any potential hazards to the station operator. However, commonsense suggests that situations in which RF power densities may be high are best avoided as a matter of principle, even if they may not prove unduly hazardous in practice.

At fixed stations the normal use of high antennas tends to reduce the environmental RF power density in accessible places to very much less than the maximum levels considered acceptable.

Even if areas of relatively high RF power density are potentially accessible, the operator can still control any hazard by preventing access or by not transmitting when anybody is in such an area.

The authors see no reason whatever for treating RF hazards any differently from other hazards of amateur radio that are better known, accepted and controlled, e.g. high voltages or falling antennas. There is no case for introducing any special regulations, on any amateur band, aimed at controlling RF hazards due to amateur radio.

**REFERENCES**


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**INTERNATIONAL NEWS**

NEW INTERNATIONAL FOCUS FOR 73 JOURNAL

Beginning with its April issue, 73: Amateur Radio’s Technical Journal will be offering a new column, "73 International".

Written by columnists from around the globe, "73 International" will offer its readers a broader international outlet through which they can internationalise amateur radio worldwide and to cross the traditional boundaries of technological cooperation. Further information is available from Avery L Jenkins WB8JLG.

AMERICAN RADIO RELAY LEAGUE NATIONAL CONVENTION

The 1984 ARRL National Convention will be hosted by the Hudson Division at the New York Statler, on the weekend of 20-22 July. The popular event, which usually attracts amateurs from every one of the fifty United States, all Canadian provinces and many countries abroad, is scheduled to feature numerous activities including technical and operating seminars, social events, banquets, DX meetings, manufacturer’s displays showing the latest equipment designs and unlimited activities for non-amateur spouses.

The New York Statler is situated in the heart of the city, which provides visiting amateurs and their families easy access to its many cultural attractions. Broadway’s famous theatre district, the Empire State Building, the World Trade Centre’s twin towers, the bohemian Greenwich Village artists’ colony, plus opera houses, museums and numerous restaurants feature. The site is within a stone’s throw from nearly every nation, are all within minutes of the hotel via taxi, bus or subway. The hotel itself offers every amenity of a cosmopolitan inn, including dining rooms, conference rooms, lounges and a Grand Ballroom which can accommodate up to 2000 people.

Detailed information and registration forms may be obtained by writing to Mike Troy, AJ1J, R.R. 4 — Box 19C, Pound Ridge, New York 10576, USA.
In December 1982 a group of mountaineers, scientists and radio amateurs sailed aboard the maxi-yacht Anaconda II to the Antarctic wastelands.

This month we begin a two-part story by Dave Shaw VK3DHF, the leader of the radio component of the successful operation of VK0HI and VK0CW and the triumphant ascent of Big Ben, the highest mountain in Australia and its territories by the mountain climbers. As there is a high pictorial content it was decided to run this article over two issues.

My journey began on a warm night in Melbourne with a bus trip to Adelaide, the port from which the Anaconda II was going to depart. As I was carrying half of the display material for our Audio Visual the next night it was fortunate that the service was new with few people travelling and plenty of room for my gear. It was thought this would be the most uncomfortable part of the trip, but with twenty people to embark on Anaconda II in Perth, I was quite wrong.

This story starts in early March 1982 with a telephone call from Perth when Nick VK6XI rang and without introduction asked if I was about twenty eight and reasonably fit. With an affirmative answer, he continued by asking if I would like to go to Heard Island. This was reasonably startling and one couldn't help wondering if it were a joke.

Nick probably realised this and gave me his telephone number and asked me to call him if I was interested. It took me approximately ten minutes to return his call saying that I would accept the invitation.

From my side things moved very slowly. All my questions and fears were allayed continually with regular reports from the VK6 DX Chasers Club (VK6DXCC) through Nick and Neil VK6NE.

This exercise turned out to be the most damaging.

A meeting with the organisers of the trip, the mountaineers, in August firmed arrangements and I was convinced that the trip was feasible and safe!

Word from Perth about equipment and other operators was also very promising and other than the canvassing of friends and acquaintances for associate memberships the worry, frustration and work of putting the expedition together was in the hands of the VK6 DXCC and the mountaineering group in Sydney.

My responsibilities consisted of physical training and also an exercise on the inflatable rubber boats (IRBs) at Portsea Surf Lifesaving Club, which is located south of Melbourne. This exercise turned out to be the most damaging and demanding part of the whole trip.

The surf endured at Portsea during the training turned out to be at least twice as large as that encountered at Heard Island, therefore valuable experience and confidence in handling of the boats was obtained. Due to mishaps during training, swimming in the cold rough surf became a necessity and the fear of drowning and being rescued from the sea was eliminated.

My interest in six metre operation saw the assembly and testing of a complete VHF installation. This was done in Melbourne with the help of Gil VK3AUI and Lionel VK3NM, both dedicated VHF enthusiasts, and a beam to complement the station was manufactured and loaned by Werner VK3BWW.

With the VHF equipment taken care of, a trip to Sydney in early December was necessary. The main object of this trip was to meet other members of the expedition
and assist with the packing of rations and sorting of clothing and all the other necessities so that it would be ready for despatch to Adelaide for an anticipated departure date of mid December.

During this period other members of the expedition were involved in Audio Visual lectures around Australia in efforts to canvass more support and give the public a picture of the broad spectrum of activities to be carried out whilst on the island.

On arrival in Adelaide, it was off to the boat to start packing and get my first view of "home" for the majority of the expedition. The Anaconda II is reasonably easy to pick out at any wharf with a length of 25 metres and its 28 metre mast plus towering above other yachts in the vicinity.

The packing and stowage of food and supplies for the voyage was to take the next four days. With twenty people to be on board, approximately five tonnes of provisions and equipment had to be safely stored.

Leaky fuel line did contaminate some food.

As most of the food had to be stored in the bilges, that are located under the floor of the boat, it was necessary to pack it into large plastic garbage bags. This was to reduce the amount of salt water ingress and, in the case of cans, to eliminate any small amount of rust getting back into the bilges.

It was an effective method for sea water, its usefulness for diesel fuel was strictly limited as we found out when a leaky fuel line did contaminate some of the food and with so many nooks and crannies filled with food it was sometimes hard, with the continual pitching of the vessel, to raise the floor and utilise the stocks fully.

With the majority of our food supplies aboard (fresh vegetables and meat were to be loaded before we departed from Perth, our last Australian port of call), we departed from Adelaide for the west to pick up the rest of the expeditioners. Only five expeditioners did this part of the trip, as the rest headed for Perth to organise the last Audio Visual, and the remainder of the equipment needed for the trip.

This was a wise move as most of us had very little sailing experience and with only five on board for this leg of the trip it allowed the skipper and crew time to teach us a little of what would be expected of us on the journey.

For the captain and crew of the Anaconda II, this was the true beginning of the voyage, Adelaide being Anaconda's home port. There were many relatives, friends and well wishers for our send off including the Mayor of Port Adelaide, Mr Roy Martens. His interest, as well as many others in Port Adelaide, in the expedition showed itself on our return.

Sailing the Anaconda is a very involved business, especially when considering that for the first few days on board the inexperienced were hanging over the side. The trip to Perth and subsequently to the island all on board had to do their shifts to keep the boat on tack. We were divided into two watches — one watch on deck at all times in three hour rotating shifts. This was compulsory and no one missed out.

Even now with two months of sailing behind me, getting to the right winch or halyard still cannot be done without a bit of thought first. Fortunately Josko Grubic, the skipper, allowed quite a bit of leeway when he built the Anaconda with extra stays and heavy rigging for a crew of raw recruits such as ourselves.

Communication during this part of the voyage was maintained with a daily sched to VK6NE and VK50X, with no problems encountered on forty and twenty metres. This was in contrast to the commercial scheds which were sometimes not so fruitful.

Equipment on this well designed vessel, consisted of two commercial crystal locked transceivers using the backstay as an aerial. A VHF marine band transceiver and an Icom 720A with antennae matching unit operating into a vertical on the stern of the boat, comprised the other communications equipment.

This radio equipment was all battery powered from the ship's supply and its drain and that of the satellite receivers, other navigation instruments and internal lighting, meant that to operate for long periods required excessive generating times from the ship's alternator which was not practicable.

Our training period on the first leg of the trip, although nothing like what we were to encounter in the southern latitudes, did serve to give us a bit of confidence on the boat, and the knowledge of where to run to when our muscle was required.

Most of the Adelaide-Perth trip was a relatively easy time. The vessel was becalmed for two days and had light winds for most of the voyage and if the rest of the journey was to have been like this, we would indeed have been suntanned, healthy, happy and fit.

After nine days, we tied up at the Port of Fremantle, the port which services Perth, to be greeted by some of the amateurs who had donated so much time, money and effort to make the trip possible. These included Neil VK6NE, Don VK6DY, Nano VK6UN.
The boat's arrival at Fremantle caused quite a bit of interest, because of the VK6's involvement in the DXpedition and it is hard now to recall the names and call signs of all those well wishers who arrived and looked over the Anaconda.

Soon after landing, I was whisked away by Don VK6DY for a much needed shower (there are no mod cons such as showering facilities on board the yacht) and get a bit of washing done before meeting the rest of the DX Chasers Club and the two other operators who had arrived from the United States a couple of days previously.

Meeting all the members of the VK6 DXCC and seeing the assembled equipment was a pleasant surprise. The group in Perth had organised all of the HF amateur radio aspect of the trip and now seeing them and meeting Al VK6AHI/VK0CW and Chuck VK0MD, the American operators, it felt good to be an integral part of this expedition. It is regrettable that Chuck had to pull out of the group at the last moment due to personal problems back in America.

**Everyone tried to get the maximum gear aboard**

As we were going through the amateur equipment, preparations with the mountain climbers and at the boat were also moving along rapidly.

The amount of gear to be taken on board now started to assume very large proportions with everyone trying to get the maximum amount of gear on board. I am certain the captain would have had a "heart attack" if he could have seen everything assembled on the wharf, but secreted away on board the gear was acceptably unobtrusive.

One or two days was the expected stay over in Fremantle, but this stretched to eight days as so much gear was assembled in Perth it was not possible to take it all and much reshuffling took place. Also some work on the Anaconda had to be done, which showed up on the trip across the Bight. Unfortunately arriving on Christmas Day did not help to get this work done expeditiously.

With the whole expedition assembled and the keel lying a few more centimetres in the water, we departed on the last day of the year for our destination, Heard Island.

Now we settled down to sailing and learning more about the yacht. Al VK6AHI/VK0CW and I saw each other at watch change during the voyage down, with the scheds to Australia being taken care of by the one on duty at the time. Al and I shared the same bunk, as with only sixteen bunks and twenty people on board most people had to "HOT BUNK", which is, two people use the same bunk and when one is on watch the other is in the bunk, sleeping.

Sleep became an important commodity during the eighteen day voyage to Kerguelen Island and it became increasingly difficult to wake people for the next watch. This was not only due to the lack of sleep but with no heating, a nice warm sleeping bag and the gentle rolling of the boat became an exclusive respite.

Life on deck, as we approached the southern latitudes, changed from relaxed cruising to cold hard work. Changing sails with half a metre of water continually
The seas south to Heard Island were the largest we were to encounter with about a twelve to fifteen metre swell whipped up with up to about fifty five knot winds. This could not dampen our enthusiasm however and after a day we sighted the McDonald Islands followed that afternoon by our first glimpse of cloud covered Heard Island.

**DAVE VK0HI**

Entering Kerguelen Bay as a Russian Trawler departs. Washing across the deck with thirty and forty knots of wind is not something to look forward to. Whereas thirty minutes at the helm, with the wind and swell trying to push us all about the ocean, had one sweating and exhausted.

After eighteen days on board it was a welcome relief to have a couple of days rest at the French base on Kerguelen Island. Here we were made very welcome, firstly with showers for all those on board and a relaxed dinner in the island’s mess.

Kerguelen is a large sub antarctic island about two days sailing from Heard, with a large French scientific base. There are about one hundred people on the base for the winter period.

One of the first people to meet us was Michel FB8XAB, home call F6GVH, who was on the base for the summer period. He showed both Al and myself around the base, arranged for our accommodation, shower and washing needs. Then refreshed we operated FB8XAB for the rest of the night. This caused some confusion on the bands. Most of the Europeans did not expect FB8XAB to come on the air with either an American or Australian accent.

**Good French food and wine occupied much of our stay.**

Al and myself were keen to get some operating in before the onslaught at Heard and Michel gave us this opportunity over the couple of days we were there. Between both of us we managed several hundred contacts considering the restricted amateur operating times that the French authorities have imposed on amateurs at Kerguelen due to the commercial daily traffic between 0900 and 1400 UTC.

Filling ourselves with good French food and wines also occupied much of our stay. The inhabitants of the island showed the whole group great hospitality and after a few after dinner drinks the language difference did not pose many problems.

We were sad to leave the French base and the new friends we would probably never meet again, but our destination was still several hundred kilometres to the south, so we departed on the 20th January on the final leg.

**To be concluded in June issue.**

Photography unless noted by Dave Shaw VK3DHF.

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13.8V REGULATED POWER SUPPLY

Des Greenham VK3CO
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In these days of "black box" operation, it can be refreshing and rewarding to actually build something that works, especially when the cost is minimal. After all, most amateurs seek the "best" at the lowest possible cost. The power supply to be described has a regulated output of 13.8 volts DC adjustable, with a maximum load of around 10 amps. This is more than enough to drive the average 2 metre FM unit with an output of 25 watts.

GENERAL DESCRIPTION

The actual layout and construction details will be left to the constructor as they are not critical. The heart of any power supply is the transformer and this can be quite a costly item. In this case the transformer is one recovered from an old B & W television set, many of which are resting as junk in shacks or even obtainable from the local "tip". The transformer is partly rewound by stripping away the original secondary winding and replacing with a heavy duty 18 volt winding. This operation, whilst time consuming, is interesting and certainly not difficult.

The 18 volt winding is fed into a conventional bridge rectifier unit and the DC output is then controlled by a UA78HG regulator which controls a bank of 2N3055 transistors. These of course, must be mounted on a heavy heat sink. This can be either a commercial type sink or a very heavy piece of aluminium or copper "U" section material. This sink is best mounted on the outside of the case to allow better heat dissipation.

Components these days are most reliable. However, should one of the regulating transistors develop a "short circuit" then the output voltage would instantly rise to a dangerous level, causing damage to valuable equipment. Most 12 volt units can only stand a maximum of 15 volts before damage occurs. It is desirable therefore that there be some form of protection against high voltage. Many power supplies have the popular "crowbar" protection, in which, when the voltage exceeds a set value, a Zener diode conducts and "fires" a SCR which in turn short circuits the output and blows a fuse.

In this supply, the cost of protection has been cut by fitting a 15V Zener diode across the output. In the event of the voltage rising above 15 volts, the Zener diode will conduct and "short" the output thus protecting the equipment. The current carried by the Zener diode is far in excess of its rated current and therefore the diode is destroyed. When the Zener diode is destroyed, it invariably becomes short circuit and the DC fuse will be blown thus completely isolating the equipment. The only cost for repair would be the faulty regulating transistor and a Zener diode. However, this is a remote risk and may never happen. It is re-assuring to know nevertheless, that there is some form of over-voltage protection for valuable equipment.

CONSTRUCTION DETAILS — TRANSFORMER

The TV power transformer should be carefully examined for any damage. It should be removed from the chassis noting and marking the 240. 220, 210 volt primary input winding connections. The secondary heater winding is usually 6.3 or 12.6 volts. This winding is obvious because it is wound with heavy gauge wire. After removal, connect the primary to the 240 volt mains supply and check the secondary heater winding with a multimeter (AC volts) to ascertain if it is 6.3 or 12.6. After checking, carefully tie back the primary connections to avoid breaking the wires. The transformer should now be dismantled by firstly removing the four bolts holding the core, then the high voltage secondary winding is usually 6.3 or 12.6 volts. The transformer should now be dismantled by firstly removing the four bolts holding the laminations and frame together. After removal of frame and clamps the first secondary winding can be stripped either by unwinding or carefully use of a hacksaw remembering that the primary winding underneath is to be re-used. Some transformers from Astor and AWA sets have a double bobbin winding with primary on one side and secondary on the other. These are particularly easy to rewind. The "turns per volt" figure is found by dividing the turns counted by the heater winding voltage. This is nominally 6.3 or 12.6 volts. However most manufacturers wind transformers for 6.5 or 13 volts to allow for a voltage drop. It is common to find that the 12.6 volt winding has 39 turns. The "turns per volt" figure would be

\[
\frac{39}{13} = 3
\]

This means we need 3 turns on the secondary for each volt of secondary output. In our case we need 18 volts, therefore we would need 3 x 18 = 54 turns. This is only an example and you must calculate for your particular transformer to obtain 18 volts output.

To rewind the secondary we need wire that will supply 10 amps without overheating, 14 Gauge B & S is adequate and can be purchased from retailers or automotive electricians. A length of 10 metres should be enough for an average transformer. The winding is wound on carefully layer by layer, although it can be "jumble" wound if there is enough space.

The turns must be carefully counted on and when the winding is complete a layer of PVC tape should be wound around it. The ends should be covered with spaghetti and extended out in a similar way to the original heater winding. Now the core must be replaced by fitting the laminations back into the bobbin. If the laminations are the "E & I" type, it is easier to fit 3 "E" sections at a time alternating the direction. The "I" pieces can be fitted later.

It is part of "Murphy's Law" that all the laminations removed will never be re-
placed, so do your best. The last few will be difficult to fit and careful use of a small hammer will assist. The assembly should be tapped into square shape with the hammer and the 4 bolts and mounting plates fitted. When finally together and looking like original, connect 240 AC to the primary and check the secondary voltage. If your calculations have been correct and all care taken your meter will read 18 volts. If your reading is not exactly 18 volts, you can adjust by changing the primary tapping. By connecting 240 volt mains to the 250 volt tapping, the output will be dropped and similarly connecting to the 230 volt tapping will increase the output.

CONSTRUCTION — GENERAL
The general assembly of the power supply will be left to the constructor. The transformer should be well mounted and all bolts tightened to prevent “buzz”. The regulator can be mounted in any position and does not require any heat sink. It can be mounted on a small piece of aluminium formed into a bracket. It is important that the 1.5 µF bypass capacitors be mounted directly on the regulator itself and not wired away. The output fuse should be rated only marginally higher than the maximum load expected. To operate a set such as the IC22S a fuse rating of 5 amps would be adequate. The main filter capacitor, shown as 33,000 µF, is from a disposal computer power supply. Any value larger than 25,000 µF would be acceptable and this could be made up from several smaller capacitors wired in parallel. An example could be 5 capacitors, each of 5000 µF, wired in parallel. Be sure the voltage rating is adequate. Any rating higher than 30 volts working is sufficient.

After completion of wiring and circuit check, set the voltage adjustment potentiometer to the “low” end (earthy side). This will protect the Zener diode in the event that the output voltage is in excess of 15 volts. Connect an accurate voltmeter or multimeter to the output and switch on AC supply. Carefully adjust the potentiometer until 13.8 volts is noted. The LED should be glowing. When satisfied that all is well, connect transceiver and check with another station for any noise or hum. The supply is clean and hum is not discernible. Check the voltage reading when the transmitter is operated. The drop should be barely noticeable. With the values shown and a transformer of the TV type, an output of 10 amperes, well regulated, will be available and there will not be too big a dent in your domestic budget.
How much can a 290R take?

Recently, whilst on a working assignment, two amateurs and two of their workmates had a miraculous escape from a helicopter crash. Along with the lucky survivors was a much loved Yaesu 290R.

Most amateurs take great care of their rigs, certainly they make sure they don’t drop them.

Dale VK3DXB is meticulous about his Yaesu 290R. He even made a special leather cover for it, but he recently dropped his from 500 feet. His second problem was that he fell with the 290 — fortunately both survived and both are in good working condition. Not a scratch on either.

Dale and Chris VK3VYS, along with a stills photographer, were filming the low water levels in the Eildon dam for the Victorian State Electricity Commission when the Bell 206 helicopter they were using suddenly lost power and crashed from 500 feet.

Both Dale and Chris work with the SEC Film Unit which early this year won a national award for one of their films (AR, February 1983).

Dale had taken his 290R on the assignment to see how far he would be able to work RML, the Melbourne two metre repeater, from the air.

"I thought it would be interesting to test the range of the 290 during the trip home from our assignment which was to film four of the water storages in north-eastern Victoria — unfortunately I didn’t get the chance," Dale said.

"We had just finished shooting a sequence at Eildon when the helicopter went into an uncontrollable spin and crashed into the dry bed of the dam.

"The helicopter flipped as we hit the ground and one of the rotors crashed through the cabin. The pilot really did an amazing job getting us down as well as he did.

"The four of us scrambled out of the wreckage and run away from the helicopter as there was aviation fuel everywhere and we expected the whole thing to catch fire.

"While we sat and tried to recover our senses and waited for the wreckage to cool down and help to arrive, I could see the 290 swinging from its strap. Later we were able to remove our gear from the wreckage."

Later on his way home, Dale was able to prove the value of amateur radio and the reliability of modern equipment, when he used the 290R to call RML and ask another station to pass a message to his wife that all were safe and were on their home — by car.

Bill Blitheringtwit goes on Air

A continuing saga by
Ted Holmes VK3DEH.
20 Edmund Street, Parkdale, Vic 3195

His hand stretched out and switched on the ancient power supply. Bill Blitheringtwit was about to go on air using one of those new fangled black boxes: an all solid state multiband transceiver, complete with LED frequency readout and a variety of knobs for many and varied functions. He had purchased the rig that morning and just couldn’t wait to try it out.

His old rig had died rather suddenly the previous day, owing to years of tuning through a defective ATU into a primitive antenna system. The glass envelopes of the finals had melted and were now a ¼ inch high. It had been a spectacular effect, added to by the generous sparking created when Bill aimed a soda syphon at the blazing rig, without first disconnecting the power system from the mains.

Bill then turned on the new black box. Unfortunately, his power supply was not the best and, of course, he had not checked it first. At switch on, the voltage immediately shot up and the lights in the black box grew bright, then died. Despite all Bill’s efforts — which included switching the power supply on and off again several times — the brand new black box refused to come to life again. He signed and made a mental note to return the unit to the suppliers. He could always have it fixed under warranty.

He reached for his old and trusted ex-Army unit. No matter what he did, he had been unable to destroy that! So far, that is. He plugged it in and switched on. This was beautiful! He could hear a QSO in progress on 20 metres and decided to try to get into it. Locating the analog exactly on the frequency, he started to tune.

Doing this, he almost destroyed the QSO which was going on but, undeterred, he waited. At a suitable time he inserted his call sign. There was a pause and the QSO resumed. He called again. No reply. The voices disappeared but he found them about 20 kHz up. Not understanding all this, Bill decided that some people were not very friendly.

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LtoR — Dale VK3DXB, Chris VK3VYS and Ern Ward, stills photographer after their lucky escape. Photograph — Alan Weekes.
With some circuits the dip on the Trio DM-800 was found to be only just perceptible. It was much improved by the addition of the following differential amplifier. The amplifier was built into a separate small metal box, suitably spray painted and labelled with rub down lettering. The only modification to the dip meter itself was the addition of a 3.5 mm jack, to supply 9 volts to the amplifier.

**DIP METER**

Remove the metal cover on the phone jack side and enlarge the nearby cover fixing screw hole to match that of the phone jack. Drill a corresponding screw hole on the chassis to accommodate a 3.5 mm jack. Fit the jack, wire to the positive 9 volt rail and test. Re-locate the cover fixing screw a little lower, towards the edge of the chassis and replace the cover.

**AMPLIFIER**

Build up the circuit except for R2, R6 and R7 and connect to dip meter: turn power on, set sensitivity at minimum and R4 to mid range. Select R2 so that Q1 Vc = 1/3 to 2/3 of Vb. Make R6 the same as R2 and select R7 so that Q2 Vc is very close to that of Q1. Now connect a multimeter to bridge (on a suitable low volts range). Zero the meter and increase dip meter sensitivity for a convenient reading. The device is now ready for use. To use the DM-800 as a wave meter, disconnect the amplifier plugs.
By a perusal of the VK2 section of the 1982/83 call book, I am more than convinced that Uncle Sam must have packed his flag in his bag and ti-tailed it for VK2. Look through other sections of the call book and you won't find as many VK2 American amateurs as there appear to be in NSW. A study of the addresses in this section of the call book is very interesting indeed. NSW appears to have a larger population of Americans with VK2 calls than the other states.

The “rough” for this article was being prepared just after the massive bushfires in Victoria and South Australia, and tributes to the work of amateurs who helped out are still being heard. The other night, VK2PBX John of Sunbury — a very good friend of mine from CB days — told me of a tribute to WICEN paid by Paul Welsh of the Victorian SES. When I heard that the fires had come within visual distance of Sunbury and not finding John on the air, I phoned his home to ensure that all was well. John later thanked me for doing this, but it was the least that I could do and the sort of thing that any other person would do.

Just before speaking with John on air on 1.3.83 I happened to come across the Tasmanian Devil Net conducted by Don, VK7NBF. What attracted me to pause on their frequency was a mention of the need to stay in the area. It was then that I came across the recent section of the call book dealing with the problem of the heavy distortion. VK3PBX was reporting the disrupter, who used no call sign, was causing some irresponsible person to transmit on a common frequency. I am convinced that the situation re message-passing must be used to radiotelegraphy. I am told that the situation re message-passing was more than chaotic and the need for standardisation of nets was patent.

During the emergency, ABC radio 3LO had to cease transmissions on the air all one night and for a while maintained a talk-back programme during which I heard some caller named “Digger Smith of Naringal who is believed to be a radio amateur”. Digger is indeed a radio amateur to whom I have spoken often but I had had no news of him at this time so I did not ring the number given by Anne. However, the following night I mentioned this to all the members of this net was able to answer Anne and supply the information re Digger. During this time also, Radio 3AW Melbourne did a wonderful job of bringing us up-to-the-minute reports of the fires from their on-the-spot reporters. At the time of writing, I know of at least four amateurs who lost much gear during the bushfires.

A South Australian amateur tried in vain to get a message through to phone to let him know that Dad was OK. On air, he finally got through to a VK6 who offered to relay the reassuring message on by phone.

Although I was far from the disaster area of the Ash Wednesday fires, I know that bushfires are all about. About seven or eight years ago the whole of the western half of New South Wales was on fire and there were many fires raging on both sides of the Murrum River in this Sunraysia area. To assist local volunteer and professional brigades, many appliances with their complete crews journeyed from as far away as Sydney, and thus it was not uncommon during that terrible fortnight, to see fire engines bearing the names of many Sydney suburbs cruising this area. At one point in time there were about sixteen or seventeen separate fires burning simultaneously and there was strong suspicion that some were deliberately lit.

This was long before I got my amateur ticket and before the CB craze hit this area, which means that I couldn’t assist in the vital matter of communications. And although much valuable communications equipment was being used by fire officials, it was found that much of the gear could not be used on a common frequency. I am told that the situation re message-passing was more than chaotic and the need for standardisation of nets was quite obvious. Nevertheless local people appreciated the valuable work done by the hundreds of volunteers who travelled 700 miles to assist us during that unforgettable period. Helicopters, operating out of Buronga Public school yard were used for fire spotting, and my receiver on the spot in the schoolyard enabled police and other authorities to hear messages direct, saving time before they arrived by other means.

So much for bushfires. What a land of contrasts we live in. I happened to be writing the original draft for this article on a day when the much needed rain seems to have arrived. To the west, the sky became darkened with a mixture of water vapor and Malac dust, then was joined by thunder and lightning as all hell was let loose. A local radio station went off the air for about twenty-five minutes, then returned with an announcement apologising for the blackout and blaming about his total inability to give the time, because with everything powered from the AC mains, the studio clocks had stopped also, and even the telephones were out of action.

I wonder if it was a reflection of the times that we are so heavily dependent on the seemingly inexhaustible AC mains supply and that even a commercial radio station has thought of using a battery operated kitchen clock, or one of the old fashioned wind-up variety. And as to why nobody was using a back-up power supply I can’t even guess.

A few weeks ago, when there was a similar major disruption to the power supply the cry went out for everyone to stop watering their gardens with hand held hoses, as we were told by the radio that due to the interruption to the power supply, the pumps to the big city tank had ceased to function, and there was only one hour’s water left in the tank. Now, why has nobody thought of having auxiliary generators to power the water pumps? I wonder what will happen if World War Three gets going? I reckon that when our total dependence on generators located hundreds of miles away — with all that wire strung across the country, it will be child’s play for the enemy to dislocate our big centres of population.
17 MAY 1983
WORLD TELECOMMUNICATION DAY
One World One Network
“One world, one network” is the theme for the 15th World Communication Day, which — following a long standing practice — will take place on the 17th May, the anniversary of the founding of the oldest intergovernmental organisation in the United Nations System, the International Telecommunication Union (ITU) 118 years ago in Paris on the 17th May 1865. In his message, Mr R E Butler, the Secretary-General of the ITU, stresses that the development of the infrastructures is essential for the harmonious operation of the world network.

World Communication Day 1983 is of particular significance in that it falls within World Communications Year, proclaimed by the General Assembly, with the purpose of promoting the development of communications infrastructures throughout the world.

WCY STAMPS
To celebrate World Communications Year, Australia Post will issue a 27 cent commemorative stamp on 16th May 1983. A First Day Cover will be issued around the same time.

AX PREFIX
Word has been received from the Department of Communications that approval is given to the WIA to employ one station per division using the AX prefix and ITU suffix on the 17th May 1983 on the occasion of the World Telecommunication Day Contest.

No objection is seen to the use of the AX prefix by all amateur stations on this day.

A WEEKEND WITH OE AND DL’s
A “World Communication Tour” was organised by a number of German and Austrian Amateurs with wives and friends. The countries visited were Australia and New Zealand. After having visited ZL and VK2 the group flew to Melbourne where Walter VK3DFO acted as host during their stay over the weekend 26/27 March.

Highlights of the Melbourne stopover were a visit to the Science Museum, attending the WIA Broadcast, walk through the Botanical Gardens and a ride on the famous “Puffing Billy”. Peter VK3AVE and Fred VK3BOU welcomed the guests at the “studio”, whilst Walter VK3DFO and his wife Maria contributed with a barbecue at their home, attended by many VK friends. The visitors were Ruprecht DF3CZ (tour leader), Hans OE2UE, Franz DJ9EO and Heinz DL6RB.

Peter VK3AVE and Fred VK3BOU during WIA broadcast.

Hans OE2UE, John VK3DKK and Ruprecht DF3CZ during WIA Broadcast.

L to R: Walter VK3DFO, Hans OE2UE, Ruprecht DF3CZ and Franz DJ9EO, ready to board “Puffing Billy”

Ruprecht DF3CZ and Heinz DL6RB (standing) at VK3 radiorooms.

Would Blake Taylor of Lynwood WA please contact Amateur Radio and let the Editor know your current address. Australia Post have returned a letter as address unknown. The address for AR is PO Box 300, Caulfield South, Vic. 3162.
April Fools Day is the day when you are wary of what you hear but Bouvet was the area the DXers concentrated on this year. The world amateurs had the opportunity and the dubious “honour” of working the station 3Y1A who claimed to be on the island. This station was very explicit in his QSL arrangements, that all cards go to LA3DA. What a busy time his postman is going to have and Nils is going to have to do a lot of explaining to the multitudes if this station was not genuine.

Still on Bouvet, still 1st April, was the rumour that this much wanted and inaccessible outcrop would be activated in late 1983 or early 1984 by an Australian expedition. The only known activity that is planned is a Scientific Expedition from LA in 1984/85.

1983 CQ WW WPX CONTEST

The 1983 CQ WW WPX Contest, commenced as a disaster in VK3, with the bands misbehaving to the extent that very few QSO’s of any note were made on the first day of the contest. Anticipated large ruled up log sheets will have to wait to be filled maybe next year.

When the band did eventually open, on twenty metres, the European QRM built up to the impossible and the easiest way to gain points was to turn the beam north and work the well disciplined operators in Asia. It was a pleasure to call one station and for that station to come back and give a report. This was consistent for the whole time the band was open to the north.

The VK novice had little show of making a reasonable number of contacts as both ten and fifteen metres were not kind and hardly opened at all. If there was much action it was generally outside the segment of the novice allocation. A number of amateurs still flaunt the “gentlemen’s” agreement and selfishly operate on SSB under 21.150 MHz, in a narrow segment, that novice operators have to increase their chances of working reasonably well with MA 26%. Europeans gained a 1% success rate.

FRANZ JOSEF LAND

Chris VK3OG, had the pleasure of working UK1PGO recently and reports that this station has had very few VK’s in the log over the last few months. The operators of this station are very explicit in their QSL arrangements, that all cards go to LA3DA. What a busy time his postman is going to have and Nils is going to have to do a lot of explaining to the multitudes if this station was not genuine.

Still on Bouvet, still 1st April, was the rumour that this much wanted and inaccessible outcrop would be activated in late 1983 or early 1984 by an Australian expedition. The only known activity that is planned is a Scientific Expedition from LA in 1984/85.

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Many exotic prefixes were heard and worked, including XF0MDX on Revilla Gigedo who, when last heard, had in excess of 2900 contacts to their credit. Closer to home, Bob ZK1CG, was doing excellent business and towards the end of the contest sounded that some throat jubes would be of great assistance.

Perhaps propagation next year may be better and allow more VK participation in this, my favourite overseas contest.

HOLIDAY DXING

Jan and Jay, K6HHD/FO00J and W6GO/FO00JO, took a break from the chores of producing their QSL Manager List, which is a must for any serious DXer, and ventured to French Polynesia for a mini DXpedition which was sponsored by the International DX Foundation. It was coincidental that such a trip would enable them to partake in the CQ WW DX Phone Contest.

TWO HUNDRED PLUS

Diana G4EZI, by working PY0ZSF, notched up YL country 205. Considering the difficulty in finding that elusive DX country is a big enough challenge, yet alone to achieve 205 YL countries since being licensed. What’s the secret, Diana?

MOZAMBIQUE

Jane ON7WW, writes to say that conditions have not been very good and short skip QRM has not been conducive to good DX QSO’s. Jane also mentions that Jack ON6BC/C9 is back home and was unable to obtain the correct documentation to satisfy the ARRL scrutineers. Quite a pity as this is a much needed country.

UNUSUAL PREFIX

Selected Yugoslavian amateurs are using their alternative 4N and 40 prefix allocation for the 1984 Winter Olympics to be held in Sarajevo. It has been intimated that quite a few calls will be on the bands over the next twelve months from this country. The operators from Sarajevo will see a lot of Willy, in green and gold, a creative koala, the first official mascot ever to represent Australia in an Olympiad.

WARC BANDS

The latest known “stocktake” of countries that have been granted the WARC bands lists the following.

10 MHz has been granted to A2, A3, DL, DJ, EA, F, G, H4, HB, L2, JA, LA, LX, MA, OY, OZ, P2, P4, PA, PJ, PZ, VE, VK, W, XE, YB, YK, ZF, ZL, ZS, 4X, 5N, 7X, 9H, 9L and 9M.

18 and 24 MHz activity is now allowed from A2, A3, A4, DL, F, G, HB, L2, JA, LA, OA, OY, OZ, PA, VK, YB, ZF, ZS, 4X, 5N, 7X and 9L.

Quite an impressive list for the SWLer and the dedicated amateur to look for.
Though not acceptable for DXCC, they should create quite a lot of interest.

**JY ACTIVITY**

The "globetrotting" Colvins, after making quite an impact from 9K2 on the waiting multitudes, moved on as predicted to JY. Iris was giving many a new YL country when she was signing as JY8KG and operating from JY3ZH's QTH. The deliberate QRM everyone could have done without but Zedan's transmitters have a way of getting out from that QTH overlooking Amman. QSL's are assured from YASME.

**MALAGASY REPUBLIC**

Paul, F6EXV now signing TO6EXV, a special prefix to commemorate WCY, has had to cancel his arrangements to visit Alain 5R8AL and assist him in some serious operating from the rather "unheard-of-on-the-bands" QTH. One reason that Paul put forth was that he has been conscripted into military training for a period and this was going to alter his operating habits.

In the meantime Alain 5R8AL can be heard occasionally on the low end of the twenty metre phone segment speaking to his friends back home.

**BANGLADESH**

Peter S2BTF, is active from this rare area on SSB. In a brief QSO with Peter he indicated that he would be QRV until mid July. QSL's, if you are lucky enough to catch him on SE2A Net on 14.320 MHz at 1200 UTC, should go to LA5NM.

Two JA operators hoped to assist in taking S2 off the rarity list as a gesture for his friends back home.

**COCOS KEELING**

Paul VK9YB, had a lengthy stopover on the island recently and was set to outdo Neil's VK9YE QSO rate in his Mini "DXpedition" last year. Paul's QSL arrangements are via VK5QX.

**TOGO REPUBLIC**

Ted 5V7HL, is to be shortly joined by another missionary who will become active on the bands. Ted has given many a DXer this rare country in the limited operating time that he has available. Ted has never appointed a manager mainly due to the fact that he says that he doesn't have the time to operate and swell the log book that would justify one's existence.

**BEACONS**

A group of interested North American amateurs have funded a chain of eight beacons which will operate sequentially on 14.100 MHz. The beacons are as follows:

- **TIME**: CALLSIGN LOCATION
- **00**: 4U1UN/B New York
- **01**: K6OBO/B Stanford, CA
- **02**: KH6O/B Honolulu, HI
- **03**: JA2IGY Tokyo
- **04**: 4X4TUB/B Tel Aviv
- **05**: OH2B Espo
- **06**: CT3B Madeira
- **07**: ZS6DN/B Transvaal

Each beacon transmits in sequence for one minute every ten minutes. The message sequence is as follows: (100W) "QST de (callsign) beacon", (100W) nine second dash, (10W) nine second dash, (1W) nine second dash, (0.1W) nine second dash, (100W) "SK (callsign)". All beacons should now be operational using single element quad loops for antennae.

**MODEL STATION**

The ultimate in operational comfort is what all amateurs strive to achieve. Glyn VK3VQX, has constructed this magnificent model station, which has all "mod cons" at one's fingertips, for ease of operation. Glyn is fairly new to the bands and one must think that it will not be long before that back wall is filled with overseas certificates.

**ARRL MICROSCOPE**

Erik SM0AGD/KH1 and T31AE was a little slow in submitting verification of his successful visit to this area. In fact some of the cards that were sent out were on the DXCC desk for updating amateurs standings before the paper work was received from Sweden. The result, returned cards with no credit. This anomaly was soon rectified and all cards from this area are now acceptable.

**RECIPIROCAL LICENCE**

It is believed that the negotiations between G and JA are closer to a reciprocal agreement. A number of 9V and VS amateurs are dwelling on such an agreement which would allow them a licence whilst on holidays in this area.

**CW SWL-ING WITH ERIC L30042**

28MHz

FK8DZ, JA, 8JJSDU, UA0CBE, UA0FLI, UI8BDA, VE8SM, V6BQG, VE7UZ, XX7CC, X07SR, VK8HA, KA6EAS, W7WHO.

21MHz

BY1PK (0715UTC), DUC1CK, F8KCE, F8KAA/P, HL4VM, IS0NZA, JT1AO, K01APJ, US0AB, UR2KKS, VK8HA, 9HM6Y.

14MHz

A35XX, CE3AA, CM6JC, CR9T, NO70/OJ2, GF7CC, FK8BU, FM19AX, F8BDR, F8BHV, K0KX8, KD6O/B (Beacon), OK30M, W2BFB/P, PY1ZAF, K04LJ/S, T3OA/B, SV1NY, U1FLFC, 4K1A, VK9YB, VPS5XX, VP9DR, X07CC, WX6V/B (Beacon), YV4A4, ZK1AA, ZK2BW, ZL37C/D, ZL0GDA/ZLS, 457EC, 65HYN, 9Y1TL.

10MHz

A35MS, DL8MM, EA1BSU, F3NB, GB2Y, H98BGG, JA, KV4CJ, OZ2RH, PA3BTH, VK8OB, W9UZL, ZL1BXW.

7MHz

E2A2, F9XL, FC9YN, FK8OZ, G3LNS, GM7KZ, HL5SBB, IT930H, JA, HB9G, HL9K7, IL3X/PK4A, LK1KAB, X07CC, VK9YC, VP7JR, VS6DD, W2BUC, YO3AWC, 4N9YY.

3.5MHz

YU2DAM/M.

**QSL MANAGERS**

3A3L (3A2ARM), 4K1G (UA0JUCV), 4K1H (UA1CIDJ), 4Y9YY (UY4FRS), 5N7HTR (OESRI), 6Y5M (K2ZBY), 7PB9C (K0DGH), 9U5SO (WA4WPO), A22C7 (G3HCT), A22DC (G4KJF), C31S7 (G4HYD), CE9AT (WB6WOD), CO2H (WB6DGO), CO2PY (KB7SB), CO2C (CT1CK), CR9BK (JA1HGY), EK9D/B (UK3CAA), EL2AD (WA3HUP), E2A2 (UK2AA2), F6GFNW/1V7 (FSFGW), F9BZL/FC (HW8C), FK8CR (F6EWK), GUSCIA (NEMB), HB0BHA (DK6NM), HK0BXX (WB4F0H), J20BL (F6BFN), J20D (W6RRG), J28P (F2GA), JD1FH (JM1FHJ), VP2MKD (N0DH), VU2JXO (WA3TBL), VU2TLC (WA3TBL), 2Z0T (ZD8TM), 2ZP5X (W3HKN).

**THANKS**

These notes have been made possible by information from such magazines as CqDX, WORLD RADIO RADCOM, CQ, QST, HOW'S DX, DX NEWS, QTC, BREAK IN and amateurs including DK20C, DK9KD, G3NB, IBSAT, K6HDD, ON7WW and VK's 1MM, 2PS, 3BY, FR, UX, YJ, YL, DHF, VOX, 4YX, 5QX, 6FS, HD, IH, NE and Eric L30042. Sincere thanks to one and all.

JOIN A NEW MEMBER NOW
COUNTER DISASTER COMMUNICATIONS STUDY

WICEN has received an invitation to be represented at a Counter Disaster Communications Study jointly sponsored by Department of Communications and Natural Disasters Organisation, to be held at the Australian Counter Disaster College, Mt Macedon from 24 to 27 July, 1983. With the concurrence of the Federal Executive, I, as Federal WICEN Co-ordinator, have been nominated to attend.

A suitable scenario, which includes bush fires and cyclones, has been proposed as a basis of the study and representation has been invited from a wide range of Commonwealth Departments, State Emergency Services, TV and Broadcasting Federations and the Royal Flying Doctor Service.

The scope of the Study will include:
(a) The extent of the Australian disaster problem.
(b) The general requirements for effective response to disaster, with particular reference to communications.
(c) Briefings on current and planned future Australian communications capability in relation to the requirements for effective response to disaster.
(d) Identification of communications requirements for effective response to disasters with particular reference to Australian (including external territory) circumstances.
(e) Review of Australia’s communications capability in relation to the identified requirements.
(f) Suggestions for the improvement of Australia’s capability — in the immediate short term; and — in the long term.
(g) Identification of training needs.

I will be contacting state co-ordinators separately but if there is anything you personally would wish me to be aware of please write to me at the above address. Now is the time to debrief and review the activities of the recent summer.

QUEENSLAND WICEN QUESTIONNAIRE

I am indebted to Ken Ayers, VK4KD, the Queensland WICEN co-ordinator for the following questionnaire which is reproduced as received. This is part of Ken’s dynamic approach to WICEN awareness and passage of information within his division. Keep up the good work Ken!

HOW DO YOU RATE AS A QUEENSLAND WICEN OFFICER?

ANSWER TRUTHFULLY AND CHECK YOUR SCORE

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>TICK YOUR SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Do most of the local amateurs know you are a WICEN Officer?</td>
<td>(10) YES (0) NO</td>
</tr>
<tr>
<td>2) Have you given a talk at your local radio club on WICEN?</td>
<td>(10) YES (0) NO</td>
</tr>
<tr>
<td>3) Have you organised a local WICEN net in your area?</td>
<td>(10) YES (0) NO</td>
</tr>
<tr>
<td>4) Are you registered with the local SES as a member?</td>
<td>(5) YES (0) NO</td>
</tr>
<tr>
<td>5) Do you know the name of your local SES Group Leader?</td>
<td>(10) YES (0) NO</td>
</tr>
<tr>
<td>6) Do you know the name of the SES area Controller.</td>
<td>(5) YES (0) NO</td>
</tr>
<tr>
<td>7) In an emergency with no telephone, could you get a message to your local SES headquarters within five minutes?</td>
<td>(10) ALWAYS (5) SOMETIMES (2) RARELY (1) RARELY</td>
</tr>
<tr>
<td>8) Do you check into the weekly 7050 state network?</td>
<td>(10) YES (5) MOSTLY (0) NO</td>
</tr>
<tr>
<td>9) Can you recite the PHONETIC ALPHABETIC accurately?</td>
<td>(10) YES (5) MOSTLY (0) NO</td>
</tr>
<tr>
<td>10) Are you familiar with the WICEN PROWORDS?</td>
<td>(10) YES (5) MOSTLY (0) NO</td>
</tr>
<tr>
<td>11) Do you know how to give or take a map reference?</td>
<td>(5) YES (0) NO</td>
</tr>
<tr>
<td>12) Have you emergency power and can get on air without mains?</td>
<td>(10) YES (5) PROBABLY (0) NO</td>
</tr>
<tr>
<td>13) In an emergency, after family and immediate house damage assessment, would you go on air immediately to help other WICEN stations and the authorities?</td>
<td>(10) YES (5) PROBABLY (0) NO</td>
</tr>
<tr>
<td>14) Have you a telephone?</td>
<td>(5) YES (0) NO</td>
</tr>
<tr>
<td>15) Are you emergency minded and a survivalist?</td>
<td>(5) YES (0) NO</td>
</tr>
<tr>
<td>16) Could you erect an emergency antenna within half an hour?</td>
<td>(5) YES (0) NO</td>
</tr>
<tr>
<td>17) Have you a fully stocked first aid kit?</td>
<td>(5) YES (0) NO</td>
</tr>
<tr>
<td>18) Have you a survival kit or emergency rations available?</td>
<td>(5) YES (0) NO</td>
</tr>
<tr>
<td>19) Have you a fire extinguisher in the house or car?</td>
<td>(10) YES (0) NO</td>
</tr>
</tbody>
</table>

SCORING: 120 to 150 — You are a good amateur dedicated to WICEN.
80 to 120 — You are a good WICEN Officer but you should seriously consider the answers where you didn’t get top marks.
25 to 80 — You are not taking your important job as WICEN Officer seriously enough.
Under 25 — Please resign, you are letting the team down.
FROM SYDNEY'S NEWEST ICOM CENTRE!

IC-R70 COMM RECEIVER .................................................. $799
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IC-PS 20 POWER SUPPLY ................................................... $278
IC-PS 740 POWER SUPPLY ................................................. $235

FROM SYDNEY'S OLDEST KENWOOD CENTRE

R-2000 Comm Receiver ...................................................... $655
TS-930S with tuner ........................................................... $1935
TS-430S HF TRX ............................................................... $1055
TL-922 2KW Lin ampl. ....................................................... $1380
PS-430 power supply ........................................................ $189
HC-10 world clock ............................................................ $125
DM-81 Grid Dip Oscillator ................................................. $119

FROM AUSTRALIA'S LARGEST HAM RADIO CENTRE.

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PCS-4000 ................................................................. $459

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  10 kHz COMPARE!
- TINY SIZE: Only 2” H x 5.5” W x 6.6” D. COMPARE!
- MICROCOMPUTER CONTROL: At the forefront of
  technology
- UP TO 8 NON-STANDARD SPLITs: Ultimate versi-
  ability for CAP/MARS. COMPARE!
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  BANKs: Retains frequency and standard offset.
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  separately or together. COMPARE!
- TWO RANGES OF PROGRAMMABLE BAND SCAN-
  NING: Units are quickly reset. Scan the two seg-
  ments either separately or together. COMPARE!
- FREE AND VACANT SCAN MODES: Free scanning
  stops 5 seconds on a busy channel. Vacant scan-
  ning stops on unoccupied frequencies.
- DISCRIMINATOR SCAN CENTERING (AZDEN EX-
  Clusive Patent): Always stops on frequency.
- TWO PRIORITY MEMORIES: Either may be instantly
  recalled at any time. COMPARE!

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  tribution
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- PL Tone switch
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- Automatic inclusive or ex-
  clusive programmable band
  scan
- Busy and vacant scan modes
- Keyboard lock
- Transmit lock
- Digital S/RF and memory
  address meter.
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- True FM
- Automatic front end tuning
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  modular construction
- Superior receiver
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TELEREADER:
CWR685E Cmm. Terminal .............................................. $1289
CWR870E Receive Conv ................................................. $497
CWR-610E Receive Conv ................................................... $247

HAL:
CT-2100 3 comm. ........................................................... $1654
KB-2100 3 Terminal ....................................................... $1654

ALINCO SSTV:
EC-720 SSTV Conv ........................................................ $778

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AD270 Active Antenna ................................................... $129
AD370 Active Antenna ................................................... $199
RC, Universal Speech Clipper .......................................... $199
RFA Broadband Pre-amp ................................................... $79
Code Call 4036 .............................................................. $79
RF Direction Indicator .................................................... $360
VLF Converter ............................................................... $79
NFA Notch filter ............................................................ $99

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OUR LATEST 1983
PRODUCT CATALOGUE

AMATEUR RADIO, May 1983 — Page 23
INTRUDER WATCH

This month, we continue with a short list of known intruders using the A1A (CW) and F1B (RTTY) modes of emission. The A1A intruders can be difficult to monitor, as often the sending speed is very fast, and they don't identify as frequently as we would like. Often, also, they are listening on other frequencies, so we don't hear any replies, and don't always know the identity of the station they are working.

FREQUENCY: CALL-SIGN:
7012 HYSJ
7013 LNV
7060 SGJ
14015 6VWG
14040 MS2T
XBCM
14079 VRQ, VHL
14141 ULY4, UL2, UWX2
14198 7HKM, PAA, AF
14199 ORBS
12444 OSA
21032 UMS (USSR Naval)
21115 F9T (Diplomatic)

Intruder reports on these, and any other intruders are sought by the Intruder Watch. For the statistically-minded, here are a few facts on the Intruder Watch from June to December, 1982:

- Number of Intruders reported: 1705
- Number of Intruders using RTTY: 439
- Number of Intruders using AM: 405
- Number of Intruders using CW: 48
- Number of Intruders who identified: 222

And finally, thanks to the following amateurs who sent in reports of intruders in this period:
VK1 MM N DEB GC GD NBS NET UE JO
VRZ B AFT PS YVI BQ5 GS NR PEJ ARR A2R
VK3 LC X8 AMD DMP DBB
VK4 BG VFG AFA KAL AKX FB YX
VK5 RM

Now that intruders using the A3E (AM) (see March issue), and A1A (CW) modes have been discussed, let us turn our attention to those intruders who employ the F1B (RTTY) mode of transmission. This is the most prevalent mode employed by intruders, and can be heard virtually at any time on the amateur bands. Bear in mind that amateur operators NEED NO LONGER IDENTIFY IN CW OR PHONE if they are transmitting RTTY signals. They can now identify only in the mode of transmission, if they wish, and this makes the task of separating intruders from amateurs using RTTY more difficult.

If you have RTTY capabilities, well and good. If not, at least you can still measure the shift of the transmission, and any shift over 850 Hz IS DEFINITELY AN INTRUDER. Amateurs can use shifts only up to 850 Hz. Intruders use shifts of 170, 250, 425, 500, 850, 1000, 2000 Hz, etc, and this makes things difficult. If you hear a RTTY transmission you suspect as being that of an intruder, measure his shift by first zero-beating the mark frequency, and then the space frequency. The difference is the shift, and the point midway between the two is the frequency of transmission. If your rig has a digital read-out, this is comparatively easy.

If the mark frequency zero-beats on a frequency 1000 Hz away from the zero-beat of the space frequency, then the shift is 1000 Hz, and if the two frequencies in question are, say, 14.141, and 14.140, then the frequency of transmission is 14.140.5 MHz.

Now to the more common intruders using RTTY:

FREQUENCY STATION DETAILS
7.048 UHRS USSR
14.025 HMK51, HMR56, KONA-(Korean Central
HME28, HMK32, News Agency)
14.101 BXT1 China
14.115 YSK East Germany. Also
14.131 Z3N Thought to be Diplomatic
14.141 UMS USSR Naval station
14.154 BXT21 China
14.218 QLK Uses FSK Morse
14.248 BXT17 China
21.032 UMS USSR Naval station

These above details will give you some idea of the abundance of intruders to be found on our bands. But what happens to the intruders who slip up? Read on... To circumvent the International Telecommunications network, and to ensure industrial secrecy, a Sydney-based company recently got up to some funny business on the HF bands. They were using a VK2 call-sign, and working to the Pacific Islands on an H44 call-sign. Now that of which, of course, were amateur operators), using two FT 707's. Power in use was 1.5 KW, and antennas were two log-periodics. Amplifiers were in use, of course. This company was working on the 40, 20, 15, and 10 metre amateur bands, as well as other frequencies. Modes were RTTY, using unusual shifts and speeds, and SSB. Unfortunately for them, they out-smarted themselves, and had their antennas dismantled, and of course, charges were laid under the Wireless Telegraphy Act. Also found on the premises were three unauthorised UHF rigs.

I have no sympathy for these type of offenders, and the sooner we can report more results like this with regard to other Commercial, Governmental or Military intruders, the better.

You can help by telling us what you hear. Send any Intruder reports to your Divisional Intruder Watch Co-ordinator, whose details can be found by contacting your Divisional Office. See you next month.

WHO IS THIS AMATEUR?

Peter Brown VK4PJ
16 Bede Street, Balmoral, Qld 4171

He was born in Sydney in 1872 and passed on in 1928. It is doubtful that he had an amateur radio licence. He commenced his working life apprenticed to an architect but mastered many other callings ranging from engineering to art and writing.

He formed the "Association for Developing Wireless in Australia, New Zealand and Fiji" and was Honourary Secretary. The formation of the Wireless Institute of Australia was credited to him along with many other organisations of note.

He was honored by the Royal Geographic Society, Royal Astronomical Society and Institution of Engineers, Australia.

In 1911 he established wireless communication between interstate express trains, directed a model and fired a gun by radio. A Memorial Lectureship in Aeronautics was established at Sydney University to recognise his efforts in Aviation, Wireless and Building Construction. This memorial and flew gliders in 1909.

His life work is best described in a biography by J M Giles published in a supplement to "Construction" 11/12/1957, and some mention is made of him in WIA Book 1.

On Wednesday 27th October, 1925, he addressed a meeting of the WIA Queensland Division on "Wireless — Today and Tomorrow", and correctly predicted the form that present day television would take. "He has a great reputation for good work: the best of that reputation having been won for services rendered to others".

Yes he was George Augustine Taylor. Who has his photograph?
SIGNAL REPORTING

One of the oldest traditions of amateur radio, and the subject of an incredible amount of controversy, is the Signal Report. It is important to all of us to know how "good" a signal we are putting out, yet in the first place a signal report is merely someone's opinion and, secondly, there is seldom anything we can do about a "bad" report. At best a report gives us some idea of "how we are getting out"; at worst it can make us suspect problems which have absolutely nothing to do with our own equipment. Of course reports are VERY useful during contests, when the organizers have said that signal reports WILL be exchanged.

The basic problem is that a signal report is determined by an operator's ability to hear the signal, and his ability is determined by the quality of his receiver and antenna, the state of his hearing, and his understanding of the business, among other factors. INCLUDING the sort of signal you are transmitting and how well it has propagated to the listener's part of the world. All you can reasonably expect is a report of how it sounds to him, in comparison with other signals on the band or which he has evaluated in the past. He may make use of an S-meter, which makes him reliant on the equipment manufacturer's opinion as well as his own.

Given that the whole business is pretty unscientific, we owe it to our fellow amateurs to give as accurate an assessment as possible in accordance with the standard reporting system.

In the case of CW, the standard report format is called the "RST Report", which consists of a three digit number representing an appraisal of Readability (R), Strength (S), and Tone (T), in that order.

READABILITY. Reported on a scale of 1 to 9, where 1 represents no readability and 9 equals perfect copy. Assuming that "copy" is our ability to derive intelligence from a received signal, perfect copy would represent 100% reception with no difficulty. The scale is:

- **R1** No readability
- **R2** Barely readable (only occasional words)
- **R3** Readable with difficulty
- **R4** Readable with practically no difficulty
- **R5** Perfectly readable

The word "difficulty" as used above presents some problems. Keeping in mind that we are talking about actual signals here, you should ignore "difficulty" that you might experience due to your own copying ability or the other station's sending speed.

STRENGTH. Reported on a scale of 1 to 9, where 1 represents faint signals and 9 represents extremely strong ones:

- **S1** Faint, barely perceptible
- **S2** Very weak
- **S3** Weak
- **S4** Fair
- **S5** Fairly good
- **S6** Good
- **S7** Moderately strong
- **S8** Strong
- **S9** Extremely strong

A great degree of judgement is called for in giving a strength report. "S-points" cannot be measured objectively outside a laboratory, so meter deflection should be taken as a relative indication only. For example, my own S-meter rarely moves at all on 10 metres — if it twitches the received signal must be at least 8! As far as possible, give a report which indicates the strength relative to other signals on the band. It may seem strange to give an S9 report when the static noise level is S9 + 3 dB, but there is scope in the report amplifications to explain that one, as we shall see next month.

NEVER, never, never give a report of S0. It just makes you look silly, because if there is no signal strength at all, there is no signal — and nothing for you to report on in the first place.

For practical purposes, readability can give a clue to the appropriate strength report, at least to this extent — if readability is 5, Strength can't be less than 3. Look at the tables again and think about it.

TONE. Yes, tone . . . Well, what can we say about tone? This report must go back to the days of spark. T1 is defined as a rough, hissing note, while T9 is defined as a pure DC note with no trace of ripple. I think in technical terms a report of less than T9 would have to represent some form of modulation, but I'm damned if I've ever heard it.

**Note:** Technical faults such as Chirp, Drift and Clicks do not mean sub-standard tone. They will be covered separately next month.

I once got a report of 5/9/8 and I was so shocked I nearly broke the paddles going back with "WHY T8? WHY T8?" The answer I got was "SRI OM RCVR HR NOT VY GUD". He knew the fault was in his receiver, but he still wouldn't change my report. Oh well . . .

Ultimately the tone report will go the way of the dinosaurs. Good riddance, and perhaps we can speed it on its way. As an experiment, once this has appeared in print and I can hope for some support, I will stop giving tone reports and just give readability and strength, with any amplification which might be called for (X, C, D, K, QRN, QRN). If anybody demands a tone report, I'll go back with "T9 OF COURSE OM T9". Well you have to start somewhere, so wish me luck and why not try it yourself? Who knows, maybe we can start something worthwhile in this staid old hobby of ours.

If you agree with the idea, why not drop us a line, direct or via the editor, and of course if you know of a good reason for keeping the T report, I'd sure love to hear it!

Till next month, keep pounding ES 73.
MECHANICAL GENERATION OF RTTY SIGNALS

If you were a very exceptional CW operator with the dexterity and sense of rhythm of a jazz band drummer and had learnt the RTTY code perfectly then you could send RTTY with a morse key.

However I certainly do not recommend that you attempt this and I only mention it to underline that the mechanical generation of RTTY is as simple as the opening and closing of a circuit according to the RTTY code. The normal amateur RTTY sending speed is 45.45 Bauds and at this 60 WPM speed the shortest part of a RTTY signal is 22 milliseconds (just a little shorter than a 60 WPM morse dot). In a RTTY signal there are seven parts the total length of the 45.45 Baud. The RTTY signal is 163 milliseconds. The first six parts are all 22 milliseconds each and the last part 31 milliseconds long. The first part is always space or off and the last part always mark or on.

To generate a RTTY signal we need a rapid system of on/off switching that gives accurate time lengths of on and off as needed for the various letters etc. The five coded parts of the signal are changeable and the start and stop parts of the signal are always the same. By the way these parts are called bits in computer jargon.

The help explain what is involved in a simple way I will, as a teaching aid, describe a very simple mechanical system. RTTY sending can be done with a rotary switch having seven segments, the rotary arm being motor driven to do one revolution every 163 milliseconds.

At this stage please study the diagrams and continue to do this as necessary while you read the remainder of this explanation.

Six of the switch segments are arranged so the moving switch arm takes 22 milliseconds to sweep over each one in turn, the seventh one is slightly longer and the arm takes 31 milliseconds to pass over it.

The longer segment is the stop pulse segment and considering the direction of rotation the next one contacted by the arm is the start pulse contact. As the start pulse is always a space or open circuit condition nothing is connected to this segment of the switch and we will call it the S segment. The next segment is the first of the code segments so we will call it No. 1. The next No. 2 and so on up to code segment No. 5, the stop segment we will call F (F for finish).

There is little insulating space between segments and the switch arm is wide enough to bridge the insulation gap (make before break). Segments 1 to 5 have a push button hold on switch in series with each one so according to what buttons are pressed the five code segments can be made either mark or space. Holding down a button will make that segment mark and all buttons not held down will make their segments space. The F segment is always a stop pulse (mark) so will always be connected needing no push button switch in series with it.

If the switch arm is rotating at the correct speed and the No. 1 push button is pressed while the arm is over the F or S segments and held down until the arm returns to the F segment and then released the letter E will be sent assuming the receiving equipment is in the letters printing condition. NOTE: In a teleprinter there are less typing keys than a typewriter and letters and figures are combined on the same keys so a special signal is sent to make the receiving machine print either letters or figures and the machine thus operated will stay that way until another signal is sent to change it back again. If the receiving machine was in the figures printing condition the figure 3 would have been sent. If the button is held down for several revs of the switch arm several E or 3s will be sent. If no push buttons are pressed the rotating arm will send start and stop pulses with five space signals for the coded positions, this combination of five spaces is normally not used to print anything and although it has a key on the teleprinter keyboard the key is blank as it prints nothing and normally does nothing at the receiving end.

Sometimes this signal is used to control something at the receiving end however its use is limited as it is an error prone signal because a break in the transmitting circuit also gives the same signal. As far as our simple sending device is concerned we can simply assume no buttons pressed mean nothing printed at the receiving end.

Now as mentioned before the changing of button positions should be done while the switch arm is over the F or S segments and never while the arm is over the coded segments portion of the switch. Failure to observe this will normally mean various unwanted character signals will be sent.

Because of the rapid rotation of the switch arm it is very difficult to press the buttons at the exact right time so it is desirable to have a one turn clutch that, when engaged, starts the switch arm revolving and stops it after one turn, also the start and stop positions are always at the same point, namely at the end of the stop segment.

With such a clutch in operation press the clutch starting key and you always get one turn even if you hold the key down long enough for several turns.

As an experiment I have made and tried this system on air and I can assure you it does indeed work, the main problem being to quickly remember the RTTY code and decide on the right buttons to press. I found it was best to have the five buttons one under each finger of the right hand and the print or start key under the first finger of the left hand. As the buttons are always there under the correct fingers there is no need to keep looking at your simple keyboard and instead you can watch what is printed, as it is printed. All very interesting, but I repeat I only recommend this system as a teaching experiment and not as a permanent RTTY sending device.

In a normal teleprinter machine you need not know the RTTY code as pressing the desired letter key etc automatically sets the code switches into the correct position and the pressing of any of the keys also sets the one turn clutch into operation at the same time. Additionally when the clutch engages, the switch setting mechanism is locked so a second key cannot be pressed until the first signal has finished.

In our simple sending device a single rotary switch was used but in normal teleprinters each of the five code switches are controlled by a separate cam mounted at different spots on the same shaft. As each cam portion is arranged to come into action consecutively the result is much the same except it is a more compact system that provides easier keyboard control of the switching mechanism.

Well so much for this simple explanation of the mechanical generation of RTTY signals. What has been explained should start beginners along the right road and
help when, for the first time, they are confronted with the complexity of a teletype-printer service handbook.

At a later date we will deal with the mechanical reception of RTTY signals.

In the above diagram the one turn wheel that is attached to the rotary switch shaft has a single projecting tooth that comes to rest against the solenoid armature pin in its extended no current position. While in this condition the motor is turning and the clutch is slipping and the rotary switch is stationary at its stop position.

When the solenoid is briefly energised its armature pin is withdrawn allowing the switch shaft to rotate for only one turn as the armature pin has returned to its at rest extended position before the tooth comes around again.

1983 RD CONTEST

As RTTY participation in the 1982 contest was almost negligible I intend to do all I can to reverse this in 1983.

1. I am endeavouring to have the rules changed so telegraphy contacts receive double points.

2. I am asking the WIA to recommend what frequencies should be used by RTTY stations during the contest.

3. I am trying to organise some special RTTY awards for those with the highest RTTY contacts score.

4. I am compiling a list of RTTY stations that intend to participate on HF bands and will publicise this just before the contest.

All the above statements have a monotonous repetition of the word I and it should not be that way, how about YOU getting into the act and helping in this effort.

73 From Bruce VK5XI

Ron Cook VK3AFW
7 Dallas Avenue, Oakleigh Vic 3166

EQUIPMENT REVIEW

VoCom TELESCOPIC TWO METRE ANTENNA

Perhaps one of the best pieces of gear I've bought is my two metre "handheld". I'm onto my second one, synthesised of course, but it has the same limitations as the first — an inability to reliably raise two out of the three local repeaters.

Fortunately a solution was available from GFS, (an AR advertiser of course) — the VoCom telescopic antenna.

As the photograph shows the antenna telescopes down to almost the same size as the "rubber ducky". This is an advantage when you are moving about with the rig either in your hand or hanging from your belt and you want to monitor a channel or two. In this position received signal is indistinguishable from the "rubber ducky".

When you want to reply to a call it is only a two second task to extend the antenna to its full 1.2 metre length. The effect is as adding a linear. Where once only a thin and noisy unreadable signal might have resulted on the "rubber ducky" the VoCom five-eighth gives a strong, virtually noise free signal.

I have used this antenna in locations from mountain tops to motel rooms, around Australia and New Zealand with excellent results.

So much for the users report, now for the technical details.

| Connector:  | BNC |
| Length:     | 210 mm telescoped |
|            | 1215 mm extended |
| (Both lengths include the connector and loading coil) |
| Impedance:  | 50 ohms nominal |
| On test the VSWR was about 2:1 over most of the band, rising slightly at the low frequency end. Measurement of the length of the radiator revealed that it was about sixty four mm (2½") shorter than the recommended length. |
| Comparative tests were made against a carefully resonated and matched half-wave. It could be expected that the half-wave may out perform the five-eighth wave when either were mounted on the hand-held without resonant radials. The small gain of the five-eighth over the half-wave might be expected to be more than lost due to the poor ground plane. |

In practice there was a barely perceptible difference, in favour of the half-wave, between either antenna on transmission or reception, a very satisfactory result.

Extending the radiator to the full five-eighth wavelength by adding a length of thin brazing rod may improve the match to 50 ohms. I haven't bothered because the operational improvement would be slight and the telescoped length would be longer.

The appearance isn't very exciting. The finish is chrome and black and white plastic.

Nevertheless, when I sell the hand-held I'll be keeping the VoCom.

The VoCom five-eighth 2 m antenna is available from GFS Electronic Imports, PO Box 97, Mitcham, Vic 3132 for around $35.

AT A GLANCE

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>• • •</td>
</tr>
<tr>
<td>Performance</td>
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<tr>
<td>Appearance</td>
<td>• • •</td>
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<tr>
<td>Construction</td>
<td>• • •</td>
</tr>
<tr>
<td>Matching</td>
<td>• •</td>
</tr>
</tbody>
</table>

AMATEUR RADIO, May 1983 — Page 27
**MODERN MILITARY SURPLUS EQUIPMENT**

Colin MacKinnon, VK2DYM  
PO Box 21, Pennant Hills, NSW, 2120

**Reception Set R210**

The R210 is a seven band single superheterodyne communications receiver normally used in conjunction with the Wireless Sender C11. It can be used with longwire or coax cable input, and has facilities for AM and CW, a switchable noise limiter and audio filter.

**SPECIFICATIONS**

- **Power requirements:** 24V DC at 1.8 amps  
- **Frequency coverage:**
  - Band 1: 2.0-3.0 MHz  
  - Band 2: 3.0-4.5 MHz  
  - Band 3: 4.5-6.8 MHz  
  - Band 4: 6.8-9.1 MHz  
  - Band 5: 9.1-11.4 MHz  
  - Band 6: 11.4-13.7 MHz  
  - Band 7: 13.7-16.0 MHz  
- **Mode of operation:** Reception of AM, CW and FSK. SSB possible using inbuilt variable BFO.  
- **Sensitivity:** AM-5 microvolts for full audio output  
- **Signal to noise ratio:** AM 6.5 microvolts for 20 dB  
- **Selectivity:** AM 5 kHz at 60 dB  
  - less than 12 kHz at 60 dB  
  - CW 150 Hz at 3 dB  
  - 600 to 1000 Hz at 20 dB  
- **Antenna:** 1-long wire  
  - 2-80 ohm via a BNC socket  
- **IF Frequency:** 460 kHz  
- **Stability after 15 minute warm up:** 50 Hz per MHz  
- **Dial Calibration:** 5 kHz per division, 40:1 reduction ratio of tuning dial.  
- **AF output:** 150 mW into 50 ohms.  
- **Weight:** approx 17 kg  
- **Valve line up:**

<table>
<thead>
<tr>
<th>SERIAL NO.</th>
<th>TYPE</th>
<th>FUNCTION</th>
<th>EQUIVALENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>CV4015, CV.31</td>
<td>RF amp</td>
<td>6065, EF92</td>
</tr>
<tr>
<td>V2</td>
<td>CV4012, CV453</td>
<td>Mixer</td>
<td>68E6</td>
</tr>
<tr>
<td>V3</td>
<td>CV4015, CV131</td>
<td>1st IF amp</td>
<td>6065, EF92</td>
</tr>
<tr>
<td>V4</td>
<td>CV4015, CV131</td>
<td>2nd IF amp</td>
<td>6065, EF92</td>
</tr>
<tr>
<td>V5</td>
<td>CV4015, CV131</td>
<td>3rd IF amp</td>
<td>6065, EF92</td>
</tr>
<tr>
<td>V6</td>
<td>CV4025, CV140</td>
<td>AGC Rectifier/detector</td>
<td>60S8, EB91</td>
</tr>
<tr>
<td>V7</td>
<td>CV4010, CV 850</td>
<td>1st AF amp</td>
<td>6AK5, EF95</td>
</tr>
<tr>
<td>V8</td>
<td>CV4010, CV850</td>
<td>2nd AF amp</td>
<td>6AK5, EF95</td>
</tr>
<tr>
<td>V9</td>
<td>CV4003, CV491</td>
<td>10 kHz multivibrator</td>
<td>12AU7, ECC82</td>
</tr>
<tr>
<td>V10</td>
<td>CV4010, CV850</td>
<td>100 kHz crystal oscillator</td>
<td>6AK5, EF95</td>
</tr>
<tr>
<td>V11</td>
<td>CV4010, CV850</td>
<td>Local Oscillator</td>
<td>6AK5, EF95</td>
</tr>
<tr>
<td>V12</td>
<td>CV4010, CV850</td>
<td>BFO</td>
<td>6AK5, EF95</td>
</tr>
<tr>
<td>V13</td>
<td>CV4010, CV850</td>
<td>IF cathode follower</td>
<td>6AK5, EF95</td>
</tr>
<tr>
<td>V14</td>
<td>CV4025, CV140</td>
<td>Noise Limiter</td>
<td>60S8, EB91</td>
</tr>
<tr>
<td>V15</td>
<td>CV286</td>
<td>95V Stabiliser</td>
<td>95A1</td>
</tr>
</tbody>
</table>

In the above list the valve type numbers are given for the high reliability version e.g. CV4015 and the standard version e.g. CV131. Equivalents are given for US and English commercial valves.

**PRINCIPLE OF OPERATION**

RF signals are fed through the appropriate aerial circuit via Band Switch SWB to the RF amplifier V1. The signal is mixed in V2 with the local oscillator, V11, output; operating 460kHz above the signal frequency. Three IF stages, V3, V4 and V5, amplify the signal at 460 kHz. V6 detects the audio in one half and acts as the AGC rectifier in the other diode half. V7 and V8 are audio amplifiers.
Output is via a transformer matching to 50 or 150 ohms. The BFO V12 is variable from the front panel about ± 5 kHz. V13 provides an 80 ohm IF output on the front panel for FSK, or as the army call it, CFS, Carrier Frequency Shift. The double diode V14 operates as an audio noise limiter switchable from the front panel.

A 100 kHz crystal oscillator V10 is switched on for calibration and V9, a double triode connected as a multivibrator gives 10 kHz calibration signals. A 1 kHz audio filter, L12 and C99, is switched in on the CWF switch position. AGC is applied to V1, V2 and V3, in the Cal 10 kc/s, Cal 100 kc/s and AGC switch positions but in the CW, CW and Man GC positions a 1 meg ohm pot ganged with the 0.5 meg ohm audio gain control is brought into the AGC line and supplied with –30V. The audio gain pot is then inoperative.

**POWER SUPPLY**

The power supply uses a self-rectifying vibrator and a transformer, with a choke and capacitor for HT output. Separate windings give filament and bias voltages. V15 is a 95V stabiliser feeding the local oscillator and mixer.

Voltages required in the set are:
- HT1 +175VDC at about 150 mA
- HT2 +95VDC at about 50 mA
- Filaments 6.3VAC at about 2.5 A
- Bias –30VDC

An interesting feature of the power supplies for the various units is a relay which switches out resistance, or in the R210, switches transformer tappings to maintain HT voltages when the input voltage drops below 23.5V. In the R210 this is relay RLA/4 which can be permanently energised if the input voltage is less than 30V.

**FRONT PANEL INTERCONNECTION**

**PLUG — PLA**

If you examine this plug you will see it has a letter beside each pin. The significance of each is:
- A — 24VDC input positive
- B — 24VDC input earth
- C — HT1 (+175V) output from PSU
- D — to HT1 input to set
- E — 6.3V heater output from PSU
- F — to valve heaters
- G — earth same as B
- H — 30V input from C11 (in parallel with PSU supplied –30V)
Hello again to all. The months are rolling on very quickly. The good news this month is the rain we have been enjoying this week, do hope the drought really has broken and all the water related problems are over.

Haven’t heard any new callsigns from the last exam but do hope some are about to appear on the bands.

Our secretary Jessie VK3VAN and OM Gordon VK3BGB are on the move, hope you both enjoy suburbia after the country are over.

MODIFICATIONS

(1) To operate the R210 alone you need to make the following connections:
+ 24VDC to pin A earth to pin B
pin C to D
pin E to F
pin J to M if input voltage is less than 30V
Headphones, Low impedance, or a speaker to pins K and L. An 8 ohm speaker works OK.
Antenna to front panel.

(2) One way to accomplish these connections is to remove the front panel connection plug and replace it with an aluminium plate. Onto this plate fit an earphone socket eg Dick Smith P-1231 and a DC power socket eg Dick Smith P-1665. The other wires can be soldered together as required and taped.

(3) Another way of making a neat installation is to remove the centre bolt securing an aluminium plate with alignment pins that is bolted to the back of the case. Enlarge the hole to about 12 mm diameter to clear an earphone plug and drill a similar sized hole next to it. Mount a small aluminium plate to the RF/IF sub-assembly chassis and on this, in line with the holes in the case, fit an earphone socket and a DC power socket. (see photo No. 3) The existing wiring can be left as is and new audio and 24V wiring connected in parallel, or it can be disconnected from the front connector and run to the new sockets. If you choose to leave the existing wiring be aware that there is unguarded 175V on the front connector.

A worthwhile modification involves fitting a 240V to 6.3V 7 amp transformer onto the power supply chassis and connecting it to the heater wiring. The vibrator is removed and two rectifier diodes connected in the 175V secondary of the set transformer. Note that they are connected in opposite polarity to a conventional full-wave, centre tap circuit. There is room for two transformers on the chassis if you can’t find one with sufficient current rating. The mains lead can conveniently be routed through a large plug hole in a rear corner of the case. Do not use the existing ON-OFF switch for the 240 volt input as it’s only rated for low voltage.

If you can find a dual concentric pot with one 5 ohm and one 0.5 ohm values or similar, you can replace the existing gain control and obtain independent control of RF and AF gain. You must move a brown wire from VR2 terminal with shielded connection to the VR2 centre terminal. This is helpful when resolving SSB signals.

Better performance on SSB can be obtained by converting V13 and FSK IF output, to a product detector.

Although I haven’t tried it, it would not be too hard to change the BFO variable capacitor to a switch connecting one of two trimmer capacitors for USB or LSB.

You can retune the IF to 455 kHz, from the 460 kHz, if you wish to fit a crystal or ceramic filter for better selectivity. Local oscillator frequency will have to be adjusted.

If you carried out modifications to provide alternative connections to the front panel Interconnection plug PLA then you can remove the front panel connection plug altogether and fit an S-meter in its place. You may have to enlarge the hole to suit. I haven’t detailed any circuit as there are plenty of S-meter circuits in the technical literature.

On the cosmetic side, if you carefully scrape the paint off the raised lettering on the front panel you highlight them in silver on a green background.

On many sets the tuning is inoperative. I don’t know how this came about but invariably a small ball on the end of a worm shaft in the tuning gearing has been dislodged. You usually find the ball somewhere in the case and it only requires infinite patience to replace it. There is supposed to be a ball at each end of the shaft, held under tension by screwed adjusters sealed with red paint. Undo one of the adjusters and fit the missing ball back by whatever means you can, (see fig 3) I have found that a bit of grease on a toothpick will hold the ball whilst you juggle it in. Tighten up the adjuster just enough to eliminate end play and lock it up again. If you choose to fiddle with the rest of the tuning gearing — best of luck!
NATIONAL CO-ORDINATOR
Chas Robinson VK3ACR
INFORMATION NETS
AMSAT AUSTRALIA
Control: VK3ACR
1000 UTC Sunday
7.064 MHz in Summer
3.680 MHz in Winter
AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.305 MHz
AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday
28.880 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.

OPERATIONAL UPDATE
AMSAT OSCAR 8
The operating schedule of Mode 'A' on Sunday, Monday and Tuesday; Wednesday rest day and Mode 'J' on Thursday, Friday and Saturday continues to apply and will so for the foreseeable future. The possibility of severe battery problems appears to have been averted as operation of the transverters on both modes is now quite normal.

Information from Ed VK2ADJ indicates that the battery voltage and spacecraft temperature are now normal.

THE RS SERIES
All RS satellites are working normally. Some slight deviation to the RS5 telemetry on 29.452 MHz has been observed and this is understood to be connected with the use of RS5 codestore by the Soviet Antarctic Expedition.

Leo Labutin UA3CR heads up the communications section of the Expedition using the call sign 4K1CR. With the RS transponder off the Robot-Codestore channel on 29.330 MHz is used to store and exchange messages between the Antarctic and Moscow.

UOSAT OSCAR 9
After a protracted period of analysis and manoeuvring the UOSAT spacecraft was stabilised early in March and deployment of the Boom commenced. Extension proceeded satisfactorily for the first metre of the fourteen metre total length but at one point the boom became snagged with the cables connecting it to the spacecraft. The situation was analysed and it was hoped to free the boom by 'rocking' it to and fro.

The boom is important to the overall success of the UOSAT project as it acts as an antenna for the HF Beacons and carries other experiments — see the UOSAT Technical Handbook (obtainable from AMSAT-UK) for further details.

1983 ORBITAL DATA
ORBITAL PERIOD INCREMENT MINUTES DEGREES WEST
Oscar 8 103.1676 25.7943
UOSAT 9 118.5196 29.7567
RS 3 119.3930 29.9754
RS 4 119.5547 30.0155
RS 5 119.5547 30.0155
RS 6 118.7168 29.8600
RS 7 119.1949 29.9256
RS 8 119.7622 30.0676

The Orbital Period and Increment are estimated figures for 1st May 1983.

SATELLITE ORBITAL DETAILS FOR 1983

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AMATEUR RADIO, May 1983 — Page 31
VHF UHF - an expanding world

Eric Jamieson VK5LP
1 Quinns Road, Forreston, SA 5233

All times are Universal Co-ordinated Time, Indicated as UTC.

AMATEUR BAND BEACONS

FREQ CALL SIGN LOCATION
50.005 H44H1R Honiara
50.008 J21GY Mie
50.020 G8SIX Anglesey (1)
50.060 KH6EQI Pearl Harbour (2)
50.075 V5S6IX Hong Kong
51.020 ZL1UHF Auckland (3)
52.018 P29SIX New Guinea
52.100 VK0AP Macquarie Island
52.200 VK8VF Darwin
52.250 ZL2VHP Palmerston North
52.300 VK6RTV Perth
52.320 VK6RTT Carnarvon
52.350 VK6RTU Kalgoorlie
52.370 VK7RST Hobart
52.400 VK7RTT Launceston
52.420 VK2WI Sydney
52.425 VK2RGB Gunnedah
52.435 VK3RMV Hamilton
52.440 VK4RTL Townsville
52.510 ZL2MHF Mt Climie
144.400 VK4RTT Mt Mowbullan
144.420 VK2WI Sydney
144.465 VK6RTW Albany
144.475 VK1RTA Canberra
144.480 VK8VF Darwin
144.530 VK5RSE Mt Gambier
144.600 VK6RTT Carnarvon
144.900 VK7RTX Ulverstone
145.000 VK6RTV Perth
147.400 VK2RCW Sydney
432.410 VK6RTT Carnarvon
432.440 VK4RBB Brisbane
432.450 VK3RMV Mt Buninyong

(1) Confirmation to hand that this beacon is operating with 100 watts ERP to a three element yagi beaming west, and an invitation to list it. (The days are gone when one can safely say it may never be heard, that statement disproved regarding lots of stations in Cycle 21, also contacts between G land and VK6 have been made on 6 metres, so let’s be adventurous and include it . . . VK5LP)

(2) “Break In” magazine from NZART says this beacon is now on 50.064, and they are closer than we are and have probably heard it lately. Can anyone confirm frequency from VK?

(3) ZL1UHF now operating on 51.020 in lieu of former 51.022.

SIX METRES IN THE UNITED KINGDOM

Norman Fitch, G3FPK, is the Editor “VHF Bands” for the “Shortwave Magazine” published in the UK, and has written to say that “Following negotiations between the RSGB and the Home Office, forty UK radio amateurs now have permission to operate in the 6 metre band. Now we have a domestic TV service in Band 1 but the vast majority of viewers receive the 625 line colour service in Bands 4 and 5 now. So there are still restrictions as to when we can operate.

The band is from 50.0 to 52.0 MHz. The power: A1A (CW) 16 dBW carrier power at the antenna; JSE (SSB) 22 dBW at the antenna. Operation time is normally Band 1 TV transmission hours, normally from about 0000 through 0900.

“G — England — nineteen stations licensed to operate; GI — Ulster — three stations; GJ — Jersey — three stations; GM — Scotland — ten stations; GW — Wales — five stations. Only full, Class A licenses are included, no Class B, VHF only folk.

“As to the future, by Act of Parliament, as TV in Band 1 must close down by the end of 1986. However, the BBC would like to close down all the transmitters much earlier as they are costly to maintain. Lately, there has been published the Merriam Report concerned with the development of the VHF spectrum in general, and it recommended that all UK Band 1 TV be closed down by the end of 1984. Therefore, we expect that 6 metres will be available to all in the not-too-distant future. So, by the time the next sunspot cycle allows F-layer DX, we should be working VK!”

So that's the position in the UK and the forty licences so far granted is at least a start in the right direction. It will be of tremendous interest and benefit to Northern Hemisphere operators in particular, and hopefully we can eventually share in the contacts. It will be of even greater interest to us if we can operate on these bands in Europe since we have only 10 MHz to a domestic waveguide, with a sixteen element beam pointing south. On 23 cm the Kent beacon GB3NWK has an ERP of 100 watts.

NEW 1296 RECORD — HAWAII TO CALIFORNIA

That's what the headline read in the American publication. But there was one catch. It was on only over the path of almost 2500 miles, almost double the present Australian record.

One could say it was very unfortunate that the beacon operator, Paul Lieb, KH6HEM, was actually in California on business at the time the signal was received.

I am indebted to Wally VK6KZ for further fill in on the 1296 MHz scene in California, as he has recently returned from a trip to the USA, and has actually spoken to some of these operators. A group of dedicated 1296 MHz operators in Southern California are led by Chip N6CA, others include Paul KH6HEM, Ed W6NGN, Garry WA6MEM, Joe K6ZMW, Robert W6PJA and Lynn W6KG. They are anxious to make two-way communication between Hawaii and California, and keep a close watch on the weather conditions between the above two locations as well as thosefronting on to Mexico.

It appears the tropospheric duct occurs around 8000 feet in Hawaii and 1000 feet in California, and often hurricanes are present in the Gulf of Mexico at the time the duct is formed as a result of rapid changes in temperature, air pressure and water vapour or moisture in the atmosphere.

Normally the KH6HEM beacon runs on three bands, 144, 432 and 1296 MHz, but recently the 2 metre beacon has been withdrawn because the 2 metre path has been worked so often there seems little purpose in continuing a beacon on that band. However, on 432 and 1296 MHz the beacon mostly operates during the summer months when the formerly mentioned
rapid changes to pressure gradients etc are most likely to occur. N6CA even has a mobile 1296 MHz station and drives around the hills in his location looking for the right spot from which to work long distance signals. His mobile rig includes 144 MHz and HF gear for local contacts and general co-ordination, plus his 1296 MHz receiver with extremely low noise figure for mobile monitoring, apparently this is necessary as the end of the duct can be any height from the former 1000 feet to near ground level. Once having found the right spot, Chip can fire up a 500 watt transmitter which can be powered either from the AC mains if they are handy or a portable alternator. That signals. His mobile rig includes 144 MHz spot from which to work long distance the rapid changes to pressure gradients etc the end of the duct can be any height from the element yagi with a boom length of twelve feet can be used for mobile operation. These operators favour the loop yagis due to much less wind loading than with a six to eight foot dish to give similar gain, and are easy to feed from a distance. Chip, N6CA, has ensured the best possible set-up for the Hawaiian end of the circuit by constructing most of the equipment being used, himself. Four 25 element loop yagis vertically mounted one above the other give about 24 dB gain, are fed with helix from a 30 watt transmitter, and the beacon is located on Mauna Loa, an active volcano, at about 8000 feet ASL, and it takes Paul KH6HME about three quarters of an hour to get there from his home after being alerted the band is open. Wally says its some drive too, through lava flows which are black in colour, and the road would be hard to see at night as it is just bulldozed through the lava!

Whatever the outcome of the signals on 30th July, it would be remiss of us in Australia if we didn't say well done to the USA operators who have put so much time and effort into trying to span such a distance, and wish them well in the future, knowing it is only a matter of time before the crossing becomes two-way. We all await that time with interest. Perhaps to keep the world record in Australia we should be striving to span the distance between VK6 and New Zealand, and I see no reason why it should not be done eventually if there are similar dedicated operators at both ends of the circuit here. Who is going to be first?

LOW NOISE FIGURES

Whilst still concerned with the American scene, I have to hand, from Wally VK6KZ, some interesting figures on a pre-amp noise figure measuring contest held at the recent IHR Society Conference. You may find the following figures a fair indicator of how far the “state of the art” has progressed recently.

50 MHz: WA5VJB using 3SK97 returned 0.59 dB; WB5CHW 3N204 1.25 dB.

144 MHz: VE3CRU MGF1200 0.12 dB; K7KOT D4320 1.8 dB; WB5UN MGF1200 0.42 dB; K8BMW MGF1400 0.42 dB; KB9NM MGF1400 0.48 dB; WB5GHU BF981 0.73 dB; WA5IED Janel 3N204 2.99 dB.

432 MHz: WB0TEM MGF1402 0.40 dB; WD4MBK MGF1402 0.58 dB; WA5HNK MGF466 0.99 dB; W5UKO PA432 (Lunar) 1.12 dB; K5RF DX3501 1.16 dB; KL7WE PA432 (Lunar) 1.20 dB; W8HSH NE4535 1.49 dB; K5RF DX3501 1.96 dB; K502 MHz: KCOW MGF1402 0.82 dB.

WB5GHW MG1400 2.50 dB; WA5VJB MGF902 2.56 dB.

1296 MHz: WB0TEM MGF1402 0.68 dB; K9KFR MGF1400 0.99 dB; WD4MBK NE72089 1.12 dB; WB5GHW MG1400 1.20 dB; W6P0 DX3501 1.47 dB; W1UHE MGF1402 1.71 dB; 2304 MHz: K9KFR NE24483 0.90 dB; WA5VJB NE4535 (1) 2.50 dB; WA5VJB NE4535 (2) 3.00 dB.

There were a number of other pre-amplifiers in each range except 50 MHz which were not as good as those listed, but still very satisfactory by ordinary standards.

In the Antenna Gain Measuring Contest conducted at the same venue, on 144 MHz K5RF had an eleven element quad eighteen feet long giving 13.5 dB gain, a nine element quad thirteen feet long gave 13.2 dB and a nine element wide spaced quad sixteen feet long 12.5 dB. WSUN submitted a home brew twenty-six foot long quad with 12.5 dB gain.

On 432 MHz: K5GW submitted a twenty-four element Cushcraft yagi with 14.5 dB gain. WD4MBK submitted three, nineteen element home brew yagis to the RIW design producing 13.9, 13.9 and 13.5 dB respectively, W3XO submitted a sixteen element yagi with 12 dB gain.

On 1296 MHz: WSUPR obtained 17.2 dB gain with a Tonna yagi; WASTKU 16.0 dB loop yagi; K5FN 15.5 loop yagi; W5DC 14.5 dB yagi.

On 2304 MHz: WA5VJB 19.5 dB with forty-one element loop yagi; WB5LUA 8 dB with a one pound coffee can dish feed antenna, and his reference dipole naturally gave 0.0 dB!

So all you home builders will now have some specifications to attempt in both preamplifiers and antennas, so I expect soon to be hearing reports of improved signals on all bands!

EME EXPERIMENT

Wally, VK6KZ, has kindly telephoned me with information on forthcoming EME experiment on 14/5, 15/5 and 16/5/83 which could promote quite a degree of interest for those 70 cm stations having a reasonable degree of DX capability.

Callsign to be used is K8HUH and will be operating from Greenbank, West Virginia, and running 150 watts to a 150 foot dish, which should have a gain around 44 dB giving 3.86 megawatts ERP! Transmitting frequency will be 432.100 and they will be tuning for replies fairly widely both above and below that frequency, so it may be preferable for those replying to spread out a bit to reduce the possibility of being clobbered by someone more powerful.

Stations at this end, it is considered, will need about 1 kW ERP, which can be obtained from 100 watts to a 10 dB gain antenna (but remember to allow for cable losses when making your calculations!). It is likely most contacts will be made with CW but if everything is just right it might be possible for some SSB contacts to be made.

On the receiving side a masthead amplifier would be very desirable, preferably of the GaAs FET variety. As the new moon and the sun will both be in the same quadrant during the experiments, it is likely the level of sun noise will be increased, hence the better the antenna the less noise.

The window for Perth is from 50 to 60 degrees, and elevation will be just above the horizon, so your horizontal beams will be at about the right elevation.

Times for Perth are: 14/5 0020 to 0110 UTC; 15/5 0130 to 0210 UTC; 16/5 0240 to 0330 UTC. Due adjustments from these times will need to be made depending on moonrise and where you live.

Good luck with the experiment to those who have the right equipment, but remember, don't transmit on 432.100 because you could block out the signals from K8HUH to someone who is actually copying him and this would be a pity. Certainly there is no point in putting your transmitter on the air unless you can actually hear K8HUH. Whilst he might hear your transmitter if you have enough ERP, unless you can HEAR HIM then no contact will result! Doppler shift will also make it necessary for you to track his signal as he is transmitting, so you are going to be busy whatever. The use of the more recently released gear with twin VFO capability will have a head start in any case.

More information will probably be available as the time approaches. If you are serious then perhaps a brief few words with EMEers such as VK5MC and VK6ZT could provide you with additional information, but don't overload them, they will probably be very busy themselves at the time, or leading up to the experiments.

NEW 10 GHz EUROPEAN DX RECORD

"Break In" for February 1983 gives establishment of a new record has been established on 10 GHz of 1166 km between 10SNN/TEAS located near Valencia, Spain, who worked back to Italy to IW0BFZ near Rome. This sea path across the Adriatic Sea was achieved on 10th July 1982 on 10.525 GHz. Equipment in use is believed to be 30 milliwatt Gunnplexers to one metre dishes at both ends.

"Nicola Sanna 10SNN has over the last few years been investigating enhanced propagation across the Adriatic Sea (off the coast of Italy) and has held the world DX record of 1166 km 10 GHz work over this same path, once at 757 km and once at 860 km. This path is geographically interesting in that it is well sheltered by land masses and together with mid summer temperatures and calm weather conditions..."
has led to a high incidence of tropospheric ducting propagation.

"In addition to his 10 GHz work, Nicola was active on 1296 MHz and amongst other DX contacts worked I2KSX/8 in Calabria (southern Italy) at a distance of 1396 km thus creating a new European DX record on this band; he was using only 4 watts to a 17 element yagi. Thanks to QST for the report."

VK0AP — MACQUARIE ISLAND from Gil VK3AUI

A number of problems have arisen with this operation by Peter McLennan.

1. Liaison on 14 MHz. Due to the small size of the base there have been EMC problems with the station radio equipment.

2. The six metre equipment has an EMC problem with a scientific instrument called a Riometer. This equipment is very sensitive and is used to listen to cosmic radio noise. It consists of two receiver chains. The equipment operates on a frequency of 35 to 40 MHz with a local oscillator of 43 MHz and an IF of 3 to 8 MHz. The input filtering is not sharp.

Filters have been sent to Peter for the Riometer but it is up to the operator of the Riometer to install them. Approval in principle for their use, has been obtained, but it is up to the people on the island.

Peter has been looking at the alternatives listed.

a. Resiting amateur gear as far as possible from the equipment affected.
b. Using antenna polarisation changes to reduce the signal at the Riometer.
c. Using the antenna beam pattern nulls to reduce the signal at the Riometer.
d. Filters on the Riometer but this requires fitting by a third party.

e. Reduction of power from 100 W to 10 W as a last resort.

Unfortunately the deteriorating weather, as winter approaches, and Peter's work commitments may preclude opera-

tion. Operation will only be permitted when all EMC problems have been resolved to the satisfaction of all parties.

There is still hope of further six metre operation before Peter leaves the island in November.

From Paul ZS1BR in Cape Town comes news of the VHF amateur radio beacon which has been established for the benefit of the radio amateurs in the Western Cape Province and hopefully the international community under good propagation conditions.

The beacon transmits continuously as follows: firstly, in frequency shift keying CQ DE ZS1SIX OTH PIKETBERG SA FSK MODE PSE QSL TO ZS1CT 73. The beacon then changes mode and transmits FM with an audio tone of approximately 1 kHz and constant carrier CQ DE ZS1SIX OTH PIKETBERG RSA FM MODE PSE QSL TO ZS1CT 73.

The output power is 16 watts, feeding a vertically polarised ground plane antenna.

The crystal-controlled frequency is 50.945 MHz.

The location of the beacon is Aasvoelskop 32° 54' 57" S, 18° 44' 20" E at an altitude of 807 m ASL above the town of Piketberg.

The beacon was built up by ZS1SG and ZS1BR, and all reception reports and QSL cards should go to ZS1CT.

GENERAL NEWS

I wonder what that is? It's very scarce this month, the bands here have been very quiet. Still the occasional JA contacts on 6 metres, a few weak signals across "The Bight" to and from Albany on 2 metres. Bob VK5ZRO and his group continue to work 144 and 432 MHz up and down Eyre Peninsula and to Woomera, whilst others must have got out their knitting and are relaxing!

Eric Trebilcock L3-0042 sends a short note to advise that my statement re Chatham Island being south of New Zealand (Feb "AR") was wrong, and that the island is actually east of New Zealand, with people living in Christchurch saying "its out there" and pointing east. Thanks for putting the record straight Eric, my maps didn't show the island and the fact that it was to have a station signing ZL40Y/C! took a punt on its position, and of course I was wrong!

I wonder if April 1983 will bring any exotic DX across the Pacific Ocean? April 1982 didn't cause a great deal of excitement on 6 metres. My next set of notes will probably tell the story.

Closing with the thought for the month: 
"If you realise that you are not as wise today as you thought you were yesterday, you're wiser today." 73. The Voice in the Hills.
WE HANDLE ALL COMPUTER REPAIRS

Dip Meter $135
The DM-81 dip meter is intended for adjustment of radio equipment and antennas. It is a self-excited oscillator designed for external coupling to the equipment being tested.
FEATURES
- Measurable frequency range of 700 kHz-250 MHz in seven bands
- Capacitive Probe for measurements without removing coil shields
- Storage compartment for all seven dip meter calls, capacitive probe, earphone and ground clip lead
- Convenient for both in indoor and outdoor measurements, all solid-state with built-in battery.

HF Transceiver $819
ICOM's IC-730 is the "go anywhere HF rig for everyone's pocketbook". This compact size HF transceiver for the amateur band will fit in extremely small spaces, measuring only 3.7" x 7½" x 10.8" deep. The unit is perfect for car, airplane, boat or suitcase portable operation. Convenient to use features such as 3-speed tuning with tuning rates of 1 KHz, 100 Hz or 10 Hz, electronic dial lock, 1 memory per band, and dual VFO's are built in at no extra cost.

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$670
The R-2000 provides outstanding performance through use of microprocessor controlled operating functions, allowing maximum flexibility and ease of operation throughout its operating range. An all mode receiver, it covers 150 kHz-30 MHz in 30 bands, on SSB, CW, AM, and FM. Key features include digital VFO's, ten memories that store frequency, band, and mode information, memory scan, programmable band scan, digital display with 24 hour dual clock, plus timer, and a host of other features to enhance the excitement of listening stations around the world.

2 Metre/FM $395
Now with green display.
Try to imagine 25 watts, 5 memories and 2 scanner systems in a 2" high, 5½" wide and 7" deep 2-metre transceiver! The IC-25A is a full-featured FM transceiver for the space conscious operator. The IC-25A is no lightweight when it comes to features: 5 memories... Priority channel... 25 watts high... 1 watt battery saving.

$1999
The TS-830S is a high-performance, HF SSB/CW transceiver with every conceivable operating feature built-in for 160 through 10 metres (including the three new bands). The TS-830S combines a high dynamic range with variable bandwidth tuning, IF shift, and an IF notch filter, as well as very sharp filters in the 455 kHz second IF. Its optional VFO-230 digital VFO provides five memories. The TS-830M includes AM mode built in.

$495 $357
Automatic HF Antenna Tuners 500 and 100 Watt Models
The IC-AT500 and the IC-AT100 Automatic Antenna Tuners provide automatic adjustment of the ICOM HF transceivers to the transmission line. Working at 500 and 100 watt levels respectively, the IC-AT500/100 detects the resistance and reactance of the load presented by the transmission line. Powerful motors tune the two variable capacitors, so that the tuner presents a 50 ohm nonreactive load to the transceiver.

$1199
The TS-930S is a superlative, high performance, all solid-state, HF transceiver capable of operation in the SSB, CW, FSK, and AM modes on all Amateur 160 through 10 meter bands. It incorporates an excellent general coverage receiver with an exceptionally high dynamic range (100dB typical on 20 m, CW bandwidth) having continuous coverage of all frequencies from 150 kHz through 30 MHz.
Keyed to the exacting requirements of the DX and contest operator, the TS-930S provides a variety of the most useful performance features, including new, innovative, interference rejection circuits, such as SSB slope tuning, CW VBT (variable bandwidth tuning), IF notch filter, CW pitch control, and audio peak-tuned CW filter. Equally important, the TS-930S design includes dual digital VFO's, eight memory channels, CW full break-in switchable to semi break-in, a unique built-in automatic antenna tuner, and a new higher voltage operated solid-state final amplifier that provides the ultimate in reduction of IM and spurious emissions.

$495 $357
Automatic HF Antenna Tuners 500 and 100 Watt Models
The IC-AT500 and the IC-AT100 Automatic Antenna Tuners provide automatic adjustment of the ICOM HF transceivers to the transmission line. Working at 500 and 100 watt levels respectively, the IC-AT500/100 detects the resistance and reactance of the load presented by the transmission line. Powerful motors tune the two variable capacitors, so that the tuner presents a 50 ohm nonreactive load to the transceiver.
AMATEUR AND COMMERCIAL ANTENNAS,
HELICAL MOBILE ANTENNAS

The ASE range of HF Helical Mobile antennas is designed to give you a signal to be proud of and get it further out because each antenna uses every known method to increase mobile efficiency.

- Thick wire (0.6 mm) to decrease resistive losses.
- Top winding—toca increase current-length product.
- Top loading—large brass mass to act as capacity hat.
- Parallel former—allows top winding to be smaller in length producing a longer radiating part.

In addition you get top quality chrome plating, 3/8 stainless steel grub screw and adjustable sliding tuning tip and Allen key. Plus extra thick heat shrink to minimize impact trauma.

ASE HF HELICAL MOBILE ANTENNA

Super G-80/10/15/40 Tridband helical covering 80, 15 and 10 meters, overall height on 80 meter is 21 feet.

G-80 $46 80 meter heavy duty helical, 6 feet long.

G40 to G-10 $40 20, 15 and 10 meter helicals, 5 feet long.

G-BM $26 Stainless Steel bumper mount to suit the ASE Helicals, female, 3/8 x 24 thread.

JIL MODEL SX-200 HF/VHF/UHF PROGRAMMABLE SCANNING RECEIVER

This SX-200 includes many unique features not provided on any other scanner. For example, its wide frequency coverage of 26 to 88, 108 to 180 and 380 to 514 MHz. Its capability of receiving over 33,000 channels, 3 mode squelch that can be set to allow the SX-200 to stop on carrier with modulation signals. 16 Memory channels that can be expanded to 32 with the EXP-32 kit. AM and FM detection on all bands. For full details write or call us.

$599 SX-200 HF/VHF/UHF 33,000 CHANNELS

EXP-32 $53 Memory Expander kit increases memory channels in SX-200 from 16 to 32 channels.

A-4AM $32 Air Band Auto AM Kit.

SEIKI ELECTRONICS

Century 21D Digital HF Communications receiver is designed for the keen SWL who desires a quality digital HF Receiver at a reasonable price. The Wadley loop combined with a 5 digit orange LED display makes operation of this new receiver a breeze. Some important features include:

- 0.5 to 30 MHz
- 0.3 uV on SSB

$425 0.5 to 30 MHz

GFS ELECTRONIC IMPORTS

Division of GFS ELECTRONIC IMPORTS

Page 36 — May 1983, AMATEUR RADIO
CONTEST CALENDAR

MAY
- 7-8 Florida QSO Party
- 7-8 G-QRP Day
- 7-8 CQ M Russian Test
- 7-8 World Telecom Phone Test
- 14-15 World Telecom CW Test
- 14-15 Sangster Shield Test
- 17 World Telecommunications Day
- 28-29 CQ WW WPX CW Test

JUNE
- 4-5 RSGB National Field Day
- 11-12 South American CW Test
- 11-13 6th VK/ZL Oceania WCY RTTY Test
- 11-12 ARRL VHF Test +++
- 18-19 All Asian Phone (Log available FCM)
- 18-19 Nine Lands CW Test
- 25-26 ARRL Field Day

JULY
- 2-3 Venezuela Phone Test +++
- 9-10 NZART Memorial Test (June AR)
- 9-10 IARU Radiosport Test
- 16-17 International ORP Test +++
- 16-17 SEANET CW Test
- 23-24 Venezuela CW Test +++

AUGUST
- 6-7 DARCC WAE CW Test
- 13-14 SEANET Phone Test
- 20-21 SARTG RTTY Test
- 27-28 All Asian CW Test

The contests marked with +++ are not yet confirmed.

WCY COMMENORATION, THE 24th ALL ASIAN DX CONTEST
1 CONTEST PERIOD:
(1) Phone: 48 hours from 0000 UTC 18 June, 1983 to 2400 UTC 19 June, 1983
(2) CW: 48 hours from 0000 UTC 27 August, 1983 to 2400 UTC 28 August, 1983

2 BANDS:
Amateurs bands under 30 MHz.

3 ENTRY CLASSIFICATIONS:
(1) Single operator, 1.9 MHz band (CW only)
(2) Single operator, 3.5 MHz band
(3) Single operator, 7 MHz band
(4) Single operator, 14 MHz band
(5) Single operator, 21 MHz band
(6) Single operator, 28 MHz band
(7) Single operator, Multi band
(8) Multi operator, Multi band

4 POWER, TYPE OF EMISSION and FREQUENCIES:
Within the limits of own station licence.

5 CONTEST CALL:
(1) For Asian stations:
   (a) Phone..."CQ contest"
   (b) CW..."CQ test"
(2) For non-Asian stations:
   (a) Phone..."CQ Asia"
   (b) CW..."CQ AA"

6 EXCHANGE:
(1) For OM stations: RS(T) report plus two figures denoting operator's age
(2) For YL stations: RS(T) report plus two figures '00 (zero zero)'

7 RESTRICTIONS ON THE CONTEST:
(1) No contact on cross band
(2) For participants of single operator’s entry: Transmitting two signals or more at the same time including cases of different bands is not permitted.
(3) For participants of multi operator’s entry: Transmitting two signals or more at the same time within the same band, except in case of different bands, is not permitted.

8 POINT AND MULTIPLIER:
(1) For Asian stations
   (a) Point...Perfect contact with non-Asian stations will be scored as follows:
      1.9 MHz band...3 points
      3.5/3.8 MHz bands...2 points
      Other bands...1 point
   (b) Multiplier...The number of different countries in the world worked on each band. According to the DXCC countries list.
(2) For non-Asian stations
   (a) Point...Perfect contact with Asian stations (excluding US auxiliary military radio stations in the Far East, Japan: KA stations) will be counted as follows:
      1.9 MHz band...3 points
      3.5/3.8 MHz bands...2 points
      Other bands...1 point
   (b) Multiplier...The number of different Asian Prefixes worked on each band. According to the WPX rules.

3) JD1 stations
(1) Phone About February 1984
(2) CW November 30.1983

10 INSTRUCTIONS ON THE SUMMARY AND LOG SHEET:
Please keep all times in UTC.

11 AWARDS:
(1) For both phone and CW, certificates will be awarded to those having the highest score in each category in proportion to the number of participants from each country and also those from each call area in the United States.
(2) Award only to the highest scorer.
(3) From 11 to 20...Award up to the runner-up.
(c) From 21 to 30...Award up to the top third.
(d) From 31 or more...Award up to the top fifth.

12 REPORTING:
(1) Submit a summary sheet and logs of only one classification.
(2) Both log and summary sheet must arrive in JARL, P.O. Box 377, Tokyo Central, Japan on or before the following dates:
(a) Phone...September 30, 1983
(b) CW...November 30, 1983

13 DISQUALIFICATION:
(1) Violation of the contest rules
(2) False statement in the report
(3) Taking points from duplicate contact on the same band in excess of 2% by the total.

14 ANNOUNCEMENT OF THE RESULT:
(1) Phone...About February 1984
(2) CW...About April 1984

15 COUNTRIES LIST OF ASIA:

RESULTS OF THE 23RD ALL ASIAN TEST (82) FOR AUSTRALIA

Call  FINAL SCORE
VK2XT  61506 *
VK6NSD  25434 *
VK2DVU  20473
VK2PFQ  15132
VK2NHV  6440
VK2EDW  3836
VK3VAB  3155
VK5NWS  220
VK6JS  36064 *
VK4AIX  5757

Congratulations to all those who entered the contest and represented Australia in this very popular contest, especially those who have won a certificate (*) and all the novices who have shown us all the way.

EUROPEAN DX-CONTEST
1 Contest periods: CW: 13/14 August, Phone: 10/11 September, RTTY: 12/13 November. All from 0000 UTC Saturday to 2400 UTC Sunday.
2 Bands: 3.5 - 7 - 14 - 21 - 28 MHz.
3 Classifications: Single Operator — all band.
Multi Operator — Single transmitter. Multi-operator/Singlearm transmitter stations are only allowed to change band one time within a period of fifteen minutes. A quick band change and return for working new multipliers is allowed.

4 Rest period: only thirty six hours of operation out of the forty eight hours are permitted for single operator stations. The twelve hours of non-operation may be taken in one, but no more than three periods at any time during the contest and have to be marked in the log.

5 Exchange: A contest QSO can only be established between a non-European and a European station. Exchange the usual five or six serial digital number RTS/RS report plus a progressive QSO number starting with 001. W/K stations in addition give their state (eg 599011 MA).

6 Points: Each QSO counts one point. A station may be worked once per band. Each confirmed QTC — given or received — counts one point (see below).

7 Multipliers: 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 in the following countries will be considered a multiplier: JA, PY, VE, VO, VK, ZL, ZS, UA90. (See special regulations for RTTY fig 13). Each W/K state will be considered a multiplier.

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.

8 Scoring: The final score is the total QSO points plus QTC points multiplied by the sum total multipliers from all bands.

9 QTC-Traffic: Additional point credit can be realised by making use of the QTC traffic feature. A QTC is a report of a confirmed QSO — given or received — counts one point (see below)

10 OTC: Scoring: The final score is the total QSO points plus QTC points multiplied by the sum total multipliers from all bands.

11 Contest Awards: Certificates will be given to stations with at least half the score of the continental leader. Leaders will be honoured. Certificates will also be given to stations with at least half the score of the continental leader. Leaders will be honoured. Certificates will also be given to stations with at least half the score of the continental leader.

12 Disqualifications: Violation of the rules of this contest, or unsportsmanlike conduct, or taking credit for excessive duplicate contacts will be deemed sufficient cause for disqualification. The decisions of the Contest Committee are final.

13 Logs: It is suggested to use the log sheets of the DARC or equivalent. Send large size SASE to get the wanted number of log and summary sheets (forty QSOs or OTCs per sheet). Use a separate sheet for each band. All contacts are required to submit cross-check (duplicate sheets for each band on which they worked more than 200 QSOs. For each duplicate contact, that is removed from a log by the checker, a penalty of three additional contacts will be crossed out.

14 Special regulations for RTTY: In the RTTY Section of the EUROPEAN DX CONTEST all contacts between all continents and also one’s own continent are permitted. Multipliers are determined according to the EUROPEAN ARRL countries list. QSO as well as OTC traffic with one’s own country (district) is NOT allowed. SWLs apply to the rules accordingly.

15 Deadline: CW: September 15th; Phone: October 15th; RTTY: December 15th.

EUROPEAN COUNTRY LIST

Criteria for the awarding of certificates and trophies in the WAEDC. Minimal requirements for a certificate or a trophy are 100 QSOs or 100 OTCs.

Mailing Address: WAEDC Committee Postbox 1328, D-895 Kaufbeuren, Germany.

THE ROSS HULL CONTEST 1982
The contest this year (1982) was entered by only twenty odd contestants, three of those were overseas.

The entries all were particularly well presented and most gratefully received because of the trouble and obvious care taken by the entrants.

Although there were only a few entrants those who did enter were there to make a point through the contest and most carried the same general suggestions for a change of the rules. I will make these comments public and ask for your advice on the alterations to the rules for the future contests.

Anybody, not only any comment for the contest and my sincere congratulations to the winners for an excellent effort in a very difficult area of specialty.

COMMENTS
These comments have been received from entrants’re letters and reproduced here for your advice.

From a lengthy letter from Victoria here condensed with literal licence, for the purpose of publicity.

This entry is sent with the purpose of showing the impossibility of an eastern state winning the contest against the bonus scheme of VK6.

"It became necessary to seek other bands to increase the score over other active locals."

"It was necessary to design and construct equipment for 576 and 2304 MHz during the contest activity."

"The contribution of long distance DX would be an important part of the scoring. We note these contacts are based on normal nightly contacts and are not dependent on propagation enhancement. This is surely what Ross Hull is all about."

"The aim of operators is to give the contest a ‘BIG MISS’ which is not in the best interests of amateur radio."

"The end event of the present scoring scheme is ‘WHY OTHER’, from WA.

"I am not a rabid contest operator, but this is one event that has a positive aspect of encouraging the extension of activity to otherwise neglected bits of the spectrum and so must not be allowed to lapse."

"The first multiplier for VK6 may need some revision," from WA again.

"Are mobile contacts valid?" Answer yes.

"If the rules as to the multipliers changes then some incentive for national and state winners for each frequency band," from VK4.

"Conditions very poor over the whole period. For several days on end never heard a signal from outside Rockhampton. Worst conditions for many years."

From these comments I can draw the following tentative conclusions.

1 The VK6 bonus of doubling the score should be dropped.

2 An additional incentive for each div/state for each winner of each band.

3 The distance and multipliers should remain the same.

4 Each state should compete on an even footing and scoring basis.

The next Ross Hull Test is December this year (1983) and the same rules will apply unless you consolidate your thoughts for a change.

FCM comments. With the ever-increasing pressure of commercial stations requiring band space we are in the unpunishable position of having to ‘show’ that we are using the bands that have been allocated and that we are using them to the advantage of the general population. We are doing very well in the HF spectrum and have been allocated additional spectrum space at WARC 79. However this is not the case in these higher frequencies. The ‘few’ are again expected to maintain the status quo for all of the rest of us and for the future amateurs (your descendants).

It would be of great assistance if all the amateurs of VK showed some interest in these higher frequencies. The ‘few’ are again expected to maintain the status quo for all of the rest of us and for the future amateurs (your descendants).

The winners of the 1982 Ross Hull VHF Contest are:
Walter House VK6KZ, Seven Day Phone Section
S Blanchard, VK2KFJ, Seven Day CW Section
Hideo Kiiri JA2DDN, O/seas Seven Day Phone Japan
Yutaka Kato JH1WHS, O/seas Two Day Phone Japan
W R Hamer ZL2CD, O/seas Seven Day Phone NZ
G L C Jenkins VK3ZBJ, Two Day Phone Section
A Van Derbyl VK2EDB, Two Day CW Section

As the number of overseas entries were few all overseas entries will receive a certificate.

RESULTS OF
1982 ROSS HULL CONTEST

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OVERSEAS

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1983 RTTY CONTEST

Further to the contest rules — page 64 April AR — Copies of Exchange Points Table are available from FCM at above address. Please enclose SSAE.

100 BASIC ELECTRONIC PROJECTS

First Edition

This interesting book is published by the WIA (NSW Division) Education Service. It is based on an earlier book by Dave Wilson, VK2KDW, and incorporates additional material by Ian Hook.

Although it is a how-to-do-it rather than a who-done-it, I found it hard to put down until I had read it all. This is in spite of the title giving away the whole plot. Yes there are one hundred projects and although they are basic, they offer enjoyment and some education, I am sure, for all amateurs and short-wave listeners as well as all others, interested in electronics, aged from nine to ninety years.

Every project has a circuit diagram, a parts list, an explanation on what it does and how it does it and, where appropriate, sketches and descriptive information on construction. Some projects do not even need a soldering iron.

Just to whet your appetite here are the names of ten of the projects:

Dr Who Maze
Transistor Tester
Dalek Bomb
Electronic Thermometer
One Transistor Receiver
Hazard Warning Light
144 MHz Sniffer
BFO
Metal Detector
Brake Fluid Monitor

And the best news is that the price is only $3.00, yes 3¢ per circuit!

I strongly recommend this book and suggest you enquire at your local Divisional Office or Mag Pubs.

The review copy was provided by Australian and New Zealand Book Co Pty Ltd, PO Box 459, Brookvale, NSW 2000. List price is $15.95.

Inevitably any such book must be heavily biased toward a particular microcomputer. Apart from the popular Apple, Tandy and Commodore, there are some one hundred commercially produced inexpensive microcomputers. This book is based on the GOLEM-80, an 8080, 8085 or Z80 based system using the AMS-80 monitor and an S-100 bus. The beginner will be relieved to learn that most of the buzz-words are explained in the early chapters.

Obviously if you build the GOLEM-80 Project you will want this book to get the most out of the beast.

As far as I can ascertain the programmes given in the book will run on most Tandy machines with an S-100 bus. Some modification to the software would be inevitable but there should be no problems with the hardware. Full software/programme listings are given at the rear of the book.

If you do not have an 8080 or Z80 based system this book should provide you with some good ideas.

Although the 100 plus pages of programme listings may take you a considerable time to type in, the cost of the book is much less than current prices for equivalent software packages.

If you are “into” microprocessors, or about to take the plunge, then this book is certainly worth considering.

By the way does anyone have any ideas on an S-100 bus for a ZX80/8k ROM?

The review copy was provided by Australian and New Zealand Book Co Pty Ltd, PO Box 459, Brookvale, NSW 2000. List price is $15.95.

MICROCOMPUTERS IN AMATEUR RADIO

By Joe Kasser, G3ZCZ

This is a sturdy paper-back book of over 300 pages. It is intended to show the amateur how he can use a mini-computer, based on a microprocessor, as a station accessory for receiving and sending Morse and/or RTTY, and for such operating assistance as log and record keeping.
A reminder . . . NZART has a very comprehensive awards programme from the prestigious five band “5 x 5” award to the Worked All Pacific (WAP) and many others. The VK/ZL/Oceania DX Contest 1983 will be organised by WIA — the first two weekends in October as usual. All NZART expresses gratitude to all who submitted logs — sometimes even with a magnifying glass is desirable. I hope other articles will help to overcome this problem. In the May-Novice exam — best of luck — but READ THE QUESTIONS — and take care when filling in the answer sheets. Also make sure that your answer sheet has your number on it. For those of you who feel you have a genuine complaint about an exam, let me know the exam for which you sat, and the exam centre, and the reason for the complaint. Don’t just say — ‘it was a hopeless paper’ see if you can specify the problem so I can check on it. To those who again missed out in February, keep trying, many people have made several attempts and still got there. I am trying to produce a sample paper about a month before each exam — let me know if you need a copy. The May exam is hot off the press.

I have received an interesting collection of letters in response to recent columns. These will be answered individually, but at the risk of repeating myself there are a few comments I would like to make. To those who are simply critical of the system — there are moves afoot to try to improve it — but I have had few useful suggestions from correspondents. On a cost basis alone, the Institute would find it difficult to maintain the examination system, regardless of the other difficulties involved. I do not believe that the Department of Communications is deliberately trying to prevent candidates passing. The amateur exams are a very small section of the work handled by the Examinations Branch but I think we would be much worse off under any other system. Pass rates for AOCP Theory exams have changed little from the days of the essay type answer. When the statistics for the January exams are available, I will publish them in full, but what information I have suggests that usual pass rate figures were maintained. The paper which collected most complaints in February was one that had previously been used in other centres without complaint. Surely the recycling of papers and questions is the best way of ensuring that the papers do not become ‘harder’. However, it is also important that there is provision for new questions to be added occasionally, otherwise the exam becomes a test of how well the candidate remembers the questions, not how much Radio Theory he knows.

I do not publish copies of the papers I see, — nor do I intend to. I do not even quote questions to my classes, or use DOC questions in our sample papers — although it is hard to be sure that a question I write as ‘new’ is not just a remembered one resurfacing. It seems to me important to retain the privilege of viewing and criticising as a way of checking the standard. Where I have been able to find fault, those faults have been rectified before the paper was reused.

On the idea of ‘standard’ — I look for questions that I would expect an average candidate to be able to answer after some thought. It is reasonable to expect that questions for AOCP exams require more knowledge than those for Novice exams. This may make them more complex questions, and it is probably these that the candidate remembers as ‘trick’ questions. There is a pattern to the exam paper — so, many questions from each section of the syllabus — but at AOCP level I think it is fair to have some that connect two or three sections of the syllabus. For example, a question on TVI could be related to the syllabus sections Interference, VHF, ATV, Filters and possibly even Harmonics. This is one reason why a well prepared multi-choice paper is much more searching than an essay type exam.

To those sitting for the May Novice exam — best of luck — but READ THE QUESTIONS — and take care when filling in the answer sheets. Also make sure that your answer sheet has your number on it.

For those of you who feel you have a genuine complaint about an exam, let me know the exam for which you sat, and the exam centre, and the reason for the complaint. Don’t just say — ‘it was a hopeless paper’ see if you can specify the problem so I can check on it.

To those who again missed out in February, keep trying, many people have made several attempts and still got there. I am trying to produce a sample paper about a month before each exam — let me know if you need a copy. The May paper is hot off the press.

Brenda VK3KT has available:
Trial Exam Papers —
Theory, Novice, AOCP, Regulations.
Past CW Exams from DOC:
10 Exams at 5 w.p.m.
10 Exams at 10 w.p.m.
10 Exams fill a C60 tape. Send a tape and I will copy what you want onto it.
Complaints — or other comments — about Exam papers?

Make them known to your Federal Education Officer, VK3KT, QTHR, or on the Education Net, Wednesday evenings 12.00 UTC. 3.885 MHz±.

WANTED

Due to the imminent retirement of Bob Arnold VK3ZBB a Contributing Editor for AMSAT AUSTRALIA column is required.

SPECIAL EDUCATION QSP

Brenda VK3KT

AR

EDUCATION NOTES

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic 3199

SWL

EUROPE
BR31976 5700 Y2-9883/P 2600
BR52542 2730 Y2-11030/F 1500
HAZ-013 1696 Y2-4406/G 952
HEBEVI 2070 Y2-11148/F 374
ONL-383 834 Y2-16835/G 112
NL4276 3144 Y2-11153/F 2
OE1-109976 384 Y2-16841/G 2

ASIA
OIK-22309 6032
OK3-26694 2176 JA6-9330/1 19800
OK1-11861 1962 JA1-24432 7704
OK2-19986 500 JA3-32103 3486
O08-191318 546 JA3-9344 456
YU7-544 2832 JA6-MT 4644
YU7-711 980 JA7-8347 5046
YU7-666 912 JA8-3759 3250

NTH AMERICA
0H6-401 1200 WDX9 IKK 1500

NOTE:
1 Certificates will be posted to top scorer in each scoring area (as per rules) and additionally to second and third place winners where activity warrants as well as band winner certificates where necessary. All certificate winners will receive this result sheet.
2 NZART expresses gratitude to all who submitted logs — sometimes even with quite a small score — thank you.
3 The certificates — showing a typical New Zealand bush scene, provided a difficulty with typing. Our apologies — a magnifying glass is desirable. I hope other factors will help to overcome this problem.
4 VK/ZL/Oceania DX Contest 1983 will be organised by WIA — the first two weekends in October as usual.
5 A reminder . . . NZART has a very comprehensive awards programme from the prestigious five band “5 x 5” award to WAP (Worked All Pacific) and many awards for contacts with ZLs such as NZ Counties Award etc.

AMATEUR RADIO, May 1983 — Page 41
DIPLOMA BRASILEIRO DE DX AWARD (DBDX)
RULES
1 The DBDX award for confirmed contacts with a minimum of twenty different countries (one of them has to be Brazil), as shown on the Official DXCC List, is available to amateurs anywhere in the world.
2 Special stickers for additional countries, in groups of ten, will be available.
3 All contacts must be made on the 160, 80 and 40 metre bands. No cross-band or phone to CW contacts are allowed.
4 There will be two certificates; one for phone-CW operation and one for phone operation.
5 All stations must be contacted from the same call area, where such areas exist, or from the same country in cases where there are no call areas. One exception is allowed to this rule: where a station is moved from one call area to another, all contacts must be made from within a radius of 150 miles (240 kilometres) of the initial location.
6 All contacts must be "land stations". Contacts with ships, anchored or otherwise, and aircraft, cannot be counted.
7 Contacts may be made over any period of years from 15 November, 1945.
8 All confirmations must be submitted exactly as received from the stations worked, and minimum reports are: RS-33 for phone and RST-338 for CW.
9 The DBDX secretary will keep an honor roll showing all awards issued and consecutively numbered.
10 Applications must be submitted to: "LABRE Awards Manager — DBDX PO Box 0004 Brasilia — Distrito Federal — Brazil — 70 000"
11 Decisions of the LABRE Awards Commission regarding interpretation of the rules as here printed or later amended shall be final.
12 Sufficient postage for return of confirmations must be forwarded with the application — US$2.00 or 10 IRCs.

WORKED ALL NIGERIA STATES AWARD — WNS
CONDITIONS FOR THE AWARD:
Work ONE amateur radio station from each of the ten call areas in Nigeria.

OUTSTANDING NIGERIA DX AWARD — 5NDX
There are three classes for this Award:
First Class: Worked 100 amateur radio stations.
Second Class: Worked 50 amateur radio stations.
Third Class: Worked 20 amateur radio stations.

Multipliers — NARS, President's Station (5N0AAJ), counts as five stations.
— XYL Stations, count as two stations.
— Club Stations, count as two stations.

For the three above awards all QSOs need to have been made after 1st January 1980. The Fee for each award is 10 IRCs or $4.00. For each award, full QSO details are required and in lieu of the QSLs the log extract can be certified by the Federal Awards Manager. (This means that applicants forward a log extract, together with the QSLs to me — do not forget to include return postage for your QSLs — I will certify the list as being correct and this is then returned to the applicant who claims the certificate direct from the issuing society).
Applications for these awards should be sent to: Awards Manager PO Box 2873 Lagos Nigeria.

DIPLOMA DE L'UNIVERS FRANCOPHONE (DUF)
This award may be claimed for having contacted (heard) and received QSLs from the DUF countries list.

There are several categories of this award.
DUF1: awarded for contacting five different DUF countries in five continents (ten QSL cards). Fee — 7 IRCs.
DUF2: awarded for contacting ten different DUF countries in four continents (eight QSL cards). Fee — 9 IRCs.
DUF3: awarded for contacting ten different DUF countries in five continents (ten QSL cards). Fee — 12 IRCs.
DUF4: awarded for contacting twenty different DUF countries in six continents (twenty QSL cards). Fee — 15 IRCs.
DUF Medal: a very nice medal which can be claimed by the proud recipients of the DUF4. Fee — 20 IRCs.
All endorsements — 6 IRCs.

DUF COUNTRIES LIST
EUROPE:
France
Corsica
Monaco
Andorra
French Army in Federal Republic of Germany
AFRICA:
Algeria
Tunisia
Morocco
Central African Republic
Congo
Ivory Coast
Benin
Gabon
Republic of Guinea
Mali
Mauritania
Niger
Senegal
Chad
Upper Volta
Cameroon
Togo
Djibouti
Malagasy Republic
Mayotte
Comoros
Reunion
Glories Island
Tromelin
Europa
Juan De Nova
SOUTH AMERICA:
French Guiana
NORTH AMERICA:
St Pierre — Miquelon
Mauritius
Guadeloupe

Once again the gremlins crept into the half yearly DXCC listings. Apologies to VK3DU who should have shown with a phone total of 282/284. Several awards this month to tempt the award hunter's appetite. These come from Brazil, Nigeria, France and Italy.
STATIC CHARGES

The usual certification rules apply (detailed in the Nigerian award above) and application should be sent to:

Mr Edmond DuBOIS, F9IL
BP 7
Aubenchel Au Bac
F 59265 Aubigny Au Bac
France

DIPLOMA DEL MILLENNARIO

On the occasion of the Millenary of the foundation of the city of Udine, the Committee responsible for the organisation of the Electronic Exhibition EHS in collaboration with the ARI Section of Udine, institutes certificate “Diploma Del Millenario”. The certificate is granted to all OMs, YLs and SWLs all over the world who, in the course of 1983 will score at least thirty points according to the following regulations:

1. Each QSO/HRD with stations located in Friuli Venezia Giulia region (IV3 prefix) will count one point.
2. Each QSO/HRD with stations of members of ARI Section of Udine will count three points.
3. Each QSO/HRD with stations located in Udine, Buia, Fagagna, Brazzacco, S Margherita del Grugno will count six points.
4. Each QSO/HRD with the special station operating on the premises of the sixth EHS exhibition on 8th and 9th October, 1983 will count ten points.

One station cannot be worked more than once on the same band, and contacts via transponders, repeater, and mixed mode are not considered valid. The operating modes are: SSB, CWT, SSTV and shall be made on all the authorised bands, between 1st January and 31st December, 1983.

A special classification will be reserved for the OM who all over the world (excluding IV3 call signs), whose original, direct or indirect is Friuli, who score the most points. All the operators outside the IV3 call area will indicate on the log, the name of their original village in Friuli region.

A copy of the log with all QSO/HRD details to ARI Udine Diploma del Millenario PO Box 23-33100 UDINE, ITALY before 29th February, 1984. The award is free of charge. All participants will be sent a small flag as a keepsake of the competition. The decision of the jury will be final.

Well that’s it for this month.
73 es DX, Good Hunting de Mike, VK6HD.

TECHNICAL CORRESPONDENCE

HISTORY OF THE RAAF WIRELESS RESERVE

The RAAF Wireless Reserve was created about 1931 by Howard Love (then VK3BM), President of the WIA Victorian Division and the Air Board of the RAAF.

It was realised that the radio amateurs of Australia represented a great potential of emergency communications to the RAAF in providing a group of trained signals operators. At the outbreak of the 1939/45 war some 200 operators were called up for full time active service from all States.

The Air Force appointed Bob Cunningham VK3ML, with the rank of Pilot Officer to command and organise this Reserve. Bob now wishes to write a history of the RAAF Wireless Reserve from information available. Unfortunately there are many missing gaps in the 1931-1939 years where records of members and their activities are unavailable. He would therefore be grateful if former members of the Reserve would provide him with known lists of members and any items of interesting activities worth recording in the proposed history.

Please forward any such information to VK3ML at 384 Glenferrie Road, Malvern, Vic 3144.
THE RADIOCOMMUNICATIONS BILL — EMC COMMENT

The Radiocommunications Bill has at last seen the light of day: for how long — who knows! Governments consider electronic communications to be very low priority. This is rather surprising considering they use the electronic form of communication to conduct a large percentage of their everyday business.

The draft Bill has given a great deal of general attention to the problems of interference. Unfortunately it appears to be written in a form which is not too helpful in respect of the major interference problems affecting the Amateur Radio Service.

There are many members of amateur service who can boast that they have never received a complaint of interference, however I guess there are few members who boast that they have never been troubled with interference to their reception.

Those members of the amateur service who have never received a complaint of interference — excellent! They should consider themselves very lucky in this fast expanding world of electronic gadgets. However, because the Amateur Radio Service has always kept well ahead in modern technology the lack of interference complaints can mean only one of two things:

(a) the Station is separated from other radio and electronic equipment by a large amount of real estate, or
(b) other radio and/or electronic equipment which is in close proximity to the station has, by good luck or design, a reasonable immunity factor.

Most amateur stations have installed equipment which uses the most modern communications techniques, equipment, which meets high standards for transmission and reception of electromagnetic energy.

The same cannot be said for manufacturers of domestic entertainment equipment and consumer products where the object is to produce a product as cheaply as possible, to ensure a large turnover with as much profit as possible with little regard to how it will operate when it is in close proximity to other equipment — which of course is the case in the majority of domestic situations.

This lack of regard for how and where the equipment will be used is reflected in the fact that a large percentage of domestic entertainment equipment and consumer product is manufactured in overseas countries and dumped on the Australian market by profit orientated entrepreneurs.

The majority of radio amateurs are not in the fortunate situation where they can isolate themselves with large amounts of real estate. For most of us 'luck' runs out and we receive a complaint of interference or suffer interference soon after receiving our hard earned licence.

Quite often there is no simple answer — except to completely redesign the domestic equipment so it has a reasonable immunity factor and does not produce incidental radiation. Also, redesign the electrical power distribution so this does not produce incidental radiation.

Those of the Amateur Radio Service can, with respect, sit back and ignore the ever growing threat to our service by interference problems which are not of our making, in many cases are beyond our control and, are outside the law as it stands at present.

The draft Radiocommunications Bill goes some way towards dealing with the problems of IMMUNITY/SUSCEPTIBILITY and INCIDENTAL RADIATION. However, much work will be required before full and proper control is able to be exercised over these problem areas.

Before commenting on the interference sections of the Bill perhaps we should outline a few items from some of the original material.

The Draft Principles of Proposed Radiocommunications Legislation by the Department of Communications dated January 6, 1981 stated: "Control of interference should be possible including incidental emissions from non-communications sources such as radio frequency, heaters and power lines."

"Standards: The Minister could be empowered to adopt standards relevant to use and technical factors."

"Radio equipment should be subject to technical standards."

"Restrictions should be imposed, to the limits of Commonwealth legislative power, to control manufacture, importation and sale of equipment which fails to meet those standards."

The Institute responded with a twenty two page document entitled, "Proposed Radio Communications Act — Comments submitted on behalf of the Wireless Institute of Australia".

STANDARDS

It is noted that the draft principles include the suggestion that the Minister could be empowered to adopt standards "relevant to use and technical factors". It is not clear what that phrase means.

In general, such a provision is supported. However, two observations are made. Firstly, it is suggested that this power should not reside in the hands of the Minister. It would be more appropriate for standards to be prescribed by regulation. The prescription of standards by regulation is provided for by the Trade Practices Act 1974 and such a course has considerable advantage. A standard promulgated by regulation, or identified by regulation, is far more accessible than what really amounts to an internal administrative Act. Secondly, a regulation is necessarily more formal and there is thus less chance of an inappropriately worded standard being promulgated. Finally, a regulation is subject to review and may be disallowed.

It is suggested that this power should not be sought except in cases of urgency. This is seen as a very constructive and worthwhile proposal and indeed it is suggested that this proposal could be taken further. Not only standards but regulations affect investment decisions and individuals.

The regulation of radio communication is necessarily complex. The WIA favours the
public exposure of not only draft standards but also draft regulations prior to their promulgation.

An interesting precedent is to be found in Section 70 of the New Zealand Commerce Act. Under the legislation regulations will, in the normal course, be exposed for comment though a discretion is given to bypass the public exposure route where it is urgent for a move to be made quickly.

Because of the importance of this area, it is worth quoting an extract from the New Zealand Section of the proposed draft which gives to the Governor-General power, by Order in Council, "in accordance with the recommendations of the Commission," to make regulations for certain specified purposes and provides by sub-section (3): "before making any recommendation for the purposes of" this Section "the Commission shall—"

(a) do everything reasonably possible on its part to advise all persons and organisations, who in its opinion will be affected by any order in council made under this Section, of the proposed term thereof, and give such persons and organisations a reasonable opportunity to make submissions thereon to the Commission; and

(b) give notice in the Gazette, not less than fourteen days before making the recommendation, of its intention to make the recommendation and state briefly in the notice the matters to which the recommendation relates; and

(c) make copies of the recommendation available for inspection by any person who so requests before an order in council is made in accordance therewith; provided that this sub-section shall not apply in respect of any particular recommendation if the Commission considers that it is desirable in the public interest that the recommendation be made urgently; provided also that failure to comply with this sub-section shall in no way affect the validity of any order in council made under this Section.

The Wireless Institute of Australia regards the inclusion of such a provision, appropriately modified, as highly desirable.

At present the Amateur Service is subject to the provisions of any condition imposed by way of licence, the provisions of a Handbook which purports to interpret the Regulations made under the Wireless Telegraphy Act (though not necessarily consistently in all cases), the Regulations themselves and finally the Act. The present inconsistencies and inadequacies have resulted in the expenditure of an enormous amount of departmental and individual time in the resolution of various problems that arise. Many of these difficulties would never have arisen if there had been proper consultation before the promulgation of the relevant Regulation. Certainly the "Handbook" has been the subject of close co-operation between the Department and representatives of the Amateur Service and experience of this co-operation is clear evidence of the desirability of prior consultation. No doubt other users of the radio frequency spectrum would take a similar view.

Interference

It is noted amongst the principles announced generally in the paper prepared by the Department it is suggested that control of interference should be possible, including incidental emissions from non-communication sources such as radio frequency, heaters and power lines.

The power to control interference may be regarded as an essential aspect of the control of radiocommunications. However, there are considerable difficulties in the establishment of a standard of interference in the definition of powers that are appropriate. Two broadly based principles can be identified and may be summarized as follows:

(a) A sub-standard, improperly operated, or defective, or inadequately designed receiver, entertainment device, or other device susceptible to RF interference should not be protected from a transmitter that is correctly operated, correctly adjusted and spurious and emissions standard.

(b) Radiocommunications Services should be protected from interference and from unnecessary electromagnetic radiation emissions of any source.

A blanket prohibition against causing interference imposed on particular stations, classes of stations, or stations in a particular Service, must be rejected. The formulation of principles must necessarily have regard to the fact that the removal of interference may be only possible at the receiver or device suffering the interference. This may involve some expenditure and it should be clearly established how that cost is to be borne.

It must be recognized that in some cases interference cannot be remedied at the transmitter. For example, a transmitter correctly operated, and of a high standard, may cause inevitable interference to a broadband device in the immediate vicinity, even though the device is reasonably protected against RF interference. Where special measures are necessary in such cases, the question as to who is to bear the cost may give rise to a different answer. At least it should be made clear, in such cases, that a person who complains and then unreasonably refuses to allow the necessary measure to be taken, can preserve no rights.

It is considered that the legislation should establish certain broadly based principles to deal with these situations.

So far as a power of general control is concerned, it is noted that in the United States the Federal Communications Commission is, by Section 302 of the Communications Act 1934, given the following power:

"(a) The Commission may . . . make reason-

able regulations governing the interfer-

cence potential of devices which, in their

operation, are capable of emitting radio

frequency energy . . . in sufficient degree
to cause harmful interference to radio

communications. Such regulations shall

be applicable to the manufacture, import,
sale, offer for sale, shipment or use of

such devices.

(b) No person shall manufacture, import,
sell, offer for sale, ship or use devices which fail to comply with regulations promulgated pursuant to this Section . . . ."

The Institute is of the view that this is an area where regulations (of the kind discussed in the context of standards) are appropriate and the effectiveness of such regulations would be bolstered by the provisions of the Trade Practices Act 1974. Recourse to heads of Commonwealth constitutional power such as the corporation power and the customs power as well as the postal, telegraphic, telephonic and like services power, may be necessary to give Commonwealth legislation in this area effect.

There are many EMC areas within the new draft Bill which have been considered by the CASPAR Committee and are now contained within the CASPAR Report. This report will assist the Federal Executive with the production of the Institute’s official response to the Bill.

However, perhaps the most important outstanding omission in the EMC area is that the Bill refers only to receivers, it is by no means clear that the Federal Parliament would have the power to legislate for standards of immunity from the electromagnetic energy in items like audio systems, video systems, intruder alarms, intercoms, and other sundry consumer products.

This appears to be a most difficult area from the legal viewpoint. There seems no way in which radiocommunications legislation can cover non-communications equipment, even though this type of equipment and its problems are related through electromagnetic energy.

Unlike many other countries who have managed to deal effectively with equipment which is not intended to receive electromagnetic energy, it seems the Australian Federal Legal system (under which the DOC operates) is unable to cope with this situation and must, for the legislation to go through, involve the States’ legal system—and all the problems this could involve.

So, unless some of our smart lawyers can think up an easy way around this difficult and growing problem area we will all continue to suffer the crazy situation where domestic entertainment and consumer products, which for economic reasons, come with built-in potential to cause RF interference, are not protected against RF interference.

In respect to Standards the Bill indicates it should be the radiocommunications equipment which should meet specific standards. This is of course against the whole concept of the Amateur Radio Service.

In contrast to the field of business and commercial (taxi, fire, Police, and general business) communications; with amateur radio it is the operator who is technically qualified and must, for the legislation to go through, involve the States’ legal system—and all the problems this could involve.

With business and commercial communications services it is necessary for the equipment to meet specific standards both here and abroad. The Institute is of the view that this is the case with amateur radio. But the Standards situation is for both Services much more complex, and there is the basic requirement of Standards to cover EME (electromagnetic emission): A Standard to cover the transmission or recep-
Recently, I was present at a Launceston SWL’s QTH, after we received a tip-off from some DXer’s in New Zealand, when we heard one of the rare stations in the world — the Falkland Islands Broadcasting Station. One moment, the channel was quiet, then popped up some very weak audio, indistinct, with quite an amount of flutter. The programme consisted of mainly “pop” and disco music, although we recorded the audio to get the announcements, which were clearer on playback.

Ordinarily very difficult to hear in Australia, this station seems to have better propagation than we do. However, many SWLs in southern Australia were indeed very fortunate to intercept the FIBS. After the tip-off, many commenced monitoring 3.958 MHz, which appears to be the main operational frequency, and the signals faded in at about 0900 UTC. The phenomenon of hearing signals from this region only occurs at the Autumn equinox, when the Sun’s horizon is roughly parallel, although the Spring equinox does not propagate as well. Signals come over the South Polar region, hence the flutter which usually is present from the Antarctic region. By the time you will be reading this, the peak will have well and truly passed. I n fact, they went off Daylight Saving the same weekend as we did here in Tasmania, which means they would open one hour later at 1000 UTC, when signals from Asia commence to come in.

I believe that the MW as well as the transmitter formerly on 2.370 MHz were either destroyed or damaged during the war last year. One interesting observation is that they are using SSB with carrier, as the audio is present on the upper sideband, but not on the lower. This could be indicative of a Services’ transmitter being used. As well, a lot of the programming is from the British Forces’ Broadcasting Service, serving the British garrison which now makes up two thirds of the population. There is reportedly an FM transmitter operational too.

Congratulations to those fortunate in hearing the FIBS and many reports from Australia and NZ have gone in, judging by some cheoirs I heard from the DJ. It is unfortunate that listeners in WA and further north in NSW would have missed out hearing this station, because the difference in propagation makes it highly improbable.

Recently, I accidentally came across some cordless telephone outlets between 1.7 and 1.9 MHz. Now I don’t have anything against these devices, but am somewhat concerned that one could lose contact on 1.810 MHz CW because a local cordless ‘phone will suddenly plop on to the channel out of nowhere. Surely other frequencies exist for these devices to operate without causing harmful interference. They state on the commercials they are Telecom approved but the user would have to apply to DOC for permission to operate. If any cordless systems are heard within our primary allocation on 1.8 MHz I shall be reporting them to the Intruder Watch. It does appear to be one model of these devices that could cause problems.

Listening on 6.095 MHz recently, I thought I had come across a new frequency of a Chinese domestic network. However, I was puzzled because the music choice didn’t follow the normal pattern of what one hears from the Central Peoples Broadcasting Station (CPBS). The identification and the time signal were similar to that on the CPBS. Yet it eventually drowned on me, after listening for a while, that it was Taiwan. The signals are directed to the Chinese mainland, and it is naturally in that language. There doesn’t appear to be any jamming yet. Listen at 1100 UTC and see for yourself.

And talking of new channels, both Radio 3 RPH and VL2 UV altered their operational frequencies in the second week of March. The Radio Print for the Handicapped Station 3RPH, formerly on 1.705 MHz, can now be heard on 1.629 MHz. The University of NSW station, VL2UV, has now gone to 1.692 MHz from 1.750 MHz.

Those interested in shortwave listening may not know that there is a regular weekly amateur radio net devoted to this. It is on Thursday evenings at 1030 UTC on 3.565 MHz ± QRMs LSB. Net Control is either Don VK3BMB, Tony VK2ECB, or myself VK7RH.

Don’t forget that the “J” period commenced on Sunday 1st May. On this date, international broadcasting stations occasionally alter their frequencies to take account of seasonal variations in propagation. This period will be in effect until the first weekend in September, when it becomes the “S” period. Also winter time propagation will be in effect now. Many signals will be heard during daylight hours, especially on 25 and 31 metres, which should have twenty four hour propagation. Also take note of signals coming across the South Polar regions, emanating from Europe. Listen on 41 and 49 metre bands at 0200 UTC for DW, Radio Berlin International and the BBC, mainly in Spanish. Those in the southern states again have the advantage over those further north in observing these.

Well, that is all for this month. Until next time, the best of 73’s and good DXing!

— Robin
**VK4 WIA NOTES**

Geoff Adcock, VK4AG — MERIT BADGE AWARD

That very popular amateur, Geoff, VK4AG, has been in the limelight again. It was president, Guy Minter’s, VK4ZXZ, pleasure to present a merit badge and certificate to Geoff for his untiring work and many achievements in furthering the cause of amateur radio in Queensland. The merit badge is an award not lightly given and does not happen very often. Geoff is always there to assist his fellow amateur in any way that he can. He is very active in WICEN and has built a couple of VHF repeaters for portable use. Geoff was largely responsible for the technical side of one our state’s greatest achievements, that of putting repeaters for portable use. Geoff also takes an active part in the broadcast on Sunday mornings relaying VK4WIA on ten metres. Geoff, VK4AG, can wear his merit badge with pride, Queensland is justifiably proud to honour VK4AG in this way.

**EDUCATION**

We have already had one “Educating the Educators” seminar in Queensland, last year in Toowoomba on the Darling Downs. This year two more are planned. Ron Smith, VK4AGS, from Dalby will be teaching the teachers the finer points of teaching. At press time, nothing is definite, but it is hoped to hold one in Toowoomba on the weekend of 28/29 May, to be followed by one in Central Queensland, probably Rockhampton, on 10/11 September.

**REPEATERS**

Gladstone Amateur Radio Club have officially opened their 2 metre repeater on CH6900. This repeater, situated on Amy's Peak some 1000 metres ASL, has a range of about 150 km. It covers Highways 1, 17 and 39, the Capricorn Coast, many off shore Barrier Reef Islands, Gladstone, Rockhampton, Biloela, Monto, Moura. The repeater, completely solar powered, is located about 25 metres above ground, some 60 km south west of Gladstone on the Callope Range.

The Darling Downs Radio Club are about to commission new equipment for their repeater, VK4RDD. This equipment was made possible by a legacy from Arch Marshall, VK4AF, 1907-1982, late of Clifton. It will be known as the Arch Marshall Memorial Repeater and will carry a plaque commemorating Arch’s generous bequest. Plans are well advanced for a repeater on a mountain top north of Roma. It is anticipated that the site will afford a very wide coverage. "On the Air” day is not yet available but this repeater is not too far off.

**RTTY NEWS**

More and more stations are becoming active on RTTY, particularly in south east Queensland. The SEQ Teletype Group now have a news broadcast on Monday evenings on 10.120 MHz at 1000 UTC. The Bulletin is also carried by the group’s Mt Cotton 2 metre repeater near Brisbane. The group would welcome reports on the 30 m transmission.

**HISTORY**

There are two historians in Queensland. Peter Brown, VK4PJ, has been collecting history up to 1930 for some time. Now Al Shaw smith, VK4SS, (Thumbnail Sketch, April AR) has taken on the task of recording events and personalities of the 1930 to 1939 years. Al has set out to document all those with VK4 callsigns in that decade. Maybe you can help, both Peter and Al would appreciate any help that they can get, both are QTHR.

**THE QUEENSLAND AWARD**

The VK4 Council have decided at the last council meeting to delete two shires from this award. These are Mornington and Arakun Shires. Both are aboriginal reserves and not accessible without special permission from the appropriate government department. So that you can advance your score towards claiming the Queensland Award, the Queensland net operates each Thursday evening on 3.605 MHz, 0930 UTC. You do not have to operate from the Sunshine State to join the net, others less fortunate than we Queenslanders are very welcome.

**STOLEN EQUIPMENT**

Recently GFS Electronic Imports in Mitcham, Vic were the victims of a burglary — their second in as many months.

Equipment taken in these robberies were:

- A PCS-3000 Azden two metre FM rig — serial number 80256
- A Standard C58E two metre portable rig — serial number E030036
- A JIL-SX200 scanner — serial number 10740326
- FS10 pocket scanner — no serial number
- C800 pocket scanner — serial number F050332
- Sky Ace R517 pocket receiver — no serial number.

Anyone offered equipment similar to that described above are advised to carefully check the serial number and if the serial number is the same or has been erased, contact Greg Whiter of GFS or your nearest Police station.

Apparantly other traders in the same area have had similar experiences and as a result of these burglaries Greg has improved security at his premises.

**AMATEUR RADIO**, May 1983 — Page 47
COUNCIL REPORT
The VK2 Divisional Council met on the 11th of March at the WIA Parramatta office.
An Invitation from the Queensland Division for a VK2 representative to attend the VK4 Radio Club Workshop in April was accepted. Councillor Peter Jeremy, VK2PJ, will attend so he can observe the operation of the workshop system. An agenda item carried at the 7th Conference of Clubs requested the VK2 Council to investigate the radio workshop system with a view of changing the twice yearly conference to an annual meeting along the lines of the VK4 club workshop system. The division appreciates the generous offer by the Queensland Division to arrange the accommodation and meals of the VK2 delegate.
Twenty-five new applications for membership were received and accepted.
The official opening of the Parramatta office was discussed and the date confirmed as being the 26th of May at 2 PM.
A report was presented on preparations for the Annual General Meeting. Special thanks are due to Bob Clark VK2YOD, Bruce Miller VK2VRG, Tom Delandre VK2PDT and Jim Swan VK2BQS who answered a call on the broadcasts and assisted councillors in inserting and posting the notice for the AGM.
Eight agenda items were received for the 8th Conference of Clubs. A report of the Conference will be included in the next VK2 Mini Bulletin.
Federal Councillor Stephen Pall VK2PS presented a report on WIA Federal matters and correspondence. It was resolved that the division pay the air fare of the Federal President so he could attend our official opening.

REPORT ON 1983 ANNUAL GENERAL MEETING
The Annual General Meeting of the division was held on the 26th of March in the auditorium of the Granville RSL Club. Fifty-eight members and two visitors attended the meeting commenced at 2 PM.
The minutes of the 1982 AGM, President’s Report and Annual Accounts were all received and adopted by the meeting as circulated. A motion of special thanks to retiring members of council, Athol Tilley VK2BAD and Stephen Pall VK2PS was carried by acclamation.
Awards were then presented to winners of the 1982 Homebrew Competition. Winner of Completely Home Designed and Built section, Graeme Dowse VK2CAG, was presented with an engraved trophy, a cheque for $100 and a merit certificate for his fine entry of a 2 metre repeater. Geoff Campbell VK2ZQC was presented with a merit certificate and a $25 open order for his entry of a 6 metre power amplifier in the home built from a published design section. The awards for Mike McDonnell VK2DAD and Rod Pym VK2DNP will be posted to them as they were unable to attend the meeting.
Presentations were also made to winners of the ‘Amateur Radio’ Technical Articles Award, these being judged from articles from VK2 members published in Amateur Radio magazine during 1982. First was Bruce Henderson VK2DFH for his article “Antenna Tuner Adjustment” published in March 82 AR. Bruce’s award of a cheque for $200 and a merit certificate was accepted on his behalf by Tom Taylor VK2DTB who has assisted with the development of the tuner described in the article. Second prize of a cheque for $100 and a merit certificate will be posted to Terry Clark VK2ALG for his article on a CMOS bug published in February 82 AR.
Third prize was awarded to Gordon McDonald VK2ZAB for his article “Staggered Stacking” published in the June 82 AR, and his cheque for $50 and a merit certificate will be posted to him as he was unable to attend the meeting. Rod Pym was highly commended for his article on “Another 2 metre amplifier”.
The Returning Officer, Roger Henley VK2ZIG, then announced the members of the 1983/84 Council. As there were only six nominations, no ballot was required, and the new council members are Susan Brown VK2BBS, Bob Clark VK2YOD, Peter Jeremy VK2PJ, Tim Mills VK2ZTM, Jeff Pages VK2BYY and David Walters VK2AYO.
The meeting then debated and voted on the four notices of motion as sent to all members of the division. The two special resolutions to change Articles 93 and 96 were carried without dissent by the meeting and are now in effect as prior approval from the Attorney-General had been received for the changes. The third motion asking that the Administrative Secretary check whether QSL cards are awaiting members at the office was lost. The final motion requesting that divisional premises at Wigram Street, Parramatta be made available for meetings by bodies of kindred interest to the Institute was lost.
Roger Henley VK2ZIG was reappointed as the Division’s Returning Officer for 1983/84 and the meeting then closed at 3.23 PM.
The following articles (93 & 96), as accepted at the 1983 AGM are now in effect. Please amend your copy of the Articles of Association.
“Article 93. Each delegate shall, at any such Conference, have voting rights on behalf of his club, in respect only of those members of his club who are also Ordinary Members of this Division, in accordance with the following scale:
(a) For any number of Ordinary Members of this Division from five (5) to ten (10) inclusive — one (1) vote.
(b) Thereafter, for each subsequent group, or part thereof, of ten (10) Ordinary Members of this Division — one (1) vote.
In calculating the number of votes to be exercised by a delegate at any Conference, any Ordinary Member of the Division who is a member of more than one club shall be counted in respect of one club only for the purpose of calculating the voting rights of a delegate. Where an Ordinary Member of the Division holds membership in more than one club, such member shall be deemed to have assigned his voting rights to the club nearest his home address unless he advises the secretary of the Division and the clubs involved of his contrary wishes in writing. The secretary of the Division...
shall keep a file of such members which shall include the club to which the member is assigned for the purposes of voting rights.”

“Article 96. A Conference may not transact any business unless a quorum of no less than twenty five (25) per cent of the total clubs affiliated is represented by delegates entitled to vote”.

(Prior approval for changes to Articles 93 and 96 has been obtained from the Attorney-General and the Corporate Affairs Commission.)

REPEATER REPORT

There has been considerable activity during the last few months in developing new repeater systems in VK2.

A few weeks ago eleven new licences were issued by the Department of Communications. Expanded details will be given on future divisional broadcasts and in the MINI BULLETIN. Some of the new systems included VK2RRT (6900) in the Condobolin region, VK2RCC (6800) at Dubbo and VK2RNE (6950) at Glen Innes. To provide a channel for Glen Innes, the existing Moree-Inverell service VK2RMI will change from channel 6850 to 6650.

In Sydney, VK2ROT which is sponsored by the OTC (A) Amateur Radio Club, was installed in the Eastern Suburbs on channel 7075. A new paging system has been installed in Sydney just above 148 MHz and this appears to be interfering with this new repeater. When a solution to the problem is found, VK2ROT will be placed in service again.

The morse practice beacon VK2RCW (7400) has been relocated to a new site which is giving a much larger service area. Later this year the northern beaches repeater VK2RMB (6875) will be relocated to Terry Hills. The Liverpool Club has plans to develop VHF and UHF systems.

Other developments include establishing a repeater at Grenfell. This was the system previously proposed for Cootamundra by SWARS. Wagga is working on an ATV repeater for that city. In Sydney, an ATV signal on UHF channel 34 is transmitted by VK2RIL on most week nights from Lane Cove. At Wollongong, there is a new VHF repeater VK2RIL (7275) which covers their northern suburbs and a new UHF repeater on channel 8725 is proposed at the same site.

There are additional UHF systems licensed with VK2RUH (8425) in the Sydney southern suburbs, VK2RUT (8375) in the Blue Mountains and VK2RDK (8025) at High Range, south west of Sydney.

It is now time to compile the repeater listings for the next booklet. There are a few repeater systems observed as not having the official records up to date. The problem mostly concerns the site of these systems and those system operators have been advised accordingly. If you have not returned a repeater questionnaire, would you please complete the information requested and return the form to the State Repeater Committee.

There are now thirty four VHF and twelve UHF repeaters licensed in VK2.

Notes from Tim Mills, VK2ZTM, VK2 State Repeater Committee Chairman.

VK2BW1 SLOW MORSE SESSIONS

David Bell VK2NAW is taking a well earned vacation from the Sunday night slow morse practice sessions after four years of service. David is very well known on air not only for his fine CW but also for his consistently strong signal from Gosspie, and his clff-hanger stories in the CW text where aircraft are regularly plunging out of control or ships sinking in giant seas. Listeners were literally in suspense from week to week as David used to run his programmes in the form of an ongoing story. All good stuff and certainly designed to ensure the sweating listener had to jolly well keep up to find out what was happening next. Thank you David for a job enthusiastically and colourfully well done. We hope you will still find the time to do the occasional session for us.

We welcome to the Sunday session Doug, VK2NMC, an operator of wide experience who many will remember from some years past as a panel member. Thank you Doug for your patience with the newbie operators who keep on jumping into David's shoes so keenly. The division and listeners are grateful to you for offering these skills for the benefit of so many and a warm welcome is extended to you Doug from all of us at VK2BW1.

The VK2BW1 Slow Morse sessions are conducted by volunteers of the division each night, commencing at 0930 UTC using 3.550 MHz. You can assist by keeping clear of the frequency during these periods.

Notes from Ross Wilson VK2BRC, VK2 Slow Morse Co-ordinator.

TAREE AMATEUR RADIO CLUB

The club held its AGM on the 8th of February and the following officers were elected.

President — Geoff Hunziker, Vice Presidents — Chas Withers and George Baker, Secretary — Mike Richardson, Treasurer — Trevor Clarke, WICEN Co-ordinator — Chas Withers, QSL Officer — Trevor Clarke, Social Committee — Bruce Cross and Wayne Eckert, Repeater Committee — Ted Eckert, John Farley, Geoff Hunziker, Chas Withers, Trevor Clark, Broadcast Officer — Bruce Cross.

The Club address is PO Box 712 Taree, 2430.

COMING EVENTS

Official Opening, W1A Parramatta; 28th May at 2 PM. Port Macquarie Field Day; 11/12th June.

NSW members and clubs are invited to submit news items for inclusion in these notes to WIA NSW Division at PO Box 1066, Parramatta, 2150, marking the copy and envelope “For Mini Bulletin”. Items for July AR must reach us by the 23rd of May.

Athol VK2BAD

At the Divisional Council meeting held on the 18th of March, John Mitchell VK5JM gave a detailed report on the WICEN involvement in the Ash Wednesday bushfires. One good thing that has emerged as far as WICEN is concerned, is that the Director of State Emergency Services has provided permanent facilities and antennas for WICEN use at SES Headquarters, for any future emergencies. This recognition of WICEN's usefulness has been hard won by John and his officers, and it only takes one act of stupidity to undo months or years of work. It was a couple of incidents like this, which has caused John to draw up a paper on the terms of reference of the Director. Council has moved that this be adopted.

Council has authorised the purchase of an Olivetti Praxcis 35 and additional interface, so that we can do our own typesetting of the 'Journal'. Although this is initially a large cost, it is envisaged that we will recoup this within the next year, and that after this it will represent quite a saving on what we would be paying elsewhere.

The Kenwood Trophy for this quarter was presented to John Mount VK5EV for his services to the division as publications officer. Although John no longer appears at the monthly meetings, he still takes care of the ordering and postal requests. Our steep stairs, the weighty parcels, and his YXL Eleanor's poor health are the main reasons that John no longer attends the meetings. His stalwart helpers, Max VK5NMX and Archie L50014, still keep up the standard of service that John has set. I'm sure that everyone would agree with Council that John is a most worthy recipient of the voucher from ICS.

Sam VK5TZ has resigned as Co-ordinator of the panel of Morse Code Practice volunteers. We can't really complain though, seeing that he only took over in a temporary capacity a couple of years ago! Our thanks for your past efforts in this capacity, Sam, and for the work that you continue to do for the division.

Dick Boxall VK5ARZ, our equipment supplies COMMITTEE, was conspicuous by his absence at the last meeting, due to an attack of shingles. We hope that you are now fully recovered Dick, and thank David VK5AMK and Graham VK5AGR for ensuring that parts were available at the meeting.

DIARY DATES

24th May 'Getting started in RTTY' speaker John Mitchell VK5JM.

31st May 'Buy and Sell'starts at 7.30 PM.

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

AR

AMATEUR RADIO, May 1983 — Page 49
ODES OF THANKS
7 Grimes Street, Auchentflower, 4066.
7.2.83
Dear Sir,

A number of VK4's owe thanks to Roy O'Malley (VK4ZQ) for carefully guiding them through a TAFE course for the AOCP theory.

Roy took raw recruits in hand and in just twenty four weeks at two hours per week (7-9 pm) he had us reading Yaesu circuits component by component. His class of 1982 was a success story of nearly 50 percent pass.

Midway through the course the ditty "To VK4ZQ" was written to show we supported his efforts. At the course end "Again to VK4ZQ" was written to thank Roy for his efforts. Both were of course signed ANON.

Many of VK4's owe thanks to Roy.

Sincerely,
Edward Seabrook VK4YAS (of the class of '82)

EXPERIMENTAL TRANSMISSIONS ON A LOW FREQUENCY
12 Albert Street, Oak Park, 3046
16-2-83
The Editor,

Dear Sir,

I would like to thank all those who gave assistance and reports on experimental low frequency transmissions following my letter in September 1982, Amateur Radio. The experiments were terminated with the start of daylight savings because of the increased summer noise level. The experiments will recommence shortly. I intend to contact all volunteer listeners before recommencing experimental transmissions.

Although the response from volunteer listeners was very good inside the ground wave range, approximately 370 km, we have few volunteers outside this range.

For anyone interested in participating in these experiments, we would arrange listening times and call back frequencies for interested persons please contact J A ADCOCK, (03) 306 2069 QTHR.

There will be a full report of the technical aspects of the activity published when complete.

Yours faithfully,
John A Adcock
VK3ACA

ITEM OF VALUE

The Editor,

Dear OM.

May I reply to the sincere concern expressed by Alex McMurray VK2AEV in AR February 83 re a medical emergency he handled on amateur radio.

I think that Alex, with no marine background handled the situation very well. Commonsense is the basic essential and by phoning HMAS Albatross he had the experts involved immediately.

73
Don Hopper VK4NN

THANKS

Dear Sir,

This club expresses its appreciation of the fine work done by the Wireless Institute Civil Emergency Network (WICEN), and the State Emergency Service (SES), in providing communications during the recent tragic bushfires in South Australia and Victoria.

We congratulate all operators on the discipline, and high standard of operating displayed in supplying these essential communications.

Once again it has been shown that the amateur service, its operators, and their equipment can play a valuable part in any local, state, or national emergency.

Yours sincerely,
Warren
Secretary.
Moorabbin and District Radio Club (VK3APC)
PO Box 123
Sandy Bay
5/3/1983

The Editor,

Dear Editor.

The members of the Southern Branch, Tasmanian Division, of the WIA wish to commend you on the new format of the Amateur Radio Journal.

At each meeting the members always remark on the amount of content in your journal, and its presentation.

Yours faithfully,
Ian Hill
Secretary, Southern Branch, WIA

CABLE TV TRANSMISSION BEARERS
18 Ottawa Avenue, Moorabbin and District Radio Club (VK3APC)
PO Box 123
Sandy Bay
5/3/1983

The Editor.

WIA is currently making representations to ensure that amateur radio is not affected by the introduction of cable TV in Australia. In making these representations, some important comparisons between coaxial cable and optical fibre as a transmission bearer could be stressed.

Polyethylene dielectric coaxial cables, in diameters ranging from 5 to 10 mm, have attenuation constants ranging from 20 to 40 dB/Km at 10 MHz and from 60 to 150 dB/Km at 100 MHz.

Compare these coaxial cable figures to optical fibres, operating in the 1.3 to 1.6 micrometre wavelength region, which can now be made with an attenuation constant of less than 1 dB/Km and which can support signal bandwidths up to 1000 MHz.

As far as amateur radio is concerned, optical fibres have the important advantages that they do not generate electromagnetic fields and are immune to interference from electromagnetic fields.

Clearly, optical fibre is destined to beat coaxial cable as a transmission bearer, hands down. It would seem to be a lack of foresight if Australia allows yesterday’s technology, of a coaxial cable television system, to be introduced. Optical fibre technology is already here and Australian industry could well do with a programme to develop it for national cable TV.

It is not the prerogative of WIA to recommend whether cable TV is needed in Australia or
TECHNICAL CORRESPONDENCE

The Editor, 

Dear Sir,

With reference to Theo Vidler's (VK1KV) comments on 290R mods to stop the battery "blow ups", I would like to make the following points.

Upon inspection of my 290R I found a diode already soldered from the ext DC jack to ground. As pointed out this will provide protection except when used with (-) earth vec AC with the co-ax braid earthed. I consider this to be unacceptable and also VK1KV's mod to exacerbate an already over-tax battery system.

Battery volts = 8 x 1.5 = 12 volts from dry cells
Battery volts = 8 x 1.2 = 9.6 volts from NiCADs
Total Drop = 12 — 9.6 = 2.4 volts
Add 0.6 volt for diode fwd volt drop
= 2.4 + 0.6 = 3 volts

This causes a dramatic reduction in output power when portable.

A better solution is a small slide switch. The noise blanker switch on my R16 is usually left on so this would appear to be a suitable switch. Just connect in series with the batteries.

No damage to the set can occur if you switch it on with the batteries isolated. It just will not work.

In my view, the added inconvenience is justified by having full power available. Sure, you can forget to turn it off; but as I use my rig only occasionally portable this does not matter.

Yours faithfully,
Peter Laughton,
VK2XAN
IONSOPHERIC PREDICTIONS

NOTES ON THE PREDICTIONS

The mode of propagation used by IPS in compiling their predictions are reflected in the bar charts used to convert the Graflex symbols into a graphic picture.

When generating the Graflex charts (reproduced in a number of publications) the following symbols are used.

1 " " — Propagation is possible but probably less than 50% of the days of the month.
2 "%" — Propagation is possible between 50% and 90% of the days of the month.
3 "F" — Propagation is possible by the first F mode on at least 90% of the days of the month unless there is a severe ionospheric disturbance.
4 "M" — Propagation is possible by both first and second F modes. The strongest mode is normally the first mode, but the vertical aerial pattern may influence the mode received.
5 "A" — High absorption, ie above the absorption limiting frequency but probably too close to it for good communication.
6 "X" — Complex mixtures of modes including the second E mode.

These are the most significant types we encounter. The full lines or bars on the chart cover 2, 3, 4 taking 5 into account. The broken lines or bars are depicted by 1.
6 is extremely hard to verify and is not taken into account.

The paths from Eastern Australia are based on Canberra. The paths from West Australia are from Perth. Suitable allowance should be made on Eastern paths for geographical differences. Times, as much as 1 hour difference between Victoria and Queensland in band openings occur. Often there is no signal available in one State, whereas the opposite effect occurs in the other State, they get the lot. Marginal differences produced by layer tilt and varying degrees of ionisation can be very frustrating.

Generally the predictions show that time of day when the path should be open between the two areas. All other factors notwithstanding.

LEGEND

FROM WESTERN AUSTRALIA
FROM EASTERN AUSTRALIA
BETTER THAN 50% OF THE MONTH, BUT NOT EVERYDAY
LESS THAN 50% OF THE MONTH.

PATHS — Unless otherwise indicated (ie LP = Long Path) all paths are Short Path.

Predictions courtesy Department of Science and Environment IPS Sydney. All times universal UTC.
### GEOMAGNETIC ACTIVITY FOR YEAR 1982

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ACKNOWLEDGEMENTS: Sunspot Data, Sunspot Index Data Center, Brussels. Geomagnetic Data, IUGG Assoc. of Geomagnetism and Aeronomy, Gottingen.
A Coll to all holders of a
**NOVICE LICENCE**

Now you have joined the ranks of Amateur Radio, why not extend your activities?

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THE COURSE SUPERVISOR, W.I.A.
P.O. BOX 1066.
PARRAMATTA, NSW 2150

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**AIR-WOUND INDUCTANCES**

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<td>7”</td>
<td>No 3907</td>
<td>$7.20</td>
</tr>
</tbody>
</table>

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80-40-20-15-10 m Trapped Vertical

Base or Portable Self Supporting

**Still Only $89**

**Why pay approx $160 for imported types?**

**MULTIBAND BEAMS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Band</th>
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<td>CE-42</td>
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<td>CE3-11/10</td>
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<td>CE2-5</td>
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**Mobile Helicals**

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<td>80 m</td>
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<tr>
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<tr>
<td>15 m</td>
<td>6’6”</td>
<td>$27.50</td>
</tr>
<tr>
<td>10/11 m</td>
<td>6’6”</td>
<td>$27.00</td>
</tr>
</tbody>
</table>

We use only high quality components: .71 m wire, top loading, solid brass fittings with adjustable stainless steel tip and heavy wall heat-shrink tubing.

All available by mail order from—

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Versions also available for PET/CBM 3000, 4000 and 8000 series (includes SSTV send) — POA.

**HIGH TECHNOLOGY COMPUTER SYSTEMS PTY LTD**

87 Swan Street, Richmond, Vic 3121 ph (03) 429 1966 ask for Mike VK3BHM or Joel VK3ZKE
John Graham. G3TR.

finally being elected President during 1968.

made In his 38 years of operating. I am sure he is

announcer In the late 1940s, on Divisional Council,

trying to beat Len Moncur's VK3LN family to the

a 'home-brew' amateur, he converted to OSB when the

Type 3 Mark 2 land occasionally an 'A' Mk 3). Always

B3. He was educated as a Civil Engineer at Melbourne

become Involved in the administrative side of

on the Antarctic Continent.

(3F0J. teaming up with the late Jack Ouncan (3VZ)

holder), he was well known on 80, 40 and 20 with his

sets and mainly hand built components. Licensed in

thousands ol VK/ZL contacts.

outstanding UK signals on 20m, resulting in

haar oi the passing, whilst on holiday in Tenerifle. of

1980s as his son Don (ODS) spent two separate years

in the 1950s: and his respect for the magnificent

Indeed he used to drive Riley cars at Brooklands in

everything connected with aviation.

fishing and a long association with motor racing.

arees as he moved around with his work.

John's many hobbies in earlier years included

flashing and a long association with motor racing.

indeed he used to drive Riley cars at Brooklands in

the heyday of that particular track. His other interests

included ballroom dancing and a lifelong interest in

following retirement John had more time to

Following retirement John had more time to

become Involved in the administrative side of

amateur radio and served on many R66B committees,

finally being elected President during 1968.

More recently, John was heard daily on the 20m

band where he particularly sought out VK/ZL contacts.

John is survived by his wife Elma, son Eric and

dughter Britt to whom we offer sincere condolences.

20m is just not the same without his voice.

Ron VK0BV

ALF SEEDSMAN VK3IE

All was born in 1904 and passed away 8 January

83. He was educated as a Civil Engineer at Melbourne

University, and experimented since his late teens

with spark transmitter and later with single valve

sets and mainly hand built components. Licensed in

1947 as VK3IE (succeeding the late Jack Mann as call

holder), he was well known on 80, 40 and 20 with his

Type 3 Mark 2 (and occasionally an 'A' Mk 3). Always

a 'home-brew' amateur, he converted to OSB when the

move away from AM set in. It was only in his last three

years of operating that he used a commercial unit.

Some of his fondest memories were the 80 metre

triumphs of —

Silent Keys

It is with deep regret we record the passing of—

HAROLD WEBBER VK3PW

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Please write copy for your Hamad as clearly as possible, preferably

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• Eight lines free to all WIA members. $9 per 10

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• Copy In typescript please or in block letters

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and price list send 105 x 220 SASE to: R. J. & U. S.

Imports, Box 157, Mortdale, NSW 2223. (No enquiries

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YAESU FT-700 — If it can be done, I would like

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Paul Casotti. 120713; Box M50, Post Office, Newtown South. 2042. NSW.

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QTHR or Ph: (065) 62 5547.

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TRANSEIVER — AM only needed by student for

experiments. Will pay any realistic price — 6 or 2

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Yaesu FRG 7700 to a 24-hour clock. Prepared to pay.

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Metres. VK3BA QTHR.

MOTOROLA MPU CLOCK type MC6871, frequency

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QTHR. Ph: (03) 569 4275.

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S500. Icom 2602 A 6 m all mode 10 W S250. Glen

VK1KAA QTHR. Ph: (062) 54 8002.

FT101B good cond $450 ONO. FT650B. T/V, good

cond $120 ONO. VK1EP QTHR. Ph: 49 6437.

AMATEUR RADIO, May 1983 — Page 55
FOR SALE — NSW

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KENWOOD TS-820 with digit display and DC-DC inverter $750, SP-820 speaker with 3 switchable filters $40, Kenwood LF-30A low pass filters X2 $20 each. Shure 444 imped mic $45, Emotator 103LBX Medium Duty rotator inc cable $90, Hidaka VS-33 el tri-band Yagi 14 ft boom inc balun $200, 30 ft free standing tower with 1/2 ins water pipe extension $10 long $60, Transistorised sig gen $400, 15-30 MHz, S5, partially complete HF Linear designed around two 3-500Z, includes blower and separate HV 3000 V 1 amp power supply $100, photographic enlarger LPL-35 with 50 mm 13.5 lens inc 6 x 8 x 10 easel $60. Apply VK5FF. Ph: (085) 84 6260.

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Yaesu FT440 $600, FT7 $350, FL110 linear amp $200, Philips FM 321 Txcvr $200. VK2DKP QTHR. Ph: (049) 94 9627 AH.

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ADVERTISERS' INDEX

BAIL ELECTRONIC SERVICES ........ 1FC
BILL EDGE'S ELECTRONIC AGENCIES 2
BRIGHT STAR CRYSTALS .......... 2
C W ELECTRONICS ................. 3
CHIRNSIDE ELECTRONICS PTY LTD 54
EASTERN COMMUNICATION CENTRE 35
EMTRONICS .......................... 23
GFS ELECTRONIC IMPORTS ........ 36
HAMRAD .............................. 51
HIGH TECHNOLOGY COMPUTER SYSTEMS PTY LTD 54
IAN J TRUSCOTT ELECTRONICS .... 51
ICOM AUSTRALIA PTY LTD ....... BC
NOVICE THEORY — G Scott & A Brucesmith ....... 3
R F INDUSTRIES .................... 5
SCALAR GROUP ................... IBC
TRIO-KENWOOD (AUSTRALIA) PTY LTD .... 4 & 17
VICOM INTERNATIONAL PTY LTD .... 3
VK2 WIA NOVICE LICENCE ...... 54
VOLLER TRANSFORMERS PTY LTD 53
WATCHMAN ELECTRONICS ........ 5
WERNER & G WULF .......................... 51
WILLIAM WILLS & CO PTY LTD .... 54
YAESU'S NEW HF TRANSCEIVER

FT-77 HF TRANSCEIVER

Featuring efficient, all solid state, no tune circuitry, the FT-77 offers a nominal 100 watts of RF output on all amateur bands between 3.5 and 29.9 MHz, including the three new WARC bands. The new CAD/CAM* techniques plus the simple design of the FT-77 add up to one of the smallest, lightest HF transceivers ever, both in your hands, and on your wallet.

The front panel control layout and operation are actually simpler than some VHF FM transceivers, with only the essential operating controls. Nevertheless, all of the essential modern operating features for HF SSB and CW are included, along with extras such as dual selectable noise blanker pulse widths (designed to blank the woodpecker or common impulse noise), full SWR metering, and capabilities for an optional internal fixed-frequency channel crystal, narrow CW filter and FM Unit.

Computer-aided design of the circuit boards in the FT-77 ensures the most efficient component layout possible in the smallest space, while automatic parts insertion and soldering greatly diminish the chance of human error. Reliability and quality control are thus improved and simplified beyond the degree previously attainable in amateur equipment.

The extremely compact size and simple control layout make the FT-77 ideal for mobile operation, or as a complete base station with the optional FP-700 AC Power Supply, FV-700DM Digital Scanning VFO and Memory System, FTV-700 V/UHF Transverter and the FC-700 Antenna Tuner.

FT-77
- ALL AMATEUR BANDS
  3.5 to 29.9 MHz (including WARC)
- CW, SSB MODES (FM optional)
- 100W OUTPUT
- WEIGHT: 6 kg
- SIZE: 240(W)x95(H)x300(D) mm, including heat sink

FP-700 AC POWER SUPPLY

FT-700 V/UHF Transverter and the FC-700 Antenna Tuner.

* Computer-Aided Design/Computer-Aided Manufacture

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Telephone: (057) 21 6260 — Telex: 56880
Compact.
Only 3.7 in (H) x 9.5 in (W) x 10.8 in (D) will fit into most mobile operations (compact car, airplane, boat, or suitcase)

Affordable.
Priced right to meet your budget as your main HF rig or as a second rig for mobile/portable operation.

Convenient.
- Unique tuning speed selection for quick and precise QSY, choice of 1 KHz, 100 Hz or 10 Hz tuning.
- Electronic dial lock, deactivates tuning knob for lock on, stay on frequency operation.
- One memory per band, for storage of your favorite frequency on each band.
- Dual VFO system built in standard at no extra cost.

Full Featured.
- 200W PEP input—powerful punch on SSB/CW (40 W out on AM)
- Receiver preamp built-in • VOX built-in
- Noise blanker (selectable time constant) standard
- Large RIT knob for easy mobile operation
- Amateur band coverage 10-80M including the new WARC bands
- Speech processor—built-in, standard (no extra cost)
- IF shift slide tuning standard (pass band tuning optional)
- Fully solid state for lower current drain
- Automatic protection circuit for finals under high SWR conditions
- Digital readout • Receives WWV • Selectable AGC
- Up/down tuning from optional microphone
- Handheld microphone standard (no extra cost)
- Optional mobile mount available
Concluding — TO HEARD & BACK
— RF RADIATION

Mini Report — 47th CONVENTION
AMATEUR TV goes Bush

Rules for 1983 RD CONTEST
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- USB, LSB, FM, CW modes
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- 11 memories store mode as well as band
- Programmable limited band seen between memories
- Satellite I.F. unit (optional) for full duplex cross-band
- Squelch on all modes
- GaAs FET RX pre-amp in 70 centimetre unit

FT980 HF ALL MODE COMPUTER AIDED TRANSCEIVER

- Built-in computer control using 8-bit microprocessor (80C85)
- General coverage RX 150KHz-29.99mHz
- Power output 100 watt SSB, CW; 25 watt AM; FSK
- Two independent RX front-ends using JFets
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- Rear panel connections for transverter, linear amplifier and external microcomputer interface

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... in this issue ...

Murphy Strikes ................................................................. 53
Old Timers Meet Again ......................................................... 37
Radio Amateur Old Timers Club .......................... 25
by John Tutton VK3ZC
The Fisk Trophy by Peter Brown VK4FJ ................................. 46
To Heard and Back by Dave Shaw VK3DHF/VK0HI .............................................. 14
Update on Stolen Equipment ................................. 55
WCI Celebrations in VK4 ................................. 37
Who is this Amateur? by Peter Brown VK4FJ ................................. 40
A word from your EDITOR .............................................. 9
Advertisers Index ......................................................... 64
ALARA ................................................................. 45
AMSAT Australia ................................................................. 52
Awards — Aust Amendments & Frankston and Mornington ................................. 34
Peninsula Award ......................................................... 24
Club Corner — Repeater Group ......................................................... 42
Contests — Rules for 1983 RD ................................................................. 48
NZART Memorial. Results Asian ......................................................... 56
& John Moyle ......................................................... 56
Education Notes ................................................................. 56
Five-Eighth Wave ................................................................. 48
Forward Bias ................................................................. 56
HAMADS ................................................................. 63
Here's RTTY — Mechanical ................................. 36
Reception of RTTY ................................................................. 36

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<table>
<thead>
<tr>
<th>No.</th>
<th>Volts</th>
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Built into the IC-720A are CW, AM, single sideband, and RTTY modes. Two VFOs, data transfer between the modes, receiver incremental tuning, selectable AGC, capability for Simplex or Duplex operation between the VFOs and pushbutton control of the band in use, plus general coverage reception of 0.1MHz to 30MHz.

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ONLY $1199

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The R70 is an ideal general coverage receiver to complement any ham shack. Use it with your existing transmitter or transceiver to provide dual receiver capability.

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An option for FM allows listening to the 10 meter FM activity.

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- Adjustable AGC With Off
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500 watts of output power give the needed punch, in a small package, to make those QSOs when the going really gets rough. ICOM's exclusive heat pipe cooling system allows smaller construction.

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FIVE BAND HELICAL-TYPE HF MOBILE ANTENNA $133

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- 5 band operation with supplied elements (80, 40, 20, 15 and 10 meter bands)
- Easily adjustable center frequencies
- FRP (fiberglass reinforced plastic) covered antenna elements
This figure shows what the antenna should look like when assembled.

**6 Element**

**26-28MHz**

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ANTENNA COUPLER

The FRG 7700 works with many types of antennas, but best with a low impedance one. This coupler ensures optimum performance always.

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Cat D-2842

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- Ruggedly made rotator with massive disc brake
- Control box with bearing indicator

Cat D-5000

Approved Supply (D-5002) $27.50

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Dick Smith Electronics

See page 98 for full address details
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With Daiwa rotators you have the advantage of control boxes with maps centred on Australia! The best way to get you going in the right direction.
Daiwa rotators offer you quality and innovation. And Daiwa rotators offer you all the choices you need.

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There is a round controller (Type R) which is a great-circle map centred on Australia, with area prefixes and paddle-switch control.
Or you can choose the pre-set controller (Type X) which allows you to pre-set the control area you want to work.

&&& AND A CHOICE OF MEDIUM OR HEAVY-DUTY ROTATORS

You can choose a Medium Duty Rotator (Model 7500) or a Heavy Duty Rotator (Model 7600). The medium duty rotator will handle the average beam with ease. The heavy duty rotator is designed to handle larger amateur and commercial beams and arrays. Compare these specifications.

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<th>Medium Duty</th>
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<tr>
<td>Motor</td>
<td>24V</td>
<td>24V</td>
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THIS GIVES YOU A CHOICE OF FOUR DIFFERENT COMBINATIONS . . . TO SUIT YOUR OPERATING STYLE

DR7500R MEDIUM DUTY; PADDLE SWITCH CONTROL BOX.
DR7500X MEDIUM DUTY; PRE-SET CONTROL BOX.
DR7600R HEAVY DUTY; PADDLE SWITCH CONTROL BOX.
DR7600X HEAVY DUTY; PRE-SET CONTROL BOX.

Daiwa rotators are made by the innovators who brought you cross-needle meters. They offer long life and quality Daiwa construction, and are the result of a considerable amount of research.

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Amateur Radio is now halfway through the year. The magazine needs many things to keep up the standard. Two very important requirements are advertising and articles.

You can help make the magazine a success by supporting our advertisers. When you buy equipment say you saw it in Amateur Radio. If you know of any potential advertisers then let Amateur Radio's advertising manager know. Every advertisement helps the production team to put more articles in the magazine.

The other way you can help make Amateur Radio live up to your expectations is to submit articles. Articles are always required. It may be a short article on something you have built or modified right through to a major technical article. Articles on subjects of general interest to amateurs are also welcome.

Photographs are very welcome. They help to illustrate and enliven articles. Photographs of amateurs and amateur radio events are of interest to many readers. Both slides and prints are usable. With your help the production team can make Amateur Radio even better in the second half of 1983.

Gil Sonex VK3AUI
Editor

INTERNATIONAL NEWS

AMATEUR RADIO SATELLITE SESSION SCHEDULED
The XXXIVth International Astronautical Congress, organized by the International Astronautics Federation and scheduled for Budapest, Hungary, on 9-15 October 1983, will include a technical session devoted to amateur radio satellite systems. Mr Jean Gruau, F8ZS, and Dr Andras Gschwindt, HA5WH, will serve as co-chairmen of the session.

CHILE: POSTAGE STAMP ISSUED TO COMMEMORATE 60TH ANNIVERSARY OF RCC
1982 was a special year for Radio Club de Chile, which was founded on 12 July, 1922. In commemoration of the 60th anniversary of RCC, Empresa de Correos de Chile issued a special postage stamp on 29 December, 1982.

The motif is... in the foreground a dove in upward flight; to the left an antenna tower with the logotype of RCC at the upper end; and in the lower corner to the right a fragment of the terrestrial globe. On the lower edge of the stamp are in two lines "RADIO CLUB DE CHILE • 60 ANOS" and "AL SERVICIO DE LA COMUNIDAD". The stamp price is 7 pesos.

CANADA: SPECIAL WCY PREFIXES
To commemorate the World Communications Year, Canadian amateurs will be permitted to use the following special prefixes between 17 May and 17 July, 1983.

CM Newfoundland (V01)
CI2 Labrador (V02)
CK1 Yukon Territory (VY1)
CY1-8 other provinces (VE1-8)

David Sumner K1ZZ

WANTED

CONTRIBUTING EDITORS

Amateur Radio requires a contributing editor for the monthly column "AMSAT Australia".

Also, contributing editors are required for two proposed columns — "SSTV" and "Computer Use in Amateur Radio".

More details are available from: The Editor, PO Box 300, Caulfield South, Vic 3162.
A Birds Eye View of the 47th WIA Convention

Brief Report of the 47th WIA Annual Convention

The 47th Annual Convention of the WIA was held over the Anzac Day weekend in Melbourne. Eighteen councillors, alternate councillors and official observers attended the intensive three day, live in session, to discuss policy items and matters of concern to the Australian amateur. The executive and several visitors also attended at various times.

As well as the usual reports of the President, Treasurer and various other sections of our diverse hobby, thirty agenda and general business items were discussed in depth.

Possibly the most intensive discussion centred around the WIA submission to the proposed Radio Communication Bill. It was acknowledged that we are indeed fortunate to be given an opportunity to be able to comment on a Parliamentary Bill prior to having been debated in Parliament itself.

In fact, the very existence of the new Radio Communication Bill would be one of the most important matters to affect the Australian amateur, therefore it was essential that we utilised all available avenues to assist the WIA in its submission.

In this regard we owe a special debt of gratitude to Michael Owen, VK3KI and George Brzostowski, VK1GB for their special expertise and the tireless and much pressured CASPAR committee for their work in gathering information from each division and collating it within the short time constraints imposed upon us. (Refer May AR.)

It is worthy to note here that Dave Shaw VK3DHF/VK0HI was awarded a special certificate of achievement from the VK6 Division acknowledging his efforts and activities during the recent Heard Island Expedition.

At the Official Dinner the convention welcomed Mr John McKendry from DOC in Canberra and Mr Gavin Brain, DOC in Melbourne, as the special invited guests. We were pleased to receive further confirmation that the WIA is held in extremely high regard within the Department of Communications and ministerial areas.

In a light hearted manner the executive presented a special award to Neil Penfold VK6NE, the VK6 Federal Councillor, entitled the ARAORP (Australian Radio Amateur Order of the Raw Prawn) for services rendered to the Executive causing the most heartburn in respect of the Heard Island Expedition. The award consisted of a jam tin mounted on an irregular shaped piece of chipboard with a wooden spoon (for stirring) inserted in the jam tin.

A more detailed report of the convention proceedings will be published in Amateur Radio at a later date.

Bruce Bathols VK3UV
Federal President

Captions: 1. Members of Executive at Convention Table. 2. Neil Penfold accepts the ARAORP award. 3. Peter Fudge and Courtney Scott. 4. VK5 Councillors. 5. John McKendry, Assistant Secretary — DOC, speaking at Official Dinner. 6. Gavin Brain, Manager Regulatory Branch — DOC and Reg Macey, Secretary/Manager — WIA. 7. Tony Tregale, Alan Foxcroft and Bill Rice at Convention.
ANOTHER USEFUL MULTIBAND ANTENNA — THE DELTA LOOP

Guy Fletcher VK2BBF
Courtesy QUA (Hornsby & Districts ARC), January '83

The original idea for this antenna came from RadCom a year or two ago. Having reached Mark 6 in my search for a compact versatile and effective HF antenna, I tested and developed this antenna and have used it happily for about two years now.

My restrictions include the need for an unbalanced coaxial feed through a hole in the wall of the house and a maximum length of the antenna top of about 8 m. The open-wire feeder is home-brew using perspex spacers about 10 cm long. The balun is a commercial type. Tests show that the balun is reasonable from 3.5 to 21 MHz, but drops off at 28 MHz in that the transformed feed impedance is rather higher than it should be. The feeder and antenna are made from 16 SWG hard-drawn copper wire.

The resonant length of a full-wave loop in metres is given by:

\[ L = \frac{306.3}{f(MHz)} \]

This is slightly longer than one wavelength which is \( \frac{299.6}{f(MHz)} \) m.

The exact lengths of each side of the loop are not critical. I use 8 m for the top and 6.86 m for each side. The open-wire feeder is one half-wavelength long at 14.1 MHz which is 10.63 m. On 14.1 MHz the feed impedance at the base of the loop is expected to be about 100 ohms (Ref 1). After one half wavelength of open feeder having an SWR of 6:1 but negligible loss the balun transforms this to ¼ x 100 = 25 ohms. A tolerable match with an expected SWR of 2:1 to a short length of 50 ohm coax. The ATU can well cope with such high values. But the ATU copes easily to present 50 ohms to the transmitter.

Again treating the whole 40 m perimeter of the loop plus feeder this total length is 3 wavelengths on 21 MHz and 4 wavelengths on 28 MHz giving low-impedance feeds on both bands at the balcony. Probably around 200 ohms and 400 ohms respectively. The balun brings these down to 50 ohms and 100 ohms with expected SWRs of 1:1 and 2:1 respectively on the short length of coax. The balun is a commercial type. Tests show the balun transforms this to exactly 50 ohms for the transmitter.

Finally on 3.5 MHz the loop plus feeder perimeter is one half wavelength and the balun sees a very high impedance, probably about 4000 ohms. Even when this is reduced by the balun to ¼ x 4000 = 1000 ohms this impedance is not very satisfactory for the coax with an SWR of 8:1. Although the balun has too few turns for a voltage rating to be used at a low-current high-voltage point in the feeder it copes quite well. However, the feed impedance at the ATU is still high at maybe 500 ohms and complex (capacitive). The ATU cannot cope alone with this at any settings but with the addition of a simple inductive stub to tune out the capacitance it works fine. This stub consists of a short length of 10 m of 50 ohm coax connected directly across the output of the ATU only on the 3.5 MHz band using a coaxial T-connector.

Another alternative frequently suggested for this kind of situation is to tie the two feeder wires together and feed the whole system as a single wire against earth. I have tried numerous antennas fed against earth and found them all very unsatisfactory especially on transmit unless a very good earth system can be devised. I have been unable to make a sufficiently good earth in my location with the result that most of the transmitter output power went into heating the garden. Balanced antenna systems are much superior or you might try the use of counterpoises or equivalent arrangements not fed against earth.

How does it work out in practice? Of course the system will not perform as well as a beam although it does have some directional characteristics. It seems to work well on all bands and perhaps even on 10 MHz. I have no trouble working most stations even into Europe on 21 and 28 MHz and with a little more trouble 14 MHz. The whole antenna incidentally is surrounded by tall trees and high buildings though the take-off west and north is reasonable.

As to its directional characteristics, on 14 MHz it is simply the driven element of a quad antenna, radiating broadside horizontally polarised. On 28 MHz theory suggests that it should radiate best off the ends with vertical polarisation. On 21 MHz off the ends with vertical polarisation and broadside with horizontal polarisation. On 10, 7 and 3.5 MHz it should radiate mostly broadside (horizontal) but a little off the ends (vertical). These calculations were based on the simpler-to-analyse square loop. When I can find time to reprogramme the problem for a triangular loop, I expect to get essentially similar results.

REFERENCES
1 ARRL, Antenna Book.
AMATEUR TELEVISION GOES BUSH

Dick Robbins VK3ARR/W8VNE
P.O. Box 5, Altona North, Vic. 3025

Bill Magnusson, VK3JT, is quite a bush man and is often looking for venues for taking his students canoeing or for good VHF locations. About five years ago, when I was getting interested in 426 MHz TV, Bill suggested a spot in the Eastern Alps and I went along, taking a yogi, TV transmitter with a free running oscillator on 426, and a "cheapo" camera. Thus began the "Annual ATV Bush Expedition".

Received picture from VK3ZSD in Geelong, a distance of 200 km.

Although only a week-long expedition, we tried numerous locations and eventually realised, by some strenuous map work, that when we were in line with the Yarra Valley we had an excellent path for UHF communications back to Melbourne.

On the first expedition, the TV contacts were as primitive as imaginable. One night a QSO with Les Jenkins, VK3ZBJ, at Frankston we used a hurricane lantern for light, and Bill's black dog was no help for photogenics. A 12V fluorescent light has become part of more recent ventures and even a cheap B/W portapack was helpful in providing day time recording, and then the evening broadcasts didn't require any lighting.

Erecting the 23 element, 426 MHz quad.

The year for bigger and better antennas became the fad which keeps motivating expeditions. The phased array 2.5 metres square, although an inconvenient size, gave us the biggest thrill — a three hour contact — and points for the Ross Hull Contest for Ray Naughton, VK3ATN, at Birchip. This 360 km contact, with a picture quality of 2 to 3, ran for three hours and began at 10.00 AM, and Ray was using only a basic converter. The confidence builder was all the regular contacts of 160 km (100 miles) with western suburbs stations — Phil VK3AWG, George VK3LA, Cole VK3 and the ATV core people, Ron VK3AHJ, Ian VK3ATY and Ian VK3ALZ. Sylvester VK3ZSD at Geelong, nearly 200 km distance, was an encouraging regular with often breathtaking results.

Constructing the 2 m Quad are Damian Smith, George Bollas, VK3LA and Greg Oddo.

Upscope — 426 MHz quad.

The 1982 expedition expected visitors — a group walking the Alpine Walking Track. These dedicated walkers, mostly from the Frankston area, were provided with a chance to talk with their loved ones and friends. With everyone there, the population grew to eighteen and the track's campsite provided their last "refuelling stop". What a delightful symbol the camp fire provided that night. One of the walkers retorted that...
he always had a negative reaction to aerials, but seeing ours on this event was a most welcome sight.

The 1983 expedition is looking for more of the usual fun well into the Alps, but in line with the Yarra Valley. 426 MHz is on again. Very long quad yagis are the antenna extravaganza for the 70 cm and 2 m bands — extravagantly 6 and 4 metres in length. I am currently using both of these aerials and I would be pleased to demonstrate them if called on 147.80 MHz most evenings.

**Method of transport for “The Flying Bedstead”**

How about a challenge in the spirit of good fun and real amateur radio? How about you taking some simple 426 MHz TV gear, even if only an aerial, TV set, and find a spot out in Western Victoria, and let’s give it a go? Did you give yourself an early Christmas present? Yes, did you invest in the finest preamp there is? One of those 432 MHz GaAs FET’s that Ian, VK3ATY, and Howard VK3ZJY, are selling at a bargain. This will be a respectable opportunity for you to prove to yourself that, with reasonable equipment (even without a GaAs FET) 250 km is a very respectable distance for 70 cm communications without a lot of hard work. Why not give your receive system a big ego trip this year. After all, 12V converter, 12V TV set, 12V preamp and 12V car battery are a great combination.

Let us hear from you on 147.80 MHz and give us the opportunity to send you a picture and even receive one from you.

**Percy Wood VK4RO 1930**

Yes Percy commenced experimenting with radio when he was but nine years old in 1918 and his father obtained an experimenters licence from “Mr J. Malone . . . Melbourne” not long afterwards in 1919. In 1922 Perc would travel by train from Ipswich to buy parts from Price’s Brisbane store but he averts that Homecrafts in Melbourne was the place to buy.

In his younger days he had a very free run of workshops and could actively experiment in radio and his broadcasts and aerials brought support from interested people in the form of books, parts and gramophone records.

Early in life Perc began his own radio and electrical business and Perc can tell of operating 4PW from City Chambers, in Ipswich, and using the Central Hotel lounge for live performances, one of which brought “Smith’s Weekly” reporters from Sydney for three quarters of a page including photos. Also a concert broadcast from the North Star hotel must have been one of the few occasions, in those days, when a rented PMG line was used for amateur radio.

Most of those performances were for charity especially during the depression years.

Fortunately Perc likes writing, as may be shown by articles in “Queensland Times”, and he will be compiling notes on amateur radio as he knew it many years ago. These notes will be well worth reading.

Perc not only keeps his “hand in” restoring old radio sets but has a fine workshop where he constructs working models of steam engines.

Still a keen golfer he won the Eric Scott cup in 1967 and twice won the Ipswich (UK) silver cup which is another story. A proud achievement was a two way contact with Commander Byrd’s second expedition, WFA, in the 1930s.

In retirement Perc overlooks the most popular series of beaches in Australia.

**A T Bauer. 4AT, 1927.**

Alf was operating 4QG, Brisbane, on top of the old State Government Insurance Building, from the time of the high power installation to the “take over” by the ABC.

Later joining G J Grice, he was radio servicing in Cairns for some years. At that time he had a permit and broadcasted for several hours daily, using the firm’s record library. The only publicity allowed was “owned and operated by A T Bauer, C/o G J Grice Ltd, Shield St, Cairns”.

During the war Alf was a technical Radar Officer when such was security that all instruction books were burned after courses.

Later Alf joined DCA maintenance, then OIC Radio Workshops and Test Equipment pool, then retired OIC Materials Inspection Section all of which Alf enjoyed because of the interesting equipment involved.

In his active amateur days Alf and 4HG would go to Bribie Is with guitars and a bank of accumulators, supplied by Willard Motors, and play to the boys at Wheeler Field, Hawaii.

Alf is proud of copying Kingsford Smith, during his Pacific flight, from 4QG which was radiating 5 kW, through all the harmonics. Later Alf went to Eagle Farm with transmitting gear to broadcast the arrival.

Alf remembers when broadcasting a Dame Nellie Melba concert from the Museum Building he was asked to walk Dame Nellie to the mike. This was the only broadcast in Australia.

Alf’s main retirement hobbies are bowls and gardening.

**AMATEUR RADIO, June 1983 — Page 13**
To Heard and Back

Dave Shaw VK3DHF/VK0HI,
9 Milton Street, Heathmont 3135

Concluding.

Story so far:

On 31st December 1982 the Anaconda II set sail from Perth — destination Heard Island. All on board did shifts of sailing the yacht and many lessons were rapidly learnt.

Eighteen days out from Perth they anchored at Kerguelen Island for a few days break. Whist there, the radio ops had the opportunity of using Michel's, FB8XAB Station to get a little practice for the onslaught once on Heard.

A couple more days sailing saw our intrepid venturers arriving at Atlas Cove. HI.

Now read on:

Even though we arrived in the early evening with the sun just setting, three of the mountaineers managed to get ashore in the failing light. The next day, which couldn't come soon enough for us all, saw a hive of activity on the boat, in fact during the night there was no shortage of people for the anchor watch.

Al and I were in the third load ashore. The conditions at Atlas Cove were perfect with very little swell or wind to worry us. First ashore came the food and bedding for us for the next month, then the transceivers and other electronic equipment. A quick break for lunch and then back to the beach for the two large drums of diesel fuel and the two 3 kVA generators.

The old ANARE base at Atlas Cove is in various stages of disrepair, only three French ARBEC huts from the joint Australian French expedition in the 1970s, are in good condition.

With the generators running sweetly, the Butternut vertical antenna and an Icom 740 transceiver were unpacked, assembled and tested. We did have a bet with some of the mountain climbers about how long from our first CQ to our first QSO, we lost by ten seconds. The contact took forty seconds to establish and was with Hugh VK6FS, the next contacts followed quickly with Ken VK3AH and then Zedan JY3ZH. It did not take long and the "pile ups" had begun.

While I continued for a while on 20 metre SSB, Al was busy unpacking and establishing the rest of our superbly packed equipment. (This job was to take the next few days, but by the 21st we were on the air in earnest). Al and I took turns at the rig for the rest of the night as after carrying loads up from the beach each day, any rest from operating was very welcome.

The next day saw one of us at the transceivers all the time when the bands were open, with the other helping to get supplies and equipment ashore. The aerials and masts arrived ashore during the morning but did not get up to the shack.
until later in the afternoon. With the incessant rain, everything to be landed on the beach from the Anaconda assumed a list of priorities, transceivers being moved straight to the hut, then bedding and food.

Al operating whilst Dave helps bring more equipment ashore.

Operating routine is established

Because of the amount of gear on the Anaconda, the arrival of equipment and supplies was at times not in accord with our immediate needs. Those on the vessel however had the job of sorting gear and equipment to stay at Atlas Cove or be taken down the island for the mountain assault.

With the typed waterproof check list prepared by the VK6 DXCC group and constant communications with the boat, by the end of the day everything to assure a successful expedition had been delivered ashore.

By now we had some 3000 contacts in the logs and were both keen to see the beam erected. Although without a beam we had established our operating routine to fit the conditions. North America opened between four and six o'clock in the morning (2300 and 0100 UTC) to drop out at about 1100 local (0600 UTC). Then there was a quiet period until our sched with the VK6s and the rest of those amateurs involved across Australia at 1030 UTC. After reporting progress, the band was generally open to Japan and Australia then until about midnight (1900 UTC) we worked into Europe. Most of the operating was concentrated on 20 metres as 15 metres opened only occasionally with ten being even less useful.

During our first three days assembly of the station and our living quarters was our prime concern. The third day saw the assembly of our triband three element Wilson System 3 beam. This had been specially strengthened by Don VK6DY so that it would survive the rigors on Heard. The beam and the mast, came with extensive instructions, with everything being ready to erect in about three hours.

We grabbed every person on the island to assist. Personal opinion is that it was the excess of willing hands which saw the tower neatly bend almost in two at our first attempt at its erection.

The mast was quickly straightened and strengthened with scrap steel sections found around the island within the hour. The second attempt saw our beam standing erect with no apparent ill effects from being bent.

Dogpiles prove indeed to be just that

The mast used, a Hills telemast, was steel guyed to teflon bearings at the top and halfway up. The rotator was located at the base and beam and mast rotated simultaneously. This system reduced the weight and wind loading to add to its reliability.

With our main aerials now erected, another transceiver was unpacked and all other work except eating was discontinued while propagation was open.

The "dogpiles" were indeed that and in those first hectic days it was not uncommon to have 60 to 70 kHz of twenty metres taken with people calling us and still only to have a contact a minute by deciphering two letters of a call.

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The assembly of our whole station continued over the next week. When complete we were equipped with:
1 IC740 with inbuilt keyer for CW.
1 IC730 for SSB.
1 IC720A as backup on battery and also for checking propagation.
1 TS660 for listening on 10 and 6 metres.
1 FT680 for transmission on 6 metres.
2 LA1000 linear amplifiers and one 6 metre 100 W linear amplifier.
1 Rotatable Wilson System III Beam (strengthened).
1 20 to 10 metre log periodic beaming on Europe.
2 Vertical antennas.
2 Daiwa antenna tuners.
2 Dipoles (one each on 40 and 80 metres).
2 3 kVA Dunlite generating sets.

Three IC730s were kept in reserve and fortunately were never needed. This equipment was all new and had been soak tested by the DX group prior to departure. Most of our equipment was purchased with money donated from the various WIA divisions with the equipment to be returned to them after the completion of the trip, although some was bought by the VK6 DXCC to be resold on return.

After seeing our beam and equipment brought up and assembled the mountaineers departed for their objectives on the island. The first of these was a planned landing on McDonald Islands, which were adjacent to our base island. Unfortunately conditions did not allow this. The next day saw their landing on Shag Rock. This was the first ever landing on this outcrop and was appropriately done on Australia Day the 26th January.

They then moved onto Skua Beach, their permanent base camp for the future assault on Big Ben. The weather was again favourable and by that night the Anaconda was at anchor in Atlas Cove.
The "antenna farm" on Heard Island. The 6 m beam has an American and an Australian flag flying below it.

As the mountaineers ascended the mountain, Al and I worked steadily at achieving as many contacts as possible for our time on the island. We did not have much time for looking about or appreciating the island, but when going out to fill the generator on our first day and seeing the mountain, it was hard to get back to the transceivers.

The 3000 metre snow and ice covered volcanic mountain Big Ben, dominates the whole island, with its many glaciers flowing down to the sea. The only flat land is the narrow strip around the coast where old receded glaciers have been and around the Laurens Peninsula.

The mountaineers attained their goal.

light show of the Aurora Australis.

Anaconda returns from a heat wave at Kerguelen

Five people in all reached the top, two on the first day and three on the second then unfortunately the weather turned too warm and the climbers had to descend. The warm weather caused the snow across the mountain to wash away leaving the heavily crevassed ice slopes unsuitable and unsafe for climbing. This stopped the Austrian mountaineers from the Cheynes II reaching their goal.

The Anaconda now departed to the safety of the harbour at Kerguelen Island and Al and myself were left to await the arrival of the Cheynes II. They arrived on the 6th February with objectives similar to our own. Aboard were mountaineers, scientists and their own amateur radio group. Their amateurs set up approximately 400 metres from us in one of the ARBEC huts and soon more aerials were sprouting on the island. The scientists set up on the other unoccupied ARBEC hut about ten metres from us and once again the base was a hive of activity.

Because of the solar activity our contact rate dropped to about a quarter or half of that when we first activated the island. At night we were greeted with the magnificent island and during the next couple of days we managed to see and photograph this isolated area. The island abounds in wildlife and a short walk from our hut were large numbers of elephant, fur and leopard seals. While around the coast there are rookeries of several penguin species. As the wildlife is unused to seeing humans they have no fear of us and walking through them is an experience that we felt privileged to experience.

Some very friendly wild life.

The Anaconda now departed to the safety of the harbour at Kerguelen Island and Al and myself were left to await the arrival of the Cheynes II. They arrived on the 6th February with objectives similar to our own. Aboard were mountaineers, scientists and their own amateur radio group. Their amateurs set up approximately 400 metres from us in one of the ARBEC huts and soon more aerials were sprouting on the island. The scientists set up on the other unoccupied ARBEC hut about ten metres from us and once again the base was a hive of activity.

Because of the solar activity our contact rate dropped to about a quarter or half of that when we first activated the island. At night we were greeted with the magnificent
the twisting motion of the wind that brought them to grief.

As the log periodic had already been taken down the only aerials left standing were the dipoles and the 6 metre Werner Wulf beam with the Australian and American flags flying beneath it.

As the Cheynes was leaving the next day with no sign of the weather improving, our captain radioed to enlist the aid of their small boat and we could leave also. We managed to get most of our equipment off with their help. Our two inflatable rubber boats were still at Skua Beach with the mountaineers.

Unfortunately, the Cheynes small boat broke free as they departed Atlas Cove in the evening and they asked us to help pick up their mountaineers awaiting at the beach further down the island.

On the 21st February we finally departed Atlas Cove for good with the satisfying knowledge that we had alleviated the need for Heard VK0, and feeling elated to have worked two American stations using only one watt.

After picking up the rest of the party from Skua Beach all sails were set for home. Turning with the wind on the Anaconda we covered about 240 nautical miles a day for the first week and passed the Cheynes in full sail on the third night out.

Two helicopters greet us in the Gulf

It was still cold on deck but with the wind behind us on our way home no-one seemed to notice the chill too much. After about two weeks we sailed into Port Adelaide after just under three months away from the Australian mainland.
MODERN MILITARY SURPLUS EQUIPMENT

Wireless Set B47

The B47 is a low power FM transceiver, VFO tuned in one range from 38 to 56 MHz. It was intended for short range communications with infantry who would be carrying a man-pack radio such as the AN/PRC10.

VALVE LINE UP:

<table>
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<tr>
<th>Serial No.</th>
<th>Type</th>
<th>Function</th>
<th>Equivalent</th>
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<tr>
<td>V1</td>
<td>CV4010, CV850</td>
<td>1st RF amp</td>
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<td>V2</td>
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<td>MR1</td>
<td>CV425</td>
<td>Crystal mixer</td>
<td>0A74</td>
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SPECIFICATIONS

Power requirements:
24V DC at 2.5 amps

Frequency Coverage:
38 to 56 MHz

Mode of Operation:
Transmission and reception of FM

Transmitter — power output
LP (low power) — approx 20 MW
HP (high power) — approx 600 MW
— Deviation
4.5 kHz for 20mV to mic input
7 kHz for input of 20 mV to 200 mV to mic input

Microphone: 600 ohms

Receiver-Sensitivity:
1.25 microvolts for 10 dB quieting

Selectivity:
- 70 kHz at 3 dB
- 260 kHz at 60 dB

Antenna:
75 ohm via a co-axial plug

IF Frequency: 4.3 MHz

Dial calibration:
100 kHz per division

AF output:
150mW into 50 ohms

Weight: Approx 15 kg

The serial numbers of the valves indicate the chassis sub-unit on which they are fitted and these references are carried through for all components.

1 to 199 RF sub unit eg R113
201 to 299 IF sub unit eg R213
301 to 399 AF sub unit
401 to 499 Calibrator and centre frame unit
501 to 599 Power Supply Unit

PRINCIPLE OF OPERATION

Receive RF signals feed through tuned circuits to two RF stages V1 and V2 and then to the crystal mixer MR1. The local oscillator V3 operating between 42.3 and 60.3 MHz also feeds to MR1. The resultant 4.3MHz frequency goes through three stages of IF amplification V4, V201, and V202 to the limiter V203. The limiter output goes to a discriminator V204, V205, then to a filter network which produces AF, noise at 10 kHz and a DC voltage. The AF is fed to AF amplifiers V301 and V302 then to the output transformer.

The noise output is fed into a noise amp V303 and the output rectified by the squelch rectifier V304. The DC signal from V304 is fed...
as bias to V301, the first AF amp, which also acts as a control for the squelch relay RLA/1. A front panel control sets the squelch level.

**TRANSMIT**

V9 is a master oscillator power amplifier, MOPA, tuned over 38 to 56 MHz and frequency modulated by a ferrite reactor in the plate circuit of the reactor driver V8. A neon stabiliser V7 maintains frequency stability despite variations in supply voltage.

Input to V8 consists of DC from the Automatic Frequency Control, AFC, system, plus AF from the microphone amp V305 and AF negative feedback. The AFC is derived from stray transmit signal which gets into the receiver and finds its way to the narrow discriminator V204, V205 and to the sidechain wide discriminator network-V5, the AFC limiter, which receives 4.3 MHz signal from V4 into V6, V10 the discriminator.

Automatic modulation control AMC is obtained by rectifying the sidetone signal from the receiver in V306 and using this as bias to the mic amp V305.

The power resistance is simply switched into the aerial line to dissipate some of the transmit signal.

The calibration oscillator V403 switches a 1 MHz crystal in the Cursor Adjust switch position and a 100 kHz crystal in the Channel Adjust position.

**POWER SUPPLY**

The PSU is built into the rear of the case and uses a self-rectifying vibrator and a transformer and thence to a filter network.

Voltages required in the set are:

- HT: +175 VDC at about 80 mA
- Filaments: 6.3 VAC at about 3.5 A
- Mic Amp: +6.3 VDC at about 200mA
- On/Off Lamp: 12 VDC at about 100 mA
- Relay Supply: 12 VDC at about 140 mA
- AFC diode heaters: 12 VDC at about 140 mA
- AF from the microphone amp V305 and AF modulated by a ferrite reactor in the plate circuit of the reactor driver V8.

A neon stabiliser lamp and relays are obtained by dropping resistors on the 24 VDC input line.

The voltage adjusting relay RLD/2 shorts out series resistance if the input voltage drops.

There is a start up circuit to prevent excessive arcing of vibrator contacts upon first switching on. A starting resistance is shorted out by RLE/2 when the voltage across a capacitor C521 is sufficient after about 1 second.

**FRONT PANEL INTERCONNECTION PLUG — SKT405**

The pin connections are:

A — microphone input shield
B — microphone input
C — no connection
D — Press to talk switch
E — Rebroadcast earth
F — 24V DC switched output
G — Audio output
H — Limiter grid current (S-meter output)
J — No connection
K — Voltage control relay
L — No connection
M — Audio output

**FRONT PANEL POWER SOCKET — SKT403**

A — +24 VDC
B — Earth

**MODIFICATIONS**

1. To operate the B47 make the following connections:
   - 75 ohm coax to the aerial socket
   - 24 VDC to pin A of the Power Socket
   - Earth to pin B of the Power Socket
   - Connect pin 13 to pin 6 on TS402, or alternatively pin 23 to pin 18 on SK401. This connects the centre zero tuning meter on receive & transmit as well as during calibration and will allow you to tune in a received signal exactly. One word of caution, if you transmit as the meter is not zeroed don’t change the tuning or you and your contact will be chasing each other up and down the band trying to set. Instead, adjust trimmer capacitor C80 to bring your transmit frequency to centre zero so that it will be the same as the receive frequency.

2. The tuning meter is not easy to see as it has a black face and dirty grey pointer. It is possible to remove the front panel and move it forward sufficiently to remove the meter. The meter scale can be removed and painted white and the pointer black. Be very careful with the meter as it is very fragile so be careful when it warms up you have to keep re-adjusting the frequency. S-wrap it in a piece of black tape and run wires to C.

3. A 0-1 mA meter in an external box with a 600 ohm microphone shield to pin B of the Power Socket

If you obtained a Power Lead this is simple.

- 600 ohm microphone to pin A of interconnection plug
- 600 ohm microphone shield to pin B of interconnection plug
- Pin C to earth internally to a convenient earth tag
- One side of a PTT switch to C
- The other side of the PTT switch to D
- Headphones or a speaker to pins G and M
- S — meter to pin H
- S — meter return to pin C
- Pin K to Pin C if input voltage is less than 30V

4. As with the R210 there is room to bring your HT and the mic amp filament and tuning voltages to the front panel and run shielded wire to the S-meter. Adjust the pot so the strongest signal is at test position and a 100 kHz crystal in the Cursor Adjust switch position.

5. The voltage adjusting relay RLD/2 shorts out series resistance if the input voltage drops.

6. It has a locknut and is sealed with paint. Instead, adjust trimmer capacitor C80 to bring your transmit frequency to centre zero so that it will be the same as the receive frequency.

7. Instead, adjust trimmer capacitor C80 to bring your transmit frequency to centre zero so that it will be the same as the receive frequency.

8. The tuning meter is black face and dirty grey pointer. It is possible to remove the front panel and move it forward sufficiently to remove the meter. The meter scale can be removed and painted white and the pointer black. Be very careful with the meter as it is very fragile so be careful when it warms up you have to keep re-adjusting the frequency. S-wrap it in a piece of black tape and run wires to C.

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10. A 0-1 mA meter in an external box with a 600 ohm microphone shield to pin B of the Power Socket

11. A 0-1 mA meter in an external box with a 600 ohm microphone shield to pin B of the Power Socket

12. A 0-1 mA meter in an external box with a 600 ohm microphone shield to pin B of the Power Socket

13. A 0-1 mA meter in an external box with a 600 ohm microphone shield to pin B of the Power Socket

**AMATEUR RADIO**, June 1983 — Page 19
HOW DANGEROUS IS RF RADIATION? — Part Three

In this third and final article of possible RF radiation hazards, the matter of Microwave RF hazards is discussed. The article was first published in Radio Communication, April 1982.

We trust that all WIA members have gained a little further information from this series of articles, and we invite your comments either by letter to the editor or direct to your division. —

MICROWAVE RF HAZARDS

By D. S. Evans, PhD, BSc, FIM, G3RPE*
RSGB microwave manager
Reproduced from Radio Communication April 1982

An earlier article introduced the general topic of the safety or otherwise of RF sources such as transmitters. It was pointed out that a hazard could exist if parts of the body absorbed sufficiently large amounts of RF energy to cause overheating. By the very nature of the hazard, it is impossible to specify any absolutely safe or unsafe level of RF power with any precision. However, the main conclusion of the article referred to (as well as others of a similar nature) is that with typical amateur HF and VHF stations where the antennas are mounted well above ground level, the measured RF levels at points of close access generally are at least 100-fold down and up to several orders of magnitude lower than the standard “safe” level of 10 mW/cm² even when using full legal power. In these practical cases, therefore, there clearly are few problems, and even arguments about what constitutes a “safe” level become somewhat academic.

However, the RF level associated with even relatively low-power transmitters can increase to an unacceptably high level as one gets close to them, and the article emphasised the care that must be taken in testing equipment on the bench with covers removed or with unscreened dummy loads. Handy-talkies, especially those using “rubber duck” antennas, may represent a hazard if their power output exceeds a few watts.

While the same basic principles regarding RF hazards apply also in the microwave area, there are significant differences compared with lower frequencies. For example, microwave equipment is more often operated near ground level for various reasons; there is more experimental development of equipment; and, for a given transmitter power, the RF power density close to the antenna will tend to increase with frequency. For these and other considerations, the topic of RF hazards at microwaves is best dealt with separately and in perhaps more detail than at HF and VHF.

Anyone involved in safety matters, whatever the area, will be well aware how difficult it is to maintain a sense of perspective. The illogicality of many safety procedures bears testimony to this. It is all too easy to “play safe” and lay down over-restrictive rules which, at best, simply inhibit activity and, at worst, become discredited and then ignored. The objective of this article is to attempt to develop a code of practice appropriate for day-by-day use by amateurs which will reduce to a minimum the risk involved to operators and bystanders. This code is summarised below. It is followed by an outline of the nature of the hazard, and the technical background employed in developing the code.

SAFE GENERATING PRACTICES WITH MICROWAVE EQUIPMENT

It is easy to demonstrate that the maximum RF power density associated with amateur microwave equipment will almost always be significantly lower than 10 mW/cm² even at a short distance away from the antenna. Indeed, it would be rather difficult to produce a practical system in which this level was exceeded at any distance. In any case, equipment parameters can be specified to ensure that it does not. However, where the effective aperture of a system carrying RF is small, eg the open end of waveguide and in feeds for dishes, the density can be very high and at a hazardous level. Thus for practical systems amateur microwave equipment will almost always be safe at almost any distance outside the structure of the antenna, and almost always will present a hazard within the structure, eg between the feed and a dish or inside a horn antenna. Therefore the only real risk is to operators and others who have access within a very short distance of these components.

The following is an attempt to define a code of practice for the safe handling of microwave equipment in an amateur context.

1. It must be recognised that a potential hazard exists wherever equipment having a small effective aperture — such as the open end of waveguide and coaxial cable, horn and rod feeds — carries RF above a level ranging from 1 mW at 24 GHz to a few hundred milliwatts at 1.3 GHz. As a guide, the input power should not exceed 2.5 mW/cm² of area of the aperture if the maximum RF power density is not to exceed 10 mW/cm².
2. For these small apertures, the maximum RF density is reached at a distance...
typically $\lambda/10$ to $1\lambda$ from the aperture and falls rapidly by a factor of 100 at a distance of 1-10$\lambda$: the potential hazard therefore exists over a short range only.

3. When working in close proximity to equipment, it is highly desirable to reduce power levels to below those given in 1. Where this is not possible, it is essential to dissipate the power in a screened load.

4. One golden rule should be to ensure no RF is present before looking down waveguide, because of the special vulnerability of the eye.

5. With high-power equipment, a hazard may exist through leakage of RF from loosely-coupled connectors and waveguide flanges, and from the coupled output of directional couplers. The power reflected from surfaces may exceed a safe level. Clearly, good practice demands care and discipline — and foresight.

6. It is strongly recommended that the RF power fed to a paraboloidal dish reflector should not exceed 2.5 mW of its projected area. This will ensure that the RF power at the dish will nowhere exceed 10 mW/cm$^2$ except for the region between the feed and the dish. This limit corresponds to approximately $2$ for a dish 0.3 m in diameter, and $80$ for a dish 2 m in diameter, and therefore is unlikely to present any practical limitations to the design of equipment.

7. If the dish is fed using the Cassegrain system, then it is recommended that the power delivered to the antenna should not exceed 25 mW/cm$^2$ of the area of the sub-reflector, or $2.5$ mW of that of the main reflector, whichever is the smaller value. In this case the leakage of RF around the sub-reflector should be less than 10 mW/cm$^2$.

8. Care must be taken to ensure that the feed is placed in the correct position at the focus of the dish. If further from the dish than this optimum value, an image of the feed will be produced at a finite distance. The RF power density at this point may approach that at the feed and therefore be at an unsafe level. It is clearly good practice to align antennas using powers at the milliwatt levels as given in 1.

9. If the power to an antenna is limited as in 5 and 6, then the RF power density will be at a safe level everywhere other than in the region between the feed and the dish. As the power density at the feed may be very high, it is essential to limit access to this region, especially by those unfamiliar with the hazard. This can be achieved either by restricting access to the site or by raising the antenna so that its height at the centre exceeds 3 m.

10. In the case of horn antennas it is recommended that the power level should be limited to 2.5 mW/cm$^2$ of the area of the aperture. For most horns this is equivalent to $2 \times 1^2$ where I is the length of the longest side of the aperture.

11. Higher power densities can of course be tolerated provided the operator of the equipment ensures that people cannot have access to these regions.

**NATURE OF THE HAZARD**

As was pointed out in 1, the hazard associated with high RF levels is completely unconnected with radiation hazards associated with $\gamma$- or X-rays for example. It is simply that of heating of parts of the body following absorption of the radiation, and the greater the power density the greater the hazard of over-exposure to the sun or sitting too near a fire. The effectiveness of this form of heating is well demonstrated by the microwave ovens with which amateurs share the 2.3 GHz band. The main factor affecting the degree of hazard is the power density of the RF intercepted by the body. Convenient units are either watts per square metre or milliwatts per square centimetre. A second factor is the frequency of radiation, which affects the proportion of incident radiation absorbed, the site of its absorption and the power density developed by a transmitter of a given output power. These factors will be discussed below.

The effect of controlled heating can be positively beneficial, as in diathermy. However, an accumulation of doses can lead to permanent damage to body tissues without a person necessarily being aware at the time that this damage is being done. One of the more vulnerable organs is the eye: the viscous fluid within the eye is affected by heat in much the same way as the white of an egg, which is transparent at room temperature but becomes opaque when warmed. In the eye, as in the egg, the process is irreversible.

Physiological characteristics also affect the degree of hazard. Thus at lower frequencies the intestines tend to be vulnerable because this is the region in which heat is generated and, being not particularly well-endowed with nerves, the effect is not immediately felt. The eye is also vulnerable because it has no blood vessels to assist in dissipating any heat that may be generated, although the same effect will also be observed at extremities such as the fingers. The effect of frequency of the radiation is quite critical. Below about 150 MHz the human body tends to become transparent to RF radiation and therefore there is no real problem. At VHF the radiation penetrates deeply into the body, and the more vulnerable parts are the internal organs. At 1-10 GHz the energy tends to be dissipated in the skin and the organs immediately below the surface: at high power densities there is a sensation of warmth. Above 10 GHz energy is absorbed in the surface layers, although it appears that a high proportion of the incident RF will be reflected.

There is a further effect which relates the absorption with the size of the organ and the wavelength of radiation. Radiation of a given density having a wavelength of $23$ cm, for example, will have less effect on the eyes which have dimensions of one or two centimetres than radiation of wavelength of $3$ cm, i.e $10$ GHz.

Another potential influence of frequency is that of affecting the RF power densities likely to be produced in practice. For a transmitter of given power, the radiation density developed is roughly proportional to frequency. However, the amount of power that can be generated tends to fall by a corresponding amount, and thereby balancing the risk of a hazard.

Frequency is also important in the way it influences the design and shape of the equipment. At lower frequencies, antennas have relatively low gain and coaxial cables have low loss: this means that antennas can readily be mounted high, usually tens of feet above ground level. At high microwave frequencies, however, there is a tendency to operate equipment near ground level. This is because antennas are so directive as to need some optical method of alignment, and cables pass so high that the antennas need to be mounted on the transmitters. These factors conspire to favour the antenna being mounted at head height, which is the least desirable from a safety point of view. Despite the complexity of the overall situation, nevertheless the majority of problems can be covered simply by specifying a maximum power level, and choosing parts of the body should be exposed, and this is described in the following sections.

**SPECIFICATION OF “SAFE” RF POWER DENSITIES**

The previous section describes several of the factors affecting the degree of hazard. It is therefore not surprising that while all authorities agree that exposure to radiation having a density of more than 100 mW/cm$^2$ is likely to be hazardous unless special clothing is worn, there is room for discussion on what constitutes a “safe” level. The Home Office and the Medical Research Council recommend a maximum density for continuous exposure of 10 mW/cm$^2$. This figure implies some extra margin of safety in an amateur context, since exposure is unlikely to be classifiable as “continuous” or cover other than a small part of the body at one time. It is to be noted that some standards have allowed a maximum of 100 mW/cm$^2$ for periods up to 6 min of exposure.

On the other hand, it is to be recognised that much amateur equipment can be of an experimental nature and not necessarily fully instrumented. Unexpectedly high radiation densities due to a power amplifier starting to oscillate, or to poor design of antennas, suggest a need for added caution. It would therefore seem wise initially to adopt a temporary arbitrary lower maximum power level and a sensible limit of experimentation — possibly 1 mW/cm$^2$ — until the equipment is properly set up.

<table>
<thead>
<tr>
<th>Frequency (GHz)</th>
<th>Waveguide No.</th>
<th>Internal dimensions [cm]</th>
<th>Maximum power [mW]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3</td>
<td>6</td>
<td>16,510 by 8,255</td>
<td>340</td>
</tr>
<tr>
<td>2.3</td>
<td>8</td>
<td>10,922 by 5,461</td>
<td>150</td>
</tr>
<tr>
<td>2.3</td>
<td>9</td>
<td>8,636 by 4,318</td>
<td>93</td>
</tr>
<tr>
<td>3.4</td>
<td>10</td>
<td>7,216 by 3,403</td>
<td>61</td>
</tr>
<tr>
<td>5.7</td>
<td>12</td>
<td>4,755 by 2,215</td>
<td>26</td>
</tr>
<tr>
<td>5.7</td>
<td>14</td>
<td>3,485 by 1,580</td>
<td>14</td>
</tr>
<tr>
<td>10</td>
<td>16</td>
<td>2,286 by 1,016</td>
<td>5,8</td>
</tr>
<tr>
<td>24</td>
<td>26</td>
<td>1,067 by 0,432</td>
<td>1,2</td>
</tr>
</tbody>
</table>

Table 1. Maximum power for 10 mW/cm$^2$ not to be exceeded at open end of waveguide
The overall pattern of power density falls at a rate set by the inverse square law. 2/A (or 2.5 A/A), and thereafter the peak the density falls rapidly and decibels lower than the peak value. Beyond shapes of aperture, approximately A/4A, which value can be used as a convenient guide with other antennas. This relationship is equivalent to the diameter of the reflector in the same units divided by 0.2 D^2/A. where D is the diameter of the dish in centimetres. The maximum density is typically 0.27A^2 — 0.45A^2. The value of A therefore is approximately 0.45A. The value of A otherwise is typically 0.27A^2 — 0.43A^2. The maximum power P that can be fed to the waveguide without exceeding 10 mW/cm^2 is expressed in the same units. However, this falls to 1.7 mW/cm^2 at a distance of approximately 40 mm from the waveguide aperture.

OPEN ENDED WAVEGUIDE

As will become apparent, the radiation from the open end of waveguide represents probably the greatest risk in practice. It is compounded by the almost irresistible urge many people have to look into it. The size of waveguide used at a particular frequency is set within fairly narrow limits: the broad width usually lies between 0.6 and 0.95A, and the height usually is approximately 0.45A. The value of A therefore is typically 0.27A^2 — 0.43A^2. The maximum power P that can be fed to the waveguide without exceeding 10 mW/cm^2 is 0.67A^2 — 1.07A^2, where P is in milliwatts and A in centimetres. The maximum density is measured at a distance of 0.13A — 0.21A in front of the aperture, and drops by a factor of 100 at a distance of 1.35A — 2.15A. The maximum powers that should be applied to typical waveguides at frequencies of amateur interest so as not to exceed 10 mW/cm^2 are given in Table 1: they are seen to be at relatively low levels. This implies that in most cases the output of most transmitters constitutes a real hazard and therefore the waveguide should always be safely terminated in a screened load where access is permitted.

As an example, the maximum radiation density from a 100 mW 10 GHz transmitter based on WG16 reaches a peak value of 170 mW/cm^2 at a distance of approximately 5 mm in front of the waveguide aperture. However, this falls to 1.7 mW/cm^2 at a distance of approximately 40 mm from the waveguide aperture.

CHARACTERISTICS OF THE RADIATION PATTERN

It is useful to consider first radiators such as the open end of waveguides or the horn antenna, and then to move on to paraboloidal dish antennas. It can be shown that the pattern of radiation across the aperture is not uniform across a waveguide or horn in the H-plane, but follows a sine wave. Thus while the mean power across the aperture is simply P/A, where P is the power and A the area of the aperture, the peak power density is nearly four times this value, ie approximately 4P/A. The use of the latter value introduces a small safety factor which is increased by the use of the electrical aperture. The maximum power density is observed along the axis of the radiator, and falls to either side. In the case of paraboloidal dish antennas, a similar pattern is observed; the feed being designed so as to reduce the power density at the edge of the dish by typically 10 dB. The maximum density is not, as perhaps would be imagined, at the aperture, but at a distance further from the dish given by 0.2 D^2/A, where D is the diameter of the reflector in the same units as A. This relationship is equivalent to approximately A/4A, which value can be used as a convenient guide with other shapes of aperture.

Between the radiator and the point of maximum power density, the density varies in a sinusoidal manner at a level of a few decibels lower than the peak value. Beyond the peak the density falls rapidly and reaches a value 20 dB down at a distance given by 2 D^2/λ (or 2.5 A/λ), and thereafter falls at a rate set by the inverse square law. The overall pattern of power density normalised in terms of D^2/λ is shown in Fig. 1 with reference to a peak density of 10 mW/cm^2.

OPEN ENDED WAVEGUIDE

As will become apparent, the radiation from the open end of waveguide represents probably the greatest risk in practice. It is compounded by the almost irresistible urge many people have to look into it. The size of waveguide used at a particular frequency is set within fairly narrow limits: the broad width usually lies between 0.6 and 0.95A, and the height usually is approximately 0.45A. The value of A therefore is typically 0.27A^2 — 0.43A^2. The maximum power P that can be fed to the waveguide without exceeding 10 mW/cm^2 is 0.67A^2 — 1.07A^2, where P is in milliwatts and A in centimetres. The maximum density is measured at a distance of 0.13A — 0.21A in front of the aperture, and drops by a factor of 100 at a distance of 1.35A — 2.15A. The maximum powers that should be applied to typical waveguides at frequencies of amateur interest so as not to exceed 10 mW/cm^2 are given in Table 1: they are seen to be at relatively low levels. This implies that in most cases the output of most transmitters constitutes a real hazard and therefore the waveguide should always be safely terminated in a screened load where access is permitted.

As an example, the maximum radiation density from a 100 mW 10 GHz transmitter based on WG16 reaches a peak value of 170 mW/cm^2 at a distance of approximately 5 mm in front of the waveguide aperture. However, this falls to 1.7 mW/cm^2 at a distance of approximately 40 mm from the waveguide aperture.

Fig. 1. Peak RF density relative to 10 mW/cm^2 as a function of distance from dish expressed in terms of D^2/λ, where D is the diameter of the dish and λ the wavelength of radiation, both expressed in the same units.

OPEN ENDED WAVEGUIDE

As will become apparent, the radiation from the open end of waveguide represents probably the greatest risk in practice. It is compounded by the almost irresistible urge many people have to look into it. The size of waveguide used at a particular frequency is set within fairly narrow limits: the broad width usually lies between 0.6 and 0.95A, and the height usually is approximately 0.45A. The value of A therefore is typically 0.27A^2 — 0.43A^2. The maximum power P that can be fed to the waveguide without exceeding 10 mW/cm^2 is 0.67A^2 — 1.07A^2, where P is in milliwatts and A in centimetres. The maximum density is measured at a distance of 0.13A — 0.21A in front of the aperture, and drops by a factor of 100 at a distance of 1.35A — 2.15A. The maximum powers that should be applied to typical waveguides at frequencies of amateur interest so as not to exceed 10 mW/cm^2 are given in Table 1: they are seen to be at relatively low levels. This implies that in most cases the output of most transmitters constitutes a real hazard and therefore the waveguide should always be safely terminated in a screened load where access is permitted.

As an example, the maximum radiation density from a 100 mW 10 GHz transmitter based on WG16 reaches a peak value of 170 mW/cm^2 at a distance of approximately 5 mm in front of the waveguide aperture. However, this falls to 1.7 mW/cm^2 at a distance of approximately 40 mm from the waveguide aperture.

PARABOLOIDAL DISH ANTENNAS

This is the most popular form of microwave antenna. It consists of a paraboloidal reflector to which a feed is fed by some form of feed placed at its focus. There are two areas of importance, which can be dealt with separately: the hazard associated with the radiation reflected by the dish and which will be at a maximum at some distance outside its focus; and the hazard associated with the region between the feed and the dish.

HORN ANTENNAS

In the form generally used by amateurs, Fig. 2, horn antennas consist of a length of waveguide which is flared in both directions to produce an aperture having an aspect ratio of typically 0.8:1. The radiation density within the horn falls from a relatively high value at the throat of the horn to a low value at the aperture. For the peak radiation density anywhere outside the antenna not to exceed 10 mW/cm^2, the power in milliwatts fed to the antenna should not exceed 2 x I^2 where I is the length of the longer side in centimetres. Because of their relatively large physical size relative to their gain, horn antennas tend to be used at frequencies of 10 GHz and above. At that frequency a reasonably large horn would have an aperture of 30 by 24 cm. The maximum power that could be fed to this antenna without exceeding 10 mW/cm^2 at the aperture would be 1.8 W, a very considerable power at that frequency.

The power density at the aperture is given by 5P/I^2. For a medium size (10 GHz) transmitter of output power 100 mW, the density is only 0.6 mW/cm^2, i.e at a very safe level. The corresponding density at the throat increases to 170 mW/cm^2, but this region is not easily accessible other than by deliberate action. For this reason, and the fact that they cannot be misaligned, horns tend to be a particularly safe form of antenna to use.

A feature of note is that the aperture of the horn is increased so the gain of the antenna increases, and therefore the effective radiated power is raised. At the same time, the larger the aperture the lower the power density at the aperture, and therefore the safer the equipment becomes. We therefore have the perhaps surprising situation that, for a given transmitter output, it is possible to have the situation that the higher the radiated power the safer the equipment can become.
**REFLECTED POWER**

The pattern of radiation from a dish reflector is approximately a cone. This has an initial diameter equal to that of the dish, which increases with distance from the dish according to the beamwidth of the antenna. The radiation density across this cone is at a maximum at its centre, i.e., at a distance 0.2 $D^2/\lambda$ from the dish, where $D$ and $\lambda$ respectively are the diameter of the dish and the wavelength of the RF expressed in the same units. Values for frequencies of amateur interest as a function of antenna size are shown in Fig. 3.

The peak radiation density in most cases will be observed at distances of 1 to 10 m from the dish, i.e., well beyond the focus. The peak radiation density corresponding to this reflected power is given by the value $4P/\lambda$, where $P$ is input power in milliwatts and $\lambda$ is the projected area of the dish in square centimetres. For this peak density not to exceed 10 mW/cm², the maximum power should not exceed the values:

$$P_{\text{max}} = 2 D^2$$ where $P$ is in milliwatts, $D$ (diameter) in centimetres

$$P_{\text{max}} = 20 D^2$$ where $P$ is in watts and $D$ in metres.

This relationship, together with that for a maximum density of 1 mW/cm², is shown as a function of dish diameter in Fig. 4, with regions designated as “most safe,” “safe” and “unsafe.” Thus, for example, if a 1.5 m dish is available, provided that the power fed to it does not exceed 44 W, then nowhere outside the antenna structure will the power density be greater than 10 mW/cm². It should be noted that this relationship is independent of frequency. This means in practice that a high degree of safe operation can be “built-in” a system by simply specifying its parameters. The above data of course presumes that the dish and feed are properly aligned; the effects of misalignment is discussed below. As was the case with horn antennas, for a given transmitter power, the larger the size of the dish the safer the equipment becomes, despite the fact that the effective radiated power is increased.

**THE HAZARD ASSOCIATED WITH THE FEED**

It was shown in the previous section that provided the power supplied to a parabolic reflector was related in the way described to its diameter, then the radiation density could be held to a safe level anywhere outside the antenna. This could be achieved in practice without placing too restrictive limitations on the equipment design. For example, Fig. 4 shows that the minimum size of dish to be used with a 2 W transmitter should be 1 m diameter if the radiation density external to the antenna structure is not to exceed 1 mW/cm², or 20 W if not to exceed 10 mW/cm².

However, as the effective aperture of the feed supplying this power to the dish is usually much smaller than that of the dish, the radiation density associated with the feed will usually be at an unsafe level, and frequently at a hazardous level. The situation is somewhat similar to the horn antenna described earlier except that with a horn it is relatively difficult to physically reach the regions of high radiation density, whereas with a dish it is normally all too easy if the antenna is near ground level or not otherwise protected. The actual power density between the feed and the reflector will be set by the power of the transmitter and the dimensions of the feed. One of the simplest cases is that of the direct horn...
feed, in which the horn is mounted at the focus of the dish with its aperture directed at the dish. The actual dimensions of the feed depend on the frequency of operation and the ratio of the focal length of the paraboloidal reflector to its diameter, in the manner described in 2. If it is assumed that access to the inside of the horn feed is prevented, then the maximum power that can be applied to the feed so as not to exceed a radiation density of 10 mW/cm² as a function of the focal length/diameter (f/D) ratio of the dish and of frequency. These levels should be adopted if the system is to be operated at ground level for alignment.

Practical transmitters will normally generate significantly greater powers than those shown in Table 2. For a 1 W transmitter at 10 GHz, for example, the peak radiation density in front of a feed will be in the range of a few hundred milli-watts to a few watts per square centimetre depending on the f/D ratio of the dish. These levels are clearly unsafe, and it therefore makes good sense to operate the antenna in such a way as to ensure that the operator and others cannot have access to that region of the antenna.

A popular second type of feed is the Cassegrain system, in which a horn feed mounted through the centre of the dish radiates a sub-reflector which in turn illuminates the main reflector. With this system the main risk would seem to be spillage of RF around the edges of the sub-reflector. If this is to be limited to 10 mW/cm², and the feed has a normal taper, in illumination of 10 dB, then the radiation density at the centre of the sub-reflector must not exceed 100 mW/cm². This is achieved if the power supplied to the antenna does not exceed 25 AmW, where A is the area of the sub-reflector in square centimetres.

Calculations of radiation density around dipole-reflector combinations are difficult. There seems little doubt that stray radiation is likely to be at a somewhat higher level than with horn feeds, and therefore correspondingly greater precautions should be taken with this type of feed.

<table>
<thead>
<tr>
<th>Frequency (GHz)</th>
<th>f/D = 0.25</th>
<th>f/D = 0.6</th>
<th>f/D = 1.0</th>
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<td>4500</td>
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</tbody>
</table>

Table 2. Maximum power to be fed to a pyramidal horn feed as a function of f/D ratio for peak density not to exceed 10 mW/cm²

THE EFFECT OF DEFICIENCIES IN THE ANTENNA SYSTEM

It is appropriate to refer briefly to a number of deficiencies in antenna systems which in some cases may lead to unexpected problems.

(a) Under-illumination of dish

In defining the maximum radiation density by the relationship 4P/A, the area A corresponds to the physical area of the reflector assuming ideal illumination. The use of a feed of too high a gain will result in under-illumination of the reflector so that its effective area is smaller than the physical area. This will lead to a higher power density close to the dish than would otherwise be expected.

(b) Over-illumination of dish

If the gain of the feed is too low, then an excessive amount of energy will spill over the edge of the dish. This will not be hazardous unless the power fed to the dish greatly exceeds the recommended value, as the density is normally designed to fall by typically 10 dB between the centre and edge of the dish.

(c) Feed positioned inside the focus

If the feed is placed between the focus and the dish, the reflected beam will be divergent. As this will reduce the power density, this condition is relatively safe.

(d) Feed positioned beyond the focus

This is a potentially dangerous case because the reflected beam will tend to converge to a point some distance in front of the dish, with the risk that local power densities will approach those at the feed.

ROD ARRAY ANTENNAS

This case deserves to be considered as a separate situation. In general terms the stray radiation from this form of antenna would be expected to be greater than either horn antennas, or horn-fed dishes, and therefore greater precautions should be taken. It seems probable that the radiation pattern at a distance will be similar to that of a parabollic antenna of similar gain, and therefore the present design information will be relevant.

OTHER PRECAUTIONS

With high-power equipment it should be recognised that there are a number of other sources of hazards. For example, the leakage of RF from loosely-coupled connectors and waveguide flanges or the coupled output from a directional coupler may be at a sufficiently high level to represent a risk. In some cases, the power reflected from some surfaces may be at an unsafe level. It is obviously wise to recognise these possibilities and to adopt the same high standards of discipline for RF as amateurs obviously already do with other hazards such as high voltages.

REFERENCES

2. VHF/UHF Manual, D. S. Evans, G3RPE, and G. R. Jessop, G6UP, RSGB.

REPEATER GROUP

A group of amateurs from the "Weddin Repeater Group" are working towards establishing a repeater in the Grenfell area of Central New South Wales.

The proposed repeater will serve from Dubbo to Cootamundra, Young, Temora, Wyalong and hopefully Griffith, Parkes, Condobolin and Forbes. Tests already carried out from the proposed site have been most encouraging.

The repeater is to operate on channel 10-147.100 MHz and is presently under test in a temporary location at Forbes.

CLUB CORNER

John Meagher VK2AMV
87 Rankin Street, Forbes, NSW, 2871

The Repeater Group L to R: seated — VK2DHR, VK2DOD, VK2APP, (chairman) VK2DBI, XYL of VK2APP. Standing — VK2ENH, VK2BOW, VK2DWT, VK2XAO, VK2PAM, VK2DHO and VK2AMV. (Missing from group is VK2EEE). In the foreground of the photo are the cavity filters on the table at the left, the repeater right and solar cells standing against table.

Photograph by John Meagher VK2AMV.
In view of the fact of the recently-allocated new frequencies being available to the VK amateur operator, and bearing in mind the number of requests received at this QTH for information on 'where and when an intruder IS an intruder', I think it timely to include a list of the HF bands, and details regarding who can be expected legally to be present on the bands.

**Allocation of Frequency Spectrum for Purposes of the Intruder Watch**

160 Metres:
- 1.800-1.825 MHz — Amateur Service is Primary Service. Exclusive to amateur operators.
- 1.825-1.875 MHz — Amateur Service is Secondary Service. Not Exclusive to amateur operators.

80 Metres:
- 3.500-3.700 MHz and 3.794-3.800 MHz. In International Amateur Radio Union, Region 3, the 80 metre band is shared with fixed services — It is not exclusive to the Amateur Service. RTTY and CW non-amateur signals cannot be considered to be intruders. But broadcast stations are.

40 Metres:
- 7.000-7.100 MHz — The Amateur Service is the Primary Service, and this segment is exclusive to amateur operators. Any non-amateur signals are those of intruders.
- 7.100-7.300 MHz — Is shared by International broadcasting stations ONLY. Any non-amateur signal OTHER THAN broadcasters can be considered to be an intruder. Non-amateur RTTY and CW signals are intruders.

30 Metres:
- 10.100-10.150 MHz — Shared with fixed stations — The Amateur Service does not have exclusive use of these frequencies. Broadcast stations are intruders.

20 Metres:
- 14.000-14.250 MHz — Amateur Service is Primary Service. This segment is exclusive to the amateur operators. Any non-amateur signals are those of intruders.
- 14.250-14.350 MHz — This segment is shared with Iran, The People’s Republic of China, and the USSR fixed services. It is NOT exclusive to the amateur service. RTTY and CW signals which are non-amateur cannot be considered to be intruders. But broadcast stations are.

17 Metres:
- 18.068-18.168 MHz — The Amateur Service shares this segment with fixed services. Non-amateur RTTY and CW are not intruders. But broadcasters are.

15 Metres:
- 21.000-21.450 MHz — The Amateur Service is the Primary Service. This segment is exclusive to amateur operators. Any non-amateur signals are intruders.

12 Metres:
- 24.990-24.990 MHz — This band is shared, and non-amateur RTTY and CW signals are not intruders. But broadcasters are.

10 Metres:
- 28.000-29.700 MHz — The Amateur Service is the Primary Service. This segment is exclusive to amateur operators. Any non-amateur signals are intruders.

Hopefully, the above details will clear up a few queries, and establish whether or not the signal you are monitoring should legally be there. Any enquiries on the Intruder Watch to your Divisional Coordinator, or to VK2EBM. 73 ‘til next month.

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RADIO AMATEUR OLD TIMER’S CLUB

Logs submitted for the March 1983 (20 metre) QSO Party between VK and ZL Old Timer’s Club members were a little down on the previous one, mainly because propagation effects, skip, etc made contacts somewhat more difficult on this band. However, although no logs were received from VK6, there were several stations active over there.

**CALL**  **MODE**  **QSOs**  **AREAS**  **SCORE**

| VK3VF | CW/SSB | 24 | 8 | 960 |
| VK2SP | SSB | 19 | 9 | 855 |
| VK40X | SSB | 21 | 7 | 735 |
| VK4AIK | CW/SSB | 21 | 7 | 735 |
| VK7RF | SSB | 18 | 8 | 720 |
| VK3XV | CW/SSB | 20 | 7 | 720 |
| VK3KS | CW/SSB | 19 | 7 | 665 |
| VK5RK | SSB | 15 | 8 | 600 |
| VK4CI | CW | 12 | 5 | 300 |
| VK7CH | CW | 11 | 5 | 275 |
| VK7BJ | SSB | 10 | 5 | 200 |
| VK7JU | SSB | 8 | 5 | 200 |
| VK3XF | CW/SSB | 10 | 4 | 200 |
| VK3AMH | CW/SSB | 9 | 4 | 180 |
| VK3YW | CW | 5 | 4 | 100 |
| ZL2BD | 19 | 7 | 665 |
| ZL2AV | 21 | 6 | 630 |
| ZL2HS | 19 | 6 | 570 |
| ZL16GJ | 16 | 6 | 480 |
| ZL2DO | 15 | 5 | 375 |
| ZL2US | 12 | 5 | 300 |
| ZL1GD | 8 | 4 | 160 |
| ZL2AD | 7 | 4 | 140 |

Members are thanked for the logs sent in and for the very kind comments made in them.

Remember that our Parties are held on the second Monday of August (40 m) and March (20 m) ie 8th August 1983 0800 UTC to 1100 UTC. Full details Amateur Radio, February 1983.

All amateurs who have been licensed for a period of 25 years or more are eligible to join the Radio Amateur Old Timer’s Club. A SASE (9 x 4) to the Secretary, Harry Cliff VK3HC, PO Box 50, Point Lonsdale, Vic 3225 will bring you a membership application form.

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Please help Intruder Watch by reporting all intruders.
LISTENING AROUND

Joe Baker VK2BJX
Box 2121, Mildura, Vic 3500

Since I was hatched in 1917, it would not be too far from the truth to say that I was brought up in that period between the wars which was known as the Golden Age of Wireless. King Bradman was on his throne knocking the opposition silly, Kingsford-Smith was doing wonderful things in aviation, De Groot helped Premier Lang to open the Sydney Harbour Bridge, the banks were closed, the Depression was upon us, relatives were on the dole, and us kids attending school in Campsie (Sydney suburb) were having bread and dripping for lunch and milk for a penny a bottle. Such was the time of my introduction to the magic of wireless.

A GREAT CRYSTAL SET

I was fortunate in having two great schoolmates — Tony Wilkinson of Robertson St, Campsie whose father was an ELECTRICIAN and therefore a veritable Edison in my eyes, and Ray Anderson who was known as the “Marconi” of our school because he could work all kinds of wizardry with wires, globes and batteries which we scrounged from out the back of the local service station. Tony Wilkinson’s father had installed, in their house, a giant sized crystal set that took up most of the table in their dining room. Eventually, much to the joy of this little boy, came the day when I was invited around to Tony’s place to have tea with the family and listen to their wireless.

At this distance across the half century or so, I can yet recall sitting at their tea table and drinking soup from a huge bowl big enough to fit my head into. After tea Tony and I retired to the room where the crystal set lay in all its glory on a large well-varnished table. The coils were made of green silk covered wire — “honeycomb coils” — which could be moved towards and away from each other to help the tuning, and these were mounted on a base of polished wood with shiny terminals all over it — gee, what pride they took in crystal set construction in those, now far-off, days!

The headphones were the most technical looking parts of the set — they were probably Browns or BBC, and from these issued forth mysterious voices and music when a curly wire with a fine sharpened point, called a cat’s whisker, was placed ever so carefully on a shiny part of the ninepenny crystal which was inside a dust cover. Tony’s father, having installed us on chairs beside the table, then took the phones apart, giving us one each and retired to another room to let us listen in quietness.

The station we were listening to was probably 2BL or 2GB, and the Children’s Hour was on. Compering the programme was our Radio Uncle George (Saunders) ably assisted by his side-kick “Bimbo” whose real name I never did get to know. Uncle George and “Bimbo” were sending birthday greetings (2/6d I think it used to cost) and singing songs for just about every kid in Sydney, and thereupon I was smitten by a bright idea:

It so happened that a short time before this, we had learned a nursery rhyme called “Sing a Song of Sixpence” so I asked Tony (who, being my best mate, was wiser than an owl and knew everything) “how do we get this Uncle George and Bimbo to sing for us also?” Tony said that all we had to do was to take these headphone things away from our ears, put them in front of our mouths and bellow into them as loudly as we could. No sooner said than done, and remember that this was the ‘Age of Wireless’ when, for two small boys with vivid imaginations, just about anything could happen if you wished hard enough. An in less time than it takes to write these lines it wasn’t long before Uncle George and Bimbo were “Sing a Song of Sixpence” just for us!

WIRELESS VALVES

Although it was the Depression, my dad had a government job as a tram conductor at five pounds a week payable fortnightly after thirteen days of shift work in all weathers, and how he managed to provide for a wife and two kids beats me even now.

It was a time when anyone with two jobs was frowned upon, yet there were those who wanted to pick up an extra quid or two when they could. Dad had a “trammie” mate who was always out to earn a few extra shillings or so as an electrician when he could, and Dad got him to come and install a few extra lights for us on our front and back verandahs.

Dad’s mate had a ginger nut (had red hair), so I used to think of him as “Mr Carrot Top”. I watched fascinated as “Mr Carrot Top” worked, cutting up all that conduit, installing those wonderful switches with the round white knobs that had “On” and “Off” written on them, on the round batten boards. Much to my joy, my dad’s mate took note of my interest and didn’t shoo me away as others might have done, but encouraged me to watch as he worked.

Came the day when “Mr Carrot Top” brought along a mysterious round glass thing that was all silvery inside and had four prongs sticking out of its bakelite base. I was entranced by the look of the thing, the like of which I had never ever seen before. “Do you know what this is?” asked “Mr Carrot Top”.

I shook my head in a positively negative sort of way. “Would you like to see what is inside it?” he then asked. I nodded my assent, not knowing exactly what spectacle I was about to behold, or if a fairy or genie might pop out of it.

Thus it was, that for the first time, I was introduced to a wireless valve (they weren’t called radios in those days), and he then broke it open ever so carefully exposing the innards of the battery-operated triode.

I can’t remember whether or not “Mr Carrot Top” tried to explain to me just how this valve worked (I probably wouldn’t have understood anyway) but even though I didn’t know what the glass thing did, the magic of it was that I did indeed know that this was part of a new sort of wireless, and a much better one than Tony’s dad’s crystal set.

AIR WIRELESS!!

Across the bridge of time from those far off days comes another recollection as I type this article. About this time “Smithy” and Ulm were hitting the headlines from somewhere in mid-Pacific headed for Australia. On this particular day, as I walked home from school along Duke Street Campsie, and passed the home of another schoolmate named Townsend, I could hear loud static and a voice from a radio trying to make itself heard. I was told that the voice was that of “Smithy” himself — probably being rebroadcast by some commercial station. Oh, the wonder of it all for this small boy — to hear a voice from far across the mighty Pacific Ocean. (I remember that for at least one of his flights across the Tasman “Smithy” made good use of some amateur radio stations who set up their gear on Gerringong beach, south of Sydney and got the very latest pre-flight weather reports from New Zealand amateurs.)

RADIO SHOW

Another highlight of this Age of Wireless comes to me as I write. The Sydney Radio Show held in the Town Hall was widely publicised, and the thousands of school children who had been invited, arrived in droves. We were told that Marconi himself,
“the father of Wireless” was to switch on the lights of the Sydney Town Hall by remote control from his yacht in the Mediterranean Sea. Another highlight was a Trans-Tasman radio-telephone hookup with New Zealand. The Australian Post Office was eager to display its new toy, and a silver or nickel coated telephone (it was jazzed up for us at any rate) in a sort of gilded birds-cage-cum-telephone box and was installed against one wall inside the hall, while along the wall was displayed a giant painted mural, representing in graphic form the two thousand miles of ocean between Sydney and Wellington.

School children were invited to enter the gilded telephone box to talk via this two thousand miles (an awfully long distance in those days) with the operator in Wellington. I don’t remember going into that box, so I assume I was either too scared or too nervous or both, so I contented myself with listening outside the box via a speaker, while other kids spoke with the man in Wellington.

**RADIO UPDATE**

When crystal sets gave way to valve wirelesses, wireless shops popped up all around Sydney. Even gramophone shops jumped on the bandwagon, and of course a few wireless shops popped up in Campsie. I pestered Mum to buy one of these new “on demo” for a week or more without a shop in Beamish Street, Campsie to a few wireless shops popped up in Campsie. Even gramophone shops around Sydney. When salesmen were falling over them—

That these were still the Depression days I pestered Mum to buy one of these new “on demo” for a week or more without knowing much about them, and yet I still had a soft spot for sets of the crystal variety. So, hearing that King George the Fifth was to make the first of a whole series of Christmas broadcasts (a tradition that is being followed by today’s Royalty) I knocked up a crystal set in Waterview St, Ryde just so that I could say, as I do now, that I heard King George’s voice for the first time on my crystal set.

George the Fifth died about 1935. Edward ascended the throne, Hitler started making loud noises like “Sieg Heil!,” the years rolled on and my radio was then a dual wave Gulbransen. I became an avid listener to Vatican Radio, and the bells of St Peters were often heard in our home. A novel addition to my listening pleasure and one that often startled guests at our home, was when I hooked up an old horn speaker to act as a microphone when the cow was being milked in the shed in our yard and the bellowing of “Molly the cow” could be heard in our front room, via a pickup connection on the Gulbransen.

Radio is a fine hobby. May it reign forever, and thanks to all of you who have made so many kind comments about the effort I put into this column. There’s plenty more to come even if I do occasionally miss the deadlines.

73s to all
Joe, VK2BJX

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**MANTLE RADIO**

Our next wireless (oh yes, we did get another) was a beaut little Mullard (Mickey Mouse mantle, I think) which worked fine and doubtless, if I had it here now, would out-perform many of the solid state sets that are around today (excuse me for showing a bias). It was for broadcast band only, got all Sydney stations without bother, and occasionally even pulled in 2KA Katoomba. And as an extra bonus, we could pick up Sydney police radio VKG which came in on a harmonic near 2BL. So, with this added bonus, we knew where the action was around Sydney Town.

At school, kids including the school’s resident Marconi, Ray Anderson, were telling me about these mysterious stations called “shortwave stations” which were ever so far away, and were located so far down the dial that they were outside the range of the broadcast band mantle. How to get them was the problem, and here indeed for me was a hitherto undiscovered world to enter into. I was advised by the school’s resident Marconi and other kids that I could make the Mullard mantle pick up these mystery stations by removing some of the wire off those strange looking coils near the tuning capacitor, and this I proceeded (without parent’s permission, I guess) to do. In fact I got a better idea — in order to make the coils easier to get at for further experimentation — why not move the coils to the back of the set so that they stuck out backwards? At this time such things as alignment were unknown to me, so having thus thoroughly upset the alignment of a beatle little broadcast set, I finally converted it to one that could receive broadcast and shortwave stations intermingled right across the dial. And now it could even get (on Sundays only) the experimental station VK2ME Sydney. How was I to know then that what I had done was to wreck forever one of the finest mantle sets of its day.

However, all this is with the benefit of hindsight. It was thus that I had my first introduction to the world of shortwave radio, that world that was to later bring me, among other things, to the voices of Churchill and Hitler, and much, much more, as I will tell of in later articles.

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Somewhere about 1932, we moved from Campsie to Ryde, and the Empire Broadcasting Service had begun. On shortwave I could hear a voice sometimes saying “this is Daventry calling. Here is the news”. Yet, I still had a soft spot for sets of the crystal variety. So, hearing that King George the Fifth was to make the first of a whole series of Christmas broadcasts (a tradition that is being followed by today’s Royalty) I knocked up a crystal set in Waterview St, Ryde just so that I could say, as I do now, that I heard King George’s voice for the first time on my crystal set.

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73s to all
Joe, VK2BJX

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**AMATEUR RADIO**, June 1983 — Page 27
What price a DX country? This is the question that a number of serious thinking amateurs are asking themselves and close friends after the Spratly Island misadventure that occurred in April.

The Spratly Islands consist of in excess of one hundred small islands and reefs of which thirty three only remain above high water level at all times and these are scattered over an area exceeding 150,000 square kilometres in an area of the South China Sea with China to the north, Malaysia to the south, Philippines to the east and Vietnam in the west.

These islands had little commercial value except for fishing until the mid 1970's when one of the contenders for ownership decided that the area may be a source of oil. Claimant to the area has been made by China who base their case on rights that are said to date back to 200 BC. In 1887 the French government of the time acknowledged Chinese sovereignty over all islands in the South China Sea. In 1933 France occupied nine islands but in 1940 were driven out because of World War II. The Japanese maintained a submarine base in the area during the war.

Present claiments to the area in either full or part are China, Vietnam, Malaysia, Taiwan and the Philippines and who owns what seems to be unclear even to the occupiers of the few of the islands, some of which have been occupied since 1945.

Four Cologne DX Club members decided to activate this much needed DX country for their fellow amateurs. After much seeking of transport they met up with Peter Marx and his lady Jenny Toh, who had designed and built a catamaran which was Ketch rigged and offered the luxury of four state rooms which were built into the outriggers. The saloon had two metres of head room and was finished in teak. Below deck, the finish was as impeccable. The bulkheads were carpeted to reduce engine noise and the wash basins and toilets worked. Bruce Wilson, a media correspondent from Washington, who with his XYL, had the pleasure of a cruise on this vessel described it as a miracle for such conveniences on a yacht to work.

Peter, a German master mariner and Jenny a Singapore Chinese graduate from a Swiss cordon bleu cooking academy, had visions of taking discerning tourists, on charter trips around the South China Sea and itinerate around its myriad of islands. The four DXerschartered Peter and Jenny's vessel Sidharta named after a Hindu Goddess.

Whilst enroute they were heard at this QTH to say they were within fifty miles of their goal of Camboyna Cay Island in the Spratly group. The group were in excellent spirits and anticipated placing a signal on the air from their goal or a nearby unoccupied island within forty eight hours. This was not to be, as soon after, a gunboat appeared and fired upon the fifteen metre Sidharta. Their last message heard on the amateur bands was— "We are being fired upon and we are on fire"—. It is understood now that one of the amateurs was killed, and the five survivors were either injured or wounded. The vessel ablaze, they took to the dingy and were still under fire from an unknown assailant.

Extensive air searches were inaugurated by fellow amateurs, with many amateurs participating, but with no sightings they were scaled down after a number of days. Meanwhile Peter somehow guided the dingy towards the shipping lanes and after nine days, four survivors were picked up by the Panama cargo ship "Linden". Another of the amateurs had perished in the dingy.

The survivors were taken to hospital in Hong Kong by Police launch when the vessel reached harbour some forty eight hours later.

With hindsight a number of operators

Photo Guy Liu courtesy Joe Hilger UPI and the Melbourne Herald.
must be commended for their diplomacy in not discussing certain aspects of the incident due to the fact that it could jeopardise any diplomatic negotiations that were taking place. Zero marks to those operators who complained of missing out on a new country and a special file in the memory bank of the call signs that were given. This practise disgusted many listening let alone crowding an emergency frequency with idle chatter.

Other incidents this decade which have caused undue hardships to the participants of other expeditions in the Pacific, include a serious aircraft accident that caused undue suffering and hospitalization to a YL operator and the slipping on some glass of a surgeon causing such damage that he was unable to further continue his profession.

No matter how meticulous the planning, it is unlikely that any of the above incidents could have been foreseen and averted but one thought is that this and other such happenings are going to be in the minds of DXpeditioners in the future.

Amateurs world wide offer their condolences to the families of those that perished in this unfortunate incident and sympathy is extended to the organisers, the Cologne DX Group who planned the operation and to Peter Marx and Jenny Toh, their ambitions and livelihood shattered.

Perhaps now is the time to take 1S off the DX Countries list before another expedition is launched with maybe more serious consequences to the participants.

EGYPTIAN ACTIVITY

Ezzat SU1ER

A new amateur in SU land for 1983 is Ezzat SU1ER. Ezzat is the daughter of Ezzat SU1ER who has been licenced since 1976. Of the sixteen amateurs licenced in Egypt, three of them are YL's. Ezzat is the youngest, only fifteen years old.

Ezzat uses Ezzat's equipment, a Collins KW32A with a TL922 Linear fed to a three element Yagi twenty metre monobander at twenty five metres. Whip antennas are used on other bands through a coupler. Ezzat and Maggi are QRV mostly on Fridays and Saturdays between 1700 to 2100 UTC around the frequencies of 7.080, 14.280, 21.280 and 28.580 MHz. QSL's to PO Box 33, Air Port, Cairo, Egypt.

QRZ DX

Bob W5KNE has taken on the onerous task of editing QRZ DX, a weekly publication in the United States of America.

A reciprocal agreement has been worked out between the writer of this column and Bob that will allow readers of both magazines greater access to DX news.

LEBANON ACTIVITY

Very little activity out of OD land lately but SSB enthusiasts may look for OD5FB who regularly frequents around 14.220 MHz particularly on Fridays and Saturdays. CW operators are taken care of by the regular appearance of OD5LX around 14.030 MHz.

DIRECT QSL’S ONLY

WA4JQS, QSL Manager for VP8s, QJ, NJ, PU, WA, ZV, ZS1DM, PY5YL and TA2TAT has made it known that he will not answer cards via the bureau and has given his bureau instructions that all cards except those from SWL’s and USSR are to be sent for pulping. A self addressed envelope with adequate IRC’s is required by him for a confirmation.

Well at least everybody does know where they stand and the readers can make up their own minds as to whether they subscribe.

HF BEACONS

It has been reported that a number of HF beacons on 18.110 and 24.900 MHz are cropping up from North America. Callsigns known to being used are KK2XJM, KM2XDU, KM2XDW and KM2XKO with voice indents.

AN AMATEUR FIRST

Probably not DX news as such but the readers of this column would think it remiss of me if I did not mention a little of the history of one of the few VK and the only VK YL representative on the ARRL DXCC Honour Roll. I gleaned this information by reading a recent edition of the Radio Amateur Old Timers Club newsletter which brought to light an interesting fact about one of VK’s keenest DXers and a constant contributor to this column, Austine VK3YL.

Bob VK3ML, the group’s Publicity Officer mentions one of the firsts in the history of the hobby in Australia. To quote in Bob’s own words —“There is one positive and unique “First” when our Austine Henry (nee Marshall) VK3YL was enrolled in the Royal Australian Air Force on 6 September 1933. She was granted the rank of AC2 with a service number of R20. She was recognised by the RAAF in a letter from the Department of Defence dated 21 May 1980 as being the first woman to enlist in the RAAF. We congratulate Austine in having this rare distinction.”—.

Austine, is noted world wide for her prowess with the key since she was licensed in 1930 and over recent years Austine has combined SSB into her operating skills and is a much sought after contact from all continents when time permits her to be on air.

STATISTICS

Hugh VK6FS has extracted a few figures out of the logs of VK0HI and VK0CW which highlight the operating habits of VK amateurs. The breakdown of the twenty metre log of VK0HI indicates that the total calls appearing in the DX log to VK were 737 made up of VK1-22, VK2-113, VK3-205, VK4-55, VK6-166, VK7-37, VK8-8, VK9/MM-1, VK0-3, VK0/MM-1. The separate individual calls not counting multiples amounted to 581. One VK3 amateur appeared seven times, another four and twenty nine had two QSO’s, two VK2’s appeared four times and five three times. Of the fourteen appearing twice and on the story goes call area by call area.

Hugh validly points out that due to duplication such as this, 156 amateurs missed out on a QSO with the rarest place and that of 79 cal Is worked, seven were duplicated and two were triplicated in the log. No further comment is necessary!

MALPELO ISLAND

A note from HK3DDD remarks that he will be QRV from Malpeolo in October. The call will be HK0TU. This will be one to look out for and QSL’s will be taken care of by HK3DDD, Call Book OTH.

BHUTAN

Correspondence from Pradhan A51PN indicates that he is no longer on the bands due to equipment problems. Pradhan does not indicate what equipment he used or what the fault is but meantime A51 is climbing the rungs of the much wanted ladder in many operators logs.
CONGO REPUBLIC

Jorg TN8AJ may be QRT from this country for good. In a letter to Ron ZL1AMM he indicated that on a trip there last November and December he only had a transceiver available that would operate up to 12.5 MHz with a power output of 100 watts and as it was the rainy season the QRN levels were very high. Jorg did succeed however in some regular QSO's with JA.

The latter part of his stay allowed use of the one kilowatt transmitter, however conditions were bad and at times difficulties were experienced in having a QSO with his QSL manager Y25LO.

To summarise the six operations from the Congo between 1979 and 1982, there have been 13,203 QSO's, 211 countries worked of which 176 have been confirmed. Broken down into bands they are 80 metres — 52 countries, 40 metres — 80, 20 metres — 147, 15 metres — 170 and 10 metres — 139 countries confirmed. Worked all States (WAS) was achieved on fifteen metres SSB.

HOME BREW

Two very keen and well known DXer's from the USSR are Vlad UW6FZ and his brother Larry UA6HZ. These amateurs share the same home brew equipment and antennas. Both operators are very keen contesters. Who operates may be the toss of a coin!

WILLIS ISLAND

The new operator for Willis Island is Graeme VK9ZJ. Graeme will be active from the island from this month through to the next scheduled changeover in December. QSL arrangements will be through Jill VK6YL QTHR.

Graeme will be taking six metre equipment with him, which was donated to the Commonwealth Bureau of Meteorology for the use of amateurs stationed at the remote Bureau base, by the Heard Island expedition and the VK6 DX Chasers Club.

Three Willis Island amateurs get together on Willis with MV Cape Pillar in background. L to R: Andy VK92A who did the last Willis tour, Bryan who has done many tours on Willis and John VK9ZJ currently on Willis.

FREQUENCY SHIFT

North American stations were all set up to QSY lower in frequency around the 20th of May and were awaiting the blessing of the FCC.

The General licence holder will be permitted 14.225 MHz and above, the Advanced 14.175 MHz and above and the Extra Licence holder an extra 50 kHz, 14.150 MHz and above.

The QSYing of those regular scheds that many VK's have with Europe and VE just under 14.200 MHz are going to crowd the low phone end of twenty metres. Perhaps I might be forced into CW operation after all. The DXpeditioners frequency of 14.195 MHz may now become 14.145 MHz.

This will be the first of many changes which will effect the American privileges in all amateur bands.

ADELIE LAND

Anyone working Dumont FB8YK can expect a quick QSL return. Dumont's XYL is handling the paperwork for him whilst he is down south. Her address is Madame D'Uraville, 24 Manresa Court, Sandy Bay 7005, Hobart, Tasmania.

Dumont, with a very powerful signal is generally heard around 14.200 MHz.

RECOGNITION

Dave VK3DHF, probably better known as VK92D and later as VK0HG, received quite a surprise when he called in at the 47th Annual WIA Convention held over the ANZAC weekend.

Dave was presented with a framed certificate inscribed — "For outstanding service to amateur radio" from Bruce VK6O0 President of the VK6 Division of the Institute.

Congratulations Dave, and thanks for the new countries that you have given many, on behalf of all DXers.

AFRICA

Ten metres is not "dead" though it may be "dying". Stations from Africa have been romping through in the late afternoons in the eastern states. So if you want 5X5's and all the other rare ones don't overlook a quick CQ on ten metres.

LATE NEWS

At the time of going to press 1S1CK was active from the Danger Reef in the Spratly Islands.

Congratulations must go to these very venturesome gentlemen that have made a new country possible for so many in the light of what has happened in this area earlier this year. QSLs to DU1CK.

Voice of the Mediterranean

Much heard on the HF bands is Eric 9H4G. I first worked Eric in 1973 and at that time Gozo was a new country for me. The QSL was returned to me very promptly.

Eric retired from business in London in 1969 and he and his XYL Frances decided the idealistic area of Gozo Island was an ideal place to settle. Now was the time to enjoy amateur radio, a hobby that has a lot to offer, which had been Eric's interest since the nineteen twenties when he joined the RSGB as a SWL member and was allocated the low number of BRS-104. Eric was first licenced in 1950 with the callsign
ERIC 9H4G

G3HGX but due to business pressures the bands unfortunately saw very little of Eric. In 1972 Eric, the fifth amateur on Gozo, was allocated the callsign 9H1DG but in August that year, stations on Gozo were given callsigns running from 9H4A to 9H4Q. Now there are sixteen amateurs on the island, all members of the Gozo Amateur Radio Society of which Eric is Vice Chairman. It is of interest that only two stations, G3DOG and G4GGY, have worked all the sixteen amateurs in this area.

DXing is Eric's favourite pursuit, with a DXCC score of 160, there are ten on 288 on fifteen and 308 on twenty metres and the new interest of forty metres over the last three months has netted some eighty three countries from all continents. The total of 303 current countries leaves and the new interest of forty metres over the last three months has netted some eighty three countries from all continents. The total of 303 current countries leaves

QTH'S YOU MAY NEED
3BBFL PO Box 1104, Port Louis, Mauritius.
3V8PS PO Box 473, Tunis, Tunisia.
5N8A/F PO Box 12635, Kano.
6C3A5 PO Box 35, Damascus.
6C3SM PO Box 35, Damascus.
6C3SN PO Box 35, Damascus.
6C3SP PO Box 35, Damascus.
6W6EX PO Box 35, Ziguinchor.
702J/C PO Box 28, Chisesezi, Zambia.
702T J/C PO Box 28, Chisesezi, Zambia.
9K2ADN PO Box 19593, Haitan, Kuwait.
9M2CH PO Box 777, Kuala Lumpur.
A59A PO Box 22381, Muharrah, Bahrain.
AP2M PO Box 999, Rawalpindi.

ERIC 9H4G

HEARD AND WORKED IN EASTERN STATES

QSLs RECEIVED

3.5 - G85GL (DL4FF). 3.5 - 7L1AM0/C. 7 - 6Y5AG. 7 - F08BI. 7 - H5AFU. 7 - K65SZ. 7 - TR8J0 (F6AJA). 7 - YN1B.

Thanks

Assistant with information for these notes has been forthcoming from amateurs including VK5 1MM, 2PS, 3BY, FR, UX, YJ, YL, AXO, 4FQ, AGW, 6FS, HD, IT, NE and Eric L30042. Overseas amateurs who have dis- included G3NBC, ON7WW, ZL1AMN, ZL1AMM and 9H4G. Research from magazines including HOW'S DX, DX NEWSLETTER, QRZ DX and Jan and Jay O'Brien's QSL Managers List. The closing date for information for the August issue is 23 June. Thanks to all contributors.
The JIL SX-200 represents the latest STATE-OF-THE-ART technology in the development of Scanning Monitor Receivers. It has many features that previous have not been available on receivers of its type.

For example the tremendous frequency coverage, which encompasses all of the following bands:—HF & UHF CB, 27 & 155MHz MARINE, Australian LOW BAND, AIRCRAFT band, VHF SATELLITE band, 10Mx, 6Mx, 2Mx and 70CMx AMATEUR, VHF HIGH BAND and UHF TWO-WAY band—as well as many others. Other features include detection of AM or FM on all bands. Squelch Circuitry that can be used to LOCK OUT carrier only signals. Fine Tuning control for off channel stations. 240 VAC plus 12VDC operation, Squelch Operated Output that may be used to trigger a tape recorder or channel occupancy counter and accurate Quartz Clock.

THE ONLY SCANNER THAT GOES 26-88, 108-180 & 380-514 MHz

The JIL SX-200 features:
- Frequency Range: 26-88.1 MHz, 108-180 MHz, 380-514 MHz
- Sensitivity: FM 0.4uV S/N 12 dB, AM 1.0uV S/N 12 dB
- Selectivity: FM More than 60 dB at 25 kHz, AM More than 60 dB at 10 kHz
- Dimensions: 210 (W) x 75 (H) x 235 (D) mm
- Weight: 2.8 Kg.
- Clock Error: Within 10 sec./month
- Memory Channel: 16 Channels
- Scan Delay: 0, 3 or 4 seconds
- Audio Output: 2 Watts
- Ant Impedance: 50-75 ohms
- Freq. Stability: 26-180 MHz Within 300 Hz, 380-514 MHz Within 1 KHz

ACCESSORIES
- Service Manual $12 + $2 P&P
- Scan-X Base Antenna $62 + $10 P&P
JIL SX-200
A BETTER SCANNING MONITOR RECEIVER

HIGH QUALITY AND PERFORMANCE
JIL have designed the SX-200 as a high quality, high performance programmable scanning receiver at a realistic price, design criteria which are not born in many other receivers of its type.

MECHANICALLY RUGGED
The JIL SX-200 is ruggedly built using EPOXY-GLASS printed circuit board and double sided through hole plating techniques. Easy access and serviceability is maintained throughout its design.

4 BIT MICROPROCESSOR WITH ONBOARD ROM AND RAM
A powerful 4 Bit PMOS Microprocessor, the uPD553, is used as a controller in the SX-200. Its features include 2000 x 8 ROM and 96 x 4 RAM onboard as well as up to 80 instructions with a 3 level subroutine stack.

EXTREMELY LOW SPURIOUS COUNT
Even though the SX-200 covers over 33,000 Channels JIL, through careful design, have been able to reduce the number of internally generated spurious signals to an extremely low level. Not the case in most other scanning receivers.

FULLY TRACKED RF AMPLIFIERS
The SX-200 makes use of 3 separate RF Amplifier Stages. They are divided into 6 bands, each band having its own electronically switched coils which are fully tracked with the receiver frequency using Varicap Diodes. Maximum performance is thus gained over the entire operating range of the set.

NEW ACCESSORIES

- **EXP-32 KIT**
  Increase the memories of your SX-200 to 32 with this memory expander kit.
  $53 + $2 P&P

- **A4-AM KIT**
  Provides automatic AM operation on the 27 MHz CB MARINE and AIRCRAFT bands.
  $32 + $2 P & P

- **CVR-1B CONVERTER**
  Allows your SX-200 to cover 180 to 380 MHz (Incl. SPACE SHUTTLE frequencies).
  $199 + $5 P & P

- **CVR-2 CONVERTER**
  Allows your SX-200 to cover the SHORT WAVE bands, 0.55 to 30 MHz.
  $189 + $5 P & P

- **MFJ-332 VLF CONVERTER**
  Allows your SX-200 to cover 5 KHz to 1600 KHz
  $144 + $5 P & P

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AMATEUR RADIO, June 1983 — Page 33
As can be seen, with forty nine awards issued and thirty six DXCC amendments during the past three months, yours truly has been kept quite busy. Once again, if I may remind those who are writing in, a stamped addressed envelope cuts down my work load. Cannot afford twenty seven cents? Well even a self addressed envelope helps a lot.

Every six months this column lists all those stations who have a claimed DXCC score of over 275. A look at the March awards column should convince the majority that there seems to be a large number of calls over this magic figure. I personally believe that this total should not change, particularly if it has been the goal of a number of members over the years. The alternative is to delete from the listings any person who has not amended their totals over the past two years. If you are in this latter category and wish to remain in the listings, please drop me a line. The next DXCC top listings are due to be published in September AR. My deadline for this issue is mid July.

AWARDS

Awards issued and amendments made during period 5 January 1983 to 22 April 1983. are listed below.

```
AWARD CERT NO
VK2OL  308/351
VK3AX  155/160
VK3BLN 283/287
VK3NL  171/173
VK3OT  297/301
VK4RF  309/336
VK5ARA 223/224
VK5GZ  117
VK6FS  294/295
VK6HD  311/329
VK7BC  298/305
VK7LZ  309/344
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THE FRANKSTON AND MORNINGTON PENINSULA AWARD

FAMPARC introduces a new world wide award which is divided into three levels. The basic award, level 3, will be named “The Coastal Towns 100 Award”. Please note that it is not 100 coastal towns. The number 100 qualifies the amateurs worked, or heard around the Australian Coastline.

GENERAL

1) The award is available to all licenced amateurs world wide. It is also available to SWLs on a heard basis.
2) Contacts after 1st January 1980 are valid.
3) GCR rules apply ie all log extracts must be certified by two licenced amateurs, an AR club official or a Notary Public.
4) Stations from net operations are not counted.

FRANKSTON AND MORNINGTON PENINSULA AMATEUR RADIO CLUB

COASTAL TOWNS 100 AWARD

This document certifies that _______________________, owner and operator of Amateur Radio Station _______________________, has submitted satisfactory evidence of two-way radio communication to qualify for the COASTAL TOWNS AWARD, LEVEL No. 3.
acceptable.
5) Level 3 is the basic award and must be worked before levels 2 and 1.
6) A spot check for each award will be made.
7) All modes and all HF bands may be worked.

SPECIFICS FOR LEVEL 3
a) There is no distinction between towns or capital cities — so long as the town/city/suburb is on the coast or river estuary, it qualifies for the award.
b) A minimum of five coastal towns/cities from each of VK2, VK3, VK4, VK5 and VK7 with at least three coastal towns/cities from VK6 and three separate contacts from Darwin (VK8).
c) A minimum of ten separate contacts from VK2 to VK7 inclusive must be made.
d) To qualify for the basic award one only contact must be made with Frankston (VK3).

LEVEL 2 — SEAL — PORT PHILLIP BAY AWARD
1) The award is available to all licenced amateurs world wide. It is also available to SWLs.
2) Fifty contacts from towns around the perimeter of Port Phillip Bay must be made on two only of the HF bands with a minimum of five contacts on each band.
3) A station may be worked twice, once on each band.
4) Six of the following towns must be represented: Frankston, Mornington, Rosebud, Chelsea, Rye, Carrum, Sorrento, Mordialloc, Seaford, Altona, Port Arlington, Williamstown, Geelong, Queenscliff.

LEVEL 1 — SEAL — CAPE SCHANCK AWARD
1) The award is available to all licenced amateurs world wide. It is also available to SWLs.
2) All HF bands and modes.
3) Fifty contacts with amateur stations on the Mornington Peninsula must be made by VK, ZL, and P29.
4) DX countries require twenty contacts.
5) A station may be worked twice on different bands.
6) There must be at least three contacts with FAMPARC members.

Log extracts must contain: Date, UTC, Station, Signal reports, QTH, Band and Mode and must clearly show the name, callsign and QTH of applicant.

Basic Award Level 3 fee is $3 US or Australian. For successive awards $1 US or Australian plus a SAE with three IRCs.
For overseas countries lists of coastal towns may be obtained from the Awards Manager of receipt of a SAE and three IRCs. For VK SASE only.
The Award is of average size and printed in black on a bright yellow background.
All applications with log extracts to be forwarded to — PO Box 38, Frankston 3199, Victoria, Australia.

TRY THIS with the Technical Editors

COAXIAL CABLE BRAID PREPARATION

Most coaxial cable terminations require the braid to be straightened out. Whilst it is possible to do this strand by strand, there is an easier way.

The wire strands may be brushed out very neatly with a wire brush. This is analogous to brushing hair.
Use the wire brush to straighten out the strands a little at a time, rotating the cable as you do this, brushing right around the circumference. The brush strokes should be in line with the cable.
Remember to advance slowly so as not to stress the wire strands of the braid unduly. You will soon have the braid fanned out or brushed out just as you see it in all the diagrams showing how to fit coaxial connectors.
This technique is also useful for other terminations where braid and inner conductor must be separated out.
Just a little practice and care will give a professional looking result that anyone would be proud of. Just the trick for PL259s, Type N, BNC and any other coaxial cable termination.
The accompanying photos illustrate and explain the technique.

AMATEUR RADIO, June 1983 — Page 35
As explained in earlier articles when teleprinter machines, normally used on land lines, are used for radio reception the audio tones coming from the radio receiver must first be converted to pulses of direct current. The audio from the receiver is fed to a demodulator that converts the audio tones into on/off switching. The demodulator switching circuit is connected to the teleprinter through a DC power supply called a loop supply, the switching circuit. The Power supply and the teleprinter all being connected in series. By this arrangement the on/off switching in the demodulator will produce DC pulses through the teleprinter machine. As the incoming DC pulsed signal has very little energy in it, this fraction of a watt is only useful to trigger into action mechanical energy available from the machine's electric motor. Just as it only requires minute energy to pull the trigger of a rifle and then tremendous power is released, so the small incoming signal can trigger large amounts of mechanical power available from the machine's electric motor. As there are many makes of machines, all using somewhat different systems, the following description is of a simple hypothetical machine that serves to illustrate elementary principals.

The heart of the mechanical teleprinter receiving machine is a selector electromagnet with its armature. This selector is rather like a large relay: when sufficient current flows through its coils the armature is closed and at other times it is opened by a spring. The armature does not work electrical contacts as in a relay instead it has projections on it that are used to trigger various mechanical actions. To function properly the armature must faithfully follow the incoming pulsed signals. The armature must be closed for mark and open for space (mark is current flow and space no current flowing).

This armature is used to control the starting and stopping of a one turn clutch connected to a receiving shaft and also controls the positioning of five code bars into either mark or space positions as the shaft turns. Firstly let us consider the one turn clutch. When the receiving machine is at rest with no signal being received a continuous mark current is flowing. When an incoming character signal is received such as a letter or figure this mark current is interrupted according to the teletype code. The first Part (or bit in computer jargon) of any such signal is always a space so with no current flowing the armature is released and this triggers the one turn clutch into engaging and the receiving shaft starts to turn.

Once this turning commences it will continue for one turn regardless of any further signals or the absence of them as it turns. Coming to the end of it's revolution normally a mark stop signal is received and the receiving shaft will then come to rest. The shaft will remain at rest until the next space signal is received. If the person at the distant transmitting station is typing very slowly the receiving shaft will be at rest for a considerable time between each letter typed. If the typing is at the machines maximum speed there will be only an extremely short rest between letters. This short rest period at the end of the reception of each character signal is necessary to achieve perfect synchronisation as it is not possible to have sending and receiving machines adjusted to one exact speed at all times.

The receiving shaft is geared slightly faster than the sending shaft in a combined send receive machine. As receiving shafts are slightly faster than sending shafts they finish their one turn a little earlier and will then stop and wait a brief moment until the sending shaft catches up with them. In other words these short waiting periods ensure that the receiving shaft always starts at the same exact time that the sending shaft sends the space starting character signal and slightly inaccurate speed settings will not become a major problem. So we see that the starting and stopping of the receiving shaft is controlled by the armature of the selector and this in turn is controlled by the distant sending machine.

Now let us deal with the second function of the armature as it controls the positioning of the five code bars. The positioning of these bars determining what letters, figures etc are to be printed or what machine functions are to take place. It will be helpful to think of the one turn receiving shaft as a sort of mechanical rotary switch with seven segments. As the shaft rotates each segment in turn is exposed to the controlling action of the armature and the armature positioning is used to trigger various mechanical actions. The first of the seven segments is traversed as the starting pulse is received. The next segment is the first of five code segments that determine what is to be printed etc. As each code segment is reached in turn, the position of the armature at that time determines what triggering signal is given to the code bar associated with that segment.

A mark signal moves the bar into a mark position and a space signal moves it into a space position. At the end of the revolution some bars will normally be set to mark and some to space according to the signal received and these positionings have been controlled by the incoming signal from the distant sending station. In computer language a serial code signal has been converted into a parallel code positioning of code bars. As the code bars control what is to be printed etc let's study them more closely. In their simplest form the bars are parallel to each other and close together, they run from left to right across the machine as viewed from the operator's position. As they are positioned to mark or space they slide slightly to either the left or right so for almost all character signals some will be to the left and some to the right.

These bars have slots in the top of them and above the bars and resting on them are printing control levers. These levers are at right angles to the code bars and so run towards or away from the operator's position. Each printing lever controls the printing of a particular letter etc and they are arranged in an evenly spaced row along the top of the code bars from left to right. For simplicity I have called all these "printing levers" but a few of them don't print anything but instead control some machine function such as carriage return or line feed.

The slots in the top of the code bars are so arranged that for each of the thirty-two possible coded combinations of the five bars the slots will only line up at one point under one printing lever. When this happens this particular lever will drop into the five slots and adopt a lower position than all the other printing levers. Underneath each printing lever is a projection that will be struck by a printing ball that sweeps past under the printing levers once for each revolution of the receiving shaft. The Printing ball will strike only one lever as the others have not dropped down into it's path. When the printing ball strikes the printing lever this letter, figure etc is printed. This printing action commences at the end of the revolution of the receiving shaft. In the case of the levers that don't print anything, when the printing ball strikes them their movement controls some machine function such as carriage return where the machine will then start printing a new line in the left of the page.

In the foregoing for simplicity sake I have left out the fact that in typical machines only a small portion of each signal pulse or bit is used in the receiving of character
signals. Most machines have a control called a range finder that controls what part of each pulse or bit is used and this is very handy when signals are distorted in some way. So if the first part of the signal pulse is distorted you can sample a later part or if the last part is distorted you use the earlier part. Usually the sample is taken near the middle part which normally gives best results. An additional use of the range finder is that to some extent it can be used to get better copy of signals that are slightly off speed.

Well, in this very elementary description I have left out many important details, however I trust those who previously had no idea of how things worked will now at least be able to picture with some accuracy what takes place in a typical machine.

RE THE 1983 RD CONTEST

As I mentioned last month I am endeavouring to encourage RTTY participation in this contest and have been busy writing many letters for this purpose. How about letting your state RTTY club know that you intend to use RTTY in the contest or let me know direct. I am trying to compile a list of those who intend to participate using RTTY.

On a personal note I now have a large World War 2 transmitter that I have slightly modified for RTTY and intend to use in the 1983 RD Contest. So if you would like to work an ex WW2 Army Signaller on RTTY using a WW2 transmitter look for VK5XI. 73 to all from Bruce VK5XI .

OLD TIMERS MEET AGAIN


WCY CELEBRATIONS IN VK4

Australia Post is celebrating World Communications Year 1983 by inviting former employees and others with Morse code experience to test their skills in a special competition to be held in the Brisbane GPO Museum during June.

Testing will be held with finalists competing for awards which will be made to the most proficient sender, receiver and all-rounder. A special function has been arranged for the presentation of prizes at 5 PM on Friday, 1 July, in the Telecommunications Staff Cafeteria, Telecom's Communications House, Brisbane.

Application forms are available from the GPO Museum or by writing to the Secretary of the Postal-Telecommunications Historical Society, GPO Box 6000 Brisbane, Qld 4001.

The competition judging will be restricted to Brisbane during June because of the availability of Morse keys. Queensland's first telegraph line between Brisbane and Ipswich was opened on 13 April, 1861. Morse remained an integral part of the communications system in Queensland until 1964.

This competition is designed to salute the many thousands of telegraph operators who pioneered the establishment of the earliest form of modern communication to the most remote parts of the state.

Although Australia Post is holding this Morse Competition in Brisbane only, it is hoped that anyone, male or female, from any part of Australia and who happens to be in the Sunshine State during June, will come along and pound a little brass. The rules don't specifically say it but bring your own key, hand or 'bug' if you wish, as I imagine there's nothing to stop you from using it.

No matter if you're rusty or out of practice — or past your best. Most OTs, professional and amateur, are now over their peak. I urge all brasspounders, or sideswipers, or 'idiot stick' fiddlers to be in it, for old times sake — also, there's no age limit, 8-80.

If, regretfully, you can't participate, come along anyway and see the Museum — it's certainly worth it and all will be made most welcome!

Alan Shawsmith, VK4SS
at a height of twenty metres above ground. Frequency shift keying is used for identification. The licence also included provision for a 1296 MHz beacon, and construction is now under way. The frequency will be 1296.420 MHz.

"The antenna of the 2 metre beacon has been replaced resulting in much improved performance. The original antenna collapsed last year and was replaced with a temporary antenna, which had also seen better days, until the new antenna could be completed."

"We are continuing to receive many reports from overseas on our 10 metre beacon, particularly from Europe. Since the beacon went to air at the beginning of 1981 we have received nearly 100 QSL cards. We have also received quite a number of cards from JA confirming reception of the 6 metre beacon."

"Looking down the latest beacon list I notice that many beacons are still not on their 'proper' frequencies. A particular problem is VK6RTT on 52.320 MHz, the secondary VK2 frequency, and there are moves to apply for a 6 metre beacon in the Newcastle area."}

"Thanks for the letter Jeff. The custodians of the VK6RTT beacon might note the above comment in regard to the 52.320 frequency, and assess the position with a view to making a change in due course and thus allow the proposed Newcastle beacon to start on its 'proper' frequency!"

"I would hope that when the VK5 beacons are finally set up again that they would be on the frequencies assigned by the band plan. However, any suggestion of this in South Australia brings about a violent reaction in certain quarters because of possible desensitising of receivers in the prime VHF areas of Adelaide, largely due to the commanding position the beacons have on Mt Lofty. So what do you do? You can't win!"

**SIX METRES**

The month has certainly seen some ups and downs on the band, mostly downs I would venture to say in the southern areas. Several brief openings to Japan, more on 50 rather than 52 MHz. One bright spot for VK5 was the reception of KH61AA on 50.110 at 0355 on 16/4. Al came up on the band in response to a request from Col VK5RO as Al was pretty good on 28.855 at the time. Signals on 50.110 were rather weak so there was little likelihood of a contact emanating on 52 MHz.

"On Saturday 2/10/82 we were having trouble with apparent pirate activity on our repeater transmit frequency 147 MHz. Later in the day you could make out words which were obviously Indonesian. Mark VK6WW was the first to make contact when he finally got a call sign and broken English coming back to his call. Harry YD9BC and Gede YD9BR in Denpassar on Bali asked us to QSY off their official Police Frequency! At this point we closed down the repeater to prevent more interference on their band. (Lots of Port Hedland people holiday in Bali.)"

"Contact was continued direct on 146.500 MHz with some QSOs averaging from 5 x
505 9x9 with powers ranging around 10 to 80 watts and antennae from a vertical 5/8 to 15 metres to a 4 element quad at 20 metres. On Sunday they were there again and over the two days of 19th and 20th December, Brian VK6AIAH, Dennis VK6KOZ, John VK6AFA, Mark VK6WV; from Wickham, Pattie VK6SL; Karratha, Dave VK6YA, Scott VK6KES, John VK6KJO, Nigel VK6KHD and from Exmouth Steve VK6AS. Worked into Indonesia over a path of 1350 to 1400 km.

The next few contacts were made with Harry YD9BC and at times Brian VK6AIAH could receive some of the Indonesian TV stations. Brian is on a small hill right on the coast and used eighty watts to a four element quad at 20 metres so is in the best position for 2 metres. He worked Indra YD9AI and Jayaparna YD9AR in Denpassar on 22/10 with 5 x 9+ signals both way.

The next contact I made with Indonesia was 221183 at 0834 5 x 1 with Syahrir in Lombok with a call sign of J609; it is not known for sure if this is an amateur call sign.

Around February 1983 Indonesian were again breaking through but this time on all three repeaters. They were asked to QSY off the Wickham repeater (146.100 MHz input) as the batteries were getting run down, again a number of our amateurs worked them with good two way reports. Since then, activity has been restricted to the local area, working Derby through the Wickham repeater etc.

Now that we are aware of the two metre DX we are now better prepared, people turn antennas in different directions and scan the band more often so next year when the DX bands open up who knows what we will find.

Wickham repeater operates on Channel 2; Karratha Channel 4; Newman Channel 6; Port Hedland Channel 8.

MOONBOUNCE REPORT

Lyle VK2ALU in "The Propagator" advises that Barry VK2ZAG had the satisfaction of seeing the newly set up dish moving in both Hour Angle and Declination using its own power. 28.3, largely as a result of some forty hours of his wiring work, and earlier motor replacement and gearbox repairs by Wojciech.

Another step forward was on 26.3 when the feed tripod, made up of 6 metre long tubes, was installed in the dish by a four man team under the leadership of Ian VK2EXN, who had made up the apex plate and tube plug arrangement for the tripod.

Contacting the normal X-band transmitter 1296 MHz low level driver stage is now well under way and more useful information has been received on another type of GASSET low noise receiver preamplifier. It is intended to make up one of this type and one of the W6PO design to compare results and to provide the necessary preamplifier and postamplifier stages for the receiving system.

So it appears something is now being seen for the fruits of their labours by this loyal band of people who have had to go to so much extra work in shifting the original dish because of vandalism.

NEWS FROM TASMANIA

Joe VK7JG has written to fill in the blanks in the information occasionally received from VK7, and reports as follows: "VHF activity is almost non-existent in VK7 except for the 2 metre VK7 to VK7 'inversion' contacts.

"However, quite a lot of construction has been going on. We now have a UHF repeater VK7RAB, 438.625, RX 433.625, situated on Mt Arthur at 1128 metres asl giving excellent coverage of Launceston and the North West coast. The equipment is a modified Icom IC4000 and running twelve watts to a VK7JG diplexer and VK7JJ antenna array, receiver as well. We are present working on a replacement unit using an AWA 15M fitted with a twenty five watt PA and GASFET pre-amp and possibly two aerials, thus eliminating the losses in the diplexer.

"The antenna line is rather unusual, designed and constructed by VK7JJ. It consists of a coaxial dipole fitted with two sets of directors and a reflector. It gives a cardioid pattern with a 20° beam width, and a null of about 55 degrees. We operate from 12 dB SINAD at 0.6 uV. We are now better prepared, people turn antennas to different directions and scan the band more often so next year when the DX period including the northern hemisphere winter when one would have expected less contacts, but they still seem to keep coming.

"I am indebted to the Japanese “CG ham radio” magazine per kind thought of Graham VK6RO for the following. Through-out the period contacts were made with VK7 stations somewhere on almost every day, mostly to VK4, VK6 and VK8 but quite a sprinkling of VK2, VK3, VK5 and VK7. Apart from these other exotic ones include K66XX, KG6KD, KG6HG, KG6FG, KG6LA; KA7AV, KA7AV/KL7, KA7DZ, KA7DZ/KL7, KA7DZ/YC2, KA7DZ/YC2, KA7DZ/YC2, KA7DZ/YC2, KA7DZ/YC2, KA7DZ/YC2.

"A UHF repeater is under construction for Port Hedland Channel 8. Thanks for writing Joe."

OVERSEAS ON SIX METRES

It is interesting to look over some of the listings of contacts made from Japan during the last four months. The contact period including the northern hemisphere winter when one would have expected less contacts, but they still seem to keep coming.

"Another step forward was on 26.3 when the repeater will incorporate an ‘economiser’ to reduce the standby current consumption. VK7REC (Tx 146.9, Rx 146.3) is a repeater situated on Snow Hill elevation 823 metres, giving excellent coverage from Hobart to Launceston and parts of the East and North West coast.

"Equipment is a ‘Tait’ VHF High Band mobile unit with remote hi-lo power switching plus several other functions. Power output is fifteen watts hi, five watts lo. Receiving sensitivity 0.2 uV for 12 dB SINAD at the input to the cavity filter system. Tx antenna is a ‘plumber’s delight’ as per ARRL Handbook, Rx antenna AEA Isopole. Tune up and alignment by VK77J; callsign generator and construction by VK7JJ; remote command system by VK7ZBA; Filters construction and alignment by VK7PP; installation by VK7ZBA. This repeater is also solar powered, and once again sharing its solar panels and batteries with two other commercial systems.

"A novel feature of the call sign generator is that its tone is voltage dependent, and by listening to the pitch of the tone we have some idea of the state of charge of the batteries. And VK7RAB is to be fitted with a voltage to frequency converter, thus exact battery voltage can be determined by the tone of the call sign.

"A UHF repeater is under construction for the Hobart area and one on 438.600 for the Central Highlands." Thanks for writing Joe.

OVERSEAS ON SIX METRES

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"A UHF repeater is under construction for Port Hedland Channel 8. Thanks for writing Joe."

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Above 50 MHz" comes an interesting report of W5UWB continuing to amaze himself and the EME community by having contacts via the moon using only a single yagi, a Junior Boomer. He has completed two way contacts with K1WHS, WA1JXN/7, SM7BAE, SM2GGF, K17D, VE7BQH and WA6MGZ. All these stations have fairly large arrays except WA6MGZ who has a six yagi array.

Dave, W1WHS has done much to convince others that those with single yagis and sufficient power can have EME contacts with stations using large arrays at the other end. Dave has a huge array of 24 Junior Boomers and these have been up for 2½ years. He always finds new stations to work on every moon perigee. Particularly in Europe, there seems to be a never ending source of new stations who want to work him. During the December and January perigees, Dave contacted twenty one new stations, many of them with single yagis. Some recent QSOs include UD6DFD, UK5EDT, YU10YK, DFOVK, KG6DX and K11KN. Also worked was VK5MC with 589/599 signals, and a single yagi station DJ5MS with 539 both ways.

In line with the above report, it seems you chaps with your 400 watts on 2 metres to a thirteen element yagi or larger could well be in the ball park for some contacts with stations such as Dave W1WHS.

Finally, I note from "Break In" that the ZLs are having a "Six Metre Only" contest on 5/11/83, commencing about 2330 and on 3/4 December 1983 will be the VHF/SHF Field Day Contest, starting on the Saturday afternoon and continuing through until the Sunday afternoon. Anyone in Australia want to sponsor a VHF Field Day to coincide with the above? The Geelong Club tried to get a field day contest going, but it collapsed for want of support, can anyone else get people moving?

WILLIS ISLAND GIFT

Neil VK6NE, whilst at the Federal Convention, took the opportunity to hand over six metre equipment to the Bureau of Meteorology for use by amateur stations based at Willis Island.

The equipment a Yaesu FT680R and the Werner Wulf beam that was used at Heard Island was accepted on the Bureau's behalf by Peter VK3FR.

The equipment which was donated by the VK6DX Chasers Club will be permanently installed on Willis Island.

The new operator from this month through to the December changeover will be Graeme VK3DSB.

CLOSURE

As you can read, there has not been such a lot of general VHF activity during the past month, in fact, the March-April period this year has been somewhat disappointing, but I guess generally in line with what could be expected at this time of the Cycle.

Closing with the thought for the month: "If you want your friends to be perfect, you'll never have any." 73. The Voice in the Hills.

WHO IS THIS AMATEUR??

1928 to 1931 saw him with the experimental licence OA4FN when he was a member of the Woolloomin Radio Club. He left amateur radio for a few years to return with his present call sign in 1935.

In 1946 he was a member of VK4 Council and 1947-48 saw him as a Federal Councillor.

From 1946 to 1951 he carried out simultaneous VK4WIA broadcasts on six bands.

He went to New Guinea in 1951 and founded the VK9 Division, becoming President in 1953 a position he held until 1959.

In 1959 he returned to Brisbane with his original call sign, and later moved to Rockingham where he founded the Central Queensland Branch, where he was President from 1961 to 1968.

Back in Brisbane he carried out VK4WIA broadcasts on 80 metres from 1973 to 1981.

When in New Guinea he figured prominently in the two searches for the YASME expedition's Danny Weil which history is preserved I believe in "AR".

He has always figured prominently in Scouting radio activities particularly Jamboree on the Air. Last year he designed, built and operated the transmitter, on 1.610 MHz, for the Scout Jamboree in Queensland.

He has been top scorer in RD Contests for VK4 and VK9. A year or so ago he was presented with the Queensland Division Merit Badge and certificate for service to Amateur radio. You are right...he is Frank VK4FN.
Still More Usable Antenna For Your Money ... PLUS 30 Metres!

That's right, Butternut's new Model HF6V offers you more active radiator on more bands than any other vertical of comparable height at any price. The HF6V's exclusive Differential Reactance Tuning™ circuitry lets the entire 26-foot antenna work for you on 80/75, 40, 30, 20 and 10 meters, and a loss-free linear decoupler provides full quarter-wave unloaded performance on 15 metres. Better still, the HF6V can be modified — without surgery — for the remaining WARC bands when the times comes. Here are just a few of the features that make the HF6V the ideal WARC antenna for your new WARC station:

- Completely automatic bandswitching 80 through 10 metres, including 30 meters (10.1 — 10.15 MHz); 160 through 10 metres with optional TBR-160 unit.
- Retrofit capability for 18 and 24 MHz bands.
- No lossy traps to rob you of power. The HF6V's three resonator circuits use rugged HV ceramic capacitors and large-diameter self-supporting inductors for unmatched circuit Q and efficiency.
- Eye-level adjustment for precise resonance in any segment of 80/75 metres, including MARS and CAP ranges. No need to lower the antenna to QSY between phone and cw bands.
- For ground-level, rooftop, tower installations; no guys required.

Suggested amateur net prices:
- Model HF6V (automatic bandswitching 80-10 metres) ............................................. $282
- Model TBR-160 (160 metre base resonator) ................................................................. $66
- Model 30MCK (30 metre conversion kit for HF5V-II/HF5V-III) ............................... $56

* When supplied as part of HF6V.

Electrical and Mechanical Specifications

- Shipping Weight: 12 lbs/5.4 kg
- Height (adjustable): 26 ft./7.8 m
- Feedpoint impedance: nominal 50 ohms with included matching section
- VSWR at resonance: 1.5:1 or less on all bands
- Bandwidth for VSWR of 2:1 or less: entire 10, 15, 20 and 30 metre bands; 250-300 kHz on 40 metres; 30-90 kHz 80/75 metres
- Power Rating: 2 kW PEP/1 kW cw input 80 through 10 metres.
- Wind loading area: 1.5 sq ft./15 sq m

BUTTERNUT ELECTRONICS CO.

For complete information concerning the HF6V and other products, amateur and commercial, contact the sole Australian distributor.

Traeger Distributors (NSW) Pty Ltd, PO Box 348, Cnr. Adelaide & Chester St., Moree, NSW. 2400 Phone (067) 52 1627

Editor's Note (CQ Review)

The Butternut HF5V-III is being phased out in favour of their new HF6V. This new antenna will eliminate the reduced power ratings of the former antenna on 80/75 metres. Ceramic capacitors are used instead of the concentric tubing capacitors, and the 10 MHz band is included. This review, although of a previous model, depicts accurately the theory of operation of the Butternut antennas both old and new. We suggest that you check their ads for any adapter kits and/or accessories.

— K2EEK
CONTESTS

CONTEST CALENDAR

JUNE
4-5  RSGB National Field Day
11-12 World Communications Year RTTY
11-12 South American CW Test
11-13 6th VK/ZL Oceania WCY RTTY Test
11-12 ARLRL VH Test +++
18-19 All Asian Phone (Log & Rules available FCM)
18-19 Nine Lands CW Test
25-26 ARLRL Field Day

JULY
11-12 Remembrance Day Contest
11-12 Nine Lands CW Test
20-21 SEAnet CW Test +++
27-28 Venezuelan CW Test +++

AUGUST
6-7 European CW Test +++
13-14 Remembrance Day Contest
13-14 DARC WA C.W. Test
13-14 SEAnet Phone Test +++
20-21 SARTG RTTY Test
27-28 All Asian CW Test

SEPTEMBER
3-4 DARC Corona "Corona" 10 m RTTY
10-11 G QRP Activity +++
17-18 VK Novice Test
17-18 Scandinavian CW +++
24-25 Scandinavian Phone +++

The contests marked with +++ are not yet confirmed.

REMEMBRANCE DAY CONTEST 1983

Please note the changes

AUGUST 13th-14th

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.

This 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
address on all WIA frequencies by a notable
personality.

A perpetual trophy is awarded annually for
competition between Divisions of the Wireless
Institute of Australia. It is inscribed with the
name of those 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.

OBJECTS
Amateurs in each VK call area will endeavour
to contact other amateurs:
1. In any VK call area (including their own). P29 and ZL on all
bands 1.8 through 30 MHz, except 10 MHz.
2. In any VK call area (including their own). P29
and ZL on authorised bands above 52 MHz
and as indicated in Rule 5.

CONTEST DATE
0800 UTC 13th August, 1983, to 0759 UTC 14th
August, 1983.

All amateur stations are requested to observe
15 minutes silence before the commencement of
the contest on Saturday afternoon. An appropri-
ate broadcast will be relayed from all Divisional
stations during this period.

RULES
1. THERE SHALL BE 4 SECTIONS:
   (a) Transmitting Phone.
   (b) Transmitting CW.
   (c) Receiving.
   (d) Open.
2. ALL AUSTRALIAN AMATEURS (VK callsigns)
   must enter the contest whether their stations
   are fixed, portable or mobile. Members and
   non-members of the Wireless Institute of
   Australia are eligible for the awards.
3. AMATEURS MAY USE THE FOLLOWING
   MODES:
   Section (a) — AM, FM, SSB, TV.
   Section (b) — CW, RTTY.
   Section (c) — Rx A, B, C.
   Section (d) — All modes.
4. CROSS MODE OPERATION is permitted. Cross
   band operation is not permitted excepting
   via satellite repeater.
5. SCORING CONTACTS:
   (a) 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 of these bands
   on Phone, CW, SSTV and RTTY.
   (b) All contacts score one point.
   (c) On the bands 52 MHz and above, the same
   station in any call area may be worked
   using any of the modes listed in Rule 3 at
   intervals of not less than one hour since
   the previous same band/mode contact.
   However, the same station may be
   contacted repeatedly via satellite not
   more than once by each mode on each
   orbit.
   (d) Acceptable logs for all sections shall
   show at least 10 valid contacts.
6. MULTI-OPERATOR STATIONS ARE NOT
   PERMITTED (except as in Rule 7), although
   log keepers are allowed. Only the licensed
   operators are allowed to make a contact under
   his/her own callsign. Should two or more
   licensed operators wish to operate any
   particular station each will be considered as
   a contestant and must submit a log under
   his/her own callsign.
7. CLUB STATIONS may be operated by more
   than one operator, but only one operator
   may operate at any one time, ie no multi-
   transmission. All operators must sign the
   declaration.
8. ENTRANTS must operate within the terms of
   their licences.
9. CYPHERS:
The serial number will consist of three
   figures that will be incremented by one for
   each successive contact. A contestant may
   start with any number between 001 and 999,
   but when 999 is reached he will start again at
   001.
10. ENTRIES:
Entries must be set out as shown in the
   example using one side of paper only.
   Envelopes must be marked "Remembrance
   Day Contest", postmarked no later than 15th
   September, 1983, and posted to FCM, Box
   236, Jamison 2614, and received not later than
   30th September, 1983.
11. TERRESTRIAL REPEATERS:
   Contacts via terrestrial repeaters are not
   permitted for scoring purposes. However,
   contacts may be arranged through the
   repeater and, if successful on another
   frequency, that contact counts for scoring
   purposes.
12. PORTABLE OPERATION:
   Log scores of operators located outside their
   own call area will be credited to that call area
   in which the operation takes place, eg
   VK5X/Y. His score is added to the VK2
   scores.
13. ALL LOGS shall be set out as in the example
   shown and, in addition, must carry a front
   sheet showing the following information in
   this order:
   Section, score, callsign, mode, name and
   address.
   Declaration: "I hereby certify that I have
   operated in accordance with the rules and
   spirit of the contest."
   Signed ................ Dated ............
14. THE FEDERAL CONTEST MANAGER has the
   right to disqualify any entrant who, during
   the contest, has not observed the regulations,
   or has consistently departed from the accep-
   ted code of operating ethics. The Federal
   Contest Manager also has the right to
   disallow any illegible, incomplete or
   incorrectly set out logs.
15. THE RULING of the Federal Contest Manager
   is final and no disputes will be
   entered into.

AWARDS (Sections (a) and (b))
Certificates will be awarded to the top scorers
in each section for each call area and will
include the top limited and novice station. There
will be no outright individual winner. Further
certificates may be issued by the FCM at his
discretion.
Certificates will be issued to top ZL and P2
scorers.
VK0 scores are added to VK7 and VK8 to VK5.

Page 42 — AMATEUR RADIO, June 1983
Scores by VK9 stations are added to the mainland call area geographically nearest. Scores claimed by ZL and P2 stations are not included in the scores of any VK call area.

The trophy shall be forwarded to the winning Division in its container and will be held by that Division for the specified period.

RECEIVING SECTION
1. THIS SECTION is open to all shortwave listeners in Australia, Papua New Guinea and New Zealand, but no active transmitting station may enter.
2. CONTEST TIMES and logging of stations on each band are as follows:
3. ALL LOGS shall be set out as in the example. It is not permissible to log a station calling “CQ”. The detail shown in the example must be recorded.
4. NOTE the times and conditions set out in Rule 5 (transmitting).
5. CLUB STATIONS may enter this section. All operators must sign the declaration.

AWARDS FOR SWLs
Certificates will be awarded to the highest scores in each call area. Further certificates may be awarded at the discretion of the Federal Contest Manager.

RD SCORE FORMULA
This year’s weighting factor and formula is as follows:

<table>
<thead>
<tr>
<th>Division</th>
<th>Total Contacts per Division</th>
<th>X Weighting factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>VK1</td>
<td>2000</td>
<td>1.15</td>
</tr>
<tr>
<td>VK2</td>
<td>3000</td>
<td>0.98</td>
</tr>
<tr>
<td>VK3</td>
<td>1500</td>
<td>0.96</td>
</tr>
<tr>
<td>VK4</td>
<td>1000</td>
<td>0.96</td>
</tr>
<tr>
<td>VK5</td>
<td>500</td>
<td>0.96</td>
</tr>
<tr>
<td>VK6</td>
<td>250</td>
<td>0.96</td>
</tr>
<tr>
<td>VK7</td>
<td>125</td>
<td>0.96</td>
</tr>
</tbody>
</table>

This is provided for advice only. The formula is applied by the FCM to the final scores.

The 1982 predicted weighting factors turned out to be very close to the actual figures gained from the results of the contest. Relationships of the predicted and actual W/F 1982.

<table>
<thead>
<tr>
<th>DIV</th>
<th>PREDICTED</th>
<th>ACTUAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>VK1</td>
<td>1.2</td>
<td>1.01</td>
</tr>
<tr>
<td>VK2</td>
<td>10.72</td>
<td>7.1</td>
</tr>
<tr>
<td>VK3</td>
<td>7.85</td>
<td>5.63</td>
</tr>
<tr>
<td>VK4</td>
<td>4.82</td>
<td>4.88</td>
</tr>
<tr>
<td>VK5/8</td>
<td>2.08</td>
<td>1.13</td>
</tr>
<tr>
<td>VK6</td>
<td>1.47</td>
<td>1</td>
</tr>
<tr>
<td>VK7</td>
<td>0.87</td>
<td>1.12</td>
</tr>
</tbody>
</table>

The only problem I can envisage, is the size of the sheet may make it unworkable for some operators. I got around the problem by taking phone signals out of the RTTY & CW sections of the band, as the RTTY boys are intending to boost interest in this mode.

RESULTS OF THE 23rd ALL ASIAN CONTEST FOR VK
PHONE: As per results published page 37, May AR.

CW:
<table>
<thead>
<tr>
<th>CALL</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AX3X8</td>
<td>968</td>
</tr>
<tr>
<td>VK3RJ</td>
<td>1363</td>
</tr>
<tr>
<td>AX4X</td>
<td>19376</td>
</tr>
<tr>
<td>AX2AYD</td>
<td>119260</td>
</tr>
<tr>
<td>VK3A</td>
<td>48094</td>
</tr>
<tr>
<td>VK6JS</td>
<td>20500</td>
</tr>
<tr>
<td>VK2DID</td>
<td>6148</td>
</tr>
<tr>
<td>VK5GZ</td>
<td>748</td>
</tr>
</tbody>
</table>

NZART MEMORIAL CONTEST
When? Sat and Sun 9/10 July from 2000 to 2400 hrs each night, divided into four operating periods, 2000 to 2200 and 2200 to 2400 each night.

AMATEUR RADIO, June 1983 — Page 43
CONTACTS
A station may be contacted twice during each period, once on phone and once on CW, provided the contacts are not successive.

CYPHERS
Five serial numbers for phone and six for CW (RS1 and three figure SERIAL eg: 599001).

SCORING
Phone: Each area will score fifteen points for the first contact then each subsequent contact scores one less point each time until the fifteenth contact when all further contacts will score only one point.

CW: The same as the phone scoring, except that the points will remain at five after the 11th QSO.

LOGS
In order of Date: Time: Station Contacted: Phone or CW: Cypher Sent: Cypher Received: Points Claimed.

Logs to be sent to Jock White, NZART Contest Manager, 152 Lytton Rd, Gisbourne, New Zealand. Must arrive no later than 10th August 1983. A photocopy of the rules may be obtained from the FCM at above address.

RESULTS OF THE 1983 JOHN MOYLE NATIONAL FIELD DAY

SECTION A
24 HOUR SECTION

<table>
<thead>
<tr>
<th>CALL</th>
<th>SCORE</th>
<th>CALL</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>VK3XO</td>
<td>2715</td>
<td>VK6NSD</td>
<td>2317</td>
</tr>
<tr>
<td>VK2KFJ</td>
<td>464</td>
<td>VK3CGH</td>
<td>1315</td>
</tr>
</tbody>
</table>

SECTION B
Nil entries for 24 hour section

SECTION C
Nil entries for 24 hour section

SECTION D
<table>
<thead>
<tr>
<th>CALL</th>
<th>SCORE</th>
<th>CALL</th>
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Check logs were sent in by VK2EES and VK3CIF.

COMMENTS FROM LOGS

VK3BAF . . . Sorry for the low points but the VK3 boys were involved in WICEN with the bushfires.

VK2CGH . . . Many thanks for the very enjoyable days participation.

VK2BQS . . . A very friendly and enjoyable contest again this year.

VK6NSD . . . This was my first year in this contest and really enjoyed myself.

VK4CAU . . . The change of rules leaves a little to be desired: The rule for contacting home stations once only needs reversing. No incentive to enter Section H. The change to CW makes no difference to our log as we do not use CW in contests. The thunderstorms did not affect the contest, only four hours rain.

OAKLEY ARC . . . Washed out Saturday in this area but looking forward to next year’s contest.

L30042 . . . Once again a most disappointing contest, insofar as CW operating in the field was concerned — sheer contempt of the stated objective of the contest!! — vis “to encourage portable operation”.

Logs from time immemorial . . . It has been world wide contest practice to list date and time headings as the first two items (Rule 16).

As you can see, the vast majority of the comments were for an enjoyable contest. Congratulations to the winners (those marked with the *).

SPECIAL NOTICE
Don’t forget the VK Novice Contest this year. Let’s make a special effort to assist the novices and show some interest in this special contest.
Ladies don’t forget the Annual General Meeting on Monday 25th July at 1030 UTC on 3.570 ± QRM. Please make an effort and join this important net, it is your association and we want all of you to help ensure it continues in the future.

If you cannot come up on air write to one of the executive and tell them your ideas, all suggestions will be discussed. Remember united we stand and divided we fall.

Welcome to new members:
Peggy VK6NKU joined 15.2.83
Dorothy VK2NVQ joined 17.3.83
Val VK4KCJ joined 7.4.83

Sponsored members:
Vicky T3QCCH 9.3.83
Heidi DF3LX 12.3.83
Joan N7DGP 11.4.83

Unfortunately a number of our members have not renewed membership this year, so numbers are down on last year. So girls please if you are one who has forgotten to pay send your sub off now to ensure you are not removed from the mailing list for the newsletter. Marlene, our editor, does an excellent job with the newsletter and we all look forward to receiving the next issue.

Thank you Marlene from us all; Marlene and Brian were involved in the Ash Wednesday fires and all members were concerned for them. One of Marlene’s first comments afterwards when we were speaking to her on air was don’t worry the gestetner and newsletters are OK!! I would not have given them a thought.

ALARA’s good wishes go to Kate Duncan, one of our associate members in your Obstetrics and Gynaecological exams; we hope you pass and do well in your time overseas. Kate was one of the early members of LARA but studies in her work have kept her well occupied. I had the pleasure of meeting Ern Kinscher VK2ADL and XYL Ella in Castlemaine recently. Ern was one of the amateurs involved in the Falkland Island rescue when lone yachtsman Richard McBride ran aground on 1st March. Ern has been licensed for fifty years and was formerly in VK4 land.

This month we include an article written by our editor of the ALARA newsletter about the devastating Ash Wednesday Bushfires.

Marlene Austin, VK5QO and her OM Brian VK5CA are a very well known amateur couple and during the fires in South Australia their house was situated in the path of the fires but fortunately the house was saved amid a blackened garden.

Congratulations to Austine VK3YL who has been licensed for fifty three years now; and we wish you many more years of operating Austine.

However I will leave it to Marlene to tell her story in her own inimitable way.

A SMOKED HAM

It was quite a day, here in the Adelaide Hills. Very hot (42°C) and winds over 100 kph. There was a duststorm, so you couldn’t see the flames until they were with you. We probably had 1-1½ hours warning, being on the top of a range of hills and could distinguish smoke from the red dust in the distance.

We have four acres of property and had spent most of last winter burning twigs and fallen leaves. We had also permanently installed a sprinkler system in copper piping on the roof of our home, coupled to our 68,000 litre rainwater tank by a petrol driven pump. Also, we had aluminium blinds over all windows, and have our own alternator. So, we were as ready as we ever would be, and when we saw the smoke in the distance, we knew we were for it. We are at 580 metres, and the gullies in the hills act as funnels for heat and fire.

I can remember saying “2 pm, so tar so good”. Then seeing the smoke, and it was back to action stations! First the bamboo blinds cut down from the front veranda, timber furniture moved indoors, aluminium blinds wired down over windows (didn’t trust cords not to burn through), a check that knapsack sprays and hoses were handy (connected to our rainwater tank, not the mains water which vanished in a fire as
our driveway away, going past us up the gully, with a roar like a train. The trees are about 15 metres high, and the flames were over the top of them. At that point we went inside until it passed, possibly 5-10 minutes and then came out and put out what we could after checking in the ceiling that the house was safe. What we didn’t know was a spark had got in the 6 mm crack along the garage doors, under the house, and smouldered in a canvas chair before finally going out. That is a lesson we won’t forget!

One of our neighbours also had gone inside to wait for the fire to go past, and she sat in her best chair — she said if she was going to die, she was going to do it in style! She shut her pet cockatoo in the toilet (after making sure he couldn’t drown!).

The fire was right around our house — the garden is just black trunks and burnt grasses are coming up, so hopefully it won’t be long before the hills are green again.

Arthur Walz, VK4AW holding the Fisk Trophy

THE FISK TROPHY

(As told by VK4AW.)

In 1933 Mr E T Fisk, later Sir Ernest Fisk, of AWA, donated this trophy for annual competition between Wireless Institute Divisions.

The forerunner of this contest was the “Five Point Relay” in 1932 organised by the then Association of Radio Amateurs, NSW, which was later to become the WIA, NSW Division. This was a CW, (20 word text) message handling contest relayed through four states, plus the originating state.

The results of this contest were... 1st late Reg Vickary, VKARV, 2nd C Harrison, VK7CH, 3rd Arthur Walz, VK4AW. This was a real endurance test with top scorers handling between 400 and 500 messages.

Arthur remembers working VK6SA for ¾ hours handling a total of 60 messages.

1933 was the start of the Fisk Contest organised by the WIA, a “Five Point Relay” held at the end of October and won by the Victorian Division.

1934 was a variation... a QRP Contest about the same time of the year won by the Queensland Division.

1935, over two weekends in August/September, was a “5 plus 5” ten letter code handling contest won by the Queensland Division. During the occasion of the 12th Federal Convention held in Brisbane, 25th/26th January 1936, at the studios of 4BC Brisbane and 2CH Sydney, Mr E T Fisk, introduced by Mr Bill Moore, VK2HZ, Federal President in Sydney studios, presented the trophy for the 1935 Contest to Arthur Walz, VK4AW, President of Queensland Division, with Harry Caldecot, VK2DA, Federal Secretary, at the Brisbane 4BC studios.

This was a “first” for Radio Broadcasting in that two interstate stations used landline “hook up” to simultaneously broadcast the same programme.

The 1936 contest, held over two weekends in September, with ten letter cypher, was again won by Queensland, Queensland was then declared the outright winner of the trophy. It was pre-recorded speech by Mr E T Fisk, who at that time was en route to England, was broadcast over 4BC and relayed to the Queensland Division’s 10th Annual General meeting held at the Brisbane Motor Cycle Club rooms Charlotte St on 2nd April 1937. Similar CW contests were held in 1937 and 1938 over two weekends in September and December.

Prominent contestants were the late Roy Belstead, VK4E! (Townsville), late Reg Vickary, VK4RV (Cunnamulla), Bob Beaton, VK4BB (Maryborough), late All Guilford VK4AP, and Arthur Walz, VK4AW (Brisbane). They operated from 10 metres through to 160 metres.

It may be accepted that the Fisk Trophy contest is really the forerunner of the present interstate annual contest... THE REMEMBRANCE DAY CONTEST.

4BC put the first version of the photo appearing in the Telegraph newspaper of January 1936 reporting on the presentation of the Fisk Trophy.
Last month I suggested dropping the Tone Report from the standard R/S/T, and I wonder how it's going. These columns are written months ahead of publication, so I haven't tried anything revolutionary yet, but I do believe that if we give honest, impartial readability and strength reports, with amplification when appropriate, no-one will miss the Tone Report, and if they do they can easily write in a 9. I'm even thinking of leaving it off QSL cards in favour of "ABOLISH THE TONE REPORT" or words to that effect.

Even when an extremely strong (S9) signal is perfectly readable (RS), it can still have technical faults which should be advised in standard format. They don't take up much space, but convey a lot of information. Typical reports might be 5/9/9X (or better yet, just 5/9X), 5/9/C, or 3/7 QRM3. The amplification symbols which should be at every op's fingertips are described below.

E Fortunately, most signals could be reported as —/—/9X, for their tone is pure and their frequency is stable. If received signals do not vary in pitch, meaning there is no variation in transmitting frequency, then X can be used to indicate that the signal is as stable as a crystal — (Xtall) controlled one.

I The symbol C represents "chirp" and is used to describe the sound of a signal in which each character element (dit or dah) changes in pitch in a repetitive fashion. If you hear a CQ which sounds like "cheow-chi-cheow-chi, cheow-chi-cheow", you are hearing "chirp". The problem is usually caused by an unstable VFO or oscillator which gets drawn off frequency each time it comes under load. Most commercial gear is chirp-free, but you can often hear chirpy signals coming from the USSR, where a lot of gear is home-brewed by members of the Radio Sport Clubs.

D Sometimes a signal will drift in frequency (the pitch gradually rises or falls), in which case the symbol D is used. This is often a problem where a VFO or oscillator is subject to temperature changes such as the rig heating up as a transmission progresses. I once heard an op in a contest who sounded like a sports-car going up a steep hill. Each time he transmitted he started zero-beat, then took off for the wild blue yonder, sometimes dropping down a bit between words before taking off again. Most drift is more gentle, and of course you should be sure it is not your receiver which is drifting before you send D. Experience is the best teacher in this regard, but as a general rule, it is probably best to ignore a small amount of drift, especially if you only notice it five minutes into the QSO.

K Key clicks can be a real problem because they are spurious transmissions which may occur quite some distance from the QSO frequency. They are a clicking, static-y noise which occurs in time with someone's sending. They often result from over-driving the transmitter, so it is a good practice to refrain from running flat-out. Just backing off a little bit from full power can make the world of difference.

QRM/QRN Interference, in contrast with technical faults, can be either man-made or natural (QRM or QRN, respectively). The basic principle in reporting QRM/QRN is that if it is causing no problems in copying, don't report it. Just because you can hear it doesn’t mean it is causing interference, and you should think in terms of readability. A report of 5/9 QRM, for example, usually means "your signal is perfectly readable with no difficulty, and the difficulty is caused by man-made interference!"

The main reason for reporting QRM or QRN is so the other station can adjust his sending to suit. Accordingly, the QRM or QRN should be followed by a number from 1 to 5, representing the degree of interference. For example, if you send a report 3/7 QRM3, the other operator knows you have noisy conditions and will (theoretically) slow down and/or repeat key words. For that matter, there is nothing to stop you from sending "RS 3 7 QRM3 RS 3 7 QRM3 PSE QRS10 QRS10 ES QSZ2 QSZ2" which translates as "your readability is 3, your strength is 7, with man-made interference causing significant but not overwhelming problems, please slow down to 10 WPM and send everything twice." Your chances of copying his next transmission are a lot better than if you had sent "RST 3 7 9 QRM".

If the strength report is high, but the readability is less than 5, then some amplification almost has to be given. One last aspect of reporting deserves comment, and that is the tendency for award and certificate managers to demand 'minimum reports'. To my mind this is about as silly as you can get, especially when some lid keeps you from qualifying for something by giving you a 5/0/9 report. Personally I do not chase paper, at least not much, but I would have to rule out anything requiring minimum reports. After all, the purpose of it all is communication, and there have been many occasions where a 3/2/9 report has meant more to me than other QSOs where I was "given" 5/9/9 PLUS 40 dB. If you have exchanged calls, reports, and names you have certainly communicated, and there is much more virtue in having done it under difficult conditions. What do you think? Keep communicating ... ES CUL.
The suggestion has been made recently that a pass in the Novice Theory exam should be made a prerequisite for an attempt at the Full Theory exam. I can see some merit in the idea, but would be very interested to hear others' opinions.

Without delving too deeply into the statistics — some of which would be very hard to obtain and analyse — it appears to me that most candidates cope with the Novice course and exam quite well, and have few complaints about the system. Of course, some do have trouble, and the pass rate does only average 40-50%, but the enthusiast who studies intelligently usually passes first or second time around. Overall, the majority of those passing the Theory go on to attempt AOCP or AOLCP. This seems to be a much bigger hurdle. Pass rates for recent exams have been very low. Why do so many candidates have so much trouble?

One factor is that there is very much more material in the Full syllabus than in the Novice.

An inspection of the syllabus in the Regs book shows the comparison.

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In part, the difference is due to more detailed specifications at the higher level, but close comparison shows that the actual material required for the Full is much more than twice that for the Novice, and includes many topics not mentioned at the lower level.

Most Novice courses run for about 7-9 months — so an AOCP course should run for about 18 months! It is unrealistic to expect this degree of dedication from either lecturers or students, so we compromise with a shorter, more intensive course.

Many who coped with the Novice course begin to flounder when the pace increases. Those who are struggling through on their own do not always read the syllabus closely enough to see the many points where new topics are included.

As for the exam itself — one hour for Novice. 1½ hours for Full, each fifty questions — either the questions for the Full must be harder, or there should be more of them.

How about a two hour exam of 100 questions to adequately test the more extensive syllabus?

Now, before you all start protesting — reconsider the previous proposal, which would allow the Full theory exam to concentrate on the 'extra' part of the syllabus, and cover it adequately in fifty questions. The only ones disadvantaged would be the few who, under the present system, go straight to AOCP theory without attempting Novice.

Another point is that the amount of knowledge required to keep up with the 'State of the Art' is increasing all the time, and very rapidly. What were new techniques when the syllabuses were put together are now commonplace and so fair game for exam questions.

Should the syllabuses now be redrawn to include digital, logic and microprocessors as they become commonplace too?

There doesn't seem to be much of the present syllabus that can be left out to make way for new material. Where does it end?

I would welcome comment on these or any other education issues. Write to me QTHR, or call in on the Education Net Wednesdays 1100 UTC 3.685± MHz.

73 Brenda VK3KT

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All of us have some time or other been plagued by interference from Over the Horizon Radar systems. These are commonly referred to as “woodpeckers” because of its similarity to the sound of that bird’s tapping. Now a committee of the Association of North American Radio Clubs (ANARC) has published a bulletin specifically dealing with interference from these OTH-B systems. Its title is very apt — Backscatter — and has been edited by the Chairman of that committee Bob Horvitz. I am sure that there are many who would be interested in obtaining a copy of this occasional bulletin. It costs only 4 IRCs for an airmailed copy from: Bob Horvitz, 54 East Manning Street, Providence RI 02906 USA.

A lot of the information was yielded from the files of the US Federal Communications Commission, the American regulatory body, under the Freedom of Information Act. There are over 900 pages on file and the cost of obtaining the data is $US90.00.

ANOTHER RARE ONE LOGGED

Recently I mentioned here that the Falkland Island Broadcasting Station is being heard here in SE Australia. Yet another difficult catch has been logged of late from the Shamrock Isle. Radio Dublin International on 6.910 MHz has been heard at about 0700 UTC. Technically this station is regarded as a pirate station. However, because a loophole in the Irish law re broadcasting was found, these unofficial stations have not been prosecuted. The State Radio — Radio Eireann — has enjoyed a monopoly ever since broadcasting commenced in Eire. But because these unofficial stations have proved more popular than the state network, the authorities haven’t intervened.

Most of these unofficial stations have become even more open and commercial, mainly concentrating on MW and FM. As well, the more prosperous stations are developing networks, by buying or absorbing the smaller outfits. In the early days of Irish “unofficial” radio a few enthusiasts commenced relaying their programmes on SW, particularly around the 49 metre band, a favourite haunt of unofficial or clandestine stations in Europe. But interest waned, as the AM stations became more commercial and aggressive. Radio Dublin International only re-commenced recently on SW. It is not surprising either that their signals were weak in this area, as reported they are only running 40 watts. This makes positive identification extremely difficult.

EXCEPTIONAL PROPAGATION

I find that when normally weak stations are clearly heard, that there is exceptional propagation present. For example, several low powered SW relays of the domestic Canadian networks have been heard here in Tasmania. They broadcast to the interior of Canada and are usually on the 49 metre band. They are very often not heard because of the presence of more powerful international broadcasters dominating the channels. Radio CKZN in St Johns, Newfoundland, was heard at around 1000 UTC and another station in Vancouver, CKZU, on the west coast, also part of the same network, was heard signing-off at 0900 UTC. Both stations use 6.160 MHz and broadcast in English.

Another good propagation indicator I have found, especially for Latin America, has been the Venezuelan Time station — VYTO in Caracas. It is heard from 0630 UTC and even as late as 0900 on 6.100 MHz. It runs only a kilowatt and has 100 millisecond pulses every second. Identification and local time are given every minute, naturally in Spanish.

SPANISH BULLETIN

Recently I was surprised to receive a letter from Francisco Martinez, who is General Secretary of the Central Spain Listening Group (GECE) in Madrid. He was kind enough to forward me a copy of their monthly bulletin “MADROX”. It is in Spanish, mainly concentrating on transmissions in that language.

One section of their bulletin contained the results of a contest to find the most popular Latin American broadcaster. Radio HCJB in Quito, Ecuador was voted number one quite convincingly with thirty votes. Presumably HCJB’s local programming on SW has a wider audience than just in Ecuador itself. Most surprisingly, the runner up was Radio Mexico International with eighteen votes. This station is not heard that often here, in fact I have never heard it personally. It also is reported by ANARC to be a poor verifier. Other stations such as Radio Havana were well down the list with only eight votes. Radio Sutatenza even polled well. Those interested in a sample copy should send 7 IRCs to: GECE, Apartado Postal 4031, Madrid, Spain.

I have also heard from Eric Irvine of Toonica, Vic. He has an FRG 7700 receiver and a Collins R390. The latter has an IF fault at present. He is also an amateur — VK3BXA, mainly enjoying CW, but he occasionally comes on SSB. He hopes eventually to get into RTTY and SSTV and working through the amateur satellites. Thanks for your letter, Eric.

NEW ANTENNA

Recently, I tried out the FRA 7700 active antenna. As you have probably deduced, it has been designed as a companion to Yaesu’s FRG 7700 receiver. It connects to it by a din plug, as it requires 9-11 volts DC. However, I was able to use it satisfactorily with my FRG 7, with an external 9V supply.

Active antennas are ideal for residents in apartments or units, where there are problems erecting outside antennas, replacing the need for their installation. The FRA 7700 performed surprising well with my FRG 7 and even on an old Philips 2262 receiver. It is good between 4 and 18 MHz, and reasonable on MW. The unit also doubles as a pre-amp for longwire or especially MW loop antennas. It really improves the signals of weak broadcasts on MW and the tropical bands, but I found it very limited on SW because the powerful stations normally present a lot of splatter. All pre-amps have a big disadvantage in that they also bring up the noise, so they are best utilised where there is a low noise level. I believe that other brands of active antennas are available, also circuits and how to construct your own, using car aerial whips.

Don’t forget that there is an amateur radio net devoted to SW and DXing every Thursday evening at 1130 UTC. Net Control is shared between Don Rhodes VK3MB, Tony Badgar VK2ECB, or myself VK7RH. We are on 3.565 MHz i QRM and all are welcome.

Well, that is all for this month. Until July, the best of 73 and good listening — Robin VK7RH.
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- **HL-45U 10W-45W, FET pre-amp, UHF Linear** $219
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Coaxial cable makes a very convenient feedline. If you purchase cable with a non-contaminating sheath intended for outdoor installation you can expect ten years trouble free operation, providing you can keep the rain out. If not your coax will come to a sticky end.

Before we get on to water-proofing let me explain briefly about sheaths.

Very cheap coax has a very modest amount of braid and often seeks to redress the losses due to higher RF resistance and radiation leakage by using a reduced amount of dielectric, making up the bulk with air bubbles. Air is low-loss so this is fine. The cable is then sheathed in a very inexpensive plastic such as PVC. Over a period of time various chemicals are exuded from the sheath and some will corrode the braid. A green sticky film forms which, of course, is very lossy. Further, in sunlight, the PVC will lose its flexibility and eventually crack. In goes the rain and, yes you guessed it, more sticky green corrosion.

A good quality coax cable with a non-contaminating sheath does none of these things. Another case of “what you pay for is what you get”.

Now back to weather-proofing.

Last year I mentioned that most silicon sealants gave off acetic acid during curing and so were likely to corrode the copper wires they were supposed to protect. Ron Higgenbothen, VK3RN, and several others have pointed out that the sealant I recommended is very hard to get.

They have drawn my attention to Dow Corning Roof and Gutter Sealant 780 which is distributed by Selleys Chemical Co. It is available in 75 g tubes or 335 g cartridges. It can be kept in the tube for twelve months and is guaranteed in service for twenty years.

Dow Corning 1080 is, I am told, another possibility. Both are neutral curing silicone sealants. Local hardware stores with a Selleys Bar should carry stocks.

If you intend to get twenty years use out of your coax then the deluxe potting method used by Ken, VK3AH, will be of interest. Fig 1 shows a section of the termination. All the components and materials should be readily available. Most shops specialising in photographic supplies and film printing will give you a bag of empty 35 mm film cannisters which are made of plastic.

The photograph shows a completed termination. Thank you Ken.

73 de VK3AFW
SHUTTLE STS 9

It is becoming highly probable that Owen Garriott W5LFL will be the first amateur to operate from space. Only a final approval from European Space Agency (ESA) is required for Owen to carry a portable transceiver aboard STS 9.

JAMSAT 'JASI'

It is reported that the Japanese Space Agency has approved a proposal by JAMSAT to build and launch the first Japanese Amateur Satellite which will be known as JASI. Miki JR1SWB will be project manager. It is possible that a launch will be scheduled for 1986 and, although many points of detail have still to be decided the following broad outline has been proposed:

Orbit of the Oscar 7 type: sun synchronous with a period of about 103 minutes. Inclination 50° and height 1500 km. Transponder will include a Mode J' type (2 m up, 70 cm down) and a Digital PACSAT type.

PHASE III B

At the time of writing the launch date of Phase III B is 3 June 1983.

For up to the minute details of the launch and direct broadcasts of the event please listen to the AMSAT Nets.

PACSAT

Activity is increasing in the field of development of a PACSAT-like satellite by AMSAT and possibly like interest groups. An inaugural meeting called the PACSAT Conceptional Design Meeting was held at Goddard Space Flight Centre, Greenbelt, Maryland on 25-27 February.
PACKET RADIO

PACSAT which is its satellite application. AMRAD, the Amateur Radio Research and Development Corporation, and a long standing member of AMSAT. He has been highly technical PACSAT matters to launch and will, without doubt, bring to ARRL and AMSAT an active involvement in Amateur Packet Radio. Topics discussed ranged from appreciation of digital technology. It is interesting to note that Paul Rinaldo W4RI, who will shortly move to ARRL to head up its technical departments, was in attendance. Paul is currently President of AMRAD, the Amateur Radio Research and Development Corporation, and a long standing member of AMSAT. He has been actively involved in Amateur Packet Radio and will, without doubt, bring to ARRL and the amateur fraternity in general an appreciation of digital technology. It is inevitable that this mode of radio communication will come to the fore during the next decade just as SSB developed in the 50’s and 60’s.

AMSAT GENERAL MANAGER

The Board of AMSAT has announced the appointment of William L. Lazzaro N2CF to be its General Manager and Executive Director. N2CF has been licensed since 1964, holds an Extra ticket and has a Masters Degree in Science Education. Australian Members of AMSAT wish Bill well in his new position.

UOSAT TRANSMISSIONS

Many amateurs listen to the beacons of UOSAT 9 and to the fascinating digital talker but few are in a position to record and translate its bulletin board which is frequently sent in 1200 Baud ASCII. I am indebted to Graham VK5AGR for a neat printout of the UOSAT Bulletin for 30 March which uniquely included Easter Greetings. This printout may entice others who have computer printout facilities to enter the fascinating world of digital communications.

PACKET RADIO

Reference has been made recently, and in this issue, to Packet Radio and to PACSAT which is its satellite application. A few words of explanation may be in order. Store and forward packet switching techniques were developed in the mid 1960s and the term ‘packet’ was introduced by the British National Physical Laboratory. A ‘packet’ is a group of ASCII characters (information) surrounded by control signals and error detection features. The control signals help recognise the presence of a packet and tell any intervening switching equipment where the packet should be sent. The error detection feature will virtually guarantee that bad information will not be observed by the destination station.

A packet is similar to a message format and the header and tailer components are designed to be read by computers which can be either a home computer programmed to perform the function or a dedicated micro-computer board.

Amateur Radio packet experimentation has been pioneered in Canada and there are now many networks active in North America. Following success with these terrestrial networks it is now highly probable that the techniques will be applied to future amateur satellites.

ORBIAL INFORMATION

For those enthusiasts who are unable to listen to the AMSAT nets or who would prefer hard copy information, I am always pleased to supply lists of updated Keplerian Elements, Orbit Periods and Equator Crossing data for prescribed satellites.

All I ask is for a supply of SASE’s and details of your requirement, i.e. which satellites, type of information required and the frequency of dispatch, i.e. weekly, bi-monthly, monthly etc. and I will do my best to keep you up to date.

Printout by Graham VK5AGR.

The meeting was attended by a range of interested persons and group representatives. Topics discussed ranged from highly technical PACSAT matters to launch possibilities during the coming years.

It is interesting to note that Paul Rinaldo W4RI, who will shortly move to ARRL to head up its technical departments, was in attendance. Paul is currently President of AMRAD, the Amateur Radio Research and Development Corporation, and a long standing member of AMSAT. He has been actively involved in Amateur Packet Radio and will, without doubt, bring to ARRL and the amateur fraternity in general an appreciation of digital technology. It is inevitable that this mode of radio communication will come to the fore during the next decade just as SSB developed in the 50’s and 60’s.

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If we are to provide the maximum protection for our service the "no-worries" attitude must be pushed well into the background:

**The battle has only just started!**

Even if we do get all that we have asked for, and all that we have recommended in our submission, there is still a long way to go before these recommendations can be implemented or, we are able to see a light at the end of the tunnel.

When the Bill eventually becomes an Act the associated regulations and standards will have to be drawn up. If these regulations and standards are not favourable to the Amateur Service then we will have lost the battle.

The CASPAR Committee will be monitoring all the various aspects of the Bill/Act, the Regulations, and the Standards; and, together with the Federal Executive will try to ensure that the Amateur Service gets the best possible deal. However, because of the very detailed and complex nature of legislation, regulations, and standards we must call on the assistance of all members of the Amateur Service to provide an on-going monitor of the overall situation, and provide an input to the CASPAR Committee. With this most important milestone for amateur radio it is not good enough to just leave it to the other guy.

Throughout the discussions about the Radiocommunications Bill, and other submissions recently, it became abundantly obvious that in order for the Amateur Service to secure the best possible deal in this very competitive world it is most advantageous for the Service as a whole to be able to say that our members are technically qualified responsible people.

Those amongst us who are constantly advocating for lower standards and the elimination of this or that from the examinations are doing our Service untold harm in the long term. It is simple logic that if one is seeking employment, a company is more likely to give the position to the most qualified person.

Any reduction in the technical standards necessary to obtain an Amateur Radio Licence can only serve to severely limit the power of the Amateur Service when negotiating for terms or extra privileges.

The fact that we are technically qualified (at a reasonable standard) and responsible people can open many, otherwise closed, doors. Also, these standards provide us with a good platform in relation to our position within radiocommunication legislation, and within the society of electromagnetic spectrum users.

The National EMC Advisory Service is especially concerned in regard to areas which produce major difficulties and quite often leave members of the Amateur Radio Service with very little chance of a final effective solution. These are, IMMUNITY/SUSCEPTIBILITY of domestic entertainment equipment and consumer products and, INCIDENTAL RADIATION from these and other devices.

These are the areas which need to be given top priority by all those concerned with the control of legislation, regulations, and standards. We need firm effective control based on international standards, legislation, and experience ... not a wishy-washy — "no worries mate, she'll be right" attitude.

Members of the Amateur Radio Service have always been very conscious of the need for high quality transmission and reception of electromagnetic energy in all forms using, modern technology, know-how, dedication and responsibility. This is reflected in many ways; one is the fact that the Amateur Service is self-monitoring and very conscious of the finite and very vulnerable electromagnetic spectrum.

This is in contrast to manufacturers and importers of domestic entertainment equipment and consumer products where the object is to produce or import a product as cheaply as possible, or ensure a large turnover with as much profit as possible with little regard as to how it will operate when in close proximity to other equipment. And of course, definitely no concern for the finite electromagnetic spectrum.

The latest device to give major concern to the Amateur Radio Service is the VIDEORECORDER which is proliferating at an incredible rate. In most cases these devices require only a "sniff" of electromagnetic energy in order to send them "beserked" — Today it's videorecorders:

- **What will it be tomorrow?**

Co-operation by manufacturers and import agents in regard to the EMC problem is, in the main, very poor. However, there are a few exceptions. The following letter from a NSW amateur is an example of co-operation by an Australian manufacturer/agent.

The case involved an Arlec AM469 intruder alarm. The writer explains:

"The AM469 is located on the opposite side of the street, about 50 metres from my TH3MK3. The AM469 uses ultrasonic doppler technique for detection of movement in the house."

"As my neighbour spends most weekends away from home I am hesitant to use my radio equipment over this period for fear of setting off the alarm.

Basic checks indicate that if I use only the TS820 there is no problem: However, using the FL2100 at 400 watts instantly triggers the alarm. Further checks indicate that I can use 400 watts with RTTY but not SSB."

After consultation with our special devices advisor, and A & R Electronics of Box Hill, Victoria who were most cooperative and helpful, the amateur was advised to try a number of ideas including shielding and earthing.

After further investigations —

"My neighbour has tried many of the ideas suggested, however, the final answer was to completely shield and earth the unit. I can now run 400 watts any mode and there is no alarm problem."

"I am surprised that these AM469 units are not totally shielded in the first place, complete with an earthing terminal. Surely the manufacturers cannot claim this would involve expense, because the top and bottom plates are made of wood with a decorative strip around the edge making it look like aluminium. An aluminium case would probably cost less, and be much more effective for EMC."

The National EMC Advisory Service is most appreciative of the valuable assistance given by A & R Electronics.

The following letter from a Victorian amateur is an example of an unusual interference problem.

"The following experience is with a Heathkit Electronic Digital clock model GC-1005, a six digit type which I built some years ago. It ran perfectly for a long time.
"However, about two years ago it started to lose time at a random rate, sometimes up to 50 secs per week, other times 14 secs —nothing exact, always random. One could of course suspect a power failure, however these clocks go into a holding pattern when a power failure occurs.

"I checked the clock for intermittent problems, changed ICs, all to no avail. Then one day I noticed intermittent flicker of an incandescent lamp I was using to do some fine work. Thinking about this later it seemed that if there was a flicker in the lamp then there must be a period of no power. This would mean that in say 1 second there could be 30 Hz (effective) or less. The clock electronics would count this as such and the display would be in error.

"As we have two phases supplying the house I was able to ascertain that the problem was associated with only one of the phases. I suspect the problem to be a large factory nearby which uses a very large welding plant.

"I am pleased to say the problem was cured by fitting a Clipsal 423, 3 pin Static Suppressor Plug to the clock."

An effect which came to our notice recently, and could be considered ultimate EMI problem was that of EMP (electromagnetic pulse) ... Not your regular EMP but the "big daddy" of EMP: I refer to EMP produced by an atomic explosion. The reports refer to two major effects, one is the effect of an EMP produced by an atomic explosion in space. If the explosion is near to the satellite belt, the electronic systems of a number of satellites can be destroyed by the massive electromagnetic pulse of energy; unless of course the satellite's electronic systems are hardened against this effect.

The second effect is perhaps a little closer to home; that of a high level atomic explosion which, if correctly positioned over an Earth target, could destroy all electronic control and communications systems (not hardened), without physical damage to the target.

Most of our modern day communications and control systems employ complex solid state devices. These devices are very vulnerable to EMP (and ESD). This is one reason why some military equipment is being reverted to thermionic valves.

There are many mundane adverse, but interesting, effects of EMP (and ESD) which we will cover on another occasion.

**UPDATE ON STOLEN EQUIPMENT**

The May issue of Amateur Radio carried a report of the loss of several items of equipment by GFS Electronics. Some of the items have been recovered by the Victoria Police. Police investigations are continuing.

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**LEARNING THE MORSE CODE?**

**Try the All New BT-1 — Basic Trainer For Morse Code**

Advanced Electronic Applications in conjunction with ETS (Educational Technology and Services)* has developed the BT-1 Code Trainer. ETS methodology, based upon research by a prominent mid-west university, has demonstrated that a typical student using this system and the BT-1, can learn Morse Code to speeds of 20 WPM in four weeks based upon two 20 minutes daily training sessions.

The pre-programmed BT-1 computerised trainer will allow you to achieve proficiency in Morse Code faster than any other known method.

No prior knowledge of Morse Code is required to use the BT-1. There are no tapes to purchase or wear out. The BT-1 operates from a 12 VDC source, the unit can also be used in mobile settings via the 12 VDC system.

* Education Technology & Services. see page 81 October 1981 issue of Ham Radio Magazine

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AMATEUR RADIO, June 1983 — Page 55
At the AGM a new committee was elected. The newly elected committee and their official positions are as follows:

**VK1KAL Alan Hawes**
President, Broadcast Manager and Public Officer

**VK1MM Fred Roberston-Mudie**
Federal Councillor, Intruder Watch Co-Ordinator and QSL and DRI Liaison

**VK1IC Ian Coleman**
Alternate Federal Councillor and Education Co-Ordinator

**VK1UE Richard Jenkins**
Secretary

**VK10K Kevin Olds**
Treasurer and ATV and WICEN Liaison

**VK1NEB Gavan Berger**
Property Officer and Awards Manager

**VK1EP Eric Piraner**
Repeater and Beacon Liaison and Book Sales

**VK1ZBC Murray McNerney**
Meeting Manager

**VK1NEN John MacPhee**
Public Relations Officer and Forward Bias Editor

Other non-committee members have the following positions:

**VK1RH Ron Henderson**
Divisional Historian

**VK1MF Mori Foster**
Inwards QSL Manager

**VK1AOP Ted Pearce**
Outwards QSL Manager

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**MEETING AGENDA**

27 June Studio Room
25 July Studio Room
22 August Room 1
26 September Room 1
24 October Studio Room
28 November Studio Room

Meetings are held at the Griffen Centre, Civic and all visitors are welcome to attend.

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**Jenny, VK5ANW accepts the RD award, on behalf of VK5, from Bruce VK3UV, Federal President, at the Federal Convention held in Melbourne during ANZAC weekend.**

---

**Jennifer Warrington, VK5ANW**

59 Albert Street, Clarence Gardens, SA 5039

As I write this half my mind is on the Federal Convention which takes place this coming weekend. As ever I am aware of the responsibility of the position, but having been well briefed by council as to their feelings on many subjects that will be raised, should make things easier.

Our 'Team' this year consists of myself as Federal Councillor, David Clegg VK5AMK as First Alternate Councillor and Graham Ratcliff VK5AGR as Second Alternate or Observer. This year we shall be driving over by car which will be a new experience for me. Perhaps it's just as well that we all get on well together or they might threaten to leave me in VK3! If all goes according to plan we shall be arriving back on the Tuesday, with only a few hours to spare before the Divisional AGM (forgive us if we weren't looking too bright!). Unfortunately there will not be a ballot, as only the bare minimum of nominations were received. Although this is a little premature, I would like to welcome the two new members who did nominate for council, Roland Bruce VK5OU, and John Gardiner VK5PJG and hope that you enjoy your time on council as most members find they do. Two members who have spent many years on council and despite the enjoyment they confess they have had, have decided that it is time to give someone else 'a go'. I am referring to Maurie VK5ZU, and John VK5NX both of whom have been tireless workers for the Division, and both of whom will be missed on council. However, both have assured us that although they are no longer council members, they still intend to continue in other areas when required.

By the time you read this 17th May will be long passed, and hopefully the planned AR station set up in the main hall of the GPO for that and the following three days, will have been a huge success. The credit for the idea must go to David VK5AMK, who thought that as we had the AX5ITU callsign for World Communications Day, it seemed a shame not to get some 'PR mileage' out of it. As it turned out, the man in charge of setting up a display for WC Day in the GPO (they have a 27c stamp and a first-day cover being released) was wondering what he could use! Hopefully as well as just being seen by the public, we may get some Media coverage as well.

---

**Full Convention report in July**
COUNCIL REPORT

The 1983-84 Divisional Council met for the first time on the 8th April. Tom Delandre VK2PDT was appointed to fill the casual vacancy on Council caused by the shortfall in nominations. The office bearers for the ensuing year were elected as follows:

President: Sue Brown VK2BSB
Vice Presidents: Jeff Pages VK2BYY and Tim Mills VK2ZTM
Secretary: David Walters VK2AYO
Treasurer: David Thompson VK2BDT
Affiliated Clubs Officer: Jeff Pages VK2BYY
Education Service Liaison: Bob Clark VK2YOD
WICEN Liaison: Peter Jeremy VK2PJ
Repeater Committee Chairman: Tim Mills VK2ZTM
QLS Bureau Liaison: Tom Delandre VK2PDT
Publications Officer: Sue Brown VK2BSB
Dural Property Officer: Jeff Pages VK2BYY
Broadcast Officer: Peter Jeremy VK2PJ
Minibulletin Editor: Jeff Pages VK2PJ
JOTA Officer: Tom Delandre VK2PDT
"AR" Publicity Officer: Tom Delandre VK2PDT
Component Officer: Bob Clark VK2YOD
Correspondence Course Supervisor: Cec Bardwell VK2IR
Intruder Watch Co-ordinator: Bill Martin VK2EBM
Co-ordinators for the Disabled: Fred Greenwood VK2DZL and Jim Saunders VK2BNY
Slow Morse Supervisor: Ross Wilson VK2BRC
Contest Publicity Officer: George Trotter VK2AVY
Honorary Solicitor: Fred Herron VK2BHE
Ken Hargreaves VK2AKH was reappointed as Education Service State Supervisor.
David MacKay VK22MZ, Eric Van de Weyer VK2KUR, Syd Griffith VK2AHF, Ian Nance VK2BIN, Alan Boxsell VK2YEO, Tim Mills VK2ZTM, Fred Parker VK2ZBK/NFF and Brian Warren VK2BX were appointed to the WICEN Committee.

Jeff Pages VK2BYY, Peter Jeremy VK2PJ, Roger Henley VK2ZIG, Colin MacKinnon VK2DYM, John Marshall VK2EGL and David Walters VK2AX were appointed to the Dural Committee.
Paul Smith VK2ZSA, Henry Lundell VK2ZHE and Max Bowey VK2ZQA were appointed to the Repeater Committee. Additional volunteers are required for this committee, which is responsible for co-ordinating repeater allocations in this state.

Twelve new membership applications for April were accepted.

Council wishes to borrow an electric Gestner duplicator for use in reprinting the Correspondence Course notes. If you can assist please contact the Divisional Office.

A group of clerical staff from the Department of Communications visited the Dural station to view the facilities, and also delivered the new beacon and repeater licences. Under the new licences, the beacons now identify as VK2RSY and the 2 metre and 70 centimetre repeaters now both have the callsign VK2RWI. The 70 centimetre beacon is now on air on 432.420 MHz, running 15 watts to an omnidirectional horizontally polarised antenna.

Council records its sincere thanks to Frank VK2KFB and Paul VK2ZSA for their donations of output transistors for the Dural 2 metre repeater and 70 centimetre beacon respectively.

8th CONFERENCE OF CLUBS

The 8th Conference of Clubs was held at the divisional headquarters in Parramatta on the 17th April, hosted by the St George Amateur Radio Society. The chairman was Jim Button VK2NPO, and Derick Sellars VK2AZS was elected as Secretary. The Central Coast, Westlakes, Liverpool, Goulburn, St George, Castle Hill RSL, Mid South Coast, Hornsby and Wagga clubs were represented. The following motions were passed by the Conference:

- That the WIA NSW Division, through the Federal WIA, request DOC to conduct CW Morse speed test is higher than 10 WPM.
- That WIA request DOC to conduct CW upgrading exams for full-licenced amateurs to sit for to have their licence endorsed to be compatible with overseas amateurs for the purpose of the issue of a reciprocal licence when visiting those countries whose Morse speed test is higher than 10 WPM.

Councillor Peter Jeremy presented a report on the Queensland Radio Clubs Workshop, and as a result it was resolved that this 8th Conference of Clubs strongly recommend to the VK2 Council that the VK2 Conference of Clubs prior to the Federal Convention be a two day conference, and that council consider appropriate reimbursement to the delegates.

Under general business, the agenda items for the 1983 Federal Convention were discussed for the guidance of Federal Councillor Stephen Pali and Alternate Councillors Wally Watkins and Tim Mills. It was resolved that the next Conference of Clubs be hosted by the Central Coast...
Ian Jeffrey accepts award on behalf of Goulburn ARS for highest percentage increase in WIA membership from Divisional President Susan Brown.

**FIREWORKS DISPLAY**

The Dural Fireworks Display takes place on Saturday the 4th June at VK2W1, 63 Quarry Road, Dural. The barbecue dinner commences at 6PM, with the fireworks kicking off at 8PM. Those attending the dinner should have purchased their tickets by now, however fireworks-only tickets will be available at the gate at $3 for adults, $2.50 for children or $11 for a family consisting of two adults and their children. Approximately $500 worth of fireworks will be set off in what promises to be a most spectacular display.

NSW members and clubs are invited to submit news items for inclusion in these notes to WIA NSW Division, PO Box 1066, Parramatta, NSW, 2150 and mark items “For Mini Bulletin”. Items for August AR must be received by the 22nd June.

**EMC**

(= Electro Magnetic Compatibility)

If radio frequency interference is causing you a problem you are reminded that — “Advice on all types and aspects of Interference (PLI, TVI, AFI, etc.) is available from the National EMC Advisory Service”.

**FORWARD DETAILS TO VK3GQ.**

Federal EMC Co-ordinator, QTHR.

The Radio Club Workshop, 1983, was held at Griffith University, Brisbane, on the weekend of 9/10th of April. No less than twenty Queensland clubs were represented. Generally there were about forty amateurs present listening to and taking part in the proceedings. As well as club delegates, several members of the Queensland Division Council and our Federal Councillors were present. The workshop is held to keep council in close touch with state members and to brief our Federal Councillors in preparation for the Federal Convention.

Guests at the workshop were Peter Jeremy, VK2PJ, VK2 councillor; Sam Voron, VK2BVS; Mr Kevin White, State Director of SES and Mr Boyd Rayment of DOC. Peter Jeremy was there as an observer for the VK2 council as VK2 had expressed an interest in our Radio Club Workshop. Sam Voron spoke on traffic nets and was very well received. Sam’s talk was very informative and quelled a lot of fears held by some in the audience. Both Mr White’s and Mr Rayment’s contributions were received with great interest and many questions.

All who attended went back to report to their clubs that the weekend was very worthwhile and worth every cent of members’ money. The Queensland Division pays for air fares for one delegate from each club so it is a costly affair. Remember that Queensland is a very big state, Cairns being as far away as Melbourne from Brisbane. It was unfortunate that inconvenient airline schedules stopped the Mt Isa Club coming.

Club motions on a wide variety of subjects were discussed, many of Queensland interest but some of interest Australia wide. These included discussion on RTTY calling frequencies, contests and upgrading the AOCP Morse speed requirement.

The workshop proposed that RTTY calling frequencies be adopted as follows:

- 3.520 ± 5 kHz
- 7.045 ± 5 kHz
- 10.145 ± 5 kHz
- 14.090 ± 5 kHz
- 18.105 ± 5 kHz
- 21.090 ± 5 kHz
- 24.925 ± 5 kHz
- 28.090 ± 5 kHz
- 28.620 ± 5 kHz

Contests were the subject of much debate, particularly in regard to taking up whole bands for many weekends throughout the year. The workshop came out strongly to have contests confined to band segments and that the WIA negotiate with other national societies to achieve this aim. There are already kindred thoughts being expressed in many parts of the world, Region 1 being a leader.

Due to difficulties experienced by Australian amateurs who have AOCP Morse qualification at 10 WPM in obtaining full privilege licences when overseas, it has been proposed in several quarters that the standard requirement be raised to 12 WPM. Several points came out of the discussion. Not many of the out of the total number of Australian amateurs go overseas to operate a station, DOC will conduct Morse tests at higher speeds and furnish documentary evidence of a pass, and a most interesting question, if the speed for AOCP qualification is raised, will all AOCP holders with 10 WPM endorsements, be required to pass at the new higher speed?

In previous workshops, delegates have formulated policy statements, some of which have been adopted as is or in modified form by the Federal Council. RTTY is gaining many supporters. Here is the policy statement prepared at the workshop on this mode which could receive federal endorsement.

Policy statement on RTTY — FUTURE DEVELOPMENTS:

... Bud, VK4QY AR

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Page 58 — AMATEUR RADIO, June 1983
FOR SALE TO VK3 MEMBERS
An ICOM 720A HF Transceiver and matching ICOM PS15 Power Supply.
This equipment was purchased by the VK3 Division and loaned to the VK6 DX Chasers Group to use during the recent very successful DX-pedition to Heard Island.
It is in mint condition and perfect working order. As it was never our intention to make a profit on this arrangement, merely to cover costs, applications to purchase the equipment for $1085 may be sent to The Treasurer, WIA Victorian Division, 412 Brunswick Street, Fitzroy, Vic 3065, before 8th June 1983.
If necessary, a ballot will be held during the June General Meeting.

VKOHl and VKOCW
QSLs for VK3 amateurs who QSLed direct to VK6NE including a self-addressed envelope but with NO RETURN POSTAGE will be bulk mailed to the VK3 office at 412 Brunswick Street, Fitzroy, Vic, 3065 and will be held for one year for collection.
Personally I think it is most unreasonable to expect ANY EXPEDITION to pay for return postage on top of the cost of the card.

HOW ABOUT IT FELLAS — DO THE RIGHT THING!!

73 Des Clark VK3DES
TREASURER VK3 DIVISION
A state Victorian Parliamentary Committee is inquiring into the environmental impact of larger radio masts in residential areas and has to report to Parliament by 30 June, 1983.
The National Resources and Environment Committee is particularly interested in whether the degree of environmental impact significance justifies municipal control over the appearance of such masts, and invited submissions from persons or organisations and set a deadline of 31 March.
The WIA Victorian Division submission was hand delivered to Parliament House Melbourne on 31 March — it contained about 4000 words and took roughly 100 manhours to produce.
The VK3 Taskforce on Radio Masts, Alan Noble VK3BBM and Jim Linton VK3PC, was expanded to include the VK3 Divisional Secretary Ian Palmer VK3YIP.
For more than two years the taskforce of Alan and Jim had been involved in making representations and attending conferences to put the view of the WIA concerning radio masts.
They were successful in impeding the progress of an amendment to the Melbourne Metropolitan Planning Scheme in 1981 which would have resulted in a planning permit being required for radio masts together with antennae that:
(a) exceed a height of eight metres above the ground.
(b) when attached to a building exceed a height of three metres above the roof line.
(c) have any horizontal dimensions in excess of three metres.
The then Liberal Minister for Planning was informed that such restrictive planning requirements were unjust and unworkable.
It is perhaps appropriate to mention that a planning permit for radio masts in residential areas — as used by radio amateurs — is not required.
However a building permit should be sought when the mast exceeds a height of eight metres above the ground, or when attached to a building exceeds a height of three metres above the roof line.
Under the Uniform Building Regulations the municipal council or shire has discretionary powers to refuse a permit and the applicant then has a right of appeal. At such appeal hearings the decision has traditionally been in favour of the radio amateur.
The Town Planning Appeals Tribunal has held that a resident has a right to do those things which accompany normal domestic living including the performance of a hobby. It has taken the view that a planning permit is not required for erection of radio masts used for domestic or hobby purposes. This historical fact has been highlighted in the WIA submission to the Parliamentary Inquiry.
In addition to the Taskforce on Radio Masts, a number of others provided assistance in compiling the submission. These included Michael Owen VK3KI on legal aspects, Jack O'Shannassy VK3SP with technical advice, and Mike Provis VK3KKA assisted in a journalistic capacity.

AMATEUR OCCUPATIONS
Ken Palliser VK3GJ and John Hutchinson VK3JH provided a computer print out giving a breakdown of the various occupations held by radio amateurs and the percentage who are retired persons.
This was valuable in explaining the nature of amateur radio and dispelling any misconceptions that radio amateurs are all "boffins" or something worse — "ratsbags".
The submission went through five draft stages using a professional typing service with a word-processor. It was estimated that a similar submission compiled totally by an outside firm which specialises in similar government submissions would have cost around $10,000.
The WIA Victorian Division has indeed been fortunate in being able to draw on the resources and expertise of individual members of the amateur radio fraternity.

In addition to the main submission, the Victorian Division circulated a form letter with eight key points and these were signed by individual radio amateurs and sent to the inquiry.
The WIA Victorian Division has opposed planning controls for modern design masts used by radio amateurs which do not exceed a height of twenty metres.
It is hoped this inquiry will resolve the issue of radio masts which has been a source of concern in Victoria since the late 1960s.

SURVEY OF BACKGROUNDS OF RADIO AMATEURS
Computer extract from membership records of 473 people, most living in the Melbourne metropolitan area, who are actively involved in amateur radio.

PROFILE OF OCCUPATIONS

<table>
<thead>
<tr>
<th>Occupation</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
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<tr>
<td>Business Administration</td>
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<tr>
<td>Communications and Electronics</td>
<td>10.5%</td>
</tr>
<tr>
<td>Data and Computers</td>
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<tr>
<td>Engineering</td>
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<tr>
<td>Finance and Accounting</td>
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<tr>
<td>Technical Sales</td>
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<tr>
<td>Electrical Trade</td>
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<td>Telecom</td>
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<td>Medical</td>
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<td>Transport Industry</td>
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<td>Building and Allied</td>
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<tr>
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<td>Miscellaneous</td>
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<tr>
<td>Total</td>
<td>100%</td>
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</tbody>
</table>

Jim Linton VK3PC

Remember Photo Competition
beginning July issue AR. See page 6 May AR.
Letters to the Editor

Editor's Note:

I have noted over the years the appeals by your magazine to patronise your advertisers. It also has been your policy to promote legal operations from licensed stations. So it struck me to be very unusual to see on page 12 of the June issue a call for help in finding your advertisers in correspondence with Mr. Jeffrey. VK6AJ, and myself, may I say that Jeff and I have been in regular correspondence, and we are getting along famously.

I am now engaged in helping others to learn code. I am sure he will be pleased to know that I am already sending in reports once more and join with him in urging others to do likewise — not because it is expected of them, but because it is an interesting pastime and a way of fighting back.

With best wishes.

Jeff Jeffrey VK6AJ

125 Cecile Street
Smithfield, WA, 6151

For the benefit of any readers who may have been following the public correspondence between Mr. Jeffrey, VK6AJ, and myself, may I say that Jeff and I have been in regular correspondence, and we are getting along famously.

We are both equally interested in the Intruder Watch, and are both trying to do our little bit to further the aims of the Intruder Watch in Australia.

Bill Martin VK2EWM
FEDERAL IW CO-ORDINATOR

INTRUDER WATCH

Bravo to Bill Martin for his spirited defence of Intruder Watch (AR, March 1983). However, I feel he has over-reacted somewhat, because my letter was not an attack upon Intruder Watch — a necessary and admirable service — and certainly not upon Mr. Martin who is doing an excellent job and, as he says, voluntarily. My letter was concerned with encouraging people to help, rather than putting them off. Let us take a couple of examples.

The Intruder Watch segment in February AR, written half-humorously I am sure, nevertheless manages to imply that, while VK1, 2, 3 and 4 are doing a fair job of reporting, VK5, 6, 7 and 8 don't give a damn and, presumably, should be ashamed.

In mid-February, the local Sunday morning WIA news bulletin gave details of the mis-spelling of some calls. It states that the editors of the callbook had not received this information on the deadline.

Again perhaps only minor issues, but let us make the effort and maintain our high standard.

Yours faithfully,

Ron Van Santen VK1VS

ARDSERVICES

Editor's Note:

A letter from Rex Black VK2YA was also received by the Federal Secretary on this topic.

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A letter from Rex Black VK2YA was also received by the Federal Secretary on this topic.

Old Coonara Rd.
Olinda Vic. 3788
6/3/83

I read with interest your OQP remarks. I intend covering for us to protect our privileges by responsible "self policing" of the regulations.

I was somewhat bemused, then, to see the same magazine advertising, via its "Emorics Catalogue" insert, such items as speech "scramblers", amateur and CB linear amplifiers for up to 2 kW output, a transmitter with continuous transmit coverage from 1.8 - 30 MHz etc.

Perhaps I am naive, but it seems to me to be utterly inappropriate for us, as an institute, to allow the pages of our official journal to carry implicit or explicit encouragement of readers to contravene either amateur or CB regulations.

If we do not have advertising or editorial policies covering such matters, I suggest that we develop them as a matter of some priority.

To Dr. Martin who is doing an excellent job and, as he says, voluntarily. My letter was concerned with encouraging people to help, rather than putting them off. Let us take a couple of examples.

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Yours faithfully,

Ron Van Santen VK1VS

NOT IN THE CALLBOOK

A number of amateurs seem to think that just because your callsign is not in the callbook, you are a "Pirate", or in some fashion, illegitimate. I have been questioned aggressively twice, abused and treated in various other discourtesies, such as being "talked about" on 2 metres after being on the HF bands by parties who, for whatever reason, fail to understand that all entries in the callbook are collated some time before the date of printing. Hence, those people who have not applied for a station license until September 1982 may not be in the callbook, especially if they are "talked about" on 2 metres after being on the HF bands by parties who, for whatever reason, fail to understand that all entries in the callbook are collated some time before the date of printing.

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and higher spectra, and an ability at 15 WPM plus passing the more difficult theory mentioned above, entitles one to the remainder of the HF Band. The bands are getting crowded.

I have enclosed copies of my certificates for the editor's benefit.

Peter Wolf VK7PW
31 Dully Street,
Alnlie. 2602.

ART UNION LOTTERY

The Maryborough (Old) West State School is currently running an Art Union, permit number A5312, which will be of interest to your readers.

All moneys raised will go toward completing an activities building the P and C is having built at the school.

PRIZES — 1st Microbee 16 K Computer, with green screen monitor, cassette recorder and an assortment of software. Value $785.50.

BOOK BUYERS PRIZE — (5 consecutive tickets). Choice of goods to the value of $150.

The Art Union closes on 13th July 1983 and will be drawn on 15th July 1983.

Tickets are $1 each, $5 a book and are available from the promoter — E. King, 45 Wilson Street, Maryborough, Qld 4650. (A SASE would be appreciated).

Yours faithfully,
E. L. King VK40A
45 Wilson Street,
Maryborough, Qld 4650.

CONCERNING COMMUNICATION

I live in a small country town in Western Australia, approximately five miles from the only phone box and I have passed all but the theory for my full ticket.

Having $3000 and a good QTH, I decided to make enquiries about radio equipment to set up my station.

To my dismay the response has been poor, to say the least. All the large outfits that advertise in ARA. Amateur Radio — I wrote to quite a large number — failed to reply. The exception was Emtronics.

I also sent money to one company that are advertisers of co-axial switches in Amateur Radio. I waited weeks and finally after something like two months I wrote again.

Finally I got the switch but no note of explanation or apology or anything to give me the confidence to deal with them again.

I understand that companies advertise to provide a service and gain revenue with their ads. I suggest at the time of printing, on heavy demand products that quantity in stock or waiting time for delivery, if any, are also printed.

As we deal on a cash basis, interest on accounts is taken into consideration by all. I feel that WIA does much to promote this fascinating hobby which, in times of emergency, has been an extremely practical and staunch service to those both connected with amateur radio and those outside its following.

The two I meet and Jack VK6AV, whose been around many a moon, have helped me to get started on this fascinating hobby and have offered me an open door to their shacks.

Have a nice life.

C. Chew,
c/- Kirup Post Office,
Kirup, WA 6251.

PLEASE NOTE

Letters to the Editor should be short and to the point. They will be easier to read and will not require shortening or summarising.

Peter Wolf VK7PW
31 Dully Street,
Alnlie. 2602.

THE VK3BWW FORMULA FOR DX SUCCESS!!

HIGH QUALITY AT LOW COST

BEAMS

<table>
<thead>
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<td>Prices include Gamma match</td>
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For further information
PLEASE RING (03) 366 7042
VK3BWW
WERNER & G. WULF
92 LEONARD AVENUE
ST. ALBANS, VICTORIA 3021

AMATEUR RADIO, June 1983 — Page 61
NOTES ON THE PREDICTIONS
The mode of propagation used by IPS in compiling their predictions are reflected in the bar charts used to convert the Graflex symbols into a graphic picture.

When generating the Graflex charts (reproduced in a number of publications) the following symbols are used.

1 "" — Propagation is possible but probably less than 50% of the days of the month.
2 "%" — Propagation is possible between 50% and 90% of the days of the month.
3 "F" — Propagation is possible by the first F mode on at least 90% of the days of the month unless there is a severe ionospheric disturbance.
4 "M" — Propagation is possible by both first and second F modes. The strongest mode is normally the first mode, but the vertical aerial pattern may influence the mode received.
5 "A" — High absorption, ie above the absorption limiting frequency but probably too close to it for good communication.
6 "X" — Complex mixtures of modes including the second E mode.

These are the most significant types we encounter. The full lines or bars on the chart cover 2, 3, 4 taking 5 into account. The broken lines or bars are depicted by 1. 6 is extremely hard to verify and is not taken into account.

The paths from Eastern Australia are based on Canberra. The paths from Western Australia are from Perth. Suitable allowance should be made on Eastern paths for geographical differences. Times, as much as 1 hour difference between Victoria and Queensland in band openings occur. Often there is no signal available in one State, whereas the opposite effect occurs in the other State, they get the lot. Marginal differences produced by layer tilt and varying degrees of ionisation can be very frustrating.

Generally the predictions show that time of day when the path should be open between the two areas. All other factors notwithstanding.

LEGEND

FROM WESTERN AUSTRALIA

FROM EASTERN AUSTRALIA

BETTER THAN 50% OF THE MONTH. BUT NOT EVERYDAY

LESS THAN 50% OF THE MONTH.

PATHS — Unless otherwise indicated (le LP = Long Path) all paths are Short Path.
Len Ansell was born in England. He joined the Royal Navy as a boy telegraphist. Later he joined the Royal Australian Navy.

He joined the New South Wales Police in 1932 and became a member of the Police Wireless Station, VKD. In 1937 Len was transferred as Officer in Charge of Police Wireless Waralah — VKG3 — in Newcastle, a position he held until his retirement some years ago.

Len was a keen amateur and a well respected member of the community. He passed away on 23rd March 1983.

All who knew him extend their deepest sympathy to his wife and family.

F C Meyer VK2AAX

JIM RAFTER VK4PR

On 6th February 1983, after a short illness, Jimmy Rafter, the one and only "PETER RABBIT", as most amateurs throughout Australia and the DX world know him, became a silent key. Jim started his association with radio working for Music Masters, Brisbane and associated with amateurs throughout Australia and overseas, we will miss him.

"Old hams never die, they just drift off frequency"... Anon

Ken Smith VK4KA

GEOFFREY HOFFMANN VK6NM

It is with deep regret that I advise the sudden passing of Geoffrey Hollmann, VK6NM/MM, of Bowen. His passing will leave another void in the ranks of the Queensland Radio fraternity. The President of the Q Branch of the WIA and foundation member of the Brisbane DX Club.

Jim is survived by a son, daughter-in-law, and two grandchildren. Two of Jim's sisters are residents of the USA.

His passing will leave another void in the ranks of amateur radio. As with most other amateurs Australian and overseas, we will miss him.

"Old hams never die, they just drift off frequency"... Anon

Calling Yachtsman's Certificate in 1980 and was an active member of the North Queensland Cruising Yacht Club. Many Townsville Amateur Radio Club members will remember his most entertaining and descriptive lecture of his recent circumnavigation of Australia.

Geoff had just passed an advanced Morse code examination for reciprocal overseas licensing. He will be sadly missed by his many friends.

Sincere sympathy is extended to his wife Nancy and daughter, Nicole.

Roger Cardukes VK4CD

JOAN FUDGE VK7ZYL

It is with deep regret we announce the passing of Joan Fudge, of Ulverstone, on 2nd March 1983 after a long battle with illness.

Despite poor health, Joan was involved with many different activities and was to be heard, until shortly before her death, talking cheerfully to people on the air.

Joan became active in amateur radio some years ago and took out a limited licence in 1981. Her cheery voice soon became well known on the metre repeaters around the state, particularly those in the north-west coast.

She was studying, amongst other things, computer programming whilst tirelessly supporting her husband Peter in his computer business.

From 1979 to 1983 Joan was secretary of the North-West Branch of the Tasmanian Division of the WIA and was the Branch news co-ordinator. She worked to promote amateur radio in the local schools, giving up her time to help the children with activities.

She will be sadly missed by all amateurs in Tasmania particularly those In the north-west.

Sincere sympathy is extended to her husband Peter and children, Marie, Juliet and Jonathan.

Martin Fox VK7MM

ACI-WOUND INDUCTANCES

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<td>7&quot;</td>
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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

WARNING!!

Disposing of your old rig?? Please ensure it goes ONLY to someone licensed to use it on YOUR bands.

HAMADS

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.

* Please insert STD code with phone numbers when you advertise.

• Eight lines free to all WIA members. $9 per 10 words minimum for non-members.

• Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.

• Repeats may be charged at full rates.

• Closing date: 1st day of the month preceding publication.

• OTHR 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 resold for merchandising purposes.

TRADE HAMADS

Conditions for commercial advertising are as follows. The rate is $15 for 4 lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the first day of the month preceding publication.

AMIDON FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE to: R. J. & U. S. Imports, Box 157, Mortdale, NSW 2223. (No enquiries at office: 11 Macken St, Oakley, 2223.)

CB RADIOS $69: walkie talkies, short wave radios, military, outback, business, amateur, marine, repair, RTTY Siemens 100A printer $120, base mic, $45, ultrasonic alarm, $35; all hams on a single 6 ft. whip, 1.8 to 30 MHz, for base or mobile, $300; aerials, installation, demonstrations, 40 ch. CB conversions, accessories, new rigs weekly. Bridge Disposals, 12 Old Town Plaza, opp. Bankstown Railway Station, NSW. Mail order service and all enquires to 2 Griffith Avenue, Roseville 2069, or phone Sam VK2BVS, 7pm to 9 pm only on (02) 407 1066.

WANTED — ACT

ANTENNA, YAGI TYPE, for 20 metres, antenna rotator and associated hardware. Also DC power supply for Kenwood TS 820S. Contact Ron Van Santen VK1VS. Ph: (062) 58 6871.

WANTED — VIC

Next Page Please.

AMATEUR RADIO, June 1983 — Page 63
CIRCUIT DIAGRAM FOR DRAKE SSR-1 receiver. Will pay all charges for photocopy and necessary post charges. Write to: G. Himoly, 118 Wilson Rd, Newcomb, Geelong, Vic 3219.

TRI-BAND YAGI TH3JR or similar as cheap as possible for local scout group with not much money to spend. Gordon VK3DBU/S1K, 15 Murdock St, Hopetoun, Vic 3396. Ph: (050) 83 3380.

WANTED — QLĐ

WAMECO MEM-2 16K S100 memory board. Bare, assembled, or kit. Prefer no rams. Contact J. Hanran. Ph: (077) 1 2265 after 8PM.

WANTED — WA

KWM2 MIC PLUG and power lead or power plug only. Circuit diagram for BZ3 AWA receiver. All letters answered. C. Chew. PO Kirup 6251.

FOR SALE — NSW


KENWOOD TS-520S VGC new finals: CW filter S450. AT200 Tuner VGC S130. MC-50 Kenwood desk mike S50, or this complete station S800. VK3BXN QTHR. Ph: (03) 528 6525.

SHACK CLEAROUT — C42 36-60 MHz 25 W Tx/Rx with xtal S30. PMG VH3F FM repeater Tx (19" rack mount) with p/s S25. 2 m 5 W AM aircraft Tx/Rx model STR-9X with manual and xtal S15. 6 m FM 25 W STC carphone with test set S10. 6 m AM Pye carphone S6. Above lot for S700. 100 kHz CRD S12. 500 V p/s (parts) S5. 2X Astor VH2 Tx/P (parts) S5. Assortment ex Telecom interfcoms S3. VIA correspond course for LQCP — books and 3 $40. Other bits and pieces. Ph: (03) 523 3556 (AH). Not Saturday.

WESTON ELECTRONICS DX33. 3 el. tri-band, trap beam antenna, 14' boom. 2 KW PEP, excellent performance. Complete condition. S150. ICOM IC-221. 2 m FM 10 W transceiver, xtal for 8 repeater and 7 simplex channels. As new condition, complete with mic, mobile mount, handbook, etc S165 VK3ARZ QTHR. Ph: (03) 584 5912.


FOR SALE — QLD


FOR SALE — SA

TOWER. 57 ft triangular framed tower, ladder to 25 ft, stage cranks to 57 ft. S300. Ph: (08) 356 8040.


HIDAKA VS33 TRI-BAND beam S150; Hills winch-up triangular lattice tower 11 m $200; CDE Ham II rotator and controller, working but needs attention S125. Standard SR-146A 2 m FM Ht Tx/Yr S10 each. Swan 350 and with PS and Vox, working but needs alignment S250. All items with manuals and all prices negotiable. EA June 71 Sept 81 incl, what you want. VK6KD QTHR. Ph: (09) 405 2041.

FOR SALE — TAS

WEBSTER BANDSPAN, American made, single mobile whip antenna, covers 80-10 m. Fully adjustable. S70. ICOM 20 amp power supply. built-in speaker, matches ICOM 701, as new. S125. VK7MG QTHR. Ph: (02) 57 8220.

ADVERTISERS’ INDEX

ANDREWS COMMUNICATION SYSTEMS .......................... 50
BAIL ELECTRONIC SERVICES ........................................ 1F
BRIGHT STAR CRYSTALS ........................................ 2
CW ELECTRONICS .................................................. 48
DICK SMITH ELECTRONICS ........................................ 5
EASTERN COMMUNICATION CENTRE .......................... 3
ELECTROMARK PTY LTD ........................................ 2
EMTRONICS .......................................................... 1B
GFS ELECTRONIC IMPORTS ......................................... 32
HAMRAD .............................................................. 55
HIGH TECHNOLOGY ................................................... 55
COMPUTER SYSTEMS PTY LTD ................................. 61
HY-TECH DISTRIBUTORS ............................................ 55/61
IAN J. TRUSCOTT .................................................... 58
ELECTRONICS ........................................................ 58
ICON AUSTRALIA PTY LTD .......................................... 58
MOBILE ONE COMMUNICATIONS SYSTEMS .............. 48/44
NOVICE LICENCE — G. Scott & A. Brucesmith ......... 4
RAKON AUSTRALIA PTY LTD ........................................ 7
TRAEGER DISTRIBUTORS (NSW) PTY LTD ............... 41
TRIO-KENWOOD (AUSTRALIA) PTY LTD ..................... 48/6
VICH COMMUNICATIONS ........................................ 8
VK2 WIA NOVICE LICENCE .......................................... 55
WATCHMAN ELECTRONICS ......................................... 48
WERNER & G. WULF ............................................... 61
WIA BADGES ........................................................ 53
WILLIAM WILLIS & CO PTY LTD ...................... 63

Page 64 — AMATEUR RADIO, June 1983
<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
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<tbody>
<tr>
<td>IC-R700</td>
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<td>IC-720A HF TRANSCEIVER</td>
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<td>IC-740 HF TRANSCEIVER</td>
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<td>IC-505 6m ALL MODE TRX</td>
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<td>IC-2A 2m FM HAND HELD</td>
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<td>IC-25A 2m FM MOBILE TRX</td>
<td>$395</td>
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<tr>
<td>IC-290 2m ALL MODE TRX</td>
<td>$817</td>
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<td>IC-4E 70cm FM HAND HELD</td>
<td>$320</td>
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<td>IC-45A 70cm FM MOBILE</td>
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<tr>
<td>IC-490A 70cm ALL MODE</td>
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<td>IC-2KL WITH PS</td>
<td>$1699</td>
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<td>IC-AT 100 AUTO TUNER</td>
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<td>IC-AT 500 AUTO TUNER</td>
<td>$495</td>
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<tr>
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<td>$279</td>
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<td>IC-PS20 POWER SUPPLY</td>
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<td>IC-PS 740 POWER SUPPLY</td>
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<thead>
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<th>Price</th>
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<tbody>
<tr>
<td>PCS-4000</td>
<td>$459</td>
</tr>
</tbody>
</table>

- 8 MHZ COVERAGE. CAP/MARS BUILT IN: 142.000-149.995 MHz in selectable steps of 5 or 10 kHz COMPARE!
- TINY SIZE: Only 2" H x 5.5" W x 6.6" D. COMPARE!
- MICROCOMPUTER CONTROL: At the forefront of technology.
- UP TO 8 NON-STANDARD Splits: Ultimate versatility for CAP/MARS. COMPARE!
- 16-CHANNEL MEMORY IN TWO 8-CHANNEL BANKS: Retains frequency and standard offset.
- DUAL MEMORY SCAN: Scan memory banks either separately or together. COMPARE!
- TWO RANGES OF PROGRAMMABLE BAND SCANNING: Scan up to 10 MHz. COMPARE!
- FREE AND VACANT SCAN MODES: Free scanning stops on occupied frequencies.
- DISCRIMINATOR SCAN CENTERING INCLUSIVE PATENTED: Always stops on frequency.

$1745

The JRS Model JST-100 HF transceiver is a new digitally synthesized, microcomputer based transmitter/receiver. It incorporates an 11-channel memory and double variable frequency oscillator, allowing various types of operation in all amateur bands in the emission modes of A3J, A1 and F1. The JST-100 is designed for compact and lightweight construction and ease of operation. Write For Brochure

<table>
<thead>
<tr>
<th>Model</th>
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<tbody>
<tr>
<td>R-2000 Comm Receiver</td>
<td>$655</td>
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<tr>
<td>TS-930S with tuner TRX</td>
<td>$1935</td>
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<tr>
<td>TS-430S HF TRX</td>
<td>$1055</td>
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<tr>
<td>TL-922 2KW Lin ampl</td>
<td>$1380</td>
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<td>PS-430 power supply for TS-430</td>
<td>$189</td>
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<tr>
<td>HC-10 world clock</td>
<td>$129</td>
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<td>DM-81 Grid Dip Oscillator</td>
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<table>
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<th>Model</th>
<th>Price</th>
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<td>AZDEN the FM KING</td>
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<th>Model</th>
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<td>IC-7400 HF TRANSCEIVER</td>
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<td>IC-730 HF TRANSCEIVER</td>
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<td>$235</td>
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</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>PCS-300 — The Standard For Comparison</td>
<td>$359</td>
</tr>
</tbody>
</table>

- 8 MHZ Coverage
- Ideal size & weight distribution
- LCD Display with timed lamp
- 16 Key Autopatch
- PL Tone switch
- Programmable "odd splits"
- 9 Channel memory with scan
- Automatic inclusive or exclusive programmable band scan
- Busy and vacant scan modes
- Keyboard lock
- Transmit lock
- Digital S/RF and memory addresser
- High or low power
- True FM
- Automatic front and tuning
- Rugged commercial-grade modular construction
- Superior receiver
- BNC Antenna connector

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
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<tr>
<td>TELEREADER:</td>
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<tr>
<td>CWR850E Comm. Terminal</td>
<td>$1299</td>
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<tr>
<td>CWR670E Receive Conv.</td>
<td>$499</td>
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<td>CWR-610E Receive Conv.</td>
<td>$259</td>
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<td>HAL:</td>
<td>$1654</td>
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<tr>
<td>CT-2100 3 comm.</td>
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<tr>
<td>KB-2100 3 Terminal</td>
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<tr>
<td>ALINCO SSTV:</td>
<td>$799</td>
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<tr>
<td>EC-720 SSTV Conv</td>
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</table>

See us for a Complete Range of HF, VHF & UHF Linear Amplifiers

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.70, Morse Trainer</td>
<td>$159</td>
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<tr>
<td>ASP, Automatic Speech Processor</td>
<td>$235</td>
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<tr>
<td>FL-3 Frequency Agile Filter</td>
<td>$299</td>
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<tr>
<td>AD270 Active Antenna</td>
<td>$129</td>
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<td>AD370 Active Antenna</td>
<td>$199</td>
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<tr>
<td>RC, Universal Speech Clipper</td>
<td>$199</td>
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<tr>
<td>RFA Broadband Pre-amp</td>
<td>$79</td>
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<tr>
<td>Code Call 4096</td>
<td>$79</td>
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<tr>
<td>RF Direction Indicator</td>
<td>$360</td>
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<tr>
<td>VLF Converter</td>
<td>$79</td>
</tr>
<tr>
<td>NFA Notch filter</td>
<td>$99</td>
</tr>
</tbody>
</table>

Write For Full Specs On All Items

SEND 80c FOR OUR LATEST 1983 PRODUCT CATALOGUE
The Dynamic Duo

ICOM's 2 Meter and 70cm FM

25 Watt/5 memories/2 scanning systems in a 2"H x 5 1/4"W x 7"D package is what has made the easy-to-use IC-25A the most popular 2 meter FM mobile transceiver ever. Now ICOM presents the second half of its mobile duo...IC-45A. The IC-45A covers 430-439.995 MHz. Both transceivers are supplied with Up Down Scanning microphones as standard.

Dual VFO's. Dual VFO's give an extra stored frequency for scanning (memory scan scans 5 memories plus 2 VFO's) and each VFO has a different tuning rate for easy QSY.

<table>
<thead>
<tr>
<th>VFO A</th>
<th>VFO B</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC-25A</td>
<td>5 KHz</td>
</tr>
<tr>
<td>IC-45A</td>
<td>5 KHz</td>
</tr>
</tbody>
</table>

5 Memories. Instant access to most used frequencies. VFO A information is transferred to the selected memory by pushing the write (IC-25A) or W/CK (IC-45A) button.

Priority Channel. Any memory channel may be monitored for activity on a sample basis, every 5 seconds, without disruption of a QSO conducted on a VFO frequency.

Led Bar Meter. Shows strength of received signal as well as relative transmitter output from the fully protected final RF amplifier. APC (automatic power control) is used to detect SWR and adjust the power output to a safe level.

Simplex/Duplex Operation. Standard 600 KHz offset initializes into radio at turn on. Offset may be changed by pressing the priority button while in VFO operation. Rotating the main tuning knob will now change the offset up or down and the offset will be displayed on the frequency readout.

Adjustable Power Levels.

<table>
<thead>
<tr>
<th></th>
<th>Hi Pwr</th>
<th>Lo Pwr</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC-25A</td>
<td>25 W</td>
<td>1 W</td>
</tr>
<tr>
<td>IC-25H</td>
<td>45 W</td>
<td>2 W</td>
</tr>
<tr>
<td>IC-45A</td>
<td>10 W</td>
<td>1 W</td>
</tr>
</tbody>
</table>

Pulling the squelch knob out places the unit into low power. Both the high and low power may be independently set to accommodate your simplex/repeater requirements or amplifier input characteristics.

Nor/Rev Capability. Use of this button on the IC-25A, or the W/CK button on IC-45A, in the duplex mode, allows one touch monitoring of the repeater input frequency. If simplex operation is possible you will know instantly.

Scanning. Pushing the S/S button initiates the scan circuitry. With the mode switch in a memory position the unit will scan all 5 memories plus the 2 VFO frequencies.

With the mode switch in VFO position, the unit will scan the entire band or the portion of the band defined by memories 1 and 2. Full band scan or program band scan is selected from the front panel in the IC-25A, internally on the IC-45A.

Both units have internally switched scanning choices of adjustable delay period after a carrier is received then resume scan, or resume on carrier drop.

The Most Compact FM Mobiles on the Market. Fits in the smallest of places. Stacking, matching Mobile Mounts for complete mobile communications for your car.

Memory Backup. When the optional IC-BU1 backup power unit is installed on the back of the IC-25A or IC-45A, memory will be maintained while transferring the unit from power source to power source. If the unit is not removed from power, it will maintain memory even when turned off with or without the IC-BU1.

Discover a new deal with ICOM AUSTRALIA PTY. LTD.

7 DUKE STREET WINDSOR 3181 VICTORIA, AUSTRALIA
TEL: (03) 529 7582 TLX: AA 35521 ICOMAS
Amateur Radio


JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

Im Convention Report
Equipment Reviews — TR-7950 & M10-1
Test Equipment & Generator to build

WC Day Celebrations — 17th May
Two Antennas to Erect
Military Radios — Port 4
**TRIO – Still the Best Scopes for Value and Performance**

**100MHz, 4 Channels, 8 Traces.**

For applications requiring the highest degree of measurement sophistication, TRIO offers the new 100MHz CS-2100A. A second generation design with a new level of performance and reliability. It brings ultra-high-performance standards and a vast array of features into one efficient package. This new scope represents the state-of-the-art and features a rugged industrial construction. As a result, the CS-2100A is efficient, lightweight and highly reliable.

**ImV Sensitivity!**

- 100MHz response and 3.5ns rise time
- 120MHz response at ~6dB
- 500V/division cascade sensitivity
- 2mV/division sweep rate with 1x magnifier
- Four-input operation provides trigger views on four separate inputs
- Selectable 1MΩ or 50Ω inputs
- Alternate timebase operation
- Built-in triggering filters
- Dual intensity controls

**CS 2100A**

$2,495*

**70MHz 4 Channel, 8 Trace, ImV Sensitivity Scope at a 60MHz Price!**

The new TRIO Model CS-2070 is a cost-effective full-feature portable lab scope. Having many of the important capabilities of the CS-2100A, the CS-2070 comes more feature-packed than most other scopes in its bandwidth class and it offers higher performance.

- 1mV/division sensitivity to 70MHz
- 500V/division cascade sensitivity
- Four-input operation provides trigger views on four separate inputs
- Alternate time base operation
- 20MHz bandwidth limiter
- Lighted function pushbuttons

**CS 2070**

$1,795*

**A Favourite of Leading Computer Companies! 35MHz, 2mV Sensitivity**

The CS-1577A should be your choice for microprocessor system development and troubleshooting. Broadcast studio applications. Measuring propagation delays and phase shifts. Troubleshooting and maintaining video systems. Comparing amplifier input-output waveforms, and displaying algebraic difference as a distortion curve.

**CS 1577A**

$995*

**Over-2,000 Sold**

**$545**

**$649**

**$3,195**

**$3,195**

**Our Most Popular Model — and Still the Best Value Available!**

Used extensively by educational institutions, industries, and by hobbyists, the TRIO CS 1560AiB has gained an enviable record for dependability. A record unsurpassed by any other scope in its class. Truly your last choice for a worldwide oscilloscope.

**CS 1560AiB**

**20MHz bandwidth limiter for best view of low frequency signals**

**Lighted function pushbuttons**

**2Mm/div sensitivity**

**Signal delay line**

**Alternate trigger capability**

**Variable hold-off for pulse train display**

**UNCAL reminder LEDs**

**Single sweep feature for photography or observation of non-repetitive waveforms**

**Video sync separators standard**

**Built-in triggering filters**

**Differential input capability**

**$3,195**

**$545**

**$649**

**$1,795**

**For Those Who Require the Extra Capability of a 20MHz Scope at a Reasonable Price**

The CS-1022 has that extra punch needed for engineering design work. Its 20MHz bandwidth and 1mV/div sensitivity make it ideal for microprocessor, digital data, broadcast, RF and IF system design work. All performance features are geared for maximum flexibility and convenience.

- 35MHz response, usable beyond 50MHz
- Triggers on signals beyond 50MHz
- 2mV cm vertical sensitivity
- Signal delay line
- Alternate trigger capability
- Automatic or manual CHOP ALT selection
- Variable hold-off for pulse train display
- UNCAL "reminder" LEDs
- Single sweep feature for photography or observation of non-repetitive waveforms
- Video sync separators standard
- Built-in triggering filters
- Differential input capability

**CS 1022**

**$649**

**MS 1650B**

**$3,195**

**"DIGITAL STORAGE"**

- **Sensitivity**
  - 10Div (triggers at 0.5 Div Typ)
  - CH1 CH2: DUAL ADD and SUB
  - CH1: 2x CH2: 4x
  - XY Mode
  - Triggered Sweep and Auto
  - Sweep times: 0.25Div, 0.5Div, 5.0Div and 10ns

- **Functions**
  - 1024 byte memory
  - Built-in triggering filters
  - Digital data output capability
  - Immediate display of stored waveform
  - Conventional 10MHz oscilloscope mode
  - 8-channel dynamic range
  - Vertical signal output (CH1 output)

**Capture Those Unpredictable One-Time Events!**

The MS 1650B captures one time or otherwise unpredictable events. Stores them in a digital memory and instantaneously reproduces them as digital waveforms on a CRT display screen. It is in combination with the MS 1651 memory and represents a powerful and versatile waveform recording and analysis tool.

- Simple storage and display of transients
- 1024 byte memory
- 1ns write time
- Conventional 10MHz oscilloscope mode
- Immediate display of stored waveform
- Can capture waveform prior to trigger signal
- Digital data output capability

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**$3,195**

**$1,795**

**$2,495**

**Stills the Best Scopes for Value and Performance — and Still the Best Value Available!**
The opening of VK2 Division's "Amateur Radio House".

ARTICLES
Amateur Radio House by Bruce Bathols
VK3UV .............................................. 7
Broadband End Fed Antenna by A M Keightley VK6YX ......................... 10
Federal Convention 1983 ........................................... 24
Horse Endurance Trials-Field Exercise by Ian Jackson VK3BUE .......... 16
Modern Military Surplus Part 4-C42 & C45 by Colin MacKinnon
VK2DYM ............................................. 18
Murphy's Party ........................................... 39
Poison Pen Letters .......................................... 46
Regulations for Power Lines ....................................... 39
Seven Element Yagi-Economy Version by Des Greenham VK3CO ........ 8
Simple Marker Generator by Neville Mattick VK2OE ......................... 13
Test Equipment for Radio Experimenters by ................................ 47

DEPARTMENTS
A word from your Editor ....................................... 3
Advertisers Index .......................................... 64
ALARA ............................................. 45
AMSAT Australia — new co-ord & scribe .......................... 47
AR showcase JRC HF Tcwr, M42G mobile ant ...................... 58
AWARDS — Rule changes for WIA awards. Work all Y2 rules .... 46
Club Corner — Eastern Zone Convention ........................... 9
Commercial Chatter .......................................... 40
Contests — OLF, Keymen's of JA, WA's, 3.5 CW & SSB Test rules. Amend to JM results ........................................... 50
Education Notes ........................................... 49
Equipment Reviews — Kenwood TR-7900 & Mobile One Hamtienne M10-1 20
Five-Eighth Wave ........................................... 56
Forward Bias ............................................. 54
HAMADS ............................................. 63

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Here's RTTYI — Connecting RTTY Gear ........................................... 38
How's DX ............................................. 34
International News ........................................... 41
Intruder Watch ........................................... 37
Ionomorphic Predictions ........................................... 60
Letters to the Editor .......................................... 59
Magazine Review .......................................... 54
Main QSP — Rad Comm Bill ...................................... 5
National EMC Advisory Service — Computer Car ................. 48
Novice Notes — More about ATUs .................................. 30
Obituaries — VK4BAC & VK2ZA .................................. 63
Pounding Brass — A Retrospective .................................. 40
QSLs, QTHs, Heard & Worked ...................................... 37
QSP ............................................. 47
Silent Keys — VK2BC, VK2BCM, VK3FJ & VK3MU ............ 63
Spotlight on SWLing ........................................... 44
VHF UHF — an expanding world ................................... 42
VK2 Mini Bulletin .......................................... 55
VK3 WIA Notes .......................................... 56
VK4 WIA News .......................................... 55
WIA News ............................................. 6

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Tel. (03) 560 5111

AMATEUR RADIO. July 1983 — Page 1
CONTROVERSIAL NEW HOBBY
SWEEPS AUSTRALIA!

THOUSANDS ARE GLUED TO THEIR SCANNERS IN DEFIANCE OF THREATENED BANS . . .

Scanning is the fastest growing hobby in the world, and these units represent the 'state of the art' in scanning technology. Just think – you can hear almost anything, from harbour control nudging a supertanker into its berth, to exciting conversations from cars speeding along city streets! All the emergency services, authorities and forces... and of course there are thousands of amateur and C.B. radio operators. Plus the thousands of stations on the band that we don't know about yet, (we're waiting for you to tell us about them!) You can surely see why so many people all over the world are being 'turned on' by this fascinating new hobby.

BEARCAT SCANNER 200FB
ONLY $349

The economy scanner with deluxe features. Extended frequency coverage, memory and lockout capabilities, delayed channel access... and much, much more! The incredible value! Cat D-2801

PRO 40 SCANNER
ONLY $399

Unbelievable value for money. State-of-the-art computerised scanning. 40 channels, memory, all channels listed, auto search mode, splash-proof keyboard, full-band search and display, auto channels & channel delay built-in, plus plus plus! Cat D-2800

SCAN-X ANTENNA
ONLY $49.95

Pick up extra stations! Ultra-wide bandwidth (65-520MHz) enables you to get the most from your scanner. Complete with mast clamps & 15 metres of cable, Can also stand alone on patio, roof, etc. A must for the serious scanner! Cat D-4430

PRO 40 SCANNER
ONLY $285

BEARCAT 150

Amazing value – microprocessor control for under $300. Features 15 channels, memory, lockout and delay facilities, touch-sensitive keypad, etc. Ideal monitor for business, emergency services, news gatherers, and others! Cat D-2800

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NEW • Auburn 6830 9558 • Bankstown Sq 707 4888 • Blakehurst 549 7742 • Bondi Jet 38 1442 • Broadway 211 1772 • Brookvale 93 6441 • Chifley 641 6922
• Dee Why 430 5371 • Eastlakes 29 0238 • Erina Heights 1 8988 • Gosford 430 6966 • Gosford 430 8966 • Penrith 323 5000
• Greenacre 387 5911 • Greenpoint 28 9800 • Rockdale 2216 6222 • Roseville Point 387 5911 • Randwick 387 5911
• North Parramatta 28 9800 • Parramatta 28 9800 • Pendle Hill 323 5000 • Penrith 323 5000 • Penrith 323 5000
• Peppermint Grove 387 0901 • Lakelands 387 0901 • Peppermint Grove 387 0901 • Rockdale 2216 6222 • Randwick 387 5911
• Kurnell 2205 6000 • Lakelands 387 0901 • Kurnell 2205 6000 • Randwick 387 5911 • Rockdale 2216 6222

DICK SMITH ELECTRONICS
Each new transceiver seems to extend the features which can be provided by microprocessor control of the radio. The actual receiving and transmitting sections advance much more slowly.

There are many applications for microprocessor control both in accessories and in operating aids as well as in the basic transceiver. Many of these systems can be bought, such as RTTY and Morse computer systems and some of the logging programmes.

Many applications lie awaiting development. As the editor of Amateur Radio, I would like to run articles on such applications and developments.

Whilst the computer systems grow bigger and more versatile there have been many simple and cheap computers available. They surely mark the way ahead.

One thousand dollars and up will buy you a very powerful computer. But the price excludes all but the devoted computer hobbyist.

Those coming into amateur radio or trying to enjoy amateur radio whilst meeting other family commitments think very carefully before making such outlays. The $200 computer is much closer to their requirements. The $100 machines will soon be here. They are already carving their niche in the world market.

Send Amateur Radio articles on how to use these machines. What about RTTY using one of these low budget machines.

Other programme ideas are a good Oscar programme or an antenna rotator controller or maybe a transceiver controller. But most importantly send it to Amateur Radio. The field is limitless. Whilst the cheap machines may not be as impressive to the computer enthusiast they hold great promise.

Gil Sones VK3AUJ
Editor
DAIWA DIRECTIONAL CERTAINTY . . . WITH DAIWA

DAIWA ROTATORS GET AUSTRALIAN AMATEURS GOING IN THE RIGHT DIRECTION WITH AUSTRALIA-BASED GREAT-CIRCLE MAPS.

With Daiwa rotators you have the advantage of control boxes with maps centred on Australia! The best way to get you going in the right direction. Daiwa rotators offer you quality and innovation. And Daiwa rotators offer you all the choices you need!

A CHOICE OF CONTROL BOXES . . .

There is a round controller (Type R) which is a great-circle map centred on Australia, with area prefixes and paddle-switch control.

Or you can choose the pre-set controller (Type X) which allows you to pre-set the control area you want to work.

AND A CHOICE OF MEDIUM OR HEAVY-DUTY ROTATORS

You can choose a Medium Duty Rotator (Model 7500) or a Heavy Duty Rotator (Model 7600). The medium duty rotator will handle the average beam with ease. The heavy duty rotator is designed to handle larger amateur and commercial beams and arrays. Compare these specifications.

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<th>Heavy Duty</th>
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<td>Brake</td>
<td>Mechanical</td>
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<td>2000kg/cm</td>
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<td>Vertical Load</td>
<td>200kg</td>
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THIS GIVES YOU A CHOICE OF FOUR DIFFERENT COMBINATIONS . . . TO SUIT YOUR OPERATING STYLE

DR7500R MEDIUM DUTY; PADDLE SWITCH CONTROL BOX.
DR7500X MEDIUM DUTY; PRE-SET CONTROL BOX.
DR7600R HEAVY DUTY; PADDLE SWITCH CONTROL BOX.
DR7600X HEAVY DUTY; PRE-SET CONTROL BOX.

Daiwa rotators are made by the innovators who brought you cross-needle meters. They offer long life and quality Daiwa construction, and are the result of a considerable amount of research.

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NEW ZEALAND
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DEALER ENQUIRIES INVITED!
Australian amateurs operate under regulations based on a very old Act of Parliament. The Wireless Telegraphy Act was passed by Federal Parliament in 1905, with the suggested intention of making wireless telegraphy a "Commonwealth monopoly". The present Act, the legislative framework supporting Australia's complex mixture of public and private radio communication systems, represents seven amendments since 1905. Several newer Acts control navigation, broadcasting and television, licence fees, and other aspects of communications.

In 1980 the Department of Communications prepared for new legislation to replace completely the old Act and all its amendments. Draft principles were stated and public comment invited. The Institute's response, a twenty two page submission in January 1981, was said to be of considerable help in drafting the new Bill. After several delays the Bill was released for public comment late in February 1983.

The WIA had meanwhile set up the Communications Act Special Planning and Response Committee (CASPAR), which held its first meeting on 17 March. It has seven members VK3s AE, NE, XX, AFW and AMD with chairman VK3ABP and secretary/co-ordinator VK3QQ. Executive from CASPAR a detailed report on all aspects of the Bill relevant to the Amateur Service, including all comments by Divisions and individual amateurs, as requested several times in AR and Divisional news broadcasts. Comment was received from the VK1, 2, 3 and 4 Divisions and from several individuals. The VK1 comments were of particular value, being a fifteen page discussion by VK1GB, a practising barrister.

After three meetings in two weeks, CASPAR presented its findings to the Institute's Federal legal consultant VK3KI at the end of March. It then met with him and members of the Executive on 14 April to discuss the draft submission which he (and 1GB on the telephone) had prepared over Easter. With little alteration the twenty three page VK3KI draft was then presented to the Federal Convention on 24 April. The final submission was presented by VK3KI personally to the IREE Workshop held in Sydney on 26 and 27 April to discuss the Bill and its implications. It was well-received by all present, including the DOC representatives, and was then formally submitted to the Department.

I have taken this long, over the history explanation to make clear that the Institute's submission is a carefully thought out legally-drafted document representing many hours' work by many people, in which there has been the greatest possible scope for participation by all members of the WIA either as individuals or through their Divisional Councillors.

But what is in the Bill itself? What changes would we like to see in it before, tabled, debated and passed in Parliament, it finally becomes the new Act? Regrettably, in the space available here it is only possible to mention a few main points. The Bill itself has eighty three clauses and occupies forty six pages. To quote parts of the outline which follows the published text, it "makes provision for common standards for radiocommunications receivers and transmitters and for offences with respect to sub-standard equipment . . . provision for compliance statements and compliance certificates . . . provision for a spectrum plan and frequency band-plans and for transmitter and receiver licences. Part . . . is devoted to the settlement of disputes with respect to interference to radiocommunications. Enforcement and procedural matters are also dealt with."

Many of the provisions of the Bill, as might be expected, re-state in modern terms what we already understand to be the function of the DOC. But its novel underlying theme is interference minimisation by much tighter control over transmitting equipment, to include anything capable of transmission even if not so intended. Unfortunately similar provisions do not apply to all receivers, nor to so-called "non-receivers" such as audio equipment. This is thought to be due to doubt about the Commonwealth's constitutional power to control such devices. It was not until 1935 that the basic power to make laws about "postal, telegraphic, telephonic and other like services" was held to encompass "Wireless telegraphy" — thirty years after the original WT Act!

Rather than continue with a description of the Bill (which is available from the Government Printing Office) the points on which the WIA has made comment will now be listed. The aspects which we find undesirable or inadequate may be inferred from the comments. The WIA:

AMATEUR RADIO, Juy 1983 — Page 5
1 Suggests creating specific offences regarding false distress messages, deliberate interference, and disclosure of received information by other than the intended recipient, the latter in lieu of receiver licensing.

2 Opposes possession of a sub-standard transmitter being made an offence.

3 Agrees that broad standards are necessary, particularly as regards transmitters, but considers that the Amateur Service (because, uniquely, its technically qualified operators engage in self-education by constructing or modifying their equipment) should be exempt from such standards.

4 Suggests that the Bill be extended to include control of interference — susceptible appliances and that the power to do this may have been established by the Trade Practices Act.

5 Suggest that the interference conciliation procedure be extended to cover more fully those suffering interference (from whatever source).

6 Opposes the power to license all receivers (other than broadcast or TV, already excluded) and suggests licensing should apply only to receivers for commercial satellite transmissions above 1 GHz, if at all.

7 Recommends that spectrum and band plans shall be in accordance with international agreements and subject to public comment at the draft stage.

8 Questions the need for any search to be authorised without issue of a warrant by at least a magistrate (as distinct from a JP).

9 Suggests that the Bill should not preclude licensing for periods longer than one year.

It was further decided at the Federal Convention that the Institute should recommend creating an offence of selling a radiocommunication transmitter to a person or agency not appropriately licensed.

Notification has already been received from DOC that amendments to the draft will follow WIA points 2, 4 and 7. The Institute continues to negotiate on the other points, particularly 1, 3, 6 and 8, and suggests that with such amendments the Bill should be introduced in Parliament as soon as possible in view of the urgent need for effective control of interference.

W M Rice VK3ABP
Chairman CASPAR Committee
The NSW Division’s new premises at 109 Wigram Street, Parramatta, “Amateur Radio House”, was officially opened on Saturday 28th May 1983 by Mr Gary Punch, MP for Barton. Mr Punch delivered a brief history on amateur radio, concluding with an acknowledgement to the WIA on its excellent submission in respect of the Radio Communications Bill.

Special invited guests were Mr Stan Dickson, Mayor of Parramatta, Mr John Milton State Manager (NSW) Department of Communications, and the WIA Federal President Mr Bruce Bathols, VK3UV.

Approx 150 members and their wives attended the opening ceremony, which was also broadcast live on VK2BW1 Amateur Television on 426 MHz. Many old timers were present, and were caught reminiscing in quiet corners.

Amateur Radio House consists of two stories, and includes a large library/reading room, activities room, offices, storage rooms etc. It is a magnificent structure, and something which the NSW Division can be very proud of.

It will serve its purpose well, being centrally located amid the majority of Sydney’s amateur population, no problems with parking and very convenient to public transport.

Congratulations must go to Susan Brown, VK2BSB and her tireless group of helpers in arranging such an impressive opening ceremony.

A special article is being prepared for future publication in Amateur Radio detailing some of the problems and jubilations in completing this project.

Photographs by Bruce Bathols VK3UV

Full report from VK2 in August AR.
If you are fortunate enough to live in a high location with a good clear outlook in all directions, then a simple omnidirectional antenna is all you will need for 2 metre FM operation, particularly into repeaters. Any basic antenna such as 1/4 wave, 5/8 wave, Slim Jim, J Pole, etc will be adequate. However, if you live remote from the repeater site, or in a “difficult” location, some antenna gain and directivity will be an advantage.

The antenna to be described has a worthwhile forward gain and is simple and cheap to construct. The elements are made from aluminium wire or tubing and are 2 to 3 mm diameter. The boom is also from an old “channel 2” TV antenna and is 1” (25 mm) diameter, 2.4 m long. New material can be used and either 25 mm round or square section could be purchased depending on the method used to mount the elements. Element mounting is left to the constructor as there are numerous ways available. Suitable plastic mounting blocks are available from component retailers although these are relatively expensive. Old TV mounting brackets can be used effectively, however, the simplest method is by simply drilling holes through the boom and securing the elements with a self tapping screw. There is no best way for mounting — even the use of “Araldite” glue combined with nylon fishing line square lashing can be mechanically solid.

The antenna is quite conventional, using a folded dipole driven element, and reflector. A close spaced “launching” director is used to provide close coupling and impedance correction, and five directors for additional forward gain. The antenna is fed with fifty ohm or seventy five ohm cable to a balanced feed but also raises the feed impedance to 300 ohms. The folded dipole is constructed with unequal diameter material to raise the feed impedance to 300 ohms thereby giving a good match to the feed system.

The folded dipole driven element is shown in the drawing and uses 6 mm tubing on the main element with 14 gauge (B & S) wire as the feed element. The ends are connected using solder lugs held with rivets, metal screws or “pop” rivets. The insulation block can be PVC or similar plastic — an old tooth brush handle is very suitable!

The feed cable and the 4/1 Balun should be tightly taped with PVC tape to prevent moisture entry. The cable should be taped along the boom and come away from behind the reflector. Taking the cable direct down the mast can distort the radiation pattern as the cable braid is close, and parallel to, the director elements.

For vertical polarisation, the antenna should be mounted on a length of PVC pipe or other insulating material with the elements vertical. Mounting direct on a metal mast will affect the feed impedance and radiation pattern.

After completion, all measurements should be checked and the feed cable connected.

The PVC or Wooden stub mast should be bolted or clamped to the main metal mast and the antenna raised into the operating position as high as possible above ground. The antenna is designed to use 75 ohm co-axial cable, however, 50 ohm cable can be used with a slight deterioration of SWR. The feed cable should be as short as possible as the loss in cable is quite high — in many cases the gain obtained by the antenna can be lost in the feed cable.

The SWR should be checked on 147.00 MHz. If everything is correct and the antenna is at least three metres above ground, in the clear, an SWR figure of 1.2 can be expected. No adjustment is provided, however, an impedance change can be made by changing the reflector to driven element spacing slightly. This will not affect the forward gain to any great extent.

This antenna is very standard and no extravagant claims are made for its performance. Provided the construction is solid and dimensions are correct, the performance will be good and equal to most commercial antennas with the same number of elements. The major difference, however, will be in the cost and this is always an important factor to the majority of amateurs.

**Seven Element Yagi — 147 MHz.**

Desmond A Greenham VK3CO
23 Stewart Street, Seymour, Vic 3660

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**Figures:**

- **Figure 1:** 50 or 75 ohm Co-ax cable.
- **Figure 2:** 4/1 Balun connect to folded dipole points A-B.
One of the most useful items, installed in my workshop for some years, is a "two terminal oscillator". This simple instrument is an oscillator, either tube or transistor type, that is coupled into a standard digital frequency counter.

There is no tuned circuit in the unit — only two terminals, across which any unknown tuned circuit may be connected. The circuit then oscillates on the resonant frequency of the L/C combination.

Direct counting on the frequency meter is of course the simplest method, however I had the unit going for twenty years prior to using the counter. The oscillator puts out harmonics, and with a general coverage receiver, it is not difficult to locate the various signals and calculate the fundamental frequency.

Application to audio frequencies as well as radio frequencies is possible, however, the most satisfactory method is to use two separate oscillators. When selecting capacitors for tuning RTTY filters built up around 88 mH toroids, the unit proved most useful.

### Inductance and Capacitance Measurement

Another advantage of the unit is the means by which L and C values may be measured approximately. At RF, I have a calibrated capacitor and inductance, across either of which an unknown L or C can be connected, and after the frequency of oscillation is known, an ARRL Lightning calculator, ABAC chart, slide rule, or electronic calculator, will give the value of the unknown very quickly.

The same method of inductance measurement for audio work is possible — a handful of surplus and valuable pot-cores can become of considerable value in a few minutes, once inductance values become known.

The basic circuits were inspired from early editions (1942 I think) of the "Radio Handbook", and the current 1982 edition still carries the same circuits. Two types, the "Transitron" and the "Cathode Coupled" oscillators are featured using 6BA6 and 12AT7 tubes respectively. The FETs I use are usually MPF102.

My own circuits have some slight modifications as shown, and in either tube or transistor format, they function satisfactorily. Other oscillator circuits will suggest themselves.

I have been able to use the unit to set tuned circuits to frequency before installation up to and beyond 30 MHz, select correct tracking and padding circuits for project receivers, check unknown Intermediate Frequency transformers, etc.

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**AF Oscillator**

**RF Oscillator**

**RF Oscillator (solid state)**

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Len VK3AKU, white stick operator, at the controls of the Station at the Victorian Division Eastern Zone Convention in March 1983. Len uses a speech synthesiser coupled to digital readout on transmit and audio tones to tune the transceiver and antenna.

Ken VK3KC's slow scan equipment at the Convention.

Len VK3AKU's station at the convention.

Ken VK3KC operating slow scan video camera.
THE VK6 BROADBAND END FED ANTENNA

A M Keightley VK6YX
242 Serpentine Rd, Albany, WA 6330

A low noise, low SWR, 160 to 20 metre antenna only 22½ metres long.

The basis of this antenna design is from two main sources, firstly the development of a three wire end fed antenna for amateur use by John VK6IM of Australind, with whom I have conducted on air tests for many months, (mainly on 160 metres) and secondly the recent article in 'AR' of April 1982 'The Australian Broadband Antenna'.

Prior to the testing with VK6IM I had the belief that, generally, end fed antennas suffer from the problem of powerline and man-made noise pickup much more than a balanced antenna. John kept describing the low noise pickup of his developing antenna, so I gradually became interested in thinking how the good characteristics of his design could be improved to reduce the SWR excursions being experienced. Much thought was given to the many possible methods of assembly to reduce the possibility of corrosion problems of dissimilar metals, to reduce the weight while retaining good strength.

DESCRIPTION

Figure 1 shows the general arrangement of the final design. The antenna consists of two parts joined by a parallel connected resistor and inductor. The lower section is connected to the feed line via a balun. The upper section is about half the length of the lower section. Both sections are in a five-wire cage configuration. Further details are given later in this article.

TESTING

An antenna was constructed, erected and considerable testing conducted to determine its characteristics. It was installed between two towers with the feed end at ten feet and the far end at thirty feet. First testing was done by taking an FRG7 receiver and an RX noise bridge up the tower to the feed point and recording the antenna impedance from 1.7 to 16 MHz. Coils from 12 to 30 micro-Henry were tried before selecting 19/uH. As this value gave the most satisfactory results, although it is not critical. These feed impedance figures were very interesting, showing a gradual drop below 2 MHz, a peak at 8 MHz and a gradual rise above 12 MHz, with the noise bridge indicating some 154 ohms over most of this range. See Fig 2.

An Amidon T200-2 powdered iron core was obtained and a suitable matching transformer constructed to permit transmitting tests to be conducted and recorded. As indicated in the Amidon literature, the use of one of these should tend to reduce the SWR excursions. This proved to be the case and the results showed that the transformer characteristics seemed to complement the antenna performance, with the resulting SWR not exceeding 1.2:1 from 1.8 to 14.35 MHz. See Fig 3.

Next some listening tests were conducted, comparing audible signal to noise ratios, between the test antenna and several verticals and a dipole antenna on commercial frequencies. These certainly showed the low power line noise pickup and while signals were a little down compared to some of the antennas, the readability of signals were greatly improved on the broadband antenna. Some simple radiation tests were conducted from twelve locations reasonably equally spaced at some three kilometres radius on roads thoughtfully provided by the powers that be. Two Drake TR7 transceivers were used, mobile and at the base. Ten watts were used for the tests, taking care that the vehicle was oriented in the same direction.
compared to the test antenna. Received signal strengths were recorded in both directions on 160, 80, 40 and 20 metres. These showed a nearly circular radiation pattern on each band. Tests were then conducted over a radius of 53 kilometres on the amateur bands and some testing on a commercial frequency. These confirmed that the antenna was working up to expectations, particularly on 160 metres, which was providing excellent communication throughout the day; some 480 kilometres were travelled on this occasion, mostly 50 to 70 kilometres radius from the test antenna. The five-wire design was proving to be as effective as hoped.

CONSTRUCTION

The wire used for the antenna is single strand .85 mm half-hard copper wire. The antenna is strong, because of the five wires in parallel and is suitably light in weight. The spreaders are 8 mm diameter fibre glass rods purchased from a city plastics supply company in three metre lengths. These are cut into 73 inch lengths and drilled in the centre and at 1/16 inches in from each end, with a 1/8 inch drill, the end holes being at right angles to the centre hole. The imperial measurements came about by using an imperial rule and materials on hand. Some 1/6 inch stainless steel weld wire is cut into four, one inch pieces and sixteen pieces, 1/4 of an inch long. The long pieces are hammered through the centre holes of two rods. The shorter pieces are then driven into the end holes; these are to prevent the antenna wires from moving along the rods. Take one spreader assembly and using a clove hitch, attach the end of some .85 mm copper wire to the end of one rod, above and below the pin leaving about three inches of pigtail. Pull the hitch tight. See photo 1. Measure from the centre of the rod, 51.9 inches and mark the wire with a wick pen, then place the mark on the next rod in line with the pin and form another clove hitch, pulling it tight. Continue this around the square, adjusting the length of the last one to have the wire taut. Treat the other three spreaders in the same way.

Procure several metres of 'Vinylon' cord from your friendly butcher who uses it to tie up roasts of beef. This makes excellent supports and halyards for antennas as it does not seem to be effected by sunlight or weather conditions. Cut five pieces about two feet long, attach one end to the end of one spreader assembly using a clove hitch over the wire and pin, then measure along the cord 12 inches, place another mark and attach to another spreader assembly. Do this at each corner and at the centre.

Photo 1 Wire being fitted to spreader rod, showing fibreglass rod and retaining pin.

The next stage requires a flat area some 80 feet long, a concrete driveway is very suitable, and some firm portable supports for each end to attach wires to for the final assembly. Cars, fences, gates can all be pressed into service; the amateur is usually most inventive here.

Several helpers will be useful for this phase of the construction. Have one person hold a spreader vertical, resting it on the ground about five feet from one end support. Tie a piece of .85 mm wire to the spreader using a clove hitch and leaving about six feet of pigtail. Tie this to the support, level with the spreader centre. Measure along the wire 44 feet from the spreader, mark the wire and cut it off about six inches longer. Now attach the wire to one of the centre pair of spreaders at its centre. Attach the end of another piece of wire to the centre of the other spreader pair, leaving a pigtail, measure along 22 feet, mark the wire before cutting it off some six feet longer and attach it to the centre of the remaining spreader. Pulling firmly, attach it to the end support some five feet away and in line with the centre. Continue this method of assembly for the next four wires placed at the ends of the rods remembering to place the wire above and below the pins to prevent it sliding along the rods in use. The next job is to bond each of the longitudinal wires to the spreader squares at each spreader, btoh sides of each rod. Now attach another wire to a longitudinal wire, spiral it around the rod seven or eight times to the centre and tie it to the centre wire. Do this on each rod of every spreader, effectively bonding all wires to the centre wire.

A suitable egg-type insulator is now fitted to the centre four feet from an end spreader and tied off. Carefully attach each of the remaining wires, keeping even tension on each wire while ensuring the insulator remains in line with the antenna centre. Carry out the same insulator installation at the other end. Now fit two feet of multi-strand flexible insulated wire to the antenna at the insulator on the long end and secure through the insulator. Attach two similar wires one foot long to the centre wires at the centre spreaders. Now all the twisted joints are to be soldered and suitably protected from oxidation by an application of Silastic or similar material. Incidentally, do not use 'RTV732' as the chemical action during curing is corrosive to copper. 'RTV738' does not have this problem and can be used with confidence on any copper materials.

Photo 2 Centre section spreaders showing 12 inch cord lie between two spreaders and the coupling of longitudinal and circumference wires to the central wire.

LOADING COIL

The loading coil is 50 turns of 1 mm enamelled wire close wound in the centre of one inch OD PVC tubing, 14 inches long. Drill two small holes through the conduit to secure the ends of the coil. Cut and tin these ends and solder six 2.2 kohm one watt resistors in parallel across the coil as shown in photo 4, the coil assembly should now be mounted in the centre of the centre spreader assembly and secured with some of the Vinylon cord, the flexible wires from the antenna centre wires shortened and soldered to the coil ends. Now protect the coil-resistor assembly from the weather by a coating of Silastic or similar.

Photo 3 View of the centre section with inductance and resistors fitted.

MATCHING TRANSFORMER

Obtain about 4½ feet of two different coloured 1 mm enamelled winding wire. Twist the wires together at one end and hold in a vice. Pull the wires through, cut them off to the same length, twist the free ends together for about a half inch and place into the chuck of a hand drill. Keeping the wires stretched firmly, wind the drill to twist the wires until there are one and a half twists per centimetre. Now wind 24 turns of
matching transformer showing tapping method.

the twisted pair on to an Amidon T 200-2 powdered iron core. Keep the turns right onto the surface of the core by forming a slight reverse bend to the wire as it is placed on the flat portions. Connect the start of one winding to the end of the other as indicated in photo 5 and Figs 3 and 4.

Fig 4 Matching transformer wiring.

Count around the core 18 turns, carefully cut the secondary wire, spread the ends away from the other wire and scrape the ends. Loop some 1 mm tinned copper wire around the ends, keeping it away from the second wire and form up a link. Squeeze it firmly onto the wire ends and solder in place. The transformer can now be hauled up to a suitable support with the antenna end being 30 feet up. Couple to the matching transformer with 50 ohm coax well weather proofed.

Fig 5 Matching transformer connection detail.

Photo 6 Method used to mount matching transformer in Clipsal 265/3 box.

INSTALLATION

Attach the feed end to a suitable support (tower, building, 2 inch water pipe in the ground etc) together with the matching transformer and run a heavy copper wire down to an earth spike, water pipes etc. The earth losses are minimal due to the moderately high feed impedance. The far end can now be hauled up to a suitable support with the antenna end being 30 feet up. Couple to the matching transformer with 50 ohm coax well weather proofed.

Fig 6 Amateur band radiation test results.

CONCLUSION

I believe this antenna meets the need many amateurs have for a good 160 metre antenna which can be fitted into the average suburban back yard, as it requires only 75 feet of length. The added bonus of low noise pickup and performance continuously to the top of 20 metres makes it very worthy of consideration. Those amateurs using transceivers with general coverage receiving capability, will also appreciate this antenna.

USE

It is desirable to use a good low-pass filter (ARRL and RSGB handbooks) at the transmitter to prevent any possible low level spurious signals being radiated, which would normally be attenuated by the usual fairly high 'Q' antenna systems we use. This enables the antenna tuning unit to be taken out of circuit for this antenna, making band changing for those with solid state rigs, a breeze. The results with a general coverage receiver are very pleasing, compared to what we usually experience with the usual 80 metre dipole. By all means check the SWR and be amazed at the very low readings obtained, enabling the solid state rigs to give full output on all bands from 160 to 20 metres, not forgetting 30 metres.
Although a marker generator is probably a thing of the past this device may be as useful as a signal generator around the shack. It has obvious uses for the not so well calibrated receiver or home brew project receiver. In addition, it has uses for receiver "IF" and front end alignment with signals that are spot on frequency. With some variations it is based on a unit described in a 1977 ETI publication.

Construction is not critical. The author used a Dick Smith 'DIL' board for the four ICs and oscillator circuit. It is suggested that the oscillator components be mounted on one end, the ICs — one to four across the board. Sockets were used for all ICs. Good shielding of the generator in a metal cabinet is an advantage to lessen leakage of unwanted harmonics. The six position rotary switch used was an old eighteen position type which gave two vacant positions between output positions. Shielded cable was used to connect the switch.

Power was taken from the shack general purposes supply of 13.8 V and further regulated within the generator by a 7812 three terminal regulator.

Other combination outputs are possible. Eg: output of IC4A to input of IC4B would give 25 kHz markers which are useful well into the 2 metre band, as are the other frequencies generated, dependent on receiver coupling, of course.

Components are common types, all ICs are CMOS devices. VC1 trimmer should be of good quality to ensure stability.

Alignment is done by selecting a known frequency standard, eg: VNG or WWV, coupling the generator to the receiver and adjusting for equal level of signal from the standard and generator on receiver "S" meter. Once this has been done adjust VC1 for zero beat condition and finally tune VC1 until there is no practical movement in receiver "S" meter.

All components are available from Rod Irving Electronics including crystal and printed circuit board.

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**Diagram:**

A Simple Marker Generator

IC1 (4007) Pins 7, 4 and 9 are grounded. Pins 14, 2 and 11 are plus 12 V Vcc.

IC2 and 3 (4518). Pins 7, 8 and 15 are grounded. Pins 2, 10 and 16 are plus 12 V Vcc. Pins 3, 4, 5, 11, 12, 13 — no connection.

IC4 (4013). Pins 6, 4, 8, 10 and 7 are grounded. Pin 14 is plus 12 V Vcc. Pins 1 and 13 — no connection.
Members of the Oakey High School Radio Club organised a major public display of communications at the school on 17th May, World Communications Day 1983. Members of the club read the notes about WCD in May Amateur Radio, and decided that the opportunity was too good to miss as both an educational opportunity and a promotional exercise for the hobby.

Very early in May a letter was sent to about forty schools within 60 km, advising them of the significance of WCD and suggesting about fifty different activities in different subject areas which might be undertaken on this day.

The next move was to plan and establish the display. Early discussions indicated that although there would be an obvious bias towards our hobby, there was much more to communications than just the hobby. However, many aspects of the hobby can be used to demonstrate communications in practice, eg RTTY. Consequently approaches were made to Telecom, Department of Communications, WIA(Q) and local commercial suppliers. (An approach was made to the local military Air Traffic Control facility who, although willing, were unable to help within the short time scale.) A search was made of local amateurs' shacks and junk piles as well as other assorted “junk” around the school.

Nathan Spence (left) and Allan Williams erecting the 2 m turnslyle satellite antenna. There are seven antennas on the roof.

As word of the display spread locally, other amateurs suggested that it should be possible to arrange a “school net” for lunchtime on WCD. Many of these were students from the Oakey High School. However, one local primary school brought all its students. The younger visitors were given a QSL card as a memento of the visit. Other visitors included members of the local community, members of the local SES, members of the “Help Handicapped Enter Life” project who are about to put on air their own station, and a camera crew from the local television station.

Among the many contacts made that day, some of the most memorable were with VK4ZPH (bicycle mobile), VK8HA on RTTY, YB2BLI on RTTY, the WIA(Q) Club Net, and a demonstration with RS8.

The display was featured on the local television news. In the days following, the comments received have indicated an excellent reception from all who attended.

Participating amateurs in addition to VK4AOH were VK4AGS, VK4AOR, VK4KTW, VK4NRZ, VK4AOE, VK4ZPH, VK4NGC, VK4KBO and L40971. Also involved were another thirty students at the Oakey High School who not only set up the display but played host to the many visitors.
When advised in early April that we would be allowed to use AX5ITU for 17th May, the problem arose of a suitable place to use it. Several phone calls and then we were greeted with enthusiasm from Australia Post. It seemed that they were releasing a stamp for WCY 83 on 18th May, as with all new releases a display was to be mounted in the large main hall of the GPO Adelaide. We were invited to be part of this display, not only for 17th May, but the 18th to the 20th also. What a windfall, four days in the centre of Adelaide. Arrangements began.

Antennas were the first problem. A careful reconnaissance found an existing long wire up near the 4th floor. Could we use it? Apparently, disused for many years, the coax was cut off and left lying on the roof. Access was easy (if you have the right keys) with many walkways criss crossing the galvanised iron roof. I connected the coax, fed it into an office, and tried it out on a TS820. Dismal failure. It seemed that the antenna was O/C at the feed point. Almost impossible to reach and repair. Next came a welcome offer of the use of a trap vertical. The following day it was installed on the roof, beside the clock tower. It was bolted to one of the handrails and earthed to the GI roof. Coax was fed in through the clock tower and down a tightly spiralled staircase inside, about 100 feet of coax in all. Judging by the holes carved in the doors leading to the tower, I suspect that there had been coax fed through them before. A test transmission this time showed all to be working.

Three operators were arranged for each day as a minimum, but many more were to drop in from time to time. Tuesday 17th arrived and all operators arrived early to give the display the finishing touches. At precisely 0000 UTC, AX5ITU was on the air. That day we had 140 contacts on HF and VHF. The public showed a lot of interest and helped themselves to many of our give aways. At 11.30 (Sat) a sked was arranged with two amateurs who are also postmasters, Kevin VK5APM (Ardrossan) and Ray VK5UY (Murray Bridge). The postmaster Adelaide, Murray Baehnisch, joined in from our station, and all had an interesting QSO.

Wednesday the 18th was the day of issue for the new stamp for WCY 83. The GPO hall was crowded very early with people anxious to obtain their first day covers. This day we had Lindsay VK5GZ operating CW. This raised a lot of interest from the public. Our Divisional President, Bill VK5AWM, was autographing first day covers for people. AP made some presentations for an essay competition they had been running. For 18th to the 20th May we used VK5WI and VK5AWI as callsigns. A steady stream of people came through the GPO for the rest of the week.

A unique QSL card is being produced for contacts with AX5ITU. We have obtained a supply of the WCY first day covers, and will be overprinting them as QSL cards. For contacts with VK5WI and VK5AWI, we will be using the WCY envelopes.

All told we had 300 contacts. Twenty operators gave their time, and all who came along enjoyed the experience. I would like to thank all who helped in any way, by loaning gear, operating the station, or providing our station with a contact. A lot more people in Adelaide must now be aware of what amateur radio is all about.

AMATEUR RADIO, July 1983 — Page 15
HORSE ENDURANCE TRIALS
— a different type of Field Weekend

Ian Jackson VK3BUF and Andy Beals VK3KCS

In central Victoria lies some of the most rugged bush terrain to be found in the State. Dense forests of native gum trees clinging precariously to the side of mountains whose height exceeds 1200 metres, quite often above the snow line.

On the weekend of the 9th and 10th of April, the Alexandra branch of APEX held its annual horse endurance trials in this area. A gruelling event, the trials consist of horses and riders embarking on either the full course of some 80 km or the younger riders and novices a 56 km trial. The trials began and ended at Camp Jungai a well established bush camp at the Rubicon Power Station.

One of the main difficulties that arises in the organisation of these events is the need for reliable communications. At eleven specified points on the trial, checkpoints were stationed to monitor the passing of all contestants and assist with any difficulties which may arise. On previous trials this need had been fulfilled with varying degrees of success by CB radio using 27 MHz.

This year, due mainly to the efforts of Peter Weeks VK3YZP, who lives in Alexandra, the Gippsland Gate Radio Club

in Dandenong was invited to provide communications for the trials.

Due to the terrain over which communications need to be provided it was decided to erect a temporary VHF portable repeater and use portable or mobile 2 metre equipment at each of the checkpoints. All checkpoints reported to a radio control point operated under the club callsign of VK3BJA portable, set up at the QTH of Peter VK3YZP near Acheron. Here the information from the checkpoints was to be collated and then transmitted to the trials control point at Camp Jungai via a 2 metre radioteletype link. A 70 cm link between Acheron and Camp Jungai was provided for voice communication.

On Saturday morning two Club members Peter VK3KCW and Andy VK3KCS set off to the area of the trials to install the repeater. Using a four wheel drive vehicle to gain access to the top of Big Hill in the Royston Range the equipment was set up, but as the peak proved to be a bad RF location the next peak about 1 km away was selected. Tests from this site proved to be entirely satisfactory as the only checkpoint which could not access the repeater

had simplex communication to Control via 2, 10 or 80 metres.

While the repeater was being installed, Peter VK3YZP, Albert VK3BQO, George VK3YZG, Ian VK3BUF, Dave VK3BJV were engaged in setting up and testing the radioteletype link. The Camp Jungai end of the link consisted of a 13 metre pneumatic telescopic mast with a 6 element 2 metre Beam and a 70 cm ground plane antenna feeding into the radio equipment in the camp manager's office. This end of the operation was manned by John VK3KCE.

Albert VK3BQO, Ben VK3KLM and Peter VK3YZP working on the 13 metre, pump-up mast at Camp Jungai.

RTTY receiving terminal at Camp Jungai.

A rough map of the trial route indicating radio checkpoints.
The radio control point utilised the facilities of VK3YZP’s radio shack. A briefing was held at Camp Jungai to inform the checkpoint operators of checkpoint locations and issue route maps and check lists.

The radio club members were well catered for and accommodated in 6 berth cabins at the camp. Saturday night’s activity consisted of descending en masse on the Pizza Parlour in Alexandra. After wrapping Saturday up at 0200 on Sunday morning we arose at 0400 for breakfast, cooked to perfection by volunteers from the APEX club. The most distant checkpoints were an hour and a half’s trek away and only accessible by four wheel drive vehicles.

Everybody was in position and ready by 0600 for the 0630 start from Camp Jungai of the participants on the first stage of the 80 km trial. The horses and riders in the 56 km trial got away at 0700.

As the horses passed through each checkpoint its rider jacket colour and number were noted with the exact time. This information was radioed to the control point where it was collated and transmitted via the RTTY link to the trial organisers at Camp Jungai.

About an hour after the start of the 56 km trial one of the riders reported his horse lame to the operator at checkpoint 3 and required assistance. A request for a horse float was made which duly arrived to collect horse and rider about twenty minutes later.

A typical checkpoint consisted of a vehicle and a radio operator. The first sign of action was the sound of horse’s hooves on the stony track. A group of horses appearing through the scrub triggered a frantic burst of activity noting numbers and colours on the checklist, followed by peace and quiet until the next group arrived. As well as people already noted, checkpoints were manned by Barry VK3NJB, Noel VK3NJJ, Doug VK3VMN, John VK3DJV and Ben VK3KLM.

By 1130 all horses had completed the first stage, roughly half the course, and were back to Camp Jungai for lunch and a vet check for the horses. Some of the horse were vetted out so the second stage of the trial was completed by 1530.

As each checkpoint completed its task the operator returned to the camp; by 1600 all had arrived for a well earned meal and then to packing up for the return trip to Melbourne.

In addition to providing highly successful communication for the horse trial, invaluable experience in message handling and co-ordination was gained by all club members who took part in this very different field weekend.

Photographs by Ian Jackson VK38UF.
Wireless set C42 & C45.

These sets are identical except for frequency range, and both use the Supply Unit Vibratory No 12 MK2. They were basically mobile to mobile, or mobile to forward base communications units. They include an intercom amplifier for communications within the vehicle.

**VALVE LINE UP:**

<table>
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<tr>
<th>Serial No</th>
<th>Type</th>
<th>Function</th>
<th>Equivalent</th>
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<tr>
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<td>RF amp</td>
<td>6AK5, EF95</td>
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<td>1st Mixer</td>
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<td>6C4, EC90</td>
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<td>CV2243</td>
<td>driver</td>
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<td>CV2128</td>
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<td>2nd IF amp 2.4 MHz</td>
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<td>CV4015, CV131</td>
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<td>CV469</td>
<td>time delay diode</td>
<td>6AK5, EF95</td>
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**PRINCIPLE OF OPERATION**

Receive: RF signals are tuned by the RF control and amplified by V1 and fed to the 1st mixer V2. The first local oscillator V31, operates at 6 MHz above the signal frequency and is tuned by the CHANNEL tuning control. There is one IF amp V9 at 6 MHz — then the signal goes to the 2nd mixer V13a with a crystal oscillator V13b at 8.4 MHz. This is followed by two IF stages at 2.4 MHz V14 and V15 and then into two limiters V16 and V17 which drive the narrow discriminator containing diodes V18 and V19. AF is fed through two AF amps V20 and V21. Noise from the discriminator is amplified in V22, rectified by V23, and used to switch the squelch relay via V24.

Transmit: The master oscillator V6 feeds V7 a driver and thence to the power amp V8 which can be tuned over the frequency range. The Master Oscillator V6 is modulated by the reactor driver V5. V32 maintains voltage to V5 constant to prevent frequency variation. Automatic Frequency Control, AFC, is derived from the limiter V10 and a wideband discriminator with diodes V11 and V12.

AF from the microphone goes through two amp stages V27 and V30. Automatic Modulation Control AMC is provided by V28 and V29 to maintain the AF output constant. This AF plus a DC voltage from the AFC circuit frequency modulates V5 but limits deviation to ± 15 kHz.

There is a fan to circulate air and prevent hot spots in the set.

Intercom: This comprises two AF amp stages V25 and V26 switched via the harness to provide talk/listen capability within the vehicle.

Calibrator: Oscillator/harmonic generator V3 with a 100 kHz crystal is switched in at the CHANNEL ADJ position. In the CURSOR ADJ position V4 with a 1 MHz crystal is operative.

**SPECIFICATIONS**

Power Requirements:
24V DC at 8 amps Tx, 3.7 amps Rx

Frequency coverage:
C42 — 1 band 36 to 60 MHz
C45 — 1 band 23 to 38 MHz

Mode of Operation:
Transmission and reception of FM

Transmitter:
- power output — low — 0.3-1.0 watts
- 15 watts approx.
- Deviation — Maximum ± 15 kHz

Microphone — 500 ohms

Receiver:
- sensitivity — 1.25 microvolts for 10 dB quieting
- Antenna — 75 ohm via co-axial plug

IF Frequency —
- 1st IF — 6 MHz
- 2nd IF — 2.4 MHz

Dial Calibration — 100 kHz per division

AF Output — 150 MW into 50 ohms

Weight — Approx 20 kg
plus Approx 16 kg for PSU

Intercom Amp:
- Output — 250 MW into 30 ohm
K — Voltage Control relay line — connected to PL1 pin C.
L — + 175 VDC output for rebroadcast
M — receiver speaker output

MODIFICATIONS
(1) To operate the set make the following connections:
Microphone to pins A and B (shield)
PTT switch to pin D
PTT return to earth
S-meter to pin H
S-meter return to earth
Speaker to pins G and M

(2) The PSU provides a suitable box for a 240V power supply. Although there are a number of outputs shown they can be obtained from a fairly common although large valve type transformer with a 350V secondary plus 12V and 6.3V. The 24V for the relays may have to come from a separate transformer.

(3) There is a little more space on and behind the front panel so sockets for mic, speaker and S-meter can be fitted to the panel. This leaves the space at SK2 socket for fitting an audio volume control. A 1 megohm pot is wired with shielded wire to replace RV1 on the AF sub-unit.

Para 3A To connect the centre zero tuning meter in line for Rx and Tx connect contact 4 to contacts 1 and 2 on switch bank SWA (the calibration switch). If your transmit frequency does not match the receive frequency adjust trimmer capacitor C49.

(4) The C42 is very suitable as it is for the 6 metre band and has been used recently in two cases I know of for contacts with Japan. The C45 can be used on 10m FM provided you narrow the deviation to ± 3 kHz by adjusting RV3 on the AMC unit. Ideally this should be done using a deviation meter but can be achieved by listening to a voice signal from the C45 on a SSB receiver and adjusting RV3 to a point just prior to the signal distorting. The IFs can be adjusted to narrow the response band.

(5) It should be possible to obtain the 100 kHz transmit shift to suit the FM repeaters by switching capacitance across L10 in the circuit of V6 the Master Oscillator. You may also have to add capacitance across the tuned circuits of L12 and L15 in the V8 circuit. Perhaps varicaps would be the best method of obtaining these capacitances.

The Circuits of the equipment in this series of articles are held in the Federal Office. Photocopies may be obtained by writing to the Secretary WIA at PO Box 300 South Caulfield 3162. To defray the costs of this service a suitable donation would be appreciated.

Remember Photo Competition

The AGFA Competition begins this month. Check May AR, page 6, for details.

HELP PREVENT PIRATES
Keep bands for licensed amateurs.

DO NOT sell transmitting equipment to unlicensed operators.

AMATEUR RADIO, July 1983 — Page 19
THE KENWOOD TR-7950 TWO METRE FM TRANSCEIVER

The first two metre FM transceiver reviewed in ‘Amateur Radio’ was the Kenwood TR-7200 back in September 1975. I was so impressed with that transceiver that I bought one and it is still in current use as a mobile rig. I might also mention that it has given no trouble of any kind over the years. Whether or not I place the old 7200 with this new TR-7950 remains to be seen but I am even more impressed with the performance and general capability of the new Kenwood than I was at the time with the old one.

THE TR-7950 DESIGN FEATURES

With a forty five watt output capability, the 7950 is somewhat larger than other current model FM mobile transceivers. It is however both lighter and more compact than the old original TR-7200 mentioned above. Overall measurements are 175 mm wide, 64 mm high and 220 mm deep. Weight is 1.8 kg. Output power is selectable for either 45 or 5 watts. But perhaps the most interesting part is the method of frequency selection and memory storage. Where in the past, most synthesised two metre transceivers used a tuning system with perhaps five or ten kHz steps and then a memory capability to back this up, the 7950 is perhaps the reverse of this. What appears to be the main tuning knob is, in fact, the memory selector with these frequencies being initially set up using the keyboard. If a frequency other than one chosen for memory operation is required then this can also be selected with the keyboard. In addition to this there are comprehensive scanning facilities for both the memories and general band scanning.

The twenty one memories can be programmed for either duplex with plus 600 kHz, duplex minus 600 kHz or for simplex operation. Once this has been initially selected and entered into the memory it is not necessary to select the repeater offset or simplex operation. Regardless of the offset chosen for repeater operation, a front panel button will give reverse repeater operation.

The frequency read out and memory channel indicator is a large and brightly illuminated liquid crystal display which is highly readable under all external lighting conditions. This same readout also shows if a + or - repeater offset is in operation or if simplex or scan modes have been chosen. While not applicable to Australia as yet, the keyboard will also act as a dialer for auto patch (telephone dialling through a suitable repeater). As each function is entered into the keyboard, a beeper indicates that the processor has actually received the command.

When the 7950 is in operation, the front panel appearance is most impressive. The LCD readout is rear illuminated with a soft green glow. There is a LED strip indicator for receiver S meter and transmitter power output, with LED indicators for reverse operation, priority channel operation and centre tuning. The key board is illuminated from above with a green strip light and the memory selector knob has a green illuminated surround when the memory facility is in operation.

Once a memory has been entered, it is there on a permanent basis. The microprocessor is powered from a lithium battery for which Kenwood claim a five-year life. This means that should the power supply be turned off as would normally happen with home station use, all memories are retained and the frequency last in use will reappear when switched on again.

The TR-7950 is supplied with an excellent mobile mounting bracket and a hand held microphone with up/down scan buttons incorporated.

One thing that is required if you intend to operate from home, is a good ten amp power supply. Current drain with 45 watts output is rated at 9.5 amps and, as we shall later see, is in fact a little higher than this. A matching power supply is available from Kenwood, the KPS-12 which has a rating of...
10 amps continuous and 12 amps peak output. The Kenwood PS-30 is also very suitable.

THE TR-7950 TECHNICAL DESCRIPTION

Unfortunately, apart from the circuit diagram, no description of circuit operation is included in the instruction manual. However, it would appear that the circuit is fairly conventional with a double conversion setup using 455 kHz and 10.695 MHz. High SWR protection is provided for the transmitter final transistors, and the output power is gradually reduced as the SWR increases. Frequency selection, memory control and all the other ingenious functions are controlled by a four bit microprocessor which in turn controls the PLL circuitry of the transceiver. Kenwood claim superior performance resulting from “The most advanced KENWOOD engineering technology”. As we shall later see, they have a point.

THE TR-7950 ON THE AIR

As mentioned earlier a good solid power supply is needed to power the 7950. If you already have a fully solid state HF transceiver, then you possibly have a suitable power supply to share between the two. Otherwise you should have a supply capable of delivering 13.8 volts at 10 amps or more with good regulation. For receive only, current drain is about 600 to 700 mA. The receiver volume and squelch controls are concentrically mounted on the left hand side of the front panel. The power on/off switch is combined with the volume. My old 7200 had a push on/push off power switch which was most convenient. One could leave the audio output level set. The new Kenwood has reverted to the old style rotary on/off/volume setup. Not so good.

The first thing to do with the transceiver operating is to programme the memories. They are set up on the keyboard and then entered by selecting the required memory channel and then simply pushing the ‘M’ button. It should be noted that while there are twenty one memory channels, four of these are paired to use for non-standard repeater offsets. In practice this means that for simplex operation, the same frequency has to be entered into each of the two channels or four repeater use, the input frequency is entered into one channel and the output into the other. In other words there are only nineteen usable memory channels.

One of the nice features of many of the new FM transceivers is the priority channel alert. With the TR-7950 any one of the memory channels can be selected as the priority channel. The priority is then automatically checked every five seconds and if a signal appears a double ‘beep’ is emitted from the speaker. It is then only necessary to push the priority ‘OPER’ button to give immediate operation on the priority channel.

With around 140 watts going into the transceiver (13.8 V at nearly 10 amps) it’s not surprising that things get hot. After a two minute over (some people talk even longer) the heat sink at the rear for the final amplifier gets rather hot. I did not use the transceiver mobile but used in a hot car during some of the days we have had in Melbourne over the last few months, you would need to be careful in positioning the transceiver. Sitting it on a vinyl seat, for instance, could be dangerous. As I do not have a suitable signal generator to check actual receiver sensitivity, I always do a side by side comparison with my normal shack two metre transceiver. I have yet to find a transceiver that dispays any noticeable improvement in receiving ability until now. The TR-7950 was able to produce intelligible copy from signals that were not copyable on my transceiver. Noise limiting also appeared to be first rate and well ahead of most. Perhaps the only criticism on the receive side is that the ‘S’ meter (LED type) is so generous as to be quite useless in giving meaningful reports. So long as the signal was audible the indicator showed S9 or more. It looks pretty, but give me a proper meter any day.

The operation of the scanning system is quite remarkable. One could spend hours just playing with this function alone. You have several choices. A band of frequencies can be scanned, the upper and lower limits
can be chosen and entered via the key-
board. When the transceiver senses a busy
channel, scanning will stop and hold on
that signal for either five seconds or until
such time as the channel becomes vacant.
Normal pauses between overs will not
allow scanning to resume. These two scan
methods are selectable with a front panel
control. Memories can be scanned in a
similar manner but now with the addition of
the priority system mentioned earlier.
On air reports of transmitted audio were
all satisfactory. I listened to the rig when
operated by a friend and found the quality
to be clean but with a slight high frequency
peak that caused known voices to sound
slightly unnatural. As quality is a subjective
thing, others may not agree with this.
Received audio quality was rated better
than average for home station use, however
the top mounted speaker is unsuitable for
under dash mobile installation and an
external speaker would be an essential
mobile operation. Audio output power is
rated at two watts and although not
actually checked, sounded loud and clear
during our subjective tests.
Transmitter power output was checked
with exactly 13.8 volts applied to the
transceiver, 48 watts was measured in the
high power setting and the rated 5 watts in
the low power position. As reported earlier
the current drain with full power output
was 10 amps.
Finally a comment on the scanning
system. One of the problems with most
scanning transceivers is that the scanning
must to stop as soon as a signal opens the
squelch. In the case of a strong signal this
might be five or ten kilohertz off turn with
resulting noise and distortion. Not so with
the TR-7950. The scanner will not stop until
the discriminator senses centre signal. A
touch. At this same point the centre
tune LED will light.

**THE TR-7950 INSTRUCTION MANUAL**

It seems that as the quality and per-
formance of equipment improves, the
instruction manuals that accompany them
go in the opposite direction. There are
a few notable exceptions to this but unfor-
tunately the Kenwood TR-7950 is not one
of them. A total of only sixteen pages plus
block and schematic diagrams cover the
whole thing. There is not a word of
alignment, circuit description and main-
tenance of any time. Having said that, the
actual operating instructions are well
covered and in general easy to follow.

However, I do believe that a $500
(approx) transceiver deserves something
better than this. How about it Kenwood?

**CONCLUSION**

If you are in the market for an FM only
two metre transceiver with better than
normal performance on both transmit and
receive then the Kenwood TR-7950 must
top rate consideration. I guess it's the old
story, pay a little more and get a little more.
As far as I can see it out performs the
opposition by a very noticeable margin. On
the other side, it is also larger than most of
its opponents and along with the top
mounted speaker, could pose some
problems mounting it in a car.

General quality of construction is very
good and all the controls operate in a
smooth and satisfying manner. The
Kenwood TR-7950 is highly recommended.

Our review transceiver was supplied by
KENWOOD (AUSTRALIA) through their
Melbourne agents, Eastern Communications.

---

**EVALUATION AND ON AIR TEST OF THE KENWOOD TR-7950**

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>RATING</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APPEARANCE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Packaging</td>
<td>**</td>
<td>Carton with foam inserts.</td>
</tr>
<tr>
<td>Size</td>
<td>***</td>
<td>Relative to output capability, very good.</td>
</tr>
<tr>
<td>Weight</td>
<td>****</td>
<td>Only 1.9 kg.</td>
</tr>
<tr>
<td>External Finish</td>
<td>***</td>
<td>Good quality paint. No rough edges.</td>
</tr>
<tr>
<td>Construction quality</td>
<td>***</td>
<td>Very hard to fault.</td>
</tr>
<tr>
<td><strong>FRONT PANEL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location of controls</td>
<td>***</td>
<td>Simplified controls well laid out.</td>
</tr>
<tr>
<td>Size of knobs</td>
<td>***</td>
<td>All knobs and buttons easy to use.</td>
</tr>
<tr>
<td>Labelling</td>
<td>**</td>
<td>Quite satisfactory.</td>
</tr>
<tr>
<td>Meter</td>
<td>**</td>
<td>LED type. Colourful but not accurate.</td>
</tr>
<tr>
<td>VFO knob</td>
<td>NA</td>
<td>No actual VFO.</td>
</tr>
<tr>
<td>Memory knob</td>
<td>****</td>
<td>Large with smooth click stop action.</td>
</tr>
<tr>
<td>Keyboard</td>
<td>***</td>
<td>With practice easy to use.</td>
</tr>
<tr>
<td>Dial readout</td>
<td>***</td>
<td>Very readable under all conditions.</td>
</tr>
<tr>
<td>Digital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Status indicators</td>
<td>**</td>
<td>On air, priority, reverse and centre tuning.</td>
</tr>
<tr>
<td><strong>REAR PANEL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receiver Operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VFO stability</td>
<td>***</td>
<td>Number and selection best yet.</td>
</tr>
<tr>
<td>Memories</td>
<td>***</td>
<td>On comparative test, the best yet found.</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>***</td>
<td>High noise rejection.</td>
</tr>
<tr>
<td>Noise rejection</td>
<td>***</td>
<td>Progressive action.</td>
</tr>
<tr>
<td>Squelch action</td>
<td></td>
<td>Of limited use. All signals S9.</td>
</tr>
<tr>
<td>'S' meter</td>
<td>**</td>
<td>No problems with adjacent channel signals.</td>
</tr>
<tr>
<td>Signal handling</td>
<td>****</td>
<td>None heard.</td>
</tr>
<tr>
<td>Spurious responses</td>
<td>****</td>
<td></td>
</tr>
<tr>
<td><strong>QUALITY OF RECEIVED AUDIO</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal speaker</td>
<td>**</td>
<td>Quality of audio good. But placement poor for mobile operation.</td>
</tr>
<tr>
<td>External speaker</td>
<td>NA</td>
<td>External mobile speaker offered as option but not tested.</td>
</tr>
<tr>
<td>Headphone output</td>
<td>NA</td>
<td>No provision for head phones.</td>
</tr>
<tr>
<td><strong>TRANSMIT OPERATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power output</td>
<td>****</td>
<td>48 watts. Enough for all occasions.</td>
</tr>
<tr>
<td>Audio response</td>
<td>***</td>
<td>Clean with slightly peaky HF response.</td>
</tr>
<tr>
<td>Metering</td>
<td>***</td>
<td>LED meter gives clear output indication.</td>
</tr>
<tr>
<td>Cooling</td>
<td>***</td>
<td>Would need watching while mobile in hot weather.</td>
</tr>
</tbody>
</table>

Rating code: Poor * Satisfactory ** Very Good *** Excellent ****
THE MOBILE ONE HAMTENNAE — Model M10-1

So you are thinking about going mobile and are wondering about which band and what antenna. Why not try ten metres? You can do everything that can be done on CB, without the QRM. For the antenna the M10-1 made by Mobile One would be hard to beat.

The first impression one has of the Hamtennae M10-1 is of its very sturdy appearance. It certainly looks capable of handling a 1 kW rig, even if your battery can not.

The mobile whip supplied for review was just under 1.5 metres in length (60 inches for all OTs). It has a standard (imperial) 5/16 inch, 24 TPI female threaded base and a helical wound coil covered in a shrink-on plastic tube. The bottom of this coil has a wide pitch with a close wound coil at the top. Whereas most mobile antennae have a tapered fibreglass former this one is of uniform diameter. Fine tuning is done by means of a short length of stainless steel rod fitted at the top.

Thus we have a solid looking compact structure. Because of the forty percent reduction in height (useful for getting under tram wires, etc) some reduction in bandwidth might be expected, as well as a worse match. The helical winding is designed so as to minimise these problems. A fairly heavy gauge of wire is used to keep the efficiency high.

ON TEST

The M10-1 was mounted on the centre of the roof of a station wagon and the length of the tuning rod reduced three millimetres (1/8 inch) at a time, by the appropriate application of a hacksaw, until resonance was obtained at 28.50 MHz. The VSWR was measured across the range 28 to 29 MHz and the results plotted on a graph (see Figure 1). A smooth curve was fitted to the results to minimise the errors due to SWR bridge inaccuracies, weak eyes, etc. The 1.5:1 VSWR bandwidth would seem to be about 1.5 MHz! Phone only operators may prefer to resonate the whip a little higher. Certainly there is little need to stop the car and readjust the whip for every frequency shift.

Unfortunately band conditions were not very good during the test period although signals from W and JA were available. The M10-1 gave noticeably better signals than a slightly longer bumper-mounted whip, even when the vehicle was aligned to give the most favourable report for the bumper-mount.

Conditions were such that the amount of improvement was difficult to gauge but it seemed to be around 3 dB. On occasions there was no difference, on others, quite a considerable difference. At no time was the M10-1 inferior.

The VSWR of the other whip was similar at resonance but the VSWR bandwidth was noticeably less. The reference whip has been tested on numerous prior occasions against other verticals, dipoles and beams and has been found to give a good account of itself. Thus it can, with some confidence, be stated that the Hamtennae M10-1 would not be noticeably inferior to a full size quarter-wave whip mounted in the same position.

OTHER REMARKS

Note that the knurled nut and coupling at the top of the M10-1 allows about ten millimetres variation of the length of the steel whip top thus enabling easy fine tuning of the resonance over perhaps ±200 kHz. After cutting the whip top to length, any burrs should be filed off and the edge given a small chamfer.

This whip is not flexible. When the vehicle is in motion it does not bend like junior’s fishing rod when it has a nine metre shark on the other end; it remains vertical. In this regard it is similar to other makes which use metal tube construction.

Unfortunately this could lead to problems if you hit a low branch. Either a “knock-down” mount or a bumper mounting could solve this problem. For such a solid antenna, particularly without a “knock-down” mount, a large diameter thread for the mounting may have been preferable. Of course these are personal opinions and it would mean that the convenience of using the standard VHF mount was lost.

CONCLUSION

The Mobile One Hamtennae M10-1 is a high performance mobile whip. I was sorry to have to hand it back. Now if they would do the same for other frequencies . . ., imagine 300 kHz bandwidth on 7 MHz . . .

73 de VK3AFW
FEDERAL CONVENTION — 1983

The 47th Annual WIA Convention was held in Melbourne from the 23rd to 25th of April 1983 at the Brighton Savoy Motel.

Convention guests at a dinner function on Sunday, 24th were members of the DOC Executive, Mr John McKendry, Canberra and Mr Gavin Brain, Regulatory Branch, Melbourne.

Mr McKendry briefly described his area of responsibility within the DOC to the delegate by way of an introduction and then the President, Bruce Bathols, VK3UV, acted as chairman in an informal question and answer session, covering such items as Channel 0, the 50 MHz window, the Broadcasting Council, Cable TV, Subscriber TV and Radio Australis.

Delegates at the convention were from each Division — a Federal Councillor and an Alternate Councillor, with VK2, 3 and 5 bringing observers. All members of Executive attended, in addition. Dr David Wardlaw, VK3ADW and Michael Owen, VK3KI were present at various times. Members of Executive Sub-committees and Co-ordinators attended to answer questions relating to their specialised subjects.

During the course of the Convention, a special resolution was passed to amend the Articles of Association of the Institute to enable the size of the Executive to be increased — it was felt that, due to the increasing work load and necessity of expertise in specialist areas, the Executive should now consist of nine members and the President.

New members of the Executive are Dr David Wardlaw, VK3ADW, who has been attending meetings in his capacities of Immediate Past President and IARU Liaison Officer, Jack O'Shanessy, VK3SP who has been a co-opted member of the Executive for the past twelve months, Alan Foxcroft, VK3AE who is the Executive representative at the Standards Association Committee — SAETE3, Gil Sones, VK3ALU editor of Amateur Radio, Bill Rice, VK3ABP currently chairman of FTAC and CASPAR and a regular attendant of Executive meetings.

Members re-elected are Peter Wollenden, VK3KAIU, Courtney Scott, VK3BNG, Ken Seddon, VK3ACS and Earl Russell, VK3BER. The only retiring member of the Executive was Harold Hepburn, VK3AFQ and this is due to business relocation.

The statutory business of the Institute was carried out as required by the Companies (Victoria) Code — ie the adoption of the accounts and Executive reports. These are reported in full at the end of this article. Some twenty one agenda items proposed by the Divisional delegates were debated, plus motions arising from the Co-ordinators reports and general business.

The Remembrance Day Contest Trophy was presented to the VK5 Division by the President, Bruce Bathols, VK3UV, congratulating on their work over the past twelve months. As in previous years, the IARU Report was discussed with interest by the Federal Councillors and a motion arising was passed for the WIA to strongly support the Region III directors in relation to the restructuring of the IARU.

Of the twenty one agenda motions, the item of greatest interest to all amateurs was the discussion of the Radio Communications Bill ‘83 and the WIA’s submission regarding it. During the long debate several areas of concern were highlighted, such as the use of amateur bands by unlicensed operators, the possession of substandard transmitters/receivers and the powers of radio inspectors. Space does not permit full reporting of this discussion.

A proposal to amend the wording in future Gentleman’s agreements from “CW only” to “telegraphy only” was amended after debate to “Narrow Band Modes” by the Federal Council and agreed upon.

The question of World Communications Year ‘83 and Public Relations was discussed as a result of an agenda item and the Council decided to investigate, through the Executive, the making of a film on amateur radio by a group of experienced film makers, for use in publicising the hobby at all levels.

Overseas membership of the Institute was debated by the Council and there was general agreement on the policy to accept overseas members. The detail of how to achieve this was left to the Executive to investigate and report.

Two motions to give significant recognition of the 75th anniversary of the WIA in 1985 and the Australia Day celebrations were both carried after debate.

The need for an International Amateur Licence was debated and the Executive were instructed to continue to pursue this matter further.

REPORTS

THE WIRELESS INSTITUTE OF AUSTRALIA

A COMPANY LIMITED BY GUARANTEE

INCORPORATED IN VICTORIA UNDER THE COMPANIES (VICTORIA) CODE

In accordance with the Companies (Victoria) Code, the Executive state the following.

(a) The names of the Executive in office at the date of this report are:

| B R Bathols | VK3UV |
| P A Wollenden | VK3KAIU |
| K C Seddon | VK3ACS |
| C D H Scott | VK3BNG |
| H L Hepburn | VK3AFQ |
| E R Russell | VK3BER |

(b) The principal activity of the Wireless Institute of Australia is to:

1. Represent generally the views of persons connected with amateur radio in the Commonwealth of Australia, its territories and dependencies.
2. Promote the co-operation between the Divisions in the encouragement and development of amateur radio.
3. Safeguard the interest of the Divisions and the members in relation to frequency allocations, rights and privileges.
4. Promote the development progress and advancement of amateur radio in all matters in relation to amateur radio in general.
5. The deficit of income over expenditure for the year ended 31st December 1982 was $151,297 compared with a surplus of $16,793 for 1981. There is no provision for income tax required as the company is exempt under Section 103A (2)(c) of the Income Tax Assessment Act.
6. The Executive have taken reasonable steps, before the Statement of Income and Expenditure and Balance Sheet were made out, to ascertain that action had been taken in relation to the writing off of bad debts and making provision for doubtful debts and to cause all known bad debts to be written off and adequate provision to be made for doubtful debts.
7. The Executive before the Statement of Income and Expenditure and Balance Sheet were made out, took reasonable steps to ascertain whether any current assets, other than debtors, and the amount of the provision for doubtful debts, inept to any substantial extent.
8. The Executive for the years 1982 to 1983.
9. The Executive are not aware of any circumstances which would render the amount written off for bad debts or the amount of the provision for doubtful debts, inadequate to any substantial extent.
10. The Executive before the Statement of Income and Expenditure and Balance Sheet were made out, took reasonable steps to ascertain whether any current assets, other than debtors, and the amount of the provision for doubtful debts, inept to any substantial extent.
11. The Executive for the years 1982 to 1983.
12. The Executive are not aware of any circumstances which would render the values attributed to current assets in the accounts misleading.
13. The Executive before the Statement of Income and Expenditure and Balance Sheet were made out, took reasonable steps to ascertain whether any current assets, other than debtors, and the amount of the provision for doubtful debts, inept to any substantial extent.
14. The Executive for the years 1982 to 1983.
15. The Executive are not aware of any circumstances which would render the values attributed to current assets in the accounts misleading.
16. The Executive before the Statement of Income and Expenditure and Balance Sheet were made out, took reasonable steps to ascertain whether any current assets, other than debtors, and the amount of the provision for doubtful debts, inept to any substantial extent.
17. The Executive for the years 1982 to 1983.
18. The Executive are not aware of any circumstances which would render the values attributed to current assets in the accounts misleading.
effect the ability of the Institute to meet its obligations when they fall due.

(ii) Since the end of the previous financial year the Executive have not received or become entitled to receive a benefit by reason of a contract made by the Institute or a related corporation with the Executive or with firms of which they are members or with companies in which they have substantial financial interests.

(m) The results of the Institute's operations during the financial year were in the opinion of the executive not substantially affected by any item, transaction or event of a material and unusual nature. There has not arisen in the interval between the end of the financial year and the date of the report any item, transaction or event of a material and unusual nature likely in the opinion of the executive, to effect substantially the results of the Institute's operations for the next succeeding financial year.

Dated at Melbourne this 25th day of March, 1983.

MEMBERS OF THE EXECUTIVE

（signed）B R Batho's  
（signed）C H Scott

STATEMENT OF INCOME AND EXPENDITURE FOR YEAR 31ST DECEMBER, 1982

<table>
<thead>
<tr>
<th>INCOME</th>
<th>1982</th>
<th>1981</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members subscriptions</td>
<td>$151,258</td>
<td>$133,006</td>
</tr>
<tr>
<td>Interest Received</td>
<td>20,873</td>
<td>10,850</td>
</tr>
<tr>
<td>Surplus — Magpubs/Book Sales</td>
<td>6,479</td>
<td>15,085</td>
</tr>
<tr>
<td>Donation — WARC/Other</td>
<td>155</td>
<td>24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXPENDITURE</th>
<th>1982</th>
<th>1981</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amateur Radio — NOTE 1</td>
<td>100,042</td>
<td>61,322</td>
</tr>
<tr>
<td>AMSAT</td>
<td>438</td>
<td></td>
</tr>
<tr>
<td>Audit Fees 1982</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Bank Fees</td>
<td>743</td>
<td>240</td>
</tr>
<tr>
<td>Debt Debts</td>
<td>622</td>
<td>96</td>
</tr>
<tr>
<td>Committee Expenses</td>
<td>1,172</td>
<td>1,092</td>
</tr>
<tr>
<td>Convention Expenses</td>
<td>7,715</td>
<td>6,256</td>
</tr>
<tr>
<td>Depreciation</td>
<td>975</td>
<td>1,147</td>
</tr>
<tr>
<td>Electricity</td>
<td>819</td>
<td>729</td>
</tr>
<tr>
<td>EDP Expenses</td>
<td>5,470</td>
<td>4,950</td>
</tr>
<tr>
<td>General Expenses</td>
<td>382</td>
<td>426</td>
</tr>
<tr>
<td>Insurance</td>
<td>1,053</td>
<td>970</td>
</tr>
<tr>
<td>IARU Dues</td>
<td>3,119</td>
<td>821</td>
</tr>
<tr>
<td>IARU Donation</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>IARU Traveling and other expenses</td>
<td>5,039</td>
<td></td>
</tr>
<tr>
<td>Licences and Fees</td>
<td>17</td>
<td>40</td>
</tr>
<tr>
<td>Membership Recruiting</td>
<td>137</td>
<td>6,747</td>
</tr>
<tr>
<td>Postage and Freight</td>
<td>7,412</td>
<td>5,143</td>
</tr>
<tr>
<td>Printing and Stationery</td>
<td>3,681</td>
<td>2,803</td>
</tr>
<tr>
<td>Rent and Rates</td>
<td>4,718</td>
<td>3,471</td>
</tr>
<tr>
<td>Repairs and Maintenance</td>
<td>809</td>
<td>660</td>
</tr>
<tr>
<td>Salaries and Secretarial</td>
<td>45,094</td>
<td>39,194</td>
</tr>
<tr>
<td>Superannuation</td>
<td>704</td>
<td>1,000</td>
</tr>
<tr>
<td>Telephone</td>
<td>2,196</td>
<td>1,070</td>
</tr>
<tr>
<td>Traveling and Sundry Expenses</td>
<td>496</td>
<td>1,707</td>
</tr>
<tr>
<td>NET SURPLUS (DEFICIT)</td>
<td>194,022</td>
<td>142,152</td>
</tr>
</tbody>
</table>

| Accumulated Funds Brought Forward | (15,297) | 16,793 |
| Add IARU Fund Brought Forward | 55,927 | 38,105 |
| IARU Donations | 1,029 |
| $ 40,630 | $ 55,927 |

NOTES TO AND FORMING PART OF THE ACCOUNTS

NOTE 1: AMATEUR RADIO: income

Advertising | $ 30,673 | $ 26,454 |
Subscriptions and Sales | 2,160 | 2,054 |
Inserts and Sundrys | 2,303 | 2,725 |
| Total Income | 35,586 | 31,233 |

EXPENDITURE:

Salaries | 16,146 | 11,573 |
Traveling and Sundry Expenses | 4,389 | 2,118 |
| Total Expenditure | 135,628 | 92,555 |

Excess expenditure transferred to General Account representing Cost of AR to Members | $100,042 | $ 61,322 |

NOTE 2: RON WILKINSON ACHIEVEMENT AWARD:

Balance brought forward | $ 1,383 | $ 1,273 |
Add Interest | 172 | 160 |
Less Award Payment | 1,555 | 1,433 |
BALANCE CARRIED FORWARD | $ 1,505 | $ 1,383 |

BALANCE SHEET AS AT 31ST DECEMBER, 1982

MEMBERS' FUNDS:

Adding Members subscriptions | S 40,630 | S 55,927 |

NON CURRENT ASSETS:

Sundry Creditors | S 40,620 | S 55,927 |
Debtors (S2,000) | 1,029 |
Stock on Hand — At Cost | 1,505 | 1,383 |
Prepayments | 190,347 | 95,693 |

Non CURRENT ASSETS:

Furniture and Fittings — At Cost less Provision for Depreciation | (5,531) | (6,016) |
Depreciation | 195,878 | 102,199 |

LESS CURRENT LIABILITIES:

Sundry Creditors | (1,000) | (900) |
Subscriptions in Advance | 142,372 | 17,415 |
Provisions — Superannuation | 9,685 |
— Amateur Satellites | 2,972 |
— High Frequency and Long Service Leave | 6,266 | 12,884 |
Deposit VK4 | 500 |
| NET SURPLUS (DEFICIT) | 153,210 | 44,356 |
| $ 42,668 | $ 57,843 |

REPORT OF THE EXECUTIVE

It is with pleasure that I present this Report of the Executive for the year 1982.

1. OVERVIEW

1.1 The Institute has made considerable progress during the past twelve months. As a measure of this, I am pleased to report that membership has increased from 8074 to 8570, while the number of DOC amateur licences issued has remained substantially unchanged. Most Limited/Novice licencees are taking advantage of the "K" (combined) licences and this has some effect on the statistics.

1.2 The results of the "CB boom" have passed and membership increases are now largely due to the concerted efforts of members, and through them the image presented of the WIA.

1.3 Increased membership and the consequent activities associated with improving our organisation — (Amateur Radio, Government representation, etc) has increased the workload on the Federal office and officers, both paid and volunteers.

2. HIGHLIGHTS FROM THE YEAR

2.1 Increased membership during a period of economic downturn.

2.2 Release of WARC '79 amateur bands — our good results being the culmination of many years work by the Institute.

2.3 Preparation and distribution of the Federal Councillors Handbook, incorporating policy statements.

2.4 Increased production standard of 'Amateur Radio' magazine.

2.5 A start made on an organised Public Relations Campaign.

2.6 A position being obtained on a Standard Accounts Committee dealing with EMC matters.

2.7 Responsive and cordial relationship with the Department of Communications.

2.8 Visit to our 1982 Federal Convention by the President of the NZART, Mr A G Godfrey, ZL1HV, and NZART IARU Liaison Officer, Mr J C Pye, ZL2NN.

2.9 Retirement of Mr Peter Dodd, VK3CIF, as Secretary/Manager.

3. MEMBERSHIP

3.1 Membership of the Institute has increased by 6% overall and 7% for licensed amateurs, while DOC licences issued have remained substantially unchanged during the past two months.

3.2 In fact DOC licences issued have decreased from 14,750 in 1981 to 14,716 in 1982. According to DOC figures significant decreases of about 10% occurred in both the ACT and Victoria.

3.3 NSW has now overtaken Victoria in having the largest amateur population, although Victoria still has the largest number of WIA members.

3.4 It could be that DOC licence figures are not all up to date, as the reversal in both ACT and Victoria, and registers required by the Code to be kept by the Institute, have been properly kept in accordance with the provisions of that Code.

3.5 It remains however, that there has been no apparent net growth in licences for the year. We must be prepared to take some positive action in attracting people to amateur radio or suffer the consequences of increased costs and decreased standing in the years to come.

HEBARD & GUNNING CHARTERED ACCOUNTANTS

(signed) P W HEBARD

Partner

Melbourne

25th March 1983

AMATEUR RADIO, July 1983 — Page 25
There is little point being introverted about public relations in this situation. Publicity on broadcasts and in Amateur Radio magazines will achieve little, but obviously some activity must remain if WIA membership is to continue to grow.

Ways and means of finding new amateurs are needed and perhaps a concentrated effort on schools and colleges needs consideration. Other avenues require exploration also. Positive ideas are called for.

FREQUENCY ALLOCATIONS

Australia was amongst the first countries to release the 30 m band allocation to amateur service on 1st January, 1982.

Less than twelve months later on 16th December, 1982 the Australian Table of Frequency Allocations — the table resulting from WARC79, was released, and from that date Australian amateurs were permitted access to the new bands at 18.068 — 18.168 MHz. 24.890 — 24.990 MHz, and new allocations at 47, 75, 120, 142, 144, 241, and 248 GHz.

A substantial spectrum was allocated on an exclusive or shared basis at 1825-1875 kHz, 3794-3800 kHz, 7100-7300 kHz. and 3500-3600 MHz.

The band 50-52 MHz was also allocated to the amateur service worldwide.

The band 50-52 MHz was also allocated to the amateur service but subject to conditions which have not yet been finalised with the DOC. At the time of preparing this Report, it would appear that a further hiatus has been introduced by the broadcasters.

Full details of the new allocations were published in the January and February issues of Amateur Radio magazine together with spot frequencies to be avoided.

Only limited use has been made of the new allocations to date, however, in time, and as other countries make the allocations available to amateurs, these bands will become more popular.

The following were amongst the matters discussed with DOC central office:

- Australian Table of Frequency Allocations — released.
- RTTY Identification — Dual Idents not now required.
- Examination procedures — ongoing.
- Morse tests at higher speeds — under discussion.
- AX Prefix also available for all VK amateurs on 17th World Telecommunications Day, 1983.
- 50-50.15 MHz — still under discussion.
- Visitors Special Callsign — under discussion.
- Licensing Information for Overseas Visitors — now available.
- Cable TV — possible problems.
- Callign retention period — 2 years deceased; 6 months others.
- Prosecutions reporting — contact with Canberra.
- Publication of Distress Procedures — In AR, Callbook.
- Possible use of Morse on VHF by K Licensees.
- Non mandatory log keeping — hearing conclusion.
- Chex on the Air — under discussion.
- Reduction in age limits for AOCP licence (14 years).
- Departmental Monitoring.
- Reciprocal Licensing — Japan, Italy, Greece and Denmark.
- Identification of Examination Candidates presently not an issue.
- Emission Designations — not now to be included on licence.
- WCY83 — National Committee to be established.

Such as bandwidth, service area, power levels, etc. to play some part in the determination of licence fee levels.

Following discussions with senior DOC officers, the Institute submitted:

(a) That there should be no immediate increase in fees and that future increases should not exceed CPI increases for the previous year.

(b) That amateur licence fees should be set at no greater level than that which represents a reasonable and proper cost recovery and that operations of cross subsidisation are not relevant to the amateur radio service.

Examination fees and credit retentions were also discussed, with the Institute maintaining that examination fees should not inhibit potential candidates and should be fair and reasonable.

Novice licence section credits should be retained for a two year period, while candidates for higher licence sections should retain that part of the qualification represented by those sections that have been passed.

The Institute rejected the proposal that a fee should be charged for the issuance of a Certificate of Proficiency.

To date, most of these aspects have been resolved satisfactorily or are still under consideration and discussion.

REPRESENTATION TO THE DEPARTMENT OF COMMUNICATIONS

The following were amongst the matters discussed with DOC central office:

- Australian Table of Frequency Allocations — released.
- RTTY Identification — Dual Idents not now required.
- Examination procedures — ongoing.
- Morse tests at higher speeds — under discussion.
- AX Prefix also available for all VK amateurs on 17th World Telecommunications Day, 1983.
- 50-50.15 MHz — still under discussion.
- Visitors Special Callsign — under discussion.
- Licensing Information for Overseas Visitors — now available.
- Cable TV — possible problems.
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- Departmental Monitoring.
- Reciprocal Licensing — Japan, Italy, Greece and Denmark.
- Identification of Examination Candidates presently not an issue.
- Emission Designations — not now to be included on licence.
- WCY83 — National Committee to be established.

Sticker licensing — not currently an issue.

PUBLIC RELATIONS/WCY83

Some worthwhile PR was obtained for amateur radio during the past year — some of which filtered through to the general public.

Two major events which obtained national media coverage were the Commonwealth Games Station AX4QCG and the Heard Island Expedition.

The VK5 Division produced an excellent set of PR guidelines for WCY83 which Executive encompassed the requirements laid down at last year's Federal Convention. The VK5 document (with their permission) was subsequently endorsed by Executive and circulated to all Divisions for use as a guide in their activities. We wish to again thank Louise and John Badcock of the VK5 Division for their outstanding efforts in the interest of amateur radio.

During the year, John Hill, VK3DKK (AR Advertising), was appointed as interim PR co-ordinator. Considerable time has been devoted to the need and appointment of a Federal Public Relations Co-ordinator. Ideally, we need a retired professional public relations person who is also a knowledgeable amateur and who is prepared to provide services at little or no cost, as do other specialist Federal Officers.

However, such people do not seem to be available, and it is apparent that a truly professional approach would be a very costly exercise.

In the meantime, our "interim" co-ordinator has started at the grass roots level, by publishing a regular column in Amateur Radio magazine, thus informing and guiding individual members. An informed membership is perhaps our best "PR package", and a good starting point.

It is also pleasing to note the popularity of the video tape co-ordinator's services, and it is interesting that the ARRL has received copies of some of our locally produced material. Good work John Ingham!

Most of our tape library contains material which is amateur-oriented, although a tape made for a pre WARC79 CCIR Meeting — "The National Resource of Every Nation", is ideal for general public viewing.

During the year, Federal MPs were forwarded copies of Amateur Radio magazine.

The Institute has been invited to be represented on a National Co-ordinating Committee for WCY83.

All of these activities are over and above "PR-type functions", which occur on a day to day basis in the form of requests for information, handouts of back copies of AR, etc.

IARU — INTERNATIONAL AFFAIRS

Dr. David Wardlaw, VK3ADW, and Michael Owen, VK5KI, continued with their responsibilities in this area during the year.

On the conclusion of the Third Party Traffic Agreement with the USA (9th July, 1982), messages of greetings between the WIA Federal President and the President of the...
ARRL were passed via VK3ADW and W1AW.

8.3 Other matters involving IARU during the year included:
IARU Resolution 170 — restructuring.
New President elected — Richard Baldwin, W1RU.
Region 11 Constitution.
Gentlemen’s Agreements.
Resolution 640 — Emergency Traffic.

9.2 In the area, greater liaison has been maintained with DOC. A grant of $500 was obtained from the Victorian Government (with the help of the VK 3 Division), for use in the preparation of an instructor’s guide. Thank you Brenda, VK3KT, and helpers.

9.3 Major advances have taken place with EMC work. As reported, we now have representation on the Standards Association of Australia Committee, dealing with EMC related subjects. This is a very significant development, and we wish to thank Alan Foxcroft, VK3AE for his interest and dedication. Thanks also go to Dick Huey, VK2AHU, for his interest and help in this matter.

9.4 Federal WICEN Co-ordinator, Ron, VK1RH, has continued his high standard in overseeing this activity. A quote from Ron’s Report written early in 1983, is worth repeating here: “regrettably complacency has set in in some places and despite liaison by coordinators, the disaster control agencies are not always convinced that on the day, their available communications will be taxed and inadequate. Sadly it frequently takes a tragedy to reinforce this viewpoint.”

9.5 In the Intruder Watch field, Bill, VK2EBM, is succeeding in reviving interest in a very difficult area. Bill took over from Bob VK4LG, whom we thank for his efforts. Intruder Watch rarely has rapid, spectacular results — but it is an essential ‘insurance policy’ for amateur radio.

9.6 Neil, VK6NE, resigned as Australian Manager of the VK/ZL Contest. We thank Neil for his efforts over the past twelve years or so. A replacement for Neil has not yet been forthcoming. Any takers?

9.7 Chas., VK3ACR, has continued the good example set by Bob, VK3ZBB, in the AMSAT-AUSTRALIA co-ordinator role — an essential activity if Australian amateurs are to be kept up-to-date with developments.

9.8 During the year a liaison team was established in Canberra, so that if need be, Executive could, on short notice, have suitable representation for urgent discussion with Government Departments located there. The services of Jim Lloyd, VK1JL, (previous Executive member), and Ron Henderson, VK1RH, (present Federal Councilor and currently Federal WICEN Co-ordinator), were obtained. I am sure that such a facility will prove to be of great benefit to the Institute.

9.9 The activities of the Publications Committee, Federal Technical Advisory Committee, the Federal Contest Manager and Federal Awards Manager are obvious and well known to all active amateurs, and need no further elaboration here. To all concerned and other helpers — thank you.

10 EXECUTIVE

10.1 The Executive for 1981/82 was elected as follows:
Peter Wollenden, VK3KAU. Federal President. Chairman.
Bob Batho, VK3CA. Executive Vice-Chairman. Editor AR.
Courtney Scott, VK3BN. Hon Treasurer, and Chairman Finance Sub-Committee.
Harold Hepburn, VK3AQF.
Ken Seddon, VK3ACS.
Earl Russell, VK3BER.

Because of business commitments, Mr. Hepburn had to resign as a member of the Executive during the year.

10.2 Whilst not members of executive, David Wardlaw, VK3ADW, Michael Owen, VK3KI, and Bob Batho, VK3CA, have continued to maintain their interest in, and dedication to, the Institute.

10.3 A number of others also attended Executive Meetings during the year and details are shown in Appendix 2.

11 OFFICE AND STAFF

11.1 The workload on the office continues to grow with increased Membership and responsibilities.

11.2 It is essential that we maintain an efficient central nucleus for the operation of our dispersed Institute which relies so heavily on volunteers spread right across Australia.

11.3 Because of membership growth and because individuals are less prepared to volunteer their time these days more and more work is having to be done by paid staff.

11.4 During the year, Peter Dodd, VK3CF, retired after more than ten years service.

11.5 I would like to personally thank our hard-working employees and also those contractors who have contributed to the operation of the Institute during the year.

11.6 Present staff are:
Mr R J Macey Secretary/Manager.
Mr C W Perry* Membership Records/EDP.
Mrs A McCurdy* Secretarial duties.
Mr J Hill* Advertising/Interim PR Co-ordinator * part-time

11.7 As this is my final Report as Federal President, I would like to thank all officers of the Institute for their assistance so readily given during my years as President; but help and guidance frequently came from other sources, both amateurs and others outside the amateur ranks.

To all — thank you again.

FEDERAL PRESIDENT (1982) (signed) P A Wollenden
APPENDIX 1

Membership statistics. All statistics to 31st December, 1982 (previous years in brackets). DOC Statistics (as supplied to WIA) refer to licences issued, whereas WIA statistics refer to individual amateurs.

<table>
<thead>
<tr>
<th>TABLE 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Licences</strong></td>
</tr>
<tr>
<td>VK1</td>
</tr>
<tr>
<td>VK2</td>
</tr>
<tr>
<td>VK3</td>
</tr>
<tr>
<td>VK4</td>
</tr>
<tr>
<td>VK5</td>
</tr>
<tr>
<td>VK6</td>
</tr>
<tr>
<td>VK7</td>
</tr>
</tbody>
</table>

TOTALS: 14716 (14750) 7743 (7219) 53% (49%) 817 (655) 8570 (8074)

<table>
<thead>
<tr>
<th>TABLE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Clubs Included in above were 191 (196)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VK1</th>
<th>27</th>
<th>VK3</th>
<th>28</th>
<th>VK4</th>
<th>27</th>
<th>VK5</th>
<th>10</th>
<th>VK6</th>
<th>7</th>
<th>VK7</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>TABLE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Clubs Included in above were 101 (106)</td>
</tr>
</tbody>
</table>

| VK1 | 2; VK2-27; VK3-28; VK4-27; VK5-10; VK6-7; VK7-1 |
| --- | --- | --- | --- | --- | --- | --- |

<table>
<thead>
<tr>
<th>TABLE 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage (increases/decreases 31-12-82 compared with 31-12-81)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DOC Licences</th>
<th>WIA Licences</th>
<th>Total WIA members</th>
</tr>
</thead>
<tbody>
<tr>
<td>VK1</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>VK2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>VK3</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>VK4</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>VK5</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>VK6</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>VK7</td>
<td>11</td>
<td>13</td>
</tr>
</tbody>
</table>

TOTALS: 0 - 7 - 6 |

<table>
<thead>
<tr>
<th>TABLE 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOC Licences by Grade 31-12-81 to 31-12-82:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Full</th>
<th>Limited</th>
<th>Novice</th>
<th>Combined</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>VK1</td>
<td>172 (201)</td>
<td>64 (73)</td>
<td>68 (69)</td>
<td>20 (9)</td>
</tr>
<tr>
<td>VK2</td>
<td>2411 (2296)</td>
<td>794 (608)</td>
<td>1036 (1030)</td>
<td>237 (155)</td>
</tr>
<tr>
<td>VK3</td>
<td>2098 (2076)</td>
<td>930 (1257)</td>
<td>870 (1095)</td>
<td>211 (161)</td>
</tr>
<tr>
<td>VK4</td>
<td>1165 (1096)</td>
<td>319 (301)</td>
<td>68 (59)</td>
<td>141 (94)</td>
</tr>
<tr>
<td>VK5</td>
<td>996 (927)</td>
<td>276 (276)</td>
<td>397 (435)</td>
<td>120 (94)</td>
</tr>
<tr>
<td>VK6</td>
<td>2303 (2137)</td>
<td>1327 (1150)</td>
<td>59%</td>
<td>108 (102)</td>
</tr>
<tr>
<td>VK7</td>
<td>4138 (4592)</td>
<td>2063 (1971)</td>
<td>50%</td>
<td>283 (252)</td>
</tr>
</tbody>
</table>

TOTALS: 7865 (7533) 2660 (3010) 7865 (7533) 53% (49%) 817 (655) 8570 (8074)

<table>
<thead>
<tr>
<th>TABLE 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>WIA Members by Grade:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F/c</th>
<th>A/T</th>
<th>S</th>
<th>B</th>
<th>L</th>
<th>X</th>
<th>Clubs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>VK1</td>
<td>196</td>
<td>26</td>
<td>7</td>
<td>3</td>
<td>8</td>
<td>2</td>
<td>244</td>
</tr>
<tr>
<td>VK2</td>
<td>1774</td>
<td>150</td>
<td>31</td>
<td>226</td>
<td>9</td>
<td>4</td>
<td>27</td>
</tr>
<tr>
<td>VK3</td>
<td>3092</td>
<td>256</td>
<td>56</td>
<td>226</td>
<td>9</td>
<td>4</td>
<td>27</td>
</tr>
<tr>
<td>VK4</td>
<td>1140</td>
<td>85</td>
<td>3</td>
<td>111</td>
<td>7</td>
<td>62</td>
<td>27</td>
</tr>
<tr>
<td>VK5</td>
<td>1024</td>
<td>36</td>
<td>26</td>
<td>106</td>
<td>7</td>
<td>19</td>
<td>10</td>
</tr>
<tr>
<td>VK6</td>
<td>565</td>
<td>15</td>
<td>45</td>
<td>6</td>
<td>22</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>VK7</td>
<td>234</td>
<td>7</td>
<td>25</td>
<td>4</td>
<td>6</td>
<td>-</td>
<td>323</td>
</tr>
</tbody>
</table>

6738 675 136 741 55 225 101 8571

APPENDIX 2

Attendance at Executive Meetings from 22nd April, 1982 to 14th April, 1983 inclusive.

<table>
<thead>
<tr>
<th>Attended Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr B Bathols</td>
</tr>
<tr>
<td>Mr P Wollenden</td>
</tr>
<tr>
<td>Mr H Hepburn</td>
</tr>
<tr>
<td>Mr C Scott</td>
</tr>
<tr>
<td>Mr K Seddon</td>
</tr>
<tr>
<td>Mr E Russell</td>
</tr>
</tbody>
</table>


If members require any further details on particular points it is suggested that they contact their Federal Councilor for clarification.

---

PUBLIC RELATIONS

John J A Hill VK3WZ

Well, with half the year of 1983 behind us, we'd better get some real action during the second half and I am pleased to see that division and club are getting their act together for some promotion or another during this period.

Here are some details.

The "Eastern and Mountain District Radio Club" is holding a special event on 3rd September, called "Communication EXPO '83" in the form of a Hamfest and display of communication equipment at the Nunawading Civic Centre, Whitehorse Road, Nunawading.

There will be a working station using the callsign VK3WCY specially allocated for the occasion. This callsign will be activated on all bands and EMDC members on a roster system during the four weeks leading up to the EXPO on 3rd September.

The Victorian Division of the WIA has decided to declare the week from 28th August to 4th September — "WCY '83 Activity Week".

The VK3 President and PR Officer Jim Linton, VK3PC said that all zones and affiliated clubs had been asked to consider their own WCY activity during this period. He would assist zones and clubs with advice and hopes that individuals in the organisations would co-ordinate their activities.

I would like to make a few suggestions which could assist to make these operations a success: How about ALL divisions and clubs join the fun during this week.

Let us demonstrate at schools and shopping centres, (not with placards, songs or slogans), but with our HF equipment, and also RTTY, VHF and UHF equipment.

I would have liked to pass on some information from the Australian WCY Bulletin, but since the April issue arrived at this desk three days ago, some interesting items are too late for the AR July issue. However here are some items:

- Aussat Pty Ltd has contracted to buy twenty one earth stations with 2.4 to 2.5 metre dish antennas to carry out technical trials for the telecommunications role of Australia's satellites. The earth stations will also be demonstrated on-site to potential users who will need modern two way voice and data links. These include mining companies, police and education authorities.


- 13-15 July — Communications and Government Seminar, Canberra College of Advanced Education.

- Register your activity for WCY.

Private or public sector organisations planning an event to mark WCY or wishing to associate an event with WCY can apply to list it as an official WCY activity by contacting Mr Allan Guster, The National Correspondent, WCY Department of Communications, PO Box 34, Belconnen ACT 2616.

AR
COUNCIL PROBLEMS?
The Answer to Limited Space
Efficient Antenna for Limited Space
Both models C/4 & HQ1 cover 6-10-15 and 20 m.

Both models C/4 & HQ1 cover 6-10-15 and 20 m.

(C/4
Miniature Band
Coaxial Vertical

HQ1
1350 mm Boom
3350 mm Elements
Gain 5.65 dB gain (Ref Dipole)
NO GROUND RADIALS NEEDED
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3350 mm long

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Adjust your antenna for maximum performance. Measure resonant frequency, radiation resistance and reactance. Better than an SWR meter. Operates over 100 MHz. Most useful test unit in your shack.

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3 to 30 MHz.
Maximum Power 300 Watts.
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Ideal for Dipoles, Beams, Quads.
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POWER LINE FILTER
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240 Volt @ 10 Amp
1000’s of Transistors — Ferrite — Hobby Kits — Tag Strips — Switches etc. Send stamped addressed envelope for full list.

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Hornsby N.S.W. 2077

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# 8/10/15 Word/min.
# 10 WPM exams
# 15 WPM practice
all tapes $5.00

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Surrey Hills 3127 Vic.
Or: A.Brucesmith. 110 Rosemead Rd.
Hornsby. NSW 2077.

BUTTERNUT ELECTRONICS CO.

Still More Usable Antenna For Your Money...
Plus 30 Metres!

Butternut’s new model HF6V* offers more active radiator on more bands than any other vertical of comparable height! DIFFERENTIAL REACTANCE TUNING™ circuitry lets the 26’ antenna work on 80/75, 40, 30, 20 and 10 metres and a loss-free linear decoupler gives full quarter wave unloaded performance on 15 metres. It can also be modified for remaining WARC bands.

- Completely automatic bandswitching 80 through 10 metres including 30 metres (10 1-10 15 MHz) 160 through 10 metres with optional TBR-160 unit
- Retrofit capability for 18 and 24 MHz bands
- No lossy traps to rob you of power. The HF6V’s three resonator circuits use rugged HV ceramic capacitors and large-diameter self-supporting inductors for unmatched circuit Q and efficiency
- Eye-level adjustment for precise resonance in any segment of 80/75 metres, incl. MARS and CAP ranges. No need to lower antenna to GSY between phone and CW bands.
- For ground, rooftop, tower installations — no guys required

Suggested amateur net prices:
model HF6V (automatic bandswitching 80-10 meters) . . . . $282
Model TBR-160 (160 metre base resonator)
(When supplied as part of HF6V) . . . . $66

For complete information concerning the HF6V and other Butternut products, amateur and commercial contact you Australian distributor.

TRAERG DISTRIBUTORS (NSW) PTY LTD
PO Box 348, Moree, NSW. 2400.
Cnr Adelaide & Chester Sts.
Phone (067) 52 1627

* Patented device

AMATEUR RADIO, July 1983 — Page 29
This month we will discuss some questions put to me by readers. They all relate to ATUs and the recent article in this column on a junk box ATU.

Firstly the errors and corrections. In Fig. 1 capacitor C4 is the unlabelled capacitor near R1. It has a value of 10 pF. Next C2 should be marked as C3 and C3 should be marked as C2. Please make these corrections to your copy.

An improved method of constructing T1 is shown here in Fig 1. The braid is extended through the toroid's core so as to form a Faraday screen. This is an electrostatic screen that prevents stray capacitive coupling occurring between the cable core and the winding on the toroid. Note that this is the method used by Drew Diamond in his excellent article in AR April 1983. (A sensitive SWR meter).

Referring to Novice Notes for February 1983, the question has been asked as to why a differential capacitor is used in the Universal Transmatch. As stated in the text at the time the purpose of C1 (which has two halves A and B) is to provide a means of tapping the transceiver up the tuned circuit. Fig 2 shows the circuit of the ultimate transmatch and a circuit which is equivalent. Note that one extra control is required for a practical version of the equivalent circuit hence the advantage of the differential capacitor. Note that the common rotor is not earthed and the electrically insulated stators (the fixed plates) are connected to each end of the coil. It should also be noted that inductors with two rotor contacts capable of independent adjustment would be a little difficult to make! (Think about that one.) For those of you who would like a differential capacitor but can't find one to buy then study Fig 3. I hope that gives an adequate instruction on one possible method of construction.

Another question concerns the low and high pass characteristics of ATUs. "Will an ATU stop BCI?" I have been asked. The answer is probably not. Any BCI caused by a modern rig is likely to be due to overload caused by the strong signal in the vicinity of your station and not by harmonics. If an ATU has inductance in series with the hot wire and at least one capacitor to ground then that circuit will attenuate harmonics of the signal for which the unit is tuned. If it has an inductor to ground and a capacitor in series with the hot wire then there will not be much attenuation of harmonics. Both PI and L networks give good attenuation of harmonics. In some instances where TVI occurs, particularly with the old style AM/CW rigs, a low pass circuit is of benefit. See Figs 4, 5.

No matter what kind of ATU you use you will, from time to time, find an antenna that won't tune satisfactorily on one band. Back in the old days (before 1965) when AM rigs with PI couplers were common, the problem of not being able to load up on one band frequently occurred. It was solved, in most cases, by increasing the length of the transmission line. The same solution will be found to be just as successful with the ATU problem. We all know that a quarter wavelength line can be used to transform a small resistance to a large one. We also know that a half wavelength will not change the impedance if connected between a load and a transceiver. See Figs 6, 7. But what happens for other cable lengths? By using a calculator programme supplied by Evan, VK3ANI, I have been able to calculate the changes of impedance for a 50 ohm line with a 2:1 SWR. The results are shown in Table 1. I have assumed a 100 ohm load. The line length is given in electrical degrees. 360 degrees equals one wavelength, 180 degrees equals half a wavelength, ninety degrees equals a quarter wavelength etc. The results are given for five degree increments up to thirty degrees and then in thirty degree increments. Negative values of reactance are capacitive reactance and positive values are inductive. The table is done this way to make it independent of frequency.

The mathematically inclined should study Fig 8 as the values in Table 1 are for series...
A strong RF field in the vicinity of a transmitter's aerial can cause BCI, which is most frequently caused by the strong RF field in the vicinity of a transmitter's aerial. Rectification of this signal by audio stages is a common phenomenon. Low-pass filters do not help here.

Although TVI may be caused by susceptibility to strong fields, harmonics from a transmitter can often cause TVI. A low-pass filter installed at the transmitter will help eliminate such TVI.

A quarter-wavelength of 72 ohm cable transforms a 100 ohm resistance to a 52 ohm resistance. Resistances greater than 100 ohms are transformed to values less than 52 ohms.

A half-wavelength of transmission line at any impedance transfers the same value of impedance at the input to the output.

At 21 MHz
\[ X_c = \frac{1}{2 \pi fC} = 75.8 \text{ ohm} \]

We can say C has a reactance of about 75.8 ohms.

\[ X_L = 2 \pi fL = 131.9 \text{ ohms} \]

We can say L has a reactance of 131.9 ohms.

Often the symbol j is used to signify reactive impedance. Thus the circuit shown below can be described at 21 MHz as 100 - j 75.8 ohms.

A strong RF field around the amateur signal 3.5-30 MHz

A strong RF field around the TV receiver tuning range 45-222 MHz

At 21 MHz and twenty five ohms every ninety degrees, the reactance varies from zero through a maximum capacitive reactance of about forty ohms and back to zero for the first ninety degrees. As the line length is increased further, the reactive portion again increases to about forty ohms and back to zero but this time it is inductive. The cycle is repeated every 180 degrees.

This is a result we might have anticipated as we know that adding a half-wavelength line does not change impedances. This also allows us to remove all the exact half-wavelengths (on paper or in our imagination of course) to see what fraction remains. The transformation caused by that fraction is the transformation of the whole line.

For example, a line 390 degrees long is equivalent to one only thirty degrees long as far as impedance transformation is concerned. The more knowledgeable reader will be saying that line loss has an effect too. So it does but on HF the effect is reasonably small and will not affect our general conclusions and comments.

So where have we got to? Well if our ATU has problems in tuning a particular load because the load is too high or too low we can now see a solution. That is by adding up to a quarter-wavelength of feeder a more manageable load will be presented to the ATU. In some cases up to a half-wavelength may be required.

One further point to note is that if the VSWR on the line is greater than 2:1 then the range of impedances will be greater than shown in Table 1.

At a later date I will discuss VSWR in more detail and bury a few sacred cows in the process.
The JIL SX-200 represents the latest STATE-OF-THE-ART technology in the development of Scanning Monitor Receivers. It has many features that previous have not been available on receivers of its type.

For example the tremendous frequency coverage, which encompasses all of the following bands:— HF & UHF CB, 27 & 155MHz MARINE, Australian LOW BAND, AIRCRAFT band, VHF SATELLITE band, 10Mx, 6Mx, 2Mx and 70CMx AMATEUR, VHF HIGH BAND and UHF TWO-WAY band — as well as many others. Other features include detection of AM or FM on all bands. Squelch Circuitry that can be used to LOCK OUT carrier only signals. Fine Tuning control for off channel stations. Squelch Operated Output that may be used to trigger a tape recorder or channel occupancy counter and accurate Quartz Clock.

**SPECIFICATIONS**

- **Type:** FM & AM
- **Frequency Range:**
  - a) 26-57.995 MHz
  - b) 58-88 MHz
  - c) 108-180 MHz
  - d) 380-514 MHz
- **Sensitivity:**
  - FM: a) 26-180 MHz 0.4μV S/N 12 dB
  - b) 380-514 MHz 2.0μV S/N 12 dB
- **Selectivity:**
  - FM: More than 60 dB at 10 kHz
  - AM: More than 60 dB at 10 kHz
- **Dimensions:**
  - 210 (W) x 75 (H) x 235 (D) mm
  - 8-1/4 (W) x 3-1/4 (H) x 9-1/8 (D) in.
- **Weight:** 2.8 Kg
- **Clock Error:** Within 10 sec./month
- **Memory Channel:** 16 Channels
- **Scan Rate:** Fast 8 Channels/sec.
- **Seek Rate:** Fast 10 Channels/sec.
- **Scan Delay:** 0.3 or 4 seconds
- **Audio Output:** 2 Watts
- **Ant Impedance:** 50-75 ohms
- **Freq. Stability:** 26-180 MHz Within 300 Hz

**ACCESSORIES**

- Service Manual $12 + $2 P&P
- ScanX Base Antenna $62 + $10 P&P

**THE ONLY SCANNER THAT GOES 26-88, 108-180 & 380-514 MHz**
JIL SX-200
A BETTER SCANNING MONITOR RECEIVER

HIGH QUALITY AND PERFORMANCE
JIL have designed the SX-200 as a high quality, high performance programmable scanning receiver at a realistic price, design criteria which are not born in many other receivers of its type.

MECHANICALLY RUGGED
The JIL SX-200 is ruggedly built using EPOXY-GLASS printed circuit board and double sided through hole plating techniques. Easy access and servcicability is maintained throughout its design.

4 BIT MICROPROCESSOR WITH ONBOARD ROM AND RAM
A powerful 4 Bit PMOS Microprocessor, the upDS53, is used as a controller in the SX-200. Its features include 2000 x 8 ROM and 96 x 4 RAM onboard as well as up to 80 instructions with a 3 level subroutine stack.

EXTREMELY LOW SPURIOUS COUNT
Even though the SX-200 covers over 33,000 Channels JIL, through careful design, have been able to reduce the number of internally generated spurious signals to an extremely low level. Not the case in most other scanning receivers.

FULLY TRACKED RF AMPLIFIERS
The SX-200 makes use of 3 separate RF Amplifier Stages. They are divided into 6 bands, each band having its own electronically switched coils which are fully tracked with the receiver frequency using Varicap Diodes. Maximum performance is thus gained over the entire operating range of the set.

NEW ACCESSORIES
- EXP-32 KIT
  Increase the memories of your SX-200 to 32 with this memory expander kit
  $53 + $2 P & P
- A4-AM KIT
  Provides automatic AM operation on the 27 MHz CB MARINE and AIRCRAFT bands
  $32 + $2 P & P
- CVR-1B CONVERTER
  allows your SX-200 to cover 180 to 380 MHz (Incl. SPACE SHUTTLE frequencies)
  $199 + $5 P & P
- CVR-2 CONVERTER
  allows your SX-200 to cover the SHORT WAVE bands, 0.55 to 30 MHz
  $189 + $5 P & P
- MFJ-332 VLF CONVERTER
  allows your SX-200 to cover 5 KHz to 1600 HKz
  $144 + $5 P & P

AVAILABLE FROM

AUSTRALIAN AGENT & DISTRIBUTOR
GFS ELECTRONIC IMPORTS
Division of CD & JA WHITER PTY LTD.

15 McKeon Road, Mitcham, Vic. 3132
PO Box 97, Mitcham, Vic. 3132
Telex: AA 38053 GFS
Phone: (03) 873 3939, 873 2652
“DXing ain't what it used to be!” is the cry heard from many of the Old Timers as I read the mail across the 20 metre band when signals can be heard, which isn't very often.

The downward trend of the solar cycle is really beginning to show as propagation is becoming very unpredictable and the chance of reliability in regular scheds is when signals can be heard, which isn't very often. AX3ITU for part of the twenty four hour period that its use was allowed. The 17th of May, International Telecommunications Day, was somewhat different and your scribe had the privilege of being an operator using the callsign AX3ITU for part of the twenty four hour period that its use was allowed.

A start was made at 0000 UTC by joining the long established VK3UE Net, on 14.150 MHz, for a few friendly exchanges of reports with Clarice and her long standing friends. Then a quick tune over the band, interspersed with a few CQs, brought no bites. A scan of 15 metres didn't look too encouraging so 10 metres was to be IT if there was any activity.

A half hearted CQ on a desolate band brought an abundance of replies, the dogpile had started and lasted for nearly an hour until it came to an abrupt end. Next stop, 15 metres and this proved to be very lucrative with some very strong signals but the majority suffered from very deep troughs of QSB which, at times, made the exchange of reports a little more difficult. This band collapsed or the demand for the DX bands than the normal. In all 819 stations were worked on 80 through to 10 metres by the three operators and QSLs are 100% via VK3AH either with a SASE or via the Bureau.

NIUE ISLAND

ZL21K will be on Niue Island for two years. All QSLs to ZL2LF as per the 1983 Call Book or via the Bureau.

KENYA RTTY ACTIVITY

More activity is promised from this area with the licensing of two new operators. Already there and QRV on all bands is 5Z4DJ whilst 5Z4DP is expected to arrive in the near future. All QSLs to ZL2LF as per the 1983 Call Book or via the Bureau.

NETS

With propagation on the downward trend the only way to increase your country tally may be to become a Net chaser or eavesdropper. Dieter, OE2DYL has made this a little easier for everybody by compiling a list of known nets, their operating frequencies and times.

His publication “DX Nets Around the World” may be obtained by sending six IRCs or equivalent currency value and a self addressed envelope to him at 5Z4DJ whilst 5Z4DP is expected to arrive in the near future. All QSLs to ZL2LF as per the 1983 Call Book or via the Bureau.

CLARIFICATION

Please advise all DX friends that the QSL Manager for Chris ZL40Y/C is VK3DWJ-SP to various problems was postponed. The expedition is being organised by the Club d’Oceanie Radio et Astronomie who had hoped to get away earlier this year but due to various problems was postponed. The operators are supposed to consist of eight FO8s, six operators from North America and two from Japan.

HClJB

If you worked this station around the middle of June, and the callsign rings a “bell” of yesteryear, you were right. The callsign originally belonged to the late Clarence J Moore W9LZX, an engineer at the commercial broadcast station HCJB located in Quito, Ecuador. He was commonly known as the “Voice of the Andes.” This gentleman is attributed to having invented the “Quad” in the early 1940s.

This activity was sponsored by HCJB as a contribution to WCY 1983. QSLs direct only to HC1JB, Casilla 691, Quito, Ecuador.

IRCAGAIN

With the prohibitive price of IRCs, the alternatives, if one wants the card direct, is either by “Green stamps” or American dollar bills or stamps of the country that you are requesting the card from.

At the time of writing, mid May, the exchange rate allows one “greenie” for ninety cents and these are obtainable over the counter from major banks in this country.

Another method is a service which is being run by the DX Stamp Service which allows you to send a card to the DX station with a self addressed stamped envelope with stamps of his own country, an incentive to return a card.

Further details of this service can be found by an SASE or equivalent postage to George Robertson W2AZX, 7661 Roder Parkway, Ontario NY 14519.
MARKET REEF

Market Reef DJO is expected to be QRV from July 22 to August 1 and will include OH0s NA, NC, RJ, G4JVG and PAOGAM.

TRISTAN da CUNHA

Mike ZD9BX will be QRV from this area until at least September and will be active on the bands, as time from his duties as chaplain permits.

DUPLICATES

John Attaway's comment in March 1983 CQ of "Hey, the DX stations don't like duplicates either" was a comment on contests but it aptly applies to DXpeditions. In this column last month mention was made of the statistics that Hugh VK6FS had extracted from the VKOH3 and OCW logs. This month Hugh has forwarded a considerable amount of impeccably laid out figures that have taken considerable hours of enthusiasm and dedication to produce. These will be summarised due to their complexity.

An overall estimated duplicate percentage on all contacts came out at 21.5% for VKOH3/SSB — 16.9%, VK0CW/SSB — 8.4% and VK0CW/CW — 26.26%. The areas that took the cake for duplicates on figures for VK0CW on 14 MHz was W/VE at 28.4%, Europe 26.8% and JA at 25%. VKOH3 operating SSB was not as unlucky and had only a maximum 22.8% which occurred from South American operators closely followed by JA and VK operators.

Not many operators succeeded in coming near the record of duplicates set by one VK3 who contacted VKOH3 seven times for a report on 14 MHz. Many Europeans, WSs and JAs appeared four, five and six times. Hugh's comments in a covering note probably should be printed, though my remarks of last month, "No further comment is necessary" still stands.

FCC PROPOSALS

The North American operators have spread their wings in the 20 metre band. The FCC is considering proposals for phone band extensions in other bands such as:

<table>
<thead>
<tr>
<th>BAND</th>
<th>PRESENT ALLOCATION</th>
<th>PROPOSED ALLOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 metres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extra</td>
<td>3.775-4.000</td>
<td>3.750-4.000</td>
</tr>
<tr>
<td>Advanced</td>
<td>3.850-4.000</td>
<td>3.775-4.000</td>
</tr>
<tr>
<td>General</td>
<td>3.890-3.950</td>
<td>3.850-4.000</td>
</tr>
<tr>
<td>15 metres</td>
<td></td>
<td></td>
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<tr>
<td>10 metres</td>
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</tbody>
</table>

The proposal is to extend the present band for all HF licences from 28.500 MHz to 28.300 MHz — 29.700 MHz.

3X YL?

Al WB8ZCJW and his XYL both have positions in the Republic of Guinea and on moving there in the near future hope to obtain licences. Dieter DL5DAB who has been active using DL5DAB/3X has returned home but hopes to return later in the year and be issued with a 3X suffix.

QATAR

Dave G4BXH has been posted to Qatar. Many VKs will remember him as VP8HJ and G4BXH/V4E4 however there is little likelihood of anyone hearing him on the amateur bands from this locale. He has been refused a licence in A71 land. Dave believes that no more licences will be issued.

Dave is amazed that both A71AD and A71B, who run at least a kilowatt input, do not have phone band extensions in other bands. He believes that no more licences will be issued.

Dave Crider WA3HUP has joined the WIA through the WIA DXCC list in the near future. It is apparent that there are only two active amateurs in this country now. Rasheed YK1AA and Michel YK1AN have an excellent QSL route through Franz DJ9ZB.

WHAT IS THE CW NET?

The frequency of 7.025 MHz is the meeting place, each Sunday morning, of a friendly CW operators get-together. Time unknown. Apparently the object of the "get together" is to pair operators off to different frequencies for a friendly QSO. Can any reader please supply me with more details for inclusion in this column?

WELCOME

Well known QSL Manager Mary Ann Crider WA3HUP has joined the WIA through the VK3 Division. Welcome Mary Ann on behalf of all VK DXers and it will be nice to see your call amongst the WIA DXCC list in the near future.

It is thought that Mary Ann is the first overseas member to join the Institute and was closely followed by Ken G3NBC. It will be interesting to see how busy Mike VK6HD, the WIA Awards Manager, is going to be if this trend continues.

DXING YL STYLE

In this column in May mention was made of Diana G4EZI having in excess of two hundred YLs confirmed. A request was made to Diana if she would divulge her secrets. This she has done and if you too want to work an abundance of YLs in other countries then read on . . .

"FIND THE LADY" or HOW YOU, TOO, CAN GET YLDXCC

Once upon a time, I was a "normal" type of radio-hating XYL. The receiver my OM Richard had, was just a source of nasty noises to me. But when he got his callsign G4DZI and actually started transmitting, I realised what fun it could be, and, like many other XYLs before and since decided I'd like to join in too.

Interest in chasing YLs could be said to have started in even those early days as I poured over my books in preparation for the RAE exam. If Richard was tuning round and I was busy elsewhere and a YL voice was heard, I'd dash in shrieking, "There's a LADY amateur! Call her — and find out how she did it!", and my poor OM would have to stop his happy tuning and call the lady concerned, and ask how she'd managed to pass the dreaded exam.

With my own callsign finally obtained, I could do my own YL chasing. Richard and I were both collecting countries, in friendly competition with other recently licensed local amateurs. Not very seriously as we were after just a bit of bench power in those days. But the idea of collecting YLs countries slowly crystallised after a conversation with Mike G3VUH whom I met one day on 80 m and who turned out to have worked all sorts of fascinatingly exotic YLs. He sent me a list of them, which whetted my appetite for the chase, especially as some of them were still around! Hearing that CLARA, the Canadian Ladies Amateur Radio Association offered a certificate for doing it, was all I needed. I decided I'd "specialise" in YL country collecting, and make that my own "thing" in radio. So if you decide to do this too, here's what I had to do, just to give you an idea.

First steps included listing all those I'd already worked. Not too hard a task as my log book was mainly full of G OMs on 80 m in those days, and it was quite easy to pick out the YLs. Gratifying too, to find how many I'd already got, just in the normal course of QSOing.

Getting into the swing of things I soon developed a technique, of working any DX station I could, and bluntly asking if they knew any licensed YLs. I must have made myself a thorough nuisance at times! If I got a positive response, it was a case of cajoling the station concerned to try and arrange a sked for me. Sometimes it worked, sometimes not. I guess some stations said yes, and agreed a time and frequency to get the YL on, just to get rid of me and work their pile up in peace! But sometimes they did know a licensed YL in their country, and did succeed in getting her on for me. These times gave me the encouragement to continue.
The callbook was a big help here, because I could look up OMs who had licensed XYLs, and then scour the bands for them. When I found one I was ready to pounce with my question: "Please, please can I work your XYL?"

Alas, sometimes the lady was out shopping, or otherwise unavailable, or, most frustrating of all, just wouldn't come on. I even had to brush up my school days French, because some of the XYLs in the French colonies couldn't or wouldn't speak English. Still, the thrill of netting another contact overcame my embarrassment over my terrible accent.

Spanish was another “must” to work Central and South American YLs. A local amateur who spoke it fluently coached me in how to make a rubber stamp QSO and how to call CO YL in Spanish. I was very timid about doing this — it didn’t work anyway, and I found it much better just to search them out and call them. Again my accent was pretty terrible, but the novelty of finding even a slightly Spanish-speaking English station strangely enough often seemed to prove quite an attraction to the South American YLs, who would often chat away to me quite happily, oblivious of the fact that I couldn’t really understand a word they were saying!

It was very thrilling to hear a YL I’d maybe been looking for, for months or even years. I could feel my heart pounding with excitement and fright in case she got away after all! I barged in once to an American traffic net in hot pursuit of a Panamanian I’d heard there, shouting “Break! break!” excitedly. I got a real lecture from the net control, on the correct use of the double break (emergencies only — “But I honestly didn’t know that Sir”, I pleaded — you see, we don’t have third party traffic nets in this country). My face was red, but at least the YL came off frequency with me and I got my contact!

Swapping information with others on the YLDXCC trail also proved very fruitful. I used to talk from time to time with an OM from 4X who had a really fantastic YLDXCC total, I despair of ever catching up with him! But at least it was a help in knowing who to look for.

Sometimes too, I found it a distinct advantage being a YL myself. I would sometimes ask for a YL operator on a DXpedition and get her — other enquirers, who happened to be OMs were not so lucky. I felt quite guilty about this — seemed like taking an unfair advantage!

Nowadays, with 205 YL countries worked (204 confirmed — hurry up Kirsti with VK0NL!) I’ve slowed up a lot and really find myself waiting for DXpeditions or new licensees. Also, I cannot imagine myself ever being so “forward” on the band again, and badgering people for contacts. I question whether some of it was worth it — hounding some poor, terrified, inactive YL onto the band, just so that I could notch up another contact. Is that really in the spirit of true amateur radio? Still, happily those instances were few. On the whole, I met some marvellous people, made some super contacts and lots of radio friends along the way. And best of all — it was fun!

Richard G4DZI and Diana G4EZI. On the wall are the hard won and treasured QSLs and awards of Diana’s collection.

Diane and Richard share the same equipment which comprises a TS 830S, FL2100 Linear that is fed into a Mosley Mustang about ten metres high. A trap dipole is used for the lower bands.

THANKS

In compiling this column information from magazines such as RACOM, QSL MANAGERS LIST, WORLD RADIO, HOW’S DX, DX NEWS SHEET, ORZ DX and DXPRESS were used together with reports from VKs 2SP, 3BY, UX, YJ, YL, 4FB, 6FS, NE and SWL30042. Overseas amateurs who contributed included G3NBC, G4EZI, I8SAT, ON7WW and ZL1AMN. Thanks to one and all.
QSLs, QTHs. HEARD AND WORKED
QTHs YOU M A Y N E E D
1S1CK Chico Kintantar. 10-12 Avenue. Cubao.
Quezon City 3008.
5H3TM PO Box 429. Mbeya. Tanzania.
7P8BU R Wresch, Maluti Hospital, Mapoteng,
Lesotho.
A4XX PO Box 981. Muscat, Oman.
A 4 X C B PO Box 18530. Salalah, Oman.
A71AD PO Box 4747, Doha. Qatar.
A92Z PO Box 26855. Bahrein.
BY1PK and B Y 8 A A , PO Box6101, Beijing. Peoples
Republic of China.
C G 1 M C S S y d n e y ARC. PO Box 1051. Sydney. N S
B1P6J7. Canada.
C080C P0 Box 118, Holquin. Cuba.
CX1BBL PO Box 5063, Montevideo, Uruguay.
6 4 A V W / S T 3 PO Box 2632. Khartoum.
GJ4ICD PO Box 100. Island of Jersey, UK.
HC1JB Casilla 691, Quito. Ecuador.
HH2RJ PO Box 2411. Port au Prince. Haiti.
HZ1FM P0 Box 7198. Jeddah. Saudi Arabia.
I1QCM/5N8 PO Box 418. Kano. Nigeria.
J87BS 3 Chesterfield Hill. London W1.
Norway.
LU4DLH PO Box 412. Gonnet Zip1897. Argentina.
0A4DW PO Box 35, Bristol, VA 24203 USA.
S V 1 N N PO Box 2586, Athens. Greece.
VP2KBU PO Box 719, Parker. CO 80134 USA.
V S 5 M K PO Box 2191, Bander Seri Bangawan.
Brunei.
X02JCG PO Box 212, Chicoutimi. PQ G7H 5B7
Canada.
XT2BM PO Box 140, Ouagadougou.
Y V 6 A B M PO Box 278, Puerto Ordax. Venezuela.
QSL M A N A G E R S Y O U M A Y N E E D
1A0KM - I1MGM. 3A2EE - F9RM, 3D2CJ GW3JI. 4 K I A - U A 1 Q A V . 4N1R - YU1DZ. 4T5N 0A9K. 5N7HKR - 0E5RI. 5T5TO F6BUM,
5X5BB - 0L2BB. 6U0WCY - 0F7ZH. 6U1WCY
— D F 7 Z H , 6Y51C - G3XTJ. 7P8CL - S M 5 G 0 J ,

8P6PC - N 2 A W M . 9J2B0 - W60RD. A35EL 0 E 2 0 Y L . A6XJC - PEOMGM. C53CJ - KB8KS.
CX5RV G5RV. DK0GDA/ZL5 0E8N0K.
D L 9 Z A X / T T 8 — DJ5RT, ED1ILT — EA1MC. FP8ZP
- F6KN0. FB8ZQ - F6GZB. G4LWN - VE7BIP.
GJ4LNW - VE7BIP. GU4LNW - VE7BIP. HC8GI
- W 3 H N K . HG100KZC - HA8UB. HH2CQ
W4MGX. J87LTA - K4LTA, KC60T - JAOCUV/1.
KC6SZ J A 6 B S M , LA2EX/3X1 LA2EX.
L A 8 U X / O D 5 — L A 8 U X . OFOBA 0H2BAZ.
PAOFRI/OD - PAOFRI. T30CH - W9SLT. T32AF
- WH6AIF, T77B - W A 3 H U P . T77Y - I0MWI.
TT8AD - HB9CLA. TV6ICE - F2YT, VE2DVG/YK
EI9G. VR6TC - W6HS, YBOADJ KA6N.
YJ8KG - VK4I0.
CW S W U N G WITH ERIC L30042
28 M H z
KA6WZI/DU2. I5SMX, JA2YDC. JH9G0B.
J 0 1 A C W . KH2BB. UA1DZ. VK6ZT. W6JWT. Y57YG.
Y B 5 A E S . ZL1BVE.
21 M H z
BY1PK (08Z). OL7AA. 0U6HM. F6GUO, F08EW.
FKOAD, HH2VP. HL2DAK, ISOFPH. KC6DT. KH6KX.
KP4CC. KX6P0. NP4P. 0E3ALW. PY2SUT. UJ8JAS.
VK9NC. 9H1BB.
14 M H z
NOZO/DU2. EA2AFG. FB8ZQ. FK8EJ. F08FW.
GU3EIG. H C 2 H M . H H 2 V P . HK1DBO. ISOAGP.
JD1ABZ. KP4BN. OFOBA, ON7EX. P29VH. PY6ABZ.
S P 1 A L K . SV5AT. T30CH. TI2DL. TV6ICE. UJ8SAO.
VK9NC. VU2VYN. XE1YV. Y22TO. YBOAFA. YJ8KG.
YV5RE, ZL2BKM/C. 3D2CJ. 4S7EF.
10 MHz
A 3 5 M S . DF1BG, EA3ELV. EA8AFB. EI5DR.
F6IFG/P. FB8ZQ. FC9VN. FK8DZ. G3AAE. HL1EJ.
JA1XYB. KH6CD. KP2J, KV4CI, OK1RR. PA3WBB.
T32AF. VE5XU. VK8GO. VK8HA.
7 MHz
CT2QN, OL6WD, EA3JJ, FK8CL. HA3GK. KP2J,

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH
CO-ORDINATOR

LZ1KSN. NL7G. 0A4CYK. SP2JS. UA1DZ. UA2FU,
YC1BKQ. YU2CWX, YV4AU. Y03NP. 9Y4VU.
3.5 M H z
F30D. HB9BCI. 0K1XX. S W 2 G E / M M . 4K1A.
UA10E0. UA3DLN. UA4PMK. UA9MRA. UB5IEP.
UY500. Y03CD. YU7NUX. YU2CRU. YU2SDA.
1.8 M H z
VK2PS. VK5MM. VK5BC.
NOTES
Wanted — more VK CW stations on 1.8 MHz
(phone seems to be Iairly well served, currently).
VK4BKM. with the rather exotic-like OTH ol
TIN CAN BAY is ex P29EJ. and is currently active
on 14 MHz CW.
SW2GE/MM.
OTH Mediterranean Sea. has
been heard on 3.525 MHz with a very good CW
signal at 2100 UTC (in May).
In mid May. Eric L30042 had heard 68
countries on 10 MHz CW.
SSB W O R K E D ON T H E E A S T COAST
14 MHz
302ER 4Z4A8. 6W8AR. 7X2FK. 9H1GY. 9H4M. 9Y4NP.
AX1WCY. AX2WCY. AX3WCY. C218D. C53DF. CR1LN.
CR10F. CR1TZ. CR4CH. CR9AK. DU1EH. EA1VG. EA6MQ.
EA7AHH. GM2BMJ. GM3W0J. GW3AX. HA2RP. HB9ARE.
HV3SJ. IT9TQH. KC6SZ. KG40X. KH6APS. KX4R. LX1BI.
OH2BH. PA0GAM. SM5IMO. SP6BZ. T32AF. T32AF.
T06HSI. T09ER. UK5IBB. UT5DK. UV3TE. VK0RC. VK0ST.
VK0VK. VK6WCY. V01CW. VP5WJR. VR6TC. XE1GPC
XE2AQ. Y08AHL. ZK1CG. ZK2RS. ZL40Y/C. ZM1BOD.
ZM1WCY. ZM2WCY. ZM3WCY. ZM4WCY. ZM5WCY
21 MHz
3B8FG. 4S7ZN. 5H30M. 5N3RTF. 6Y5IC. A4XHG,
A71AD. A92P.C21RK. DU1CK. FB8ZQ. J37AH. K5UKL/M.
KC0PP. KX6P0. NF4L. P29NSF. S83H. SV2CD. T30DB.
TL8CK. UK0FAP. VE7AST. W5TGU. W60AV/ M. W09WQG,
Z21A0. Z21BP. Z23JJ. ZK2JS. ZL4P0/C. ZM1AFU.
ZS3GB. ZS4CV. ZS4F. ZS5DX. ZS5YG. ZS6WB.
28 MHz
A050. C21RK. FB8ZP. KA6PTS. KX6P0. N6AQL.
N7DZW. 0Z1IQ. RB5QKS. TG9NT. VS6CT/W6. WL7E.
YB3DC. YU2EU. Z210. ZL1AM0/C. ZL2ACS. ZS5DY.

m s r n m i m ssms©m

33 Somerville Road. Hornsby Heights. N S W 2077
Is it necessary
to report the activities
of
an intruder
station
on more than
one
occasion?
T h e a n s w e r is a definite Y E S .
Ideally, r e p o r t i n g intruder o b s e r v e r s s h o u l d
k e e p a c h e c k o n a n y i n t r u d e r s they hear,
a n d t a k e n o t i c e if the i n t r u d e r s e e m s to
c o m e u p o n a regular basis. In other w o r d s ,
it's a bit p o i n t l e s s r e p o r t i n g , s a y , a c a r r i e r
h e a r d for five o r six m i n u t e s , a n d w h i c h
m a y n e v e r b e h e a r d a g a i n . H o w e v e r , if a
s i g n a l is p r e s e n t daily, w e e k l y , or o n a n y
o t h e r r e g u l a r b a s i s , a n d it b e c o m e s
a p p a r e n t that the i n t r u d e r s t a t i o n is u s i n g
the a m a t e u r b a n d ( s ) a s a matter of c o u r s e ,
IN D E F I A N C E O F T H E I N T E R N A T I O N A L
T E L E C O M M U N I C A T I O N S
REGUL A T I O N S , t h e n c o m e s the time to start
s e n d i n g in r e p o r t s o n h i m . V e r y s o o n , it
f o r m s a pattern a s to h i s o p e r a t i n g habits,
a n d we then, by c o m p a r i n g reports from
o t h e r a r e a s , l e a r n w h e r e a n d w h e n h e is
o p e r a t i n g . It f o l l o w s t h e n that w e c a n

DATE TIME FREQUENCY CALLSIGN MODE RST BEARING DETAILS OF TRAFFIC
U T C IN MHz
IF HEARD
M'or 'E'
AND ANY OTHER
M' or 'E'
DEGREES INFORMATION
1/4

0600

21.032

M

UMS

FIB

S9

310 M
/

g r a d u a l l y b u i l d u p a c a s e for c o m p l a i n t but
O N L Y if w e h a v e s u f f i c i e n t q u a n t i t i e s of
r e p o r t s . S o s e n d in r e p o r t s of the s a m e
i n t r u d e r y o u hear, after y o u h a v e s a t i s f i e d
y o u r s e l f that h e is w o r k i n g o n t h e a m a t e u r
b a n d s habitually.
T h e U S S R N a v a l station, " U M S " o n
2 1 . 0 3 2 M H z is a g o o d e x a m p l e . T h e
completed Observers' L o g Sheet, w h i c h
c a n be o b t a i n e d f r o m y o u r D i v i s i o n a l I W
C O - o r d i n a t o r , or direct f r o m the F e d e r a l
IW Co-ordinator, would look something
like F i g u r e 1.
T h e d a t e a n d t i m e is self - e x p l a n a t o r y , a s
is the f r e q u e n c y c o l u m n . ' M ' or ' E ' s i m p l y

RTTY — 5 0 0 Hz shift.
75 Bauds. Letter
Groups.

m e a n s ' m e a s u r e d ' o r ' e s t i m a t e d ' . If y o u are
u n s u r e of r a d i o m o d e s of e m i s s i o n , c o n t a c t
t h e F e d e r a l I W C o - o r d i n a t o r , w h o will
a d v i s e y o u o n this. B e a r i n g is a l s o
' m e a s u r e d ' o r ' e s t i m a t e d ' . ' D e t a i l s of
Traffic' c o l u m n c o n t a i n s a n y t h i n g y o u
t h i n k m a y b e h e l p f u l in t r a c k i n g d o w n the
o f f e n d i n g station. A n y i n f o r m a t i o n to a s s i s t
y o u in r e p o r t i n g i n t r u d e r s is available f r o m
y o u r D i v i s i o n a l C o - o r d i n a t o r , or f r o m the
F e d e r a l C o - o r d i n a t o r . D o n ' t forget, if y o u
s e n d m e a C 6 0 b l a n k c a s s e t t e tape, I will
r e t u r n it with all the m o d e s d e s c r i b e d . T h i s
t a p e m a k e s i n t e r e s t i n g listening. S e e y o u
next m o n t h .
A r
A M A T E U R R A D I O , July V.W.i -

Piij-c 37


HERE'S RTTY!

Bruce Hannaford VK5XI
57 Haydown Road, Elizabeth Grove, SA 5112

CONNECTING UP RTTY GEAR

A beautiful jig saw puzzle picture is meaningless until the pieces have been correctly put together, likewise excellent RTTY gear is useless until correctly connected up. From letters I have received I note many people who have RTTY gear don’t know how to connect it up and to help such people I will show some typical RTTY set ups. The diagrams shown are chosen as the simplest arrangements that will give good results. Other methods are of course possible and some may prefer to use them but it is necessary to start somewhere and the methods shown are a good starting point.

AUDIO GENERATED FSK (HF bands using a mechanical system Fig 1)

The receive audio out can be taken from any convenient point, I use an external speaker and connect to this speaker’s voice coil. The audio voltage needed is only a small fraction of a volt and enough will be available at quite low speaker volume. The two different audio tones of RTTY are fed into the demodulator input and the demodulator changes these into on/off switching at it’s output. The transmit and receive switching is shown connecting the demod through to the loop supply. Also shown in the switching unit is a push to talk switch to control the transceiver and a local loop switch that is normally left off. This local loop switch is useful to stop the teleprinter from printing rubbish when tuning in a signal or to put in a carriage return or line feed signal from your own keyboard when the distant operator has not sent them. The switching unit has been shown as a separate unit but it is normally convenient to include it in one of the other units such as the demod.

Personally I prefer to have the mod, demod, switching and loop supply all in one metal box as this simplifies external wiring.

The loop supply is one item I have not previously dealt with so I will describe this at some length (see fig 3). The purpose of the loop supply is to provide “line” current to work a teleprinter that has been designed to work over land lines. The current needed depends on the machine used and in some cases how it is connected, this current is usually between 20 and 60 mA. The voltage of the supply is not critical but is normally between about 60 to 200 volts. I would recommend about 150 volts for our type of
use. When the loop supply is providing the correct current to the teleprinter it will be found that there is only about ten or less volts drop across the machine terminals. As only say ten volts are needed to provide the correct current most people ask why is such a high voltage power supply needed? Well if only ten volts were used the circuit would be almost entirely inductive as the selector armature in the machine have a great deal of inductance and in an inductive circuit the current builds up slowly so the selector armature will respond slowly to any on/off switching. The current build up is too slow for satisfactory working but by using high voltage and a high resistance current limiting resistor the circuit is no longer mainly inductive, it is now largely resistive and in such a circuit the current builds up nearly instantly. Summing this up in a few words high voltage with high resistance means a quick acting selector whereas low voltage resistance would mean a slow acting selector.

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As only say ten volts are needed to provide the RTTY signals being received and the voltage with high resistance means a quick switching on the transmitter and also demodulation all in one unit so all that is needed is a major job to install it yourself.

If the transceiver is changed for a FM transmitter, the FSK will result. However it is now important that the audio tones used in the mod and demod be the right frequency for FSK working, mark should normally be 2125 and space 2295. Operating in the VHF/UHF bands using FSK is a delight compared to using FSK in the HF bands as the critical tuning required on the HF bands is no longer required of course some VHF/UHF FSK is needed and in circuits the HF bands FSK diagrams will apply.

CONNECTING UP A TELETYPE MACHINE

The first question a new RTTY machine owner asks is "How do I connect it up?". The quick answer is "Just connect all parts of it in series and set the loop supply in to the rig with the best scoring RTTY log. In addition to getting the best RTTY score as revealed in the official figures when published you will need to work at least three VK5 RTTY stations and submit a signed statement to SARQ that all the points in your official CW/RTTY score have been earned by RTTY contacts.

In the April Federal WIA Convention it was decided that in future gentlemen's agreements the words "CW Only" would be replaced by "Narrow Bandwidth Modes Only". This will mean RTTY is included in what some CW operators regarded as CW (Morse) only segments of the bands.

OPERATING IN VHF/UHF BANDS

In the HF bands FSK is used and normally on VHF/UHF Audio Frequency Shift Keying (AFSK) is used. If AFSK is kept in mind when buying or building RTTY gear it is possible to use both for HF and VHF. Looking at Fig 1 if the SSB transceiver is changed for a FM transmitter AFSK will result.

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A RETROSPECTIVE

Pounding Brass is a year old now (time flies, doesn't it?), and perhaps it is appropriate to look back for a moment and consider what, if anything, we have accomplished.

We’ve looked at running a CW QSO, keys and keyers, signal reporting, and contest operation, and we’ve touched on a few other matters as well. Judging from letters received, the material has been of interest to many CW operators and may even have encouraged a few “non-operators” to locate that rusty key and try out this “new” mode.

Subjects yet to be covered include learning/teaching Morse Code, QRP, foreign alphabets/codes. If you have any other suggestions for topics please let me know.

ZERO-BEAT OPERATION

Now here is a term which every good CW op should know, but unfortunately, there are a lot who either don’t know or worry yet don’t care. To “zero-beat” a signal is to precisely determine the frequency on which it is transmitted.

When a CW operator hears a signal to which he wishes to reply, he must make some effort to ensure that his transmitted signal is on the same frequency. Think about this for a moment — when you tune in a CW signal on your receiver, the pitch of the audio output goes up and down as you tune back and forth across the signal with the VFO dial. Normally you set the received frequency for maximum signal strength and/or a pitch which is comfortable for you to copy. Now, assuming you are going to transmit on exactly the same frequency you are receiving (more about that later), some problems are apparent. If you don’t have a narrow filter or highly selective receiver, you have probably noticed that you can hear the received signal, at varying pitch, over a range of two kHz or more. If the other guy has a filter, or a very selective receiver, and you transmit a kHz or so away from where he is listening, he is not going to hear you.

To be sure that he does hear you, you should (a) zero-beat his signal, and (b) transmit on exactly the same frequency.

Let’s try zero-beating a signal. Suppose we hear a signal at about 3.548 MHz, in CW mode, which we want to zero-beat. If we tune across the signal we find that the pitch of the audio signal decreases until it disappears at about 3.550 MHz. What’s happening is that the audio frequency decreases until it is no longer audible, and then finally to 0 Hz. At 0 Hz (zero-beat), if we listen carefully, we can hear a very slight rise and fall in the level of background noise. Now that we’ve zero-beat the signal, we know that it is exactly 3.55000 MHz, but we still have a problem.

First of all we still have to copy the incoming signal, which we can’t do if we can’t hear it. Next we have to arrange to transmit on exactly that frequency.

The answer is what is commonly known as “offset”. Still assuming that the rig is going to transmit on the received frequency, we can use the clarifier (or Receiver Incremental Tuning) to alter the received frequency to a comfortable pitch without altering the transmitting frequency. This is a receiver offset.

But in fact most transceivers do not transmit on exactly the same frequency — they have a transmitter offset built in. In other words, when you receive a CW signal at a comfortable pitch, the transmitter will be offset, putting your transmitted signal somewhat closer to zero-beat. You can use this feature of modern transceivers to great advantage because most rigs have some facility for adjusting the pitch of the CW side-tone (the monitoring tone which you hear when you key the transmitter).

To use the side-tone pitch for zero-beating a received signal, first determine what the rig’s transmit offset is by consulting the owner’s manual. Next zero-beat a received CW signal, in the CW mode, as described above. Having located zero-beat, adjust the frequency by the amount of the transmitter offset (usually something in the range of 700-1000 Hz). Now note carefully the audio pitch of the received signal and adjust the pitch of the side-tone to match it exactly.

Having done this, all you have to do to zero-beat any CW signal is tune to the exact pitch of your side-tone, and you will transmit on a frequency that is nearly zero-beat. If you don’t like copying at that audio pitch (700-1000 Hz), use the clarifier to alter the received frequency without affecting the transmitting frequency.

More accuracy can be achieved by using test equipment to measure the offset and set the side-tone pitch, but this method is accurate enough for most purposes.

Having mastered this technique, you will be able to recognize expertise when you hear it — if you call CQ and a station comes back with the same pitch as your side-tone, you can say to yourself — “There’s another guy who knows what he’s doing!”

73 FER NW.

COMMERCIAL CHATTER

STEWART ELECTRONICS

Stewart Electronics stock a wide range of electronic parts.

For makers and users of printed circuit boards a very extensive range of Bishop Graphics is stocked. All the tapes, pad layouts and other drafting aids for laying out really first class artwork.

Also from the Bishop Graphics range are printed circuit copper products. These are a range of copper tapes, patterns and boards. These copper products can be used to repair damaged PCBs or to lay out experimental PCBs.

Damaqk dry transfers are another stock item. These are a range of the dry transfer letters which are so popular today. As well as sheets of individual letters and numbers there are sheets of commonly used words. Having the word as a whole transfer makes the alignment just much easier, which will result in a better looking panel on your next project.

Whilst the component side has been neglected so far it should be noted there is a veritable Aladdin’s Cave of all common and hard-to-get parts. A most comprehensive range of parts, computer bits and other assorted goodies are kept in stock.

Quality parts are backed up by a very knowledgeable staff always ready to assist. This is a rare combination today.

Stewart Electronics are located at 44 Stafford Street, Huntingdale, Victoria. Phone (03) 543 3733.

Page 40 — AMATEUR RADIO, July 1983
LIBERIA

The Liberia radio amateurs are out to draw attention to the plight of the Ganta Leprosy Colony.

Special call letters A81LC, A82LC, A85LC, A87LC, A88LC and A89LC have been authorised by the Ministry of Post and Telecommunications. This will be a special On-The-Air Activity. It will start on 6 May, 1983 at 1900 hours and continue to 31 December, 1983, 2400 hours UTC.

The members of the Liberia Radio Amateur Association will be organised to operate special designated stations in the counties identified in the special call signs. Amateurs who are contacted under these special call signs will be told about the reason for the special activities.

Bob Johansson, SM4CWY is special QSL Manager for this activity. His address is: PO Box 134, S-67101, Arvika, Sweden. All QSL cards and any other communications must be sent to Bob.

There will be a special award for any station who submits satisfactory evidence of having worked all six stations on any band. At least two of the six contacts must be made by CW.

The needs of the Ganta Leprosy Colony are great and urgent. The Liberian amateurs hope that amateurs world-wide will identify themselves with the amateurs in Liberia. The aim is to make 60 000 contacts during the period stated above.

MARCONI RADIO SOCIETY RE-LAUNCHES HISTORIC CALLSIGN DURING WORLD COMMUNICATIONS YEAR

The callsign used to introduce Britain’s first scheduled radio entertainment broadcast, 2MT, will be heard on the amateur bands later this year after a 60-year break in transmissions.

Home Office approval has been granted to the use of the callsign 2MT by the Marconi Radio Society, a group formed recently by amateur radio enthusiasts employed at the Stanmore headquarters of Marconi Space and Defence Systems Limited and at other company sites in the locality.

The callsign will be used at Stanmore, for the first time at 1200 UTC on Saturday 2nd July 1983 using equipment owned and operated by members. The frequencies used will depend on the prevailing propagation conditions but it is hoped to organise contacts with amateur radio clubs affiliated to the BBC and with similar groups within the GEC-Marconi organisation.

Marconi’s Wireless Telegraph Company Limited was first granted an experimental licence in the summer of 1920 to use the callsign to introduce news bulletins. This permission did not apparently extend to music, even in the accompanying role, and the licence was swiftly revoked following the broadcast of ‘dramma per musica’ by a Danish tenor.

Following representations to the then Postmaster General by the Wireless Society of London (now the Radio Society of Great Britain), the company was later authorised to recommence transmissions. And so, the first scheduled entertainment broadcast in the UK was transmitted on 700 metres from Writtle, near Chelmsford, on 14th February 1922 under the callsign 2MT (‘Two-Emma-Tock’). The ‘G’ (for England) has now been added to accord with current practice.

The licence restricted broadcasting to home entertainment in the UK and to special callsigns A06, A08 and A10, with the exception of the callsign 2MT. The station was required to cease transmitting for three minutes in every ten. These frequent intervals were spent in checking to hear whether any complaints had been received.

The broadcasts provided amateurs with invaluable checking references and their content set the pattern for later public broadcasting programmes; for example, the first radio play was produced (Cyran de Bergerac) and a rudimentary ‘Children’s Hour’ was evolved before transmissions ceased in January 1923.

ST VINCENT AND THE GRENADINES

These islands have become the 158th member of the ITU on 25th March 1983.

JARL

The first amateur satellite is due to be launched in 1983.

Japanese radio law has been amended to allow ATV including novices.

Use of repeaters was permitted in Japan last year and shortly 130 stations will open on the 430 MHz and 1200 MHz bands.

JARL celebrated, on 9 October last, the 30th anniversary of the reopening of amateur radio in Japan after World War II at the Hotel Okura in Tokyo in attendance of about 500 participants.

The amateur radio activities in Japan were suspended during WW II and for several years after the war, but thanks to the united efforts of a number of people including the great pioneers in amateur radio, they came back to the air again in 1952. In the past thirty years, amateur radio in Japan has spread wider and wider with technical advances particularly in radio science and with pertinent guidance by the administration through several renovations of the amateur radio institution. No other country in the world now has so many radio amateurs as Japan.

In support of the activity of World Communications Year ’83, Ministry of Posts and Telecommunications and Japan Amateur Radio League (JARL) are planning to have The World Amateur Radio International Conference (WARIC) in Tokyo this September.

In addition, for the 24th All Asian DX Contest to be held in June and August 1983, cups commemorating the World Communications Year, will be awarded to continental winners (first in each continent on single operator multi band) by the Minister of Posts and Telecommunications in addition to the presentation of certificates from the Minister and medals from JARL as in an ordinary year.

RAST HOSTS SEANET

The SEANET Convention (Southeast Asia Net), hosted by the Radio Amateur Society of Thailand, held in Bangkok 12 to 14 November, 1982, was acclaimed by the attendees as the largest and best SEANET convention to date. With more than 150 registrants from 20 different countries, all three IARU Regions were represented. The convention was formally opened with the Friday evening banquet, at which time the deputy minister of communications of Thailand welcomed the delegates and set the theme for the three-day meeting. Authorisation was granted for operation of a station at the Imperial Hotel, where HS0SEA went on the air and was given a good workout.

CHAIRMAN VISITED TAIWAN

David Rankin VK3QV, Chairman Director Region III, on the trip to Singapore from Tokyo stopped over at Taipei on 16 October, 1982. He, accompanied by Tim Chen, BV2A/BV2B, paid a courtesy visit to The Post & Telecommunications Department of ROC discussing amateur activities of the world and the story of IARU and Region III Association. He was told of the possibility of expanding amateur radio on this island.

AMATEUR RADIO IN CHINA

The JARL observation group, consisting of eight JA amateurs headed by Mr Makoto Inami, JA6AV, Vice-President of JARL, made a tour to Beijing, Chenchou (Monastert Shao Lin) and Shanghai in China from the 6th to the 13th October last year.

They were warmly received by senior officials of the Chinese Radio Sports Association and all others concerned at all the places they visited. They exchanged views on various aspects of amateur radio in China and Japan, which promoted better understanding and friendship of radio amateurs in both countries.

What were specially noteworthy on this tour were: that JA amateurs of the group were permitted to operate the BY1PK station, and that they participated in fox-hunting at the Chinese National Radio Direction Finding Convention as guest participants.

The Chinese National Radio Direction Finding (fox-hunting) Convention was held in the vicinity of Monastery Shao Lin about 70 km south west of Chenchou in Hanou Province. The Chinese type of fox-hunting is a combination of pedestrian exercise and orienteering which is considerably different from the conventional type of fox-hunting in other countries. The participants compete in how fast they can find as many foxes as they can in a wider area.

AMATEUR RADIO, July 1983 — Page 41
Doug was 5 x 3 here and could hear me about the same strength working Eddie VK1VP. When I heard Doug and responded the linear expired due to the excitement and reduced my power to twelve watts PEP which made things a bit difficult! Anyway, there was some form of signal enhancement operating at the time and as we were after a tropo-scatter contact to prove it could be done frequently we were not that disturbed.

"The contact on 2/5 was tropo-scatter all night and the signals were 5 x 1 both ways for about 45 seconds. We believe this is the first time a two metre contact has been made between Sydney and Melbourne. If this is not so, someone will no doubt correct us!"

Doug also made contact with Ralph VK1RK at 1100 on 1 5 and we suspect that this is the first 2 metre SSB contact between Canberra proper (Ralph is at Hughes) and Melbourne.

"To add to my comments in the previous letter, I checked my log for April and extracted those contacts made with stations beyond the local contact range (160 km or 100 miles). They are:"

On 2 metres SSB:
- Doug VK2DXH Armidale 344 km 8 times
- Don VK2ADY Tamworth 276 km 9 times
- Jack VK2VOU Condobolin 372 km 1 time
- Ralph VK1RK Canberra 260 km 3 times
- Brian VK2AKU Narrabri 384 km 1 time
- Ross VK2DUV Ulladulla 372 km 1 time
- Eddie VK1VP Canberra 260 km 4 times
- Bob VK1RC Canberra 1 time
- Peter VK2DAU Tamworth 276 km 4 times
- Dave VK2ZDY Moree 473 km 2 times
- John VK2VEZ Griffith 476 km 1 time
- Allen VK2KAW Wagga 384 km 1 time

On 70 cm SSB:
- Barry VK2KAY Narrabri 384 km 7 times
- Eddie VK1VP Canberra 260 km 7 times

"On two metres signals were also heard from VK4LC (about 650 km), VK3UM (694 km) and VK2MQ (473 km) but no firm contacts were made at the time. On 70 cm from VK2ADY (276 km) also. As months go April was about average!"

That last statement bears a comment in that I would be most happy myself to work so many stations on those two bands for such an average month! Most activity here in VK5 still revolves around the continuing saga of the 4 and 432 MHz contacts between VK5ZRO in the first instance, joined by others from time to time, to Don VK5ZRG at Whyalla (220 km) and Neil VK5ZEE at Woomera (about 500 km). The ease with which Bob can make these contacts from the other side of my big hill makes me green with envy, even if I can hear the Mount Gambier beacon all the time!

BEACONS SYSTEM IN USA

Further word comes from Bill W3XO in "The World above 50 MHz" in May QST and some suggestions for implementing the system of unattended beacons in that country. Only narrow segments in each band have been permitted, 20 kHz on 50 MHz, 10 kHz on 144 and 432 MHz. When one considers there are 48 US states in the main area of their country, with Alaska some distance away being 49, further still Hawaii number 50, and all will no doubt want to share in what has been fairly commonplace in many parts of the world for quite a few years. Bill, W3XO, has worked out that it would need about 80 beacons, and on this basis that they should not be less than 125 miles apart (the US is not metric) but there should be one at least every 250 miles, with the highest density in the high activity areas of the East and lower West Coast; beacons also would need to be located along the coasts to provide an indication of enhanced propagation.

Bill is rightly concerned at the possibility of considerable QRM from beacons close to one another in frequency, and distant separation can become short separation under improved tropo conditions. So much so, that he suggests they may need to look at time-sharing. To accomplish this, he says, each minute might be divided into four 15 second segments. In addition to selecting or being allocated a specific frequency, each beacon operator would choose or be given a segment. In this way, the number of beacon segments is multiplied by four. Until enough beacons come on the air, however, there seems no immediate need to implement time segments. Beacons should be able to operate continuously until potential conflicts develop.

We all wish the US success with their new venture, there will surely be some problems but if common sense prevails they can be sorted out. They might well consider seeking some opinions from the European boys regarding 2 metres and 70 cm as they have many beacons in operation although over larger segments certainly but still at very close geographical distances. Here in Australia we are not faced with such decisions as we have only 7 states to consider, plus Canberra, and our distances are considerable.

Far be it for me to offer too much in the way of advice to the US but one way might be to have a lesser number of beacons initially and spread them out well, and see
how propagation affects them, where they are being heard etc. Whatever the outcome, particularly on 6 metres, it can only be good on a global basis by providing a 24 hour signal which might be heard somewhere sometime!

I also note from the May "QST" that a new 50 MHz world record has been established. "After several months of trying, following a 2 metre to 1¼ metre crossband contact last November, KP4EOR and LU7DJZ were finally able to complete a two-way contact on 220 MHz at 0033 on 9/3/83 to establish a new terrestrial world record for the band. Using atlas-listed coordinates for San Juan and Buenos Aires, the distance works out to be 3670 miles (5870 km) far exceeding the old published record of 2540 miles between W6NLZ and KH6UK established in June 1959.

"KP4EOR was running about 200 watts output to a single 17 element Boomer, and was 559 on CW and 5 x 5 on SSB at LU7DJZ's QTH. On his end, LUD7DJZ runs 70 watts to two stacked 10 element yagis. His signal was confirmation of reception. Following their success, the two are trying to see how often they can work this band via the transsequatorial propagation route, as well as, beginning next August, investigating the possibility of contacting on 70 cm.

"Congratulations are in order to both KP4EOR and LU7DJZ for this record breaking accomplishment. Their achievement surely marks another major event in the history of the world above 50 MHz."

We here in Australia join in congratulating the two participants. Although we are unable to operate on that band and are therefore unable to try and better the distance, we nevertheless say well done.

NEW 3300 MHZ RECORD

From "Break-In" for April 1983 comes news that "on 6th March 1983 two teams from the Wellington VHF Group succeeded in creating what is believed to be a new world record on this band at 545 km.

Peter Willis ZL2ARW and John Yaldwyn ZL2TRV travelled to Te Paki trig station at a height of 1019 metres ASL and located just south of Cape Reinga at the tip of the North Island.

"At the southern end were John Shoreland ZL2AQE and John Wysocki ZL2TWS who operated from the main summit on Mount Egmont at 1200 metres ASL.

"The contact took place at 09.30 AM local time when signals were heard by ZL2AQE, they were so weak that initial contact was made on CW by Peter making and breaking one of the connectors in the transmitter line (Tut, tut! Fancy not taking a key on such a jaunt ... 5LP). Shortly after this time band conditions improved and the claimed contact was on FM with 5 x 9 signals both ways. The claimed distances is 545 km and subject to confirmation is a significant improvement over the G4BYV's 585 km distance of 464 km on 14 September last.

"Equipment line-up at both ends comprised a crystal controlled multispacer chain of 1 watt output to a 4 foot dish: on receive the ZL2ARW team used a GaAs Fet preamp to an interdigital converter (VHF Comms design). The ZL2AOE team fed the input signal straight into the converter without the preamplifier.

"Congratulations to both teams on a very fine effort, especially to Peter ZL2ARW and John ZL2TRV who drove all the way from Wellington to Te Paki at Cape Reinga a round trip of 1130 km."

"We in Australia offer our congratulations too for a fine dedicated effort, and one needs to be dedicated to drive such distances, but it seems the results have been worth while.

"Incidentally, I note also that the ZL2ARW team was equipped on their journey with all bands from HF through to 2 metres, 70 cm, 2300 MHz, 5 GHz and 10 GHz. However, of the microwave bands the only successful contact was that on 3300 MHz. The ZL2AOE team was similarly equipped plus ATV equipment!"

EME EXPERIMENT

The transmissions from K8HUH (see May "AR") via the 150 foot dish and the moon proved to be a non-event for me. I listened around 432.100 MHz for at least an hour on the three mornings of 14/5, 15/5 and 16/5 and although I thought I convinced myself I could hear something in the noise once I am not really sure I heard anything!

After the first try I telephoned Chris VK5MC to see what success he had with his dish, and to enquire if K8HUH was actually on. He confirmed he had worked the station but signals were no more than 10 dB above the noise. This being so it seemed my 16 dB of antenna gain (less coax losses) would not be adequate. To assist the next day’s trials I got out the GaAs Fet pre-amplifier and coupled this into the system. This certainly made an improvement judging from the number of reported contacts on this band. Unfortunately despite all the trying nothing has happened, but it was an experience and worth a try. The fact that the total period the station was on, the sky was completely covered with cloud, didn’t help as I had to rely on bearings taken with the prismatic compass. At least I know now my antenna is only three degrees off true corrected north, so it was not necessary to spend a lot of time outside in the rain with the compass.

Chris VK5MC advised he had worked K8HUH on Saturday 15th May on CW and SSB with signals up to 10 dB over noise and again on Sunday 16th May on CW. He started with 10 watts and with increasing power made contact at the 50 watts level. As far as we can ascertain VK4ZBN, VK4AQ and VK6ZTO have heard the station weakly and Hans VK6ZT is believed to have worked it.

The transmitter was running at 150 watts solid at the feed with circular polarisation, which gave 3 dB loss to most people, the frequency being 432.095 MHz

Conclusion reached was the test was not as effective as W4/8 GET some years ago.

WILLIS ISLAND

Willis Island will soon be reactivated on 6 metres. The callsign VK9ZS has been allocated to Graeme Smith who will be on Willis Island for the next six months.

The rig will be the FT680 from the VK6 DX Chasers Club which was used on the Heard Island Expedition. The antenna will be the beam used on Heard Island provided by Werner Wulf. A 100 W amplifier will be on loan from VK3AUI. The Lunar amplifier also made the trip with VK0HI.

So look out in the coming months for VK9ZS. Graeme will have a keyer which will be used to stir up activity when conditions look promising.

CLOSURE

Just before closing, may I mention my first report (April) of the fire destruction of the VK5 beacons was not quite correct as it turned out. Fortunately Mark VK5AVQ was able to report salvaging most of the equipment, but the residence which was the source of power was destroyed, hence the beacons would have been off the air anyway. So that news is a bit brighter after all!

It must have been a quiet month around the country as very little information has come to hand. Hopefully, the mid-winter DX period might treat us well by the time you read this.

Closing with the thought for the month: "Maturity is the ability to do a job whether or not you are supervised, to carry money without spending it and to bear an injustice without wanting to get even."

73, The Voice in the Hills.
Well, the peak of the wintertime DX conditions has now passed, yet many interesting signals are continuing to be heard during the daylight hours. However, more sudden ionospheric disturbances, due to solar flares, have caused a fall in propagation particularly to the higher frequencies of 10 MHz and above. Lower frequencies are affected, but not to the same degree. Usually the east west path suffers the most. When these disturbances are present, it gives us an opportunity to hear the lower powered outlets, usually masked by the larger powerhouse signals. The majority of these lower powered outlets serve a district or provincial audience and are not designed for overseas listeners.

MANY STATIONS DUE TO FLARES

One example of this is Radio Malaysia in Kuala Lumpur on 6025, which is normally sandwiched between Radio Moscow and either FEBC International or the AFRTS. Yet on the 17th of May, I heard it here in Launceston between 1230 and 1300 UTC. It is a domestic station and should not be confused with Suara Malaysia — the external service also in Kuala Lumpur, which is heard elsewhere on the 49 metre band in the evening hours.

Yet another station that is not normally heard here, was also observed during one of these flares. It was the AFRTS Far East Network in Tokyo on 6.155 MHz. Usually VL6R at Lyndhurst (VIC) on 6.150 prevents any signals 5 kHz either side from being heard clearly. But as the skip distance seems to increase, their signals were down and there was a rapid flutter on their carrier, allowing the FEN to be heard. Later on, another Asian signal, possibly masked their signal. The FEN in Tokyo is also heard on 3.910 MHz but its programming varies from that on 6.155 MHz.

WE MISS THIS ONE

Many VK amateurs were disappointed that they could not work PA6PCJ — the special station mounted by Radio Nederland in Hilversum as part of WCY '83. The station was not heard very well in Australia due to the poor propagation over that weekend. Two stations that worked PA6PCJ were Arie VK2AVA and Morrison VK3BCY. I heard the station myself only once on 14.070 MHz and then it was barely audible.

SPECIAL STATIONS

Radio HCJB, the religious broadcaster in Quito, Ecuador, mounted a special amateur station using some of their huge antenna arrays, when they weren't required by their broadcasting transmitters, with the call of HC1JB naturally. As I am writing these notes in late May, I cannot comment on how their efforts went. However another group, the Marconi Radio Society, plan to reactivate one of the historic call signs in Great Britain, first used over fifty years ago. It was used in the Empire broadcasts, which were aired prior to the formation of the BBC's external service in December 1932. The call will be G2M, but I do not have any additional information relating to their operating times or frequencies, yet they may be found in International News.

ENJOYABLE PROGRAMMES

One programme that I find interesting on the BBC World Service is called “Listening Post”. This is not a DX programme nor is it connected with technical aspects of the hobby, rather it is a compilation by the BBC Monitoring Service in Caversham Park, of what the various international or local broadcasting stations are saying about news and current events in the World. Several foreign language broadcasts are translated and summarised into English. This gives an opportunity to those who don’t know these other languages, an insight into what some of the foreign language newscasts contain. You can hear it at 1115 UTC Wednesdays on the usual BBC World Service frequencies.

The regular programme for listeners who want to keep up with alterations to BBC World Service frequencies, or have difficulties receiving BBC programmes, is called “Waveguide”. This ten minute programme is heard at 0915 UTC on Mondays.

MAKE UP YOUR OWN MIND!!

Have you heard a woman reading out groups of numbers in German or Spanish on unusual frequencies? If you have, you must be wondering, as I have, what the identity of these stations are. There has been speculation for some time now, that these are perhaps engaged in clandestine or espionage activities. They base this on the fact that these stations do not adhere to regular operational hours or frequencies and seldom seem to be used on consecutive days. I did hear them on 9.325 or 11.545 MHz. Listen for yourself and make up your own mind.

HARMONICS

Recently I was trying to identify a station on 1.654 MHz with music and announcements. As it was very weak, I was wondering if it could be 3MU at Monash University, which reportedly utilises that channel. I also noticed that a Sydney listener claimed to have heard it. However, it only runs a watt on a cable system around the university campus to speakers. It would barely be able to get out of the campus. However, the station this listener heard presumably, is not that but rather the second harmonic of 3GI at Sale on 828 kHz. I managed to hear the Victorian State news at 1210 UTC which positively identified it. Other ABC transmitters also seem guilty of putting out harmonics. SAN in Adelaide on 891 kHz has been heard on its fourth harmonic of 3564 kHz by numerous amateurs now. Radio 3LO at Sydney on 3.910 kHz is heard here in the evening and early morning hours on its fifth harmonic of 3870 kHz.

PLEASE IDENTIFY

Another trend I have noticed is that people are assuming that the station they are hearing on a particular channel, is in a certain country because it is listed in a bulletin or in the WRTH as being operational at that time etc. I urge you to wait for some form of identification announcement to verify or otherwise where the station is. This has been highlighted by a listener in northern NSW who thought he heard Madras on MW at 1030 UTC. As it is still daylight in India, it is highly unlikely it was in Madras. It seems likely that the listener may have heard Indian music from another station. So make sure that you try and identify the station, and if in doubt report it as unidentified. Others more experienced will either confirm it was that station, or inform you as to its identity.

Well, that is all for this month. If you have any news or comments for inclusion in this column, please write by the 15th of July. Until August, the best of 73s and good DXing! — Robin.

Please remember your STD code when you advertise in HAMADS.
Hello again for this month, don't forget the Annual Meeting on Monday 25th July on 3.570 MHz at 1030 UTC. If you cannot join the net, send your votes on the form in the July Newsletter. Remember it is your association and we need your support.

**BIRTHDAY NET**

ALARA will be eight years old and the birthday net will be on Monday 22nd August on the usual frequency.

Welcome to new members: Narelle VK1NG and to Heather VK4NEZ and hope you both enjoy being a part of ALARA.

Best wishes to all who are sitting for exams next month and hope you are all successful.

**BYLARA AWARD**

Available to all YLs, OMs and SWLs (on a heard basis) for working YL members of BYLARA (British).

**DX OUTSIDE EUROPE**

Work ten members (YL) of BYLARA to include at least six British members. Starting date: 29th April 1979. YLs must be members at time of contact. All bands; all modes; one contact per member.

No QSLs necessary; send log data, signed by applicant with fee of £1.50, or 12 IRCs or $US4.00 to Mrs D Wood, GM4COO, 13 Scotland Drive, DUNFERMLINE, Fife KY12 7SY, Scotland.

Look for the G girls on activity Day, the 6th day of each month, call CQ YL on the hour and gain some points for their award.

**ALARA CONTEST**

ALARA's Contest No 3 will be on Saturday 12th November and this year a Trophy for the top score by a YL over five years will be added to the certificates. We hope this will foster interest in the contest, so keep this date in mind. Contest rules and a full list of ALARA members will appear in AR prior to the contest.

Membership of ALARA is down this year, unfortunately a number of YLs did not rejoin. The numbers on the nets are down also, so please try and come up on Monday night and help boost the numbers again.

Photo this month is from Marlene VK5QO and Jenny VK5ANW. If you enjoy seeing the photos how about sending one of yourself to me for others to see!

Until next month all the best to all.

Margaret Loft VK3DML

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**The 1983-84 CALLBOOK**

Will be available at the beginning of September.

New and updated data, repeater listings and over 3000 new and updated callsigns.

Don't miss out this year.

Order your copy now from divisions, Magpubs, Box 300, Caulfield South 3162 or Federal Office.

$5.75 plus postage.
At its meeting in April this year, Federal Council approved some changes to the rules governing WIA awards. Further, preliminary approval was given for a new DXCC certificate and the introduction of single and all band stickers.

RULE CHANGES FOR ALL WIA AWARDS

AMENDMENT TO PRESENT RULE 4.1 (VERIFICATIONS)

It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence, from the station contacted, showing that two-way contacts have taken place.

AMENDMENT TO PRESENT RULE 4.5 (VERIFICATIONS)

In lieu of forwarding QSL cards as set out in Rules 4.1 to 4.4 above, a list giving details set out in Rule 4.3, certified by the Awards Manager, Secretary or Council Member of a division of the Wireless Institute of Australia, or two licensed amateurs known to the applicant, should accompany each application for membership.

Every person certifying an award application must sign the following declaration: I have checked the (insert number in words) QSLs submitted by (insert call sign) and certify that the details attached correspond with the verifications inspected by me. Signed...

AMENDMENT TO PRESENT RULE 5.1 (APPLICATIONS)

Applications for membership shall be addressed to the Federal Awards Manager of the WIA, accompanied by the verifications and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired. WIA members should also include their address label taken from the latest edition of "Amateur Radio".

NEW DXCC RULES

DELETE OLD RULE 3.4 (OPERATIONS) AND INSERT THE FOLLOWING NEW RULE

The following criteria will be taken into consideration when determining the DXCC country list.

(a) The ARRL DXCC countries list.
(b) Whether the country's government or administration recognises and issues amateur radio licences.
(c) The Australian regulations which prohibit contacts with unlicensed stations.
(d) An Australian government directive prohibiting contacts with a particular country.
(e) The starting date for any new country to be decided by the Federal Awards Manager.

DELETE OLD RULE 3.6 (OPERATIONS) AND INSERT THE FOLLOWING NEW RULE

All stations must be contacted from the same DXCC "country". NB: Amateurs moving from one call area to another will be given the option of transferring credits or starting on a new DXCC award. Once this option has been exercised it will not be reversed.

NEW DXCC CERTIFICATE

What sort of DXCC certificate would you like? A multi-coloured map of the world with spaces for endorsement stickers? I would like to get this programme off the ground as soon as possible so if you do have any views please let me know.

It is suggested that current certificate holders will be allowed to apply for the new certificate. The actual cost of the certificate will be charged to those who wish to make the change.

WORKED ALL Y2 AWARD

This award is available to both licensed amateurs and SWLs. The award is available for all contacts after 1 January, 1980 and the minimum requirement is for twenty points from ten districts. The districts are identified by the second letter of the suffix. The districts are as follows:

- A and U = ROSTOCK
- B = SCHWERIN
- C = NEUBRANDENBURG
- D and P = POTSDAM
- E = FRANKFURT
- F and X = COTTBUS
- G and W = MAGDEBURG
- H and W = HALLE
- I and Q = ERFURT
- J and Y = GERA
- K = SUHL
- L and R = DRESDEN
- M and S = LEIPZIG
- N and T = KARL-MARX-STADT
- O = BERLIN
- RST = ROSTOCK
- SCH = SCHWERIN
- NEU = NEUBRANDENBURG
- POT = POTSDAM
- FRAN = FRANKFURT
- COTT = COTTBUS
- MAGD = MAGDEBURG
- HAL = HALLE
- ERFR = ERFURT
- GERA = GERA
- SUHL = SUHL
- DRESD = DRESDEN
- LEIPZ = LEIPZIG
- KARL = KARL-MARX-STADT
- BERL = BERLIN

One point is gained for each completed QSO. A GCR list showing callsign, band, date, time and report is acceptable. Though this award is called "the Y2 award" stations using the prefix Y2 through to Y8 are included. No Y9 stations will count. Applications to RADIOKLUB der DDR, HOSEMANNSTR 14, DDR-1055, BERLIN, German Democratic Republic, together with ten IRCs to cover costs and postage.

The WIA need YOU to enroll a new member today

If EVERY member joined JUST ONE new member, YOU would be spreading the joy of amateur radio.

POISON PEN LETTERS

Readers are advised that letters of an insulting or abusive nature have been received by amateurs. These letters have been unsigned with a false name or callsign. If you should receive such a letter you should immediately notify the authorities. Unless you do this the police and postal authorities will be unable to stamp the practice out. Help stamp out this practice now.

Mike Bazely VK6HD
FEDERAL AWARDS MANAGER
8 James Road, Kalamunda, WA 6076

Page 46 — AMATEUR RADIO, July 1983
THANKS BOB ARNOLD

Since the August 1977 issue this column has been diligently prepared by Bob Arnold VK3ZBB. Bob has succeeded in compiling one of the most informative and constructive amateur satellite columns of any amateur magazine that you care to mention. Anyone who cares to peruse past issues of AR will find a wealth of useful operating hints, orbital parameters, future missions etc. The outstanding bonus however is a fully documented history of the happenings of the amateur satellite scene both world and Australia wide, over Bob’s reporting period. Nonetheless Bob has decided that now is an opportune time to hand over the reins to another scribe, and thus allow him more time to research some ongoing projects that he has in hand. Therefore Bob, on behalf of your many readers and friends, I sincerely thank you for your contribution to the advancement of amateur satellite communication through the medium of this column.

THANKS CHARLIE ROBINSON

Effective 30 June, Charlie VK3ACR has relinquished his position as National Co-Ordinator of AMSAT Australia. Charlie stepped into the position many years back and has carried out the position with sincere dedication. Perhaps the most outward indication of the co-ordinator’s position is the dissemination of news and updates. The Sunday night skeds have, in recent years, become a significant event for amateur satellite users throughout Australia. On behalf of the regulars and the many listeners that you have kept informed through your efforts Charlie, our sincerest thanks. It is anticipated however that you will still be a regular.

NEW NATIONAL CO-ORDINATOR

Graham Ratcliff VK5AGR has agreed to take over this position following Charlie’s decision to step down. Graham, you have a hard act to follow but we wish you well in the future as co-ordinator. Any matters relating to AMSAT Australia can be directed to Graham either during the Sunday evening skeds or by mail, QTHR.

NATIONAL CO-ORDINATOR

Graham Ratcliff VK5AGR

INFORMATION NETS

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.

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ATEL (Australia net, AMSAT SW PACIFIC)

Control: VK5AG
Amateur: VK5AG
Check in: 0945 UTC Sunday
Bulletin: 1000 UTC
Commemence: 1100 UTC Sunday
Winter: 3.680 MHz
Summer: 7.054 MHz

ATEL ( AMSAT PACIFIC)

Control: JA1ANG
Time: 14.305 MHz
Frequency: 28.880 MHz

ATEL ( AMSAT SW PACIFIC)

Control: W6CG
Time: 2200 UTC Saturday
Frequency: 28.880 MHz

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.

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FIRST ASTRO-AMATEUR IN SPACE

W5LFL/Space Mobile has been approved for the space shuttle mission STS9. The mission is planned for around 30 September 83, with the primary objective of carrying aloft the joint US-European space lab in the shuttle’s cargo bay. Astronaut Owen Garriott will operate using a specially designed 2 metre transceiver on the low end of 144 MHz (approx 144.3) for one hour per day, during his off duty time. He will try to provide amateurs around the world with their first QSO via a manned orbiting spacecraft. Time, frequency and procedures will be defined later. It is stressed that the operating procedures will have to be strictly adhered to and thus avoid QRN and give everyone a chance to QSO. Abuse of the procedure could see the cessation of operations immediately. Further details as they come to hand...

QSP

CONGRESS APPROVES FUNDING TO SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE

Following years of bitter debate, and even one "Golden Fleece" award from Sen. William Proxmire, Congress has finally approved funds to be used in the search for extraterrestrial intelligence (SETI). This fiscal year, the National Aeronautics and Space Administration budget will include $1.5 million for an instrument that attaches to a radiotelescope. The instrument, a signal analyzer, will eventually study 10 million radio frequencies simultaneously in the search for a message from intelligent beings elsewhere in the universe.

Searches conducted to date have been disappointing, but many scientists believe that a concerted effort should be undertaken as soon as possible. Carl Sagan, for example, lobbied long and hard for SETI funds, and he was finally able to convince Sen Proxmire, among others, that the search was scientifically important and relatively inexpensive.
Recent years have seen a rapid growth in the field of vehicle electronics, especially in the area of electronic display instrumentation, and systems monitoring. The major developments in this field have occurred in a relatively short time.

The language of digital technology is one of breathtaking simplicity: 1 or 0, on or off. Despite this simple, yes/no thinking, computers can answer complicated questions quickly, reliably and accurately... However, accuracy in computer systems greatly depends on the system's ability to reject unwanted signals and energy. Computer systems can be, and quite often are, susceptible to electromagnetic energy. The Amateur Service, being an extensive user of the electromagnetic spectrum, views with concern the electromagnetic compatibility (EMC) of these super mobile computer systems.

The on-board computer can monitor such parameters as: average fuel consumption, how far you can go on the remaining fuel, oil level and temperature, coolant level and temperature, windscreen washer fluid level, tyre pressure, battery fluid level, collision avoidance radar, braking system operation and fluid level, transmission operation and fluid level, fuel injection, automatic self levelling system, windscreen clarity monitor, engine performance monitor, climate monitor, and others.

Perhaps the most interesting aspects of the mobile computer, and those which are of special concern to the Amateur Radio Service, are those functions which assist with the control of various vehicle parameters, and where these parameters could be inadvertently changed by on-board or close-proximity additional electronic and communications equipment. However, vehicle manufacturers are, in contrast to home entertainment and consumer product manufacturers, very conscious of the need for vehicle electronics to have good EMC. They agree there is a need to increase usage of electronics in vehicles and this does require serious consideration of electromagnetic interference effects to ensure there is no generation of electromagnetic interference or, alternatively, effect on the vehicle from on-board and external electromagnetic radiation. Vehicles are tested to measure the effect of the electromagnetic environment experienced in proximity of radio and television broadcasting stations, fixed and mobile communications stations and radar installations.

Magnetic field tests are also performed which simulate the effect of magnetic fields encountered by the vehicle in the proximity of power transmission stations and high power transmission lines. Tests are also performed to determine the broadband for field radiated emissions from the vehicle's electrical system, which may interfere with radio and television reception. Further tests are performed to identify any narrow band radiated emissions from the vehicle's electrical system or communications equipment, outside the vehicle.

The manufacturers are quick to point out that this is a new area and there are few standards formulated. Generally, vehicle manufacturers establish their own procedures to test for EMC performance.

Their concern in regard to the problem of EMC is borne out, and illustrated, in the fact that the owner's manual contains a notice regarding installation of two-way radio systems. Nevertheless, members of the Amateur Radio Service should be well advised to investigate the vehicle's total EMC before installing additional electronic and/or communications equipment in a vehicle which has any form of electronic or computer control. Furthermore, a full series of tests should be completed after installation of communications or, other additional, electronic equipment prior to taking the vehicle on the road. On the road, proceed with caution until you are satisfied there are no ill effects from the additional on-board equipment.

Some of the controlled systems include:
(a) Wheel-slip-control: This helps to prevent wheel spin with driving torque and wheel locking when braking.
(b) Gear-and-motor-control: This optimises engine warm up, behaviour, fuel consumption, emission of pollutant, and noise.

(c) Fuel-injection-control: This ensures that the correct amount of fuel is supplied to meet the exact needs at each particular moment.

(d) Anti-lock-braking system: This prevents the wheel from locking in a skid under emergency stop conditions even on road surfaces which provide different grip left and right. The system allows full use to be made of the grip actually available on each individual wheel, thus permitting the shortest possible braking distance.

(e) Automatic-self-levelling-system: This maintains the balance of the vehicle irrespective of loading, breaking, or cornering.

(f) Automatic-cruise-control: This provides constant cruising speed without the need for the driver's foot to be on the accelerator. The vehicle will maintain the chosen speed irrespective of external conditions. The driver can instantly disconnect this control.

It is obvious from the information so far, the automobile industry has come a long way with electronics in recent years; this overview is only the tip of the iceberg. One of the advantages of designing in electronics is that the range of possible tasks is almost limitless. One of the disadvantages is maintaining the EMC amongst the various systems and outside influences.

In conclusion, perhaps we should consider some of the automobile EMC aspects which are covered by an Australian Standard. Although this standard is not mandatory, it does lay down some interesting parameters in regard to spark ignition systems used in motor vehicles and similar powered devices.

Australian Standard 2557/82 was prepared under the authority of the Telecommunications and Electronics Committee on Electromagnetic Interference as one of a series of standards intended to facilitate the electromagnetic compatibility of electric and electronic equipment.
The limits and methods of measurement given are based on the recommendations of the International Special Committee on Radio Interference (CISPR) in CISPR 12:1978 and acknowledge is made of assistance obtained therewith. The standard varies, however, in regard to the following:

1. Limits are extended to cover the range 30 MHz to 1000 MHz, being identical to the CISPR recommendations for the range 40 MHz to 250 MHz. Beyond this range the limits are in accordance with guidance given in CISPR 12.

2. Requirements for suppression devices are not included nor are methods of measurement for such components.

3. A clause (Clause 3.7) on detection of offending vehicles from the roadside has been included. Marginal bars indicate a deviation from CISPR 12. In general the changes are editorial in nature, reflecting changed wording or a re-arrangement of material which would prevent ready comparison with the international document.

The purpose of the standard is to establish uniform requirements for electromagnetic interference limits and methods of measurement for interference radiated by the ignition systems of motor vehicles, motor boats and other devices powered by spark-ignition internal combustion engines. The term motor vehicles is understood to include both road transport and off-road vehicles such as tractors, construction vehicles and snow mobiles. The term similarly powered devices is understood to include chainsaws, lawn mowers, irrigation equipment, construction equipment and the like, whether mobile or stationary.

The standard does not apply to diesel-powered equipment. Other items which are sources of interference and which may contribute to the overall level of interference produced by a motor vehicle but are not within the scope of this standard are electric motors, heaters and air-conditioners, whether integral or added to the vehicle in question.

This standard establishes limits for electromagnetic interference radiated by spark ignition systems used in motor vehicles, motor boats and other similarly powered equipment, describes methods of measurement, and gives guidance on methods of interference suppression.

This standard applies to the radiation of electromagnetic energy in the frequency range 30 MHz to 1000 MHz which may cause interference to radiocommunication services, and which is emitted from —

(a) vehicles propelled by spark-ignition internal combustion engines;
(b) boats propelled by spark-ignition internal combustion engines; and
(c) other equipment or devices equipped with spark-ignition internal combustion engines.

The standard does not apply to aircraft, electric traction systems or electrically propelled vehicles.

The limits for radiation based on quasi-peak measurements are as follows:

(a) From 30 MHz to 75 MHz 50 pV/m.
(b) From 75 MHz to 400 MHz 50 pV/m.
(c) From 400 MHz to 1000 MHz 180 pV/m.

A fully copy of this Standard is available from the Standards Association of Australia. We trust this and other Standards of the Association will become mandatory under the auspices of the Radiocommunications Bill/Act in the future.

Brenda Edmunds VK3KT
FEDERAL EDUCATION CO-ORDINATOR
56 Baden Powell Drive. Frankston Vic 3199

Even if the recalled questions are accurate, they cannot prepare the candidate for any new questions that may be added, or new styles of questions. I have said previously that it is reasonable to expect new questions to be added to the papers from time to time.

Since the Department is planning to introduce quarterly exams at both levels as soon as possible, and is ultimately aiming towards monthly exams, their question bank will need to be greatly extended in the future.

No doubt many of the questions to be added will show a change of emphasis, in keeping with technological developments. Lecturers and candidates should all be aware of these possibilities.

With the present 'state of the art,' a question on a phase-locked loop is much more relevant to most candidates than one on a vacuum tube rectifier high voltage power supply.

Both exam syllabuses are at present undergoing review with a view to reassessing content and defining depth of each section.

If you have any comments to make on these matters, I would be pleased to hear from you by letter (OTHR) or on the Education Net, Wednesday evenings 1100 UTC 3.685 MHz.

For those planning to sit the August exam, our sample paper will be available very soon from me or from the Executive office.

Best of luck to you all and remember — READ THE QUESTIONS.

73 Brenda VK3KT

AMATEUR RADIO, July 1983 — Page 49
CONTESTS

CONTEST CALENDAR

JULY
1 Canada Day Contest
2-3 Venezuela Phone Test
9-10 NZART Memorial Test (June AR)
9-10 IARU Radiosport Test
16-17 International ORP Test ***
16-17 SEAnet CW Test ***
30-31 Venezuela CW Test ***

AUGUST
6-7 European CW Test ***
13-14 Remembrance Day Contest
13-14 DARC WAE CW Test
13-14 SEAnet Phone Test ***
17 QLF Activity
20-21 SARTG RTTY Test
27-28 All Asian CW Test

SEPTEMBER
3-4 DARC Corona "CORONA" 10 m RTTY
10-11 G ORP Activity ***
17-18 VK Novice Test
17-18 Scandinavian CW ***
24-25 Scandinavian Phone ***

OCTOBER
1-2 VK/ZL Phone Contest ***
15-16 VK/ZL CW ***

The contests marked with *** are not yet confirmed...

OLF ACTIVITY

This contest should be a lot of fun and now there is a certificate for all who enter (cartoon type) and just the thing to let your hair down after the RD contest.

WHEN? — Wednesday. 17th August. 2000 through to 2200.
OBJECT? — To have a packet of fun on 80 metres.

MODE? — CW ONLY ... BUT
1 You must use a straight key.
2 Operate with the hand not normally used, eg a “right-handed person” must operate the key with his LEFT hand and vice versa.
3 If ambidextrous, you must operate the key with your foot. (Others may do this by choice for better scoring.)

CYPHER — in three sections — RST/Mode/ Branch with mode indicating method of keying as follows . . . Left Hand (LH): Right Hand (RH); Left Foot (LF); Right Foot (RF). So that a cypher of 5/79/LF/11 would indicate a report of 579 — operating key with Left Foot and in Branch 11.

SCORES — ONE point per contact EXCEPT in any contact in which either contestant is using "foot keying", both operators will count 2 points for that contact. EXCEPT where both operators use "foot keying", then both will score 3 points. TOTAL SCORE is total of points multiplied by total of different Branches worked.

LOGS — NO log to be submitted — BUT — determine your own score as per the rules and send this to ZL2GX to be received by 31 August, 1983.

PRIZE — In keeping with such an activity this is not fully determined. It could be a free trip to Antarctica and on the other hand it might not be. Everyone gets a certificate (cartoon type). Please send an SASE.

NOTE — This is NOT an activity for any “sad sack”. It is however, an opportunity to have FUN — to populate the band — to populate ALL the band — without stress or strain... so let it be...

PLEASE NOTE — THE RD CONTEST

The practice of one operator operating two station/calls simultaneously is considered not to be within the spirit of the contest and any logs suspected of this will be disqualified without recourse.

RTTY IN THE RD

The South Australian Radio Teletype Group (SARG) is attempting to promote the use of teletype in VK and they will be participating in the RD contest as a major exercise to gain coverage for the activity.

It is common knowledge that the band spectrum is "slightly congested!!!” during the test and that there are some members of the amateur fraternity that have little, if any, regard for others on the bands. This type of attitude, when carried to its limits, does nothing to promote amateur radio or good sportsmanship and in fact largely attenuates the enthusiasm and progression of the other users.

As amateur radio users we all should be keen to provide the opportunity for any and all groups to participate in the activity of their choice without corruption of their signals.

Therefore, please allow a clear band for the RTTY and CW operators during the contest.

VK NOVICE CONTEST

Don’t forget the VK Novice Contest in September. Let’s generate some interest for this contest which had such a poor showing last year. This contest is a marvellous opportunity for all to participate and gain awards. The maximum speed for CW has been reduced to 10 WPM to encourage this mode.

ALL ASIAN CW

A letter from David Pilley, the winner for Australia in the CW section of the contest was received together with copies of his winning certificates. The medal unfortunately did not reproduce well enough for printing.

He mentions that his win was achieved with the use of a TS820S and 4BTV trapped vertical. So the big equipment is not necessary to win these contests but the will to participate is the most necessary component.

Congratulations David and thanks for representing Australia in this contest.

AMENDMENTS TO 1983 JOHN MOYLE CONTEST PUBLISHED IN JUNE AR

In Section D, six hour section VK3BSP was omitted with a score of 1038.
Section D, twenty four hour section VK3W, 3259 score was omitted.
Section I, twenty four hour section VK3WP, 370.
Section I, six hour section VK5NOD, 510.

Apologies to these stations for their omission, for full results see page 44, June Amateur Radio.

KEYMEN’S CLUB OF JAPAN (KCJ)

SINGLE OPERATOR CW CONTEST

OBJECT — To work as many amateur stations in as many Japanese prefectures as possible giving their accelerate on VK3WI, 3259 score was omitted.

CATEGORIES — Single operator amateur stations worldwide.
PERIOD — Starts 1200 UTC Saturday followed by the third Sunday in August; ends 1200 UTC the Sunday (August 20-21, 1983).

ELIGIBILITY — Single operator amateur stations worldwide.

INVALID CONTACT — a) Contact with multi-operator station.
b) Crossband or not CW
c) Crossband, via repeater or satellite.

SCORING — a) Points: One point for the complete

Page 50 — AMATEUR RADIO, July 1983
The Japan Amateur Radio League, Inc.

P. O. BOX 377 Tokyo Central

(Translation)

CITATION

FIRST PRIZE

It is my honour to present you this citation as a recognition for your outstanding score achieved during the 23 All Asian DX Contest, 20-21 Region.

Date 1980-10-01

Signed Tokuaro Higaki

The Minister of Posts and Telecommunications of Japan (Minister's seal)

Decisions of The KCJ Contest Committee are official and final.

DEADLINE — All entries must be postmarked no later than the last day in November, 1983 and mailed to: Kikuo Takamitsu, JA9FT, 4-16-22 Izuminomachi, Kanazawa, Ishikawa 921 JAPAN.

REFERENCE

1 JAPANESE CW BANDS
1.907.5-1.912.5 MHz, 3.500-3.525 MHz, 7.000-7.030 MHz, 14.000-14.100 MHz, 21.000-21.150 MHz, 28.000-28.200 MHz, 50.010-50.100 MHz.

2 JAPANESE PREFECTURE CODES
AC Aichi, AM Aomori, AT Akita, AB Chiba, EH Ehime, FK Fukui, FO Fukuoka, FS Fukushima, GF Gifu, GM Gunma, HG Hyogo, HK Hokkaido, HS Hiroshima, IB Ibaraki, IK Ishikawa, IT Iwate, KA Kagawa, KG Kagoshima, KM Kumamoto, KN Kanagawa, KO Kochi, KT Kyoto, ME Mie, MG Miyagi, MZ Miyazaki, NG Nigata, NN Nagano, NR Nara, NS Nagasaki, ON Osaka, OT Oita, OV Okayama, SA Saga, SG Shiga, SN Shimane, SO Shizuoka, ST Saitama, TG Tochigi, TK Tokyo, TO Tokushima, TT Tottori, TY Toyama, WK Wakayama, YG Yamaguchi, YM Yamagata, YN Yamanashi.

THE 7TH WEST AUSTRALIAN ANNUAL 3.5 MHz CW & SSB CONTESTS TRANSMITTING & RECEIVING RULES

1 — DURATION:
CW — Saturday 30th JULY and Sunday 31st JULY.
SSB — Saturday 3rd and Sunday 4th SEPTEMBER. On both days between the hours of 1100 UTC and 1330 UTC time ie 5 operating hours in all for each contest.

2 — FREQUENCIES:
All contacts to be made in the 3.5/3.7 MHz band using frequency allocation applicable to your licence conditions.

3 — CALLING:
Stations will call CO WAA using the three times three technique, infringement of this rule by the use of long CQ calls may entail disqualification as will pre-arranging of a QSO.

4 — SCORING:
Points for contacts are as follows:
Within Western Australia 5 points per contact.
WA to all Mainland Eastern States 2 points per contact.
WA to VK7 4 points per contact.
WA to VK0 & Overseas 8 points per contact.
Stations other than WA 3 points per contact with WA stations only.

5 — MULTIPLIERS:
A multiplier of 2 per WA Shire worked will apply to the final score.

6 — CONTACTS:
Stations may be worked twice on each night ie once between 1100 to 1300 UTC and again between 1300 to 1330 UTC these contacts will count for points. Each time the contact for WA stations will take the form of an exchange of 5 characters comprising RST/RS and Shire Letters.

Decisions of The KCJ Contest Committee are official and final.

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VIC.
HOBBY ELECTRONICS — 477 NELSON ROAD MELBOURNE (03) 267 9484
GELSTON ELECTRONICS — SUMMER HILL (03) 22 2595
ADVANCED ELECTRONICS — 5A THE QUADRANT LAUNCESTON (03) 31 7075
V.A. ELECTRONICS — 9 WEST PARK GROVE BURNEE (04) 31 1708

OLD MICTHER RADIO CO — 59 ALBION ROAD ALBION (07) 57 6830

W.A.
ARENA COMMUNICATIONS — 62 ALBANY HWY EAST VICTORIA PARK (09) 361 5422
TRI SALES — C/O NEWCASTLE & CHARLES STREETS PERTH (09) 328 4160
WILLIS ELECTRONICS — 445 MURRAY STREET PERTH (09) 321 2207
BAY RADIO — 18 BANKSIA STREET DANDENON RIDDON (09) 31 1207

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COX ELECTRONICS — 477 NELSON ROAD PERTH (09) 321 2207

S.A.
INTERNATIONAL COMMUNICATIONS SYSTEMS — 8 NILE ST PORT ADELAIDE (08) 47 3688

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HOBBY ELECTRONICS — 11 MALMSBURY STREET BALLARAT (053) 39 2808
SUMMER ELECTRONICS — 78 KING STREET BENDIGO (054) 43 1977

CENTRAL E NTERPRISES — 78 KING STREET BENDIGO (054) 43 1977

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AMATEUR RADIO, July 1983 — Page 58
Roy Hartkopf VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General. (C) Constructional. (P) Practical
without detailed constructional information.
(T) Theoretical. (N) Of particular information
to the Novice.

HAM RADIO January 1983
Report on propagation on the New Amateur
Bands. (G) Azimuth and Elevation Calculator.
(P) LF Converter. (P) The nicad 'memory'
myth. (G)

BREAK IN March 1983
HF Antenna Special.

CO-TV No 121 February 1983
1 GHz oscillator. (C)

HAM RADIO March 1983
15th Anniversary Issue.

BREAK IN April 1983
NZART Annual Conference.

ORBIT No 12 February 1983
World wide Satellite news.

73 MAGAZINE May 1983
Annual Antenna Issue. Home Brew Contest.

73 MAGAZINE June 1983
Meter Special. New and old methods of
using surplus meters. (G) International News.
(G) Diary of a partially sighted amateur. (G)

VHF COMMUNICATIONS
A European magazine published quarterly. Could be of interest to the advanced experi-
menter in UHF and microwaves, weather-
satellite images etc. Boards and components
are not easily available for the projects but
basic ideas and information can be useful.
Ten year index is available from WIA Federal
Headquarters. Also some back copies.

MICROWAVES AND RF
Hayden Publishing Co Inc USA. A pro-
fessional magazine giving state of the art
information on new products, microwave
synthesisers. RF Mosfet amplifiers giving
600 watts of RF output, etc.

WHAT'S NEW IN COMPUTING
WHAT'S NEW IN ELECTRONICS
Australian Trade Magazines published by
Westwick Farrow Pty Ltd NSW. Information
on new products and where further
literature (and possibly the actual products
themselves) can be obtained. Further
information available from the publishers.
Recent developments include components
such as a 256 K-bit EPROM and a one farad
capacitor.

How many times have you come up on
3.570 MHz at 1030 UTC on Sunday evenings
for the VK1 Awards Net and hear the same
VK1 callsigns that have been there every
week? How about putting some new blood
into the Awards Net? Why don't we have
more full-call VK1's joining the net or better
still offering to control the net for one
evening? This would give our VK1 Awards
Manager, Gavan VK1NEB an evening off
occasionally. Think about it and any VK1
novice or full-call wishing to be VK1 Award
Net Controller for an evening contact
Gavan VK1NEB. Ph: 58 5390.

QSL CARDS — NON-FINANCIAL
MEMBERS
These cards will be found in the unsorted
QSL card bag at each monthly meeting.

ATV GROUP
My sources have informed me that test
pictures have started and that further
developments and experiments are con-

VK1 PUBLIC RELATIONS OFFICER
36 Kavel Street, Torrens, ACT 2607

John MacPhee VK1NEN

MEETING AGENDA
JULY: Cooper Tools — Soldering Equipment.
AUGUST: Radio Inspector.

Well that's it for this month. If you have
any information to be included in future
"FORWARD BIAS" contact John VK1NEN
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LEARNING THE
MORSE CODE?
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Advanced Electronic Applications in conjunction with ETS (Educational Technology and
Services)*, has developed the BT-1 Code Trainer. ETS methodology, based upon research by
a prominent mid-west university, has demonstrated that a typical student using this system
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The pre-programmed BT-1 computerised trainer will allow you to achieve proficiency in
Morse Code faster than any other known method.
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Page 54 — AMATEUR RADIO, July 1983
COUNCIL REPORT
Divisional Council met on the 6th May. Affiliated Clubs Officer Jeff Pages reported on the 8th Conference of Clubs, and matters arising from the Conference were discussed (see June AR Mini Bulletin). The opening of Amateur Radio House took up considerable time with the technicalities and fine detail becoming more complex as we looked closer at it. Last minute preparations included the setting up of various displays and organisation of the closed circuit TV link and video recording. Federal Councillor Stephen Pall presented a detailed report on the Federal Convention, and while many of the agenda items from VK2 were lost considerable experience was gained. Maintenance and improvements at Dural were considered, particularly with a view towards operating the Divisional station in the Australian contests. Council approved the purchase of a tri-band beam and rotator, as well as a quantity of coaxial cable. Interference during callbacks on the Dural, 2 metre repeater was discussed, and it was decided to rearrange the order of callbacks so as to take the 2 metre callbacks first.

AFFILIATED CLUBS
The Divisional library at Parramatta includes a section devoted to club newsletters, and librarian Aub Topp would appreciate receiving copies of such newsletters.

Here is some further information on three of our affiliated clubs.

SUMERLAND AMATEUR RADIO CLUB
PO Box 524, Lismore, NSW. 2480.
Nets: Repeater 6800 and 28.470 MHz Fridays 2000 EAST. 3.605 MHz daily 0630 EAST.
Committee: President — JG Virtue VK2GJ, Vice President — EJ Virtue VK2EJ. Secretary — WK Munn VK2YHN. Treasurer — JW Alcorn VK2CK. Committee members — L Martin VK2EA, L W Cook VK2ZAD, EG Smith VK2ZFS.
Repeaters: VK2RIC channel 6800. VK2RSC channel 8675.

CASTLE HILL RSL AMATEUR RADIO CLUB
C/- Mills Raod, Glenhaven, NSW. 2154.
Meetings: 1st Wednesday of the month at 8 PM at the Castle Hill RSL Club.
Nets: 28.450 MHz on the 2nd Wednesday of the month.
Committee: President — RH Hudson VK2YVO, Vice President — PBalnaves VK2KDZ. Secretary/Treasurer — CMacKinnon VK2DMY, Publicity — IDoole VK2ZIO. Classes: AOCP and NAOCP courses each Monday and Tuesday night. Club callsign: VK2DXS.

GOULBURN AMATEUR RADIO SOCIETY
C/- WJ Garvey, Lot 22 MacArthur St, Taralga via Goulburn.
Meetings: 2nd Wednesday of each month at the Goulburn Police Boys Club.
Committee: President — IJeffrey VK2KXJ. Vice President — D Thompson VK2PRA. Secretary/Treasurer — GW Garvey VK2KG. Nets: 3.615 MHz at 2100 EAST each Sunday. Any news and information for inclusion in the September Mini Bulletin should be sent to the WIA NSW Division. PO Box 1066, Parramatta, NSW. 2150 to reach the office by the 22nd July.

QUEENSLAND COUNCIL 1983/84
The incoming council was declared elected at the re-convened Annual General Meeting of the Division on 20 May. Eleven amateurs stood for council and were duly declared elected, there being no need for a ballot.

These are your councillors for the 1983/84 year and their portfolios.

GUY MINTER VK4KZX President & Alternative Federal Councillor
HAROLD BREMRRMARAN VK4HB Senior Vice-President & Minute Secretary
THEO MARKS VK4MU Secretary
ROSS MUTZELBURG VK4AKT Treasurer
JOHN AARSESS VK4QA Junior Vice-President & Research Officer
BILL DALGLEISH VK4UB Club Liaison
KEN AYERS VK4KD State WICEN Coordinator
BARRIE KER VK4BIIK Publicity
DON POUNSETT VK4NN Service Liaison
ALAN WEST VK4KWK

BARCFEST 1983
7 May will go down in the history of amateur radio in Queensland as the birth date of BARCFEST. This is the name given to the gathering of amateurs at the Indooroopilly High School, organised by the Brisbane Amateur Radio Club. The event was an outstanding success. There were a number of displays which attracted a lot of interest and the most talked about after the event were the RTTY and SSTV demonstrations. The South East Queensland Telescope Group staged the former, while two individual amateurs, Rob Green, VK4NBJ and Col Powell, VK4ATC, demonstrated their slow-to-fast scan digital converters. There were a number of lectures and not to be left out, there was plenty of interest for the XYLs and kids, handicrafts, pottery and jumble sales. It was a one day event and was attended by some 300 amateurs. Southeast Queensland amateurs are hoping that this 1983 event will be the first of many.

CONGRATULATIONS, MICHAEL!
Twelve year old Michael Minter, son of Guy VK4KZ and Anne, VK4NRA has passed his novice examination. How Guy and Anne found the time to teach Michael the mysteries of radio must in itself remain a mystery. Guy is our Divisional President and Anne is our bookshop manager. Proud Dad is hoping to talk DOC into giving Michael the callsign, VK4VXZ.

Bud VK4QY

WANTED
TAPE RECORDING. I would like to obtain a copy of a tape which was made by WHDQ in 1960 with the title "VHF Horizons". Approx 1 hour long. Several copies were made and distributed round Australia. Any information to Tim Mills VK2ZTM at PO Box 204, Willoughby, 2068.

AR

WANTED

TAPE RECORDING. I would like to obtain a copy of a tape which was made by WHDQ in 1960 with the title "VHF Horizons". Approx 1 hour long. Several copies were made and distributed round Australia. Any information to Tim Mills VK2ZTM at PO Box 204, Willoughby, 2068.

AR

Bud VK4QY

AMATEUR RADIO. July 1983 — Page 55
At the general meeting of the VK3 Division the following office bearers were elected.

SECRETARY — Ian Palmer VK3YIP
PRESIDENT — Jim Linton VK3PC
VICE PRESIDENT — Bill Wilson VK3DEX
TREASURER — Des Clarke VK3DES
FEDERAL COUNCILLORS — Alan Noble and Des Clarke

"Despite what some think, intruder watching is not hard. "If you're interferred with during a QSO just make a log note of it and at the end of the month send a report to the Intruder Watch Co-ordinator," he said.

Alf explained that an operator needed to spend only a little time and effort to be an observer. His message was clear — every radio amateur and SWL can help the Intruder Watch Service by simply sending as little as one report on an intruder.

VK3 HONOUR INTRUDER WATCH

The Victorian Division has honoured Alf Chandler VK3LC for his long service to the WIA and the International Amateur Radio Union.

At this year’s VK3 Annual General Meeting he was awarded a silver medallion in recognition of his work in Intruder Watching. VK3 Councillor, Jim Linton VK3PC, in making the presentation, said: "Occasionally one comes across a person who leaves a lasting impression and is the type who goes about his job with a minimum of fuss and a high degree of efficiency. "One such person is Alf Chandler who has served as Victorian, Federal and IARU Region 3 Intruder Watch Co-ordinator."

Alf retired as IWC last January after fourteen years, but would continue to file reports on intruders.

In accepting the medallion the old-timer who got his ticket in 1926 said he was indeed honoured. Launching into an off-the-head speech Alf said he would be failing if he didn’t put a mention in for the Intruder Watch Service.

Intruder Watch Service by simply sending as little as one report on an intruder. VK3 Intruder Watch Co-ordinator is Steve Phillips VK3JY (QTHR), who can supply free cassettes of intruder modes of transmission to help anyone identify intruders.

A list of know intruders on 80, 40, 20, 15 and 10 metres is also available and is certainly an easy method to get started on intruder watching.

Alf Chandler said the Intruder Watch had been successful in getting intruders out of the exclusive amateur bands over the years.

He recalled a couple of occasions when he had written letters to people in right places pointing out that certain stations had signals where they shouldn't be. Not all intrusions are deliberate, some are spurious emissions or harmonics.

Alf’s direct approach has been necessary in the past because some radio administrations have been reluctant to act on reports of intrusions in amateur bands.

The Annual General Meeting took place on Tuesday 26th April and the following members were elected to Council. The positions were discussed and nominations made at subsequent Council Meetings.

President — Bill Wardrop VK5AWM
Secretary — David Clegg VK5AMK
Treasurer — Graham Ratchill VK5AGR
Vice President — Dick Boxall VK5ARZ
Vice President — Jenny Warrington VK5ANW
Federal Councillor Membership Minutes Secretary — Ken Westerman VK5AGW
Secretary Education Officer — John Gardiner VK5PGJ
DOC Liaison Officer — Roland Bruce VK5OU
Alternate Federal Councillor Facilities Supervisor — David Clegg VK5AMK
Facilities Supervisor — David Clegg VK5AMK

The display station which was set up in the GPO from the 17th to the 20th of May was a great success, if the enjoyment of the volunteers was any indication. Contacts were made on 2 metres and HF and the video tape entitled ‘Amateur Radio — the national resource of every nation’ was shown continuously (courtesy of John Ingham VK5KG who filled one side of a tape with it, and National Panasonic who lent us their ‘top of the range’ VCR with automatic rewind). Posters lent by Federal Office, displays of QSL cards, a map showing call-areas, and hand-outs of leaflets, old Journals, ARs, and call books, all contributed to make a most impressive and interesting display.

Another piece of PR which we are trying, is a small advertisement placed in the radio column of the Advertiser, on the Saturday prior to General Meetings, advertising the Tuesday night’s programme.

It doesn’t pay to make a suggestion in this Division, or you may find yourself with a job! John Mount VK5EV suggested that we should have a Disposals Officer, a position that he held for many years in VK6, so who better to know how to get it started in VK5! Congratulations John, and if my recent experience is any indication, you will find it a most rewarding occupation.

DIARY DATE

26th July. ‘Getting started in Constructional Practices’ Steve Mahoney — VK5AIM.
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Gain — 2 dB

Length — 390 mm

For further information contact Scalar Industries Pty Ltd, 20 Shelley Ave, Kilsyth, Vic 3137. Phone (03) 725 9677.

IF YOU HAVEN’T LOOKED AT amateur radio action LATELY, THIS IS WHAT YOU’VE MISSED...

- The Spratly Island incident — in depth.
- Yaesu’s FT-980 “Computer Cat”.
- Flexible mods for Yaesu FT-290R.
- An inside look at CIA propaganda stations.
- The VK3BCN report on emergency communications.
- A plain language summary of the WIA “RADCOM” submission.
- A cheap external VFO for Yaesu’s FT-707.
- The complete VHF/UHF frequency and beacon list.

OCEANIA’S AMATEUR MAGAZINE — $1.50 AT YOUR NEWSAGENT.
LETTERS TO THE EDITOR

MAKE MORE USE OF CW

May I say how much I agreed with and appreciated Marshall Emm’s article Pounding Brass in Amateur Radio May 1983. I have had fifty eight years ‘on the air’, much of those years in the communication branch of the FCO and can understand both the amateur and professional outlooks. The present wording of the RST code, if adhered to when the report is from the S meter, can result in a report as follows “Reading you without any difficulty, your signals are barely audible.”

We have a perfectly good code, namely the 0 code, QSA and QRK (strength and readability). If it is desired to indicate the reading is by meter this could be done by QSA (Fig) SM. It has always seemed to me unnecessary to have a scale from 1 to 9 for this purpose.

The increased use of CW would have to be worldwide but surely Australia could show the way?

Sincerely
Norman Richardson VK4BHJ
1069 South Pine Road.
Everton Hills.
Brisbane, Qld 4053

TECHNICAL CORRESPONDENCE

I read with interest, Theo (VK1KV) comments on the 290R and Peter VK2XAN also, as I had one myself. I wrote to Japan and they kindly sent me the enclosed explanation.

Lea Pinkевич VK2Q6
20 Catherine Street.
Kotara South. 2288

Dear Mr Pinkевич.
Thank you for your letter of 3rd February regarding the FT-290R.

We have received reports of overcharge to the Ni-Cd battery from a few customers. According to these reports, we investigated and found that the overcharge trouble is always caused by use of a different DC jack than that which we supply. We found that in some countries, a DC plug similar to ours is available but the diameter of the outer contact sleeve is smaller than that of the one the transceiver is designed for.

When the non-standard plug is used, the switch on the EXT DC jack does not open the contacts and the DC supplied to the EXT DC jack is also applied to the battery installed in the transceiver.

However, this trouble only occurs when the non-standard DC plug is used. When the supplied DC plug is used this trouble never occurs. However, to provide more protection, we have installed an additional diode between the negative terminal of EXT DC jack and ground. This modification protects against reverse DC connection to the EXT DC jack.

We hope and trust this information will prove helpful to you, while we remain

Very truly yours
YAESU MUSEN CO LTD
S. Yokoi, Export Department
Box 1500, Tokyo, Japan

This is in reply to Peter Laughton’s somewhat incomprehensible letter on page 51 of the May issue of AR regarding my modification to the Yaesu FT290R which was published in the January issue of your magazine.

My modification as stated is intended to protect the internal cells (NiCad or Alkaline) against the application of the 13.8 volt external power supply should the switch JS5 not open when the power supply plug is inserted into J05.

As you will no doubt agree, 6.8 into 9.6 (or dry cells) does not go! At least two users of FT290 in VK1 have found this out to their cost.

I hasten to explain, however, that while the circuit diagram in my article correctly shows the required modification, the written description of the modification which follows the diagram, is incorrect in that insertion of the “added diode” in the manner described would prevent the charging of the NiCads through J04.

Nor for the purposes of this modification should the Yaesu circuit diagram be regarded as a wiring diagram for this section of the FT290, as in reality, D02 connects direct to the centre spring of jack J05, to which the red positive lead from the battery pack also connects.

Therefore, to carry out the mod effectively it is necessary to de-solder the red positive lead and the cathode end of diode D02 from J05, solder the cathode end of the “added diode” to this point, and then proceed as per the circuit diagram in my original article.

With the mod done new alkaline cells in my FT290 provide well in excess of 13 volts to operate my rig “walk portable.” More to the point I feel much more secure in the knowledge that when operating with an external 13.8 volt power supply it is most unlikely that the dry cells will have the external supply added to them should the switch contacts in J05 not operate to isolate these cells.

Yours faithfully
Theo Vidler VK1KV
18 Hayen Street.
Weston, ACT 2611

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COVER APPRECIATION

Congratulations on the cover of the May issue! Now we’re really beginning to look professional. The detail, the colour and the composition are all superb and the photographer and all those involved in the preparation of this picture for printing and the final production are to be commended.

It’s nice to see the white band across the top of the cover disappear and the title now blended in and the whole bled at the edges. Thank you all for AR’s finest cover ever.

Harry Tr Atkinson VK6WZ
294 Middleton Road.
Albany, WA 6330

GOOD HOME

It was with some misgiving that I asked if you could publish in your May issue a “Give Away” in the form of a RAAF AR14 Rx.

I was delighted to find on Thursday 29th April that you had done so and amazed at the response incoming over the next few days.

I feel that it might be of interest to the many local and interstate callers to learn that after assessment of several earlier applications I entrusted it to Dennis Sillett VK3WX, who approached me on behalf of the Historic Radio Society on the morning of 30th April.

Thank you for your help in finding a safe home for the old rig.

Yours faithfully.
Ray Wilson VK3MU
45 Pleasant Road.
Hawthorn East. 3122
Predictions courtesy Department of Science and Environment IPS Sydney. All times in UTC.
ILP toroidal transformers meet modern day requirements for a smaller size, low magnetic interference field transformer. Featuring a nearly ideal physical construction, one can expect excellent performance. Small size and weight (approximately 50% of conventional transformers), extremely low noise and low magnetic interference field make the toroidal transformer ideal for compact power supplies.

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**Obituaries**

ANTHONY (Tony) BURGE VK4BAC

The amateurs on the Darling Downs and in many places were saddened by the passing of Tony on 15th January, 1983.

Tony was the tender age of 19 years. His amateur activities started in January 1981 as VK4VKJ. Tony was active on SSB, CW and shortly before his death was setting up for RTTY. He was an honorary member of the Darling Downs Radio Club and conducted the local 2 metre net.

What was not known by amateurs who contacted Tony was that he was confined to a wheelchair and had no use of his legs and very limited use of his arms and hands. Tony was never heard complaining about his disability on air. Nevertheless Tony insisted on sitting for the CW exam to upgrade where he had extreme difficulty in moving his arm across the page.

In recent times Tony was looking at ways to enable him to use a soldering iron to work on constructing projects and equipment. Tony’s example of a handicapped person, successfully and very actively participating in the hobby has been a guide to other handicapped people. As a result of a generous donation by his family, Tony’s efforts will be remembered by all amateurs with the establishment of a club station for handicapped people on the Downs.

To Tony’s family, father Bill, mother Coral, and brother Greg we extend our sympathies and thanks for the wonderful hospitality extended to all amateurs both on and off the air by Tony and his family.

RON VK4AGS and ROLEY VK4ADD AR

ARTHUR ALEXANDER BURROWS SLIGHT (Alec) VK2ZA

Alec was born in London, England on 1 October 1902 and he died peacefully in hospital on 1 November 1982, aged 81. He came to Australia in 1914 and later joined the RAAF in the permanent Air Force in 1927. He acquired his amateur licence no. 1199 on 11-12-1930 (A0CP).

I first met Alec in 1941 when we were mutually engaged in the type testing, at AWA Ashfield, of the RAAF ATS/ARS. He was RAAF Liaison Officer and I was the resident AID inspector stationed at AWA. During those wartime years our paths crossed several times on other RAAF work.

Alec subsequently became Wing Commander and Officer in Charge of Ballarat RAAF Communications Training College. Upon retirement he came to live in Sydney again where he later took up full time teaching with the Department of Technical Education (1959). It was here at North Sydney Technical College that we met again, both of us teaching television. It was a pleasure and privilege to work with such a competent and helpful colleague. He was a master of the ‘home brew’ and imparted this skill to many of his students.

Upon his second retirement in 1965 he ‘home brewed’ his SSB transmitter and receiver making a line job of them both. He, with others, inaugurated the ‘Electorates Award’ and personally went out of his way to assist those wishing to get this award.

He was one of the ‘old timers’ whose occupation was also his loved hobby. Long will he be remembered by his family, his RAAF and technical mates and those whom he befriended over years of amateur radio QSOs.

Arthur VK2UK AR

**Silent Keys**

It is with deep regret we record the passing of—

Mr H E HANCOCK VK2BIC
MR ALBERT C McGRADY VK2BCM
MR A MOFFAT VK3FJ
MR R G O WILSON VK3MU

**AIR-WOUND INDUCTANCES**

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* Repeats may be charged at full rates.
* Closing date: 1st day of the month preceding publication.
* OTHR means address is correct as set out in the WIA current Call Book.

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Radio Amateur Old Timers Club ..................... 41
Shack Crawling 1930s Style by Alan Shaw- .......................... 15
smith, VK4SS
Stolen Equipment ................................. 63
VK/ZL/Oceania Contest 1983 ....................... 48
WOY 83 — ARL President Visits White ................................. 53
House
WIA Representatives Visit NZART Annual Con- ................................. 11
ference by Bruce Bathols, VK3UV
Win a VHF Converter .................................. 35
World Communications Year — Amateur Radio ................................. 23
in Space

DEPARTMENTS
A word from your Editor ................................ 8
Advertisers Index ...................................... 64
ALARA .................................................. 47
AMSAT Australia ........................................ 44
AR Showcase — Scanning Receiver, ................................. 42
Video Enhancer & new Antenna for
Scanners .................................................................. 39
Awards — Ballarat & Western Zone
awards .................................................................... 42
Club Corner — Moorabbin & District Field Day,
EMDRC Expo ’83 ............................................ 38
Commercial Chatter ......................................... 31
Contests — Winner of 82/83 Contest
Champion .................................................................. 50
Equipment Review — Nicholls Woodpecker
Blanket .................................................................. 18

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Hamads .......................................................... 63
Here’s RTTY — Operating Procedures ................. 40
How’s DX ..................................................... 24
International News ......................................... 28
Intruder Watch ............................................. 50
Ionomorphic Predictions .................................. 60
Letters to the Editor ....................................... 58
Main QSP — Joint WIA & NZART
Statement ................................................................ 9
National EMC Advisory Service — A warning
from Canada ...................................................... 30
Obituaries — VK4GJ & VK3VDO ......................... 63
Pounding Brass .............................................. 47
QSP ................................................................ 28 & 48
Silent Keys — VK4GJ & VK3PEN ......................... 63
Spotlight on SWLing ......................................... 51
Technical Correspondence — 13.8V Power
Supply, EMF for ICOM IC-22S ............................... 53
Try This — Simple Signal Sources by A G
Loveday, VK4KAL ................................. 17
VHF UHF — An expanding world ............................ 36
VK2 Mini Bulletin ............................................ 54
VK3 WIA Notes .............................................. 55
WA Bulletin ..................................................... 54
WICEN News ................................................ 28

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AUTOMATIC The CNA1001 and the CNA2002 are two of the most advanced antenna tuners on the market. Both provide the convenience and accuracy of automatic tuning at the push of a button! The CNA2002 is rated at 2.5kW PEP while the CNA1001 is rated at 500 watts PEP. Both units auto tune within all HF bands 3.5-30MHz, including the new WARC bands. Both units incorporate the unique Daiwa cross-needle meter to indicate SWR and Power. A built-in dummy load is also included for preliminary tuning. CNA1001 Daiwa Automatic Tuner 200W. CNA2002 Daiwa Automatic Antenna Tuner 2.5kW.
MANUAL Daiwa has a superb range of Manual Antenna Tuners to ensure your station operates efficiently by getting maximum power to your antenna system. Rugged design and ease of operation make these tuners a must for any amateur station! CNW518 Daiwa Manual Antenna Tuner 3.5-50MHz (including WARC). CN418 Daiwa Manual Antenna Tuner 3.5-30MHz. CNW218 Daiwa Manual Antenna Tuner 3.5-30MHz.

COAXIAL SWITCHES
You get low-loss and good isolation with Daiwa's professional quality coaxial switches. They all complement Vicom's own unbeatable relays and operate from HF to 70cm. CS201 Daiwa Coaxial Switch, 2 Pos. CS201N Daiwa Coaxial Switch, 2 Pos "N" type. CS401 Daiwa Coaxial Switch, 4 Pos.

MELBOURNE
Vicom International Pty. Ltd., 57 City Road, SOUTH MELBOURNE, VICTORIA PHONE: (03) 62 6931

SYDNEY
Vicom International Pty. Ltd., 6th Floor, 118 Alfred Street, MILSONS POINT, NSW PHONE: (02) 436 276

WELLINGTON, NEW ZEALAND
Malvicom, 18 Raroa Road, Lower Hutt, NEW ZEALAND PHONE: (4) 69 7625

DEALER ENQUIRIES INVITED!
The subject of specifications of amateur equipment crops up from time to time. Unfortunately specifications are open to interpretation. Manufacturers write their specifications around what the transceiver or other equipment is capable of doing. They refer to the prime role of the equipment. If the equipment is used in some other role then some care should be exercised.

We as amateurs should carefully inspect the specification of the equipment and see that it does indeed apply for the usage we have in mind.

For instance, mobile transceivers are usually characterised for operation in a vehicle with the engine running. That is for a battery voltage of a nominal 13.8 volts. If we wish to work for a long time from a stationary vehicle a battery voltage between eleven and twelve volts is likely.

For use under such conditions the maker may well give a negative percentage of the battery voltage. However, if the same positive percentage is applied in the battery voltage tolerance the rig may suffer damage when working off another power supply. This is often covered by a warning in the handbook.

Similarly an SSB transceiver may not perform as well as the SSB power input and output figures would indicate if used for FM or FSK RTTY. Considerably reduced output or inefficient operation may well be encountered in these modes.

To avoid such embarrassments the specifications and handbook should be perused carefully prior to purchase. Also the help and advice of a reputable dealer is of value. A small monetary saving at a discount house may soon be lost if you are wrongly advised or if warranty service is needed.

PRESIDENTIAL COMMENT

Thirty Per Cent Tariff Duty Imposed on HF Transceivers

On 28th June 1983, a new 30 per cent Customs Tariff Duty was imposed on ALL imported transceivers for use in the HF bands, including amateur band only HF transceivers.

The WIA initially negotiated the import by-law approximately 10 years ago, which allowed HF transmitters and transceivers designed for use on the amateur bands to be brought into Australia duty free.

The lifting of the by-law now means the end-user retail price will escalate to approximately 40-45 per cent above current retail prices on all amateur HF transceivers.

The WIA and the amateur importing industry were shocked at this news. It would appear from our initial investigations that a number of the current 'general coverage' type amateur transceivers have been illegally modified by unscrupulous retailers and individuals. These modified sets have been sold to the yachting fraternity and others.

The purpose of this type of undesirable activity, was to sell modified amateur equipment for use on the marine bands, at greatly reduced prices than that applicable to 'type approved' and licenceable marine radio equipment, which is manufactured locally.

Equipment designed for amateur use is not able to be type approved, nor licensed for use on any other bands, whether modified or not. (Please refer elsewhere in this issue regarding a joint WIA/INZART statement on illegal maritime mobile operations. That statement was written several weeks prior to notification of the new tariff duties being received.)

It also appears that top level Government negotiations have been going on for some time in secrecy, so much so, that neither the WIA nor the amateur importing industry itself had any prior knowledge of the new tariff duty.

On 6th July 1983, a joint meeting was held at the WIA Federal Office between WIA representatives, senior personnel from Icom, Kenwood, Yaesu, importers and distributors, a customs agent, and the editor of Amateur Radio Action.

The meeting was held to determine a recommendation for the WIA's attitude, and to seek facts and advice on how best to handle this new tariff duty.

At the time of writing this report, we have certain information available to us which may assist us, also details of the 'How and Why' the tariff was initially imposed. We need to act very quickly and further expert advice is being sought. Members will be kept informed of further developments by Federal Broadcast Tapes, circulars to Divisional Counsellors, and articles published in Amateur Radio, Amateur Radio Action and other electronic magazines.

If ever we need a united front, it is now. Please enrol as many new members as possible to preserve our negotiating powers.

Bruce R. Bathols, VK3UV
WIA Federal President
PIRATE OPERATORS AND IMPROPERLY LICENSED STATIONS

This is a joint statement issued by the Wireless Institute of Australia, and the New Zealand Association of Radio Transmitters. The statement was issued on 1st July 1983. All radio amateurs should read it carefully.

YOUR RESPONSIBILITY AS A RADIO AMATEUR

As licensed radio amateurs, we organise ourselves through the Wireless Institute of Australia and the New Zealand Association of Radio Transmitters Inc. to uphold the standards of the Amateur Service, including the present high standard of entry.

We accept responsibility for helping people who want to become radio amateurs, and for protecting their interests once they have become properly qualified.

We must seek to remove improper and illegal practices that bring the amateur service into disrepute in licensing matters, make regulatory improvement difficult, make it extremely difficult to get support for the amateur service at International conferences, and cheapen the worth of our qualifications and licences.

IMPROPER AND ILLEGAL PRACTICES

We are not directly concerned with stations operating outside amateur bands.

In bands allocated to the amateur service, pirate operators and improperly licensed stations are operating. They are posing as amateur stations, but they fall short of our standards in these ways:

1) The operator is unqualified.
2) Their callsign has not been issued by an administration recognised by the ITU or
3) An administration may have issued the callsign without ensuring that a minimum standard of competence to operate in the amateur service has been demonstrated, and
4) Operation is contrary to the ITU regulations, the Australian Radio Regulations or the New Zealand Radio regulations.

MARITIME MOBILE STATIONS

The WIA and the NZART help properly qualified radio amateurs who go to sea, and the sea-going enthusiast who wants to become a genuine radio amateur.

Genuine MM stations are encouraged to make their activities known through IARU societies and amateur radio publications.

Unfortunately, many MM stations using the amateur bands are illegal.

The prefixes used in the Pacific by yachtsmen suggest many improper licences. The International Callbook does not list many callsigns or callsign-sequences used, and enquiries by IARU societies in many countries (for example Liberia) have shown that their licensing administrations are concerned about these pirated callsigns.

The Department of Communications in Australia, and the New Zealand Post Office are also most disturbed at these pirate MM activities.

Amateur equipment is cheaper than type-approved equipment, and this may be a reason for what seems to be a concerted effort in yachting circles to encourage the trend away from the maritime service to the amateur service.

ACTION

Except in a GENUINE EMERGENCY involving safety of life when any frequency may be used, as a radio amateur you should:

1) Cease contact with pirate or improperly licensed stations operating in amateur bands.
2) NOT accept third party and other traffic requests.
3) If in doubt about the legality of the station you work, seek these details:
   (a) Name of vessel
   (b) Name of operator, and
   (c) Origin of the licence.

Tell the Australian Department of Communications or the New Zealand Post Office about the station, and tell the station that you are doing so. Get in touch with:

1) Your local Radio Inspector — he is listed in the telephone book. (Australian amateurs look under 'Department of Communications'.)
2 The NZART Post Office liaison officer — his address is PO Box 40 525, Upper Hutt NZ. (New Zealand amateurs only.)

3 The WIA Executive, PO Box 300, Caulfield South. Vic 3162. (Write brief details of matter discussed — Australian amateurs only.)

Help the WIA and NZART to stamp out illegal practices, and to protect your interests.

SALES OF TRANSMITTING EQUIPMENT.

The WIA and NZART considers that the present control of sales of transmitting equipment is unsatisfactory, and will continue to press for stringent control.

When selling transmitting equipment, you should sell only to licensed operators.

THE NEW ZEALAND POST OFFICE AND THE AUSTRALIAN DEPARTMENT OF COMMUNICATIONS

Both fully support the NZART and the WIA in their desire to stamp out improper practices.

The NZPO and DOC have inspected vessels and impounded amateur-type equipment.

The NZPO and DOC will continue to take action against shore-based stations that take part in improper practices.

SPREAD THE WORD

Draw this statement on pirate operators and improperly licensed stations to the attention of any radio amateur who has traffic with pirate / MM stations.

For this purpose you may photocopy this statement.

This statement is published jointly and in conjunction with the Wireless Institute of Australia and the New Zealand Association of Radio Transmitters.

Authorised by
Bruce R. Bathols
WIA FEDERAL PRESIDENT

WINTER IS HERE — BAND CONDITIONS ARE POOR

Curl up beside the fire and read a book

WORLD AT THEIR FINGER TIPS by John Claricoats, G6CL
A hardcover book of 300 pages telling the story of amateur radio in words and glossy photographs.

VHF UHF MANUAL by G R Jessop, G6JP
This 4th edition hardcover book tells of the technical advances in 6 years, since the last edition was published.

RADIO AMATEURS EXAMINATION MANUAL by G L Benbow, G3HB
130 pages of information to assist one to pass the amateur examinations.

TV FOR AMATEURS by John L Wood, G3YQC
A handy little book explaining the principles and getting started in TV to color TV and the 1.3 GHz TV band.

NZART CALL BOOK '83
Full callsign listing for ZL plus much helpful information.

TEST EQUIPMENT FOR THE RADIO AMATEUR by H L Gibson, G2BUP
Hardcover book describing the range of test equipment and measurement methods.

This new shipment of books is now available. Contact your division of Magpubs, Box 300, South Caulfield, Vic 3162.
Both organisations exchange reciprocal visits, thereby keeping in close touch with items which can be mutually beneficial, and of interest to each others members. The aims of both amateur bodies are identical, and needless to say, so are the problems.

The NZART is structured slightly differently to the WIA, in that there are no divisions as we know them here in Australia. The NZART consists of approx eighty "branches", each branch being formed by a local radio club and consists of either transmitting or non-transmitting members. A branch may be formed if more than eight members in a particular area are desirous of forming such a branch.

At the annual conference, a delegate from each branch is represented. However, some of the smaller branches may not send a delegate, therefore a branch desires of having its views known but not being able to have a delegate present, will give a proxy to a delegate from a larger branch who will present votes on behalf of the absent branch. It was not uncommon for one branch delegate to be holding proxies for three or four other smaller branches. Each member of the NZART is able to register a vote through his/her branch, therefore a delegate representing the branch (either direct or by proxy) may vote proportionally for or against a particular REMIT (motion discussion point) as it is presented.

Remits are published in Break In one month prior to the annual conference, therefore each branch is able to discuss their voting preferences prior to the conference, and the aggregate of individual branch members voting preferences are then presented to the conference through the attending delegate.

In amateur operating matters etc, votes of Remits are restricted to transmitting members only, matters of an administrative nature are open to all branch members to vote upon.

Daily administrative and operational policy matters are handled by the NZART Council (similar to the WIA Executive). The Council consists of twenty two NZART members who are elected to office by the branches in an election which is conducted several weeks prior to the conference.

Councillors reside in all parts of the country, therefore the council meets in person only once each year. That meeting is on the day prior to the annual conference. It will discuss policy matters and general administrative affairs.

To keep in regular contact with each other, the council conducts a monthly net on 80 metres, and discusses 'on air' items of importance to the NZART in general.

A full time paid secretary (based in Upper Hutt) co-ordinates council activities and circulates matters to councillors on a regular basis. Matters which are of a sensitive nature and unable to be discussed on the monthly net are handled by mail.

Much use is made of volunteer labour in a similar manner as in the WIA, and it is agreed by both organisations, that due to increasing demands of members, a certain amount of paid professional help is now required. Neither organisation can function without the backbone of volunteers at the grass roots level, but the day is coming in the not too distant future where daily administrative matters can only be handled by paid full time staff. This will certainly be the case as membership numbers increase. It will put both the WIA and the NZART on the same administrative basis as the RSGB (UK) and the ARRL (USA).

Some of the problems common to both amateur societies are:

1. Tower difficulties — a greater public awareness of amateur radio towers and their effect on the environment is evident. NZART have several legal cases pending at the moment.
2. TVI and RFI (a world-wide problem).
3. Lack of volunteers (suitably qualified or otherwise) to service important posts.
4. Difficulty in obtaining major press publicity in amateur radio affairs. The AREC (Amateur Radio Emergency Corps — similar to our WICEN) appears to have a much greater acceptance with the authorities, and is officially recognised for its capabilities. A certain amount of press coverage is given to AREC matters, as it is the primary service associated with major Search and Rescue and Civil Defence organisations.
5. Increasing inflation, and a possible loss of members as fees are increased to cover normal running costs. It was recognised by both groups that fees must be increased annually to maintain existing services, otherwise reserves would be eroded as inflation took its effect.
6. Increasing costs of production of the respective amateur journals (Amateur Radio and Break In).

Both groups suffered heavy losses in 1982 due to increased costs in the printing industry.

Both groups share excellent liaison with the relevant licensing authorities — Department of Communications and the New Zealand Post Office.

Two NZART representatives will be attending the WIA convention in 1984, and WIA representatives will attend the NZART conference in 1985.

Mail exchanges during the year also helps to keep each group up to date. It was accepted that these continuing exchanges are important, so that both groups are aware of changing trends as they occur.

For the mutual benefit of both societies, and the amateur service in general, these lines of communication must always be kept open.

Below — Bruce VK3UV and David VK3ADW at the NZART Conference.
WIRELESS SENDER — THE C11

The C11 is a transmitter for CW, AM and FSK covering 2-16 MHz. It was used mobile in some AFV's and in command wireless vehicles. The associated receiver is the R210. The power supply was the Supply Unit Transformer Rotary 24V and it had a very nice aerial tuner ATU No 7.

SPECIFICATIONS
Power Requirements:
24V at 20 amps Tx, 3 amps standby.
Frequency coverage:
Band 1 2 to 4 MHz
Band 2 4 to 8 MHz
Band 3 8 to 16 MHz
Mode of Operation:
Transmission of CW, AM and FSK with an adaptor
Power output:
Low — 3 to 10 watts
High — 12 to 50 watts dependent on frequency in use.
Microphone: 600 ohms
Antenna: 75 ohms
Dail Calibration:
Band 1 and 2 2.5 kHz/division
Band 3 5 kHz/division
Weight: C11 31 Kg.
PSU 20 kg.
ATU 9 kg.
Total: 60 kg
Intercom amp:
output — 250 MW into 30 ohms.

PRINCIPLE OF OPERATION
The master oscillator V1 covers a frequency from 2 MHz to 4 MHz. The oscillator unit is housed in a sealed, substantial diecast case. The output is buffered in V2 and fed to the band switch. On band 1 V3 is bypassed but on band 2 V3 a doubler is brought into circuit and V4 is an amplifier. On band 3, V4 becomes a doubler also. V5 & V6 are final amplifiers in parallel.

V11 is a microphone amplifier feeding an AF amp V10 thence to the push pull modulator V8 and V9. Modulation is applied to the screens of V4, V5 and V6 and also to the anodes of V5 and V6. V7 is a detector for Automatic Modulation Control AMC which is fed back to V11 to maintain modulation level constant.

V13 is a sidetone oscillator for CW and amplified by V10.

V14 is a voltage stabiliser for V1 and is housed in the same enclosure.

For calibration a 100 kHz signal from oscillator V12B is mixed in V12A with the master oscillator output from buffer V2. The resultant beat signal is amplified in the AF amp stages.

The intercom AF amp V15 and V16 is powered by voltage from the R210 receiver.
ANTENNA TUNING UNIT NO 7

This unit matches the 75 ohm transmitter output to various short antennae over the frequency range. It has a variable capacitor controlled by a Match knob and a roller inductor tuned via a Tune control with a digital counter to indicate position. An aerial current metre assists the tuning process. The output connection is a large insulated single wire terminal.

The aerial base used with a rod aerial is specified as a Base No 31. The base for the VHF units is a No 28.

POWER SUPPLY UNIT

The PSU connects to the C11 via a harness and a 12 pin socket. It also has a 12 pin socket for a harness to the R210. The power plug is 4 pin and the power lead has two wires in parallel for +ve and -ve to carry the current. A rotary transformer converts 24V to ± 530V and a stabilised +300V via dropping resistors and stabilisers V101 and V102.

Voltages required by the C11 are:
- HT1 — +300 VDC
- HT2 — ± 530 VDC at about 500 mA.
- HT2 — -530 VDC — ie isolated from chassis earth.
- Filaments — +19 VDC
- Fan & Relays + 24 VDC

FRONT PANEL CONTROL

INTERCONNECTION SOCKET SktB
- A — Tx mike input
- B — intercom and Tx microphone shield
- C — intercom microphone input
- D — PTT line
- E — no connection
- F — +24 VDC output via PLA-K
- G — intercom and speaker output
- H — no connection
- J — intercom speaker output
- K — no connection
- L — no connection
- M — speaker output.

MODIFICATIONS

1) To operate the set make the following connections:
   - Microphone to pins A and B Shield to B.
   - PTT switch to pin D
   - Receiver to REC AE receiver aerial BNC socket

Note that during operation the vents on the front and rear of both the C11 and PSU must be opened to allow air circulation.

When the C11 control switch is set to CW the PTT line can be keyed and operates semi-break-in.

2) The C11 can be operated directly into a dipole using 75 ohm co-ax. For other impedances the ATU No 7 can be used. The large insulator on the rear can be replaced with an SO239 on a metal plate fitted in place of the insulator.

160 METRE MODIFICATION

The C11 can be modified to operate on the 1.80-1.86 band by switching in added capacitance across C3, the tuning capacitor in the oscillator sub-unit.

The bottom cover was removed from the oscillator sub-unit to reveal coil L1, and L2 which is adjustable from the front panel for calibration.

The bracket supporting L2 was drilled to mount a small 2 lug tag strip onto which was mounted the compression trimmer and 60 pF capacitor with the diode going from one end to an earth lug. A wire was soldered from the other side of C(A) to the top of L1 (actually the farthest end of L1 looking from the top). Another wire was connected from the junction of the diode and C(A) to an existing unused terminal feed-through on the sub-unit.

Use heavy, rigid connecting wire and ensure the added parts are supported rigidly to prevent vibration and frequency variations.

A second 2 lug tag strip was fitted on an existing bolt on the feed through block on the outside of the sub-unit and the RFC, R, and bypass capacitor mounted there-on.

I found a space on the front panel just to the left of the meter and big enough for a miniature SPST switch. There is a convenient 24V terminal available near the right hand side of the meter.

I used a frequency counter as an aid to calibration but other means of determining the frequency should be satisfactory.

The calibration procedure followed was to set the tuning dial on 2.000 MHz, the front calibration central (L2) at mid travel and the new switch off.

Run the transmitter for at least half an hour to allow temperatures to stabilise.
With the transmitter keyed at low power into a dummy load the frequency was adjusted to exactly 2.000 MHz by adjusting the position of the ferrite slug in L1.

I found some interaction between the adjustments so you may have to go through the procedure a couple of times to get a close calibration. During normal operation the calibration control and internal crystal calibrator can be used for exact frequency setting.

I also found that a 60 pF N750 capacitor for C(B) was best for my set after trying various others. One problem is to get the frequency / temperature variations reasonably correct. At one stage I had the normal 2.0 MHz increasing in frequency with temperature and the 1.8 MHz decreasing.

As I was not concerned about operating on the 3.5-3.70 MHz band I didn’t try to adjust for correct frequency tracking or power output but did adjust L8 and L12 for maximum output at 1.80 MHz and C28 and C49 for maximum at 1.86 MHz. These adjustments interact so need to be done a couple of times.

Although I had no problem bringing the oscillator sub-unit down to 1.800 MHz it did tend to drop out of oscillation just below 1.8 MHz.

Depending on the gain and feedback of individual sets, some modification may be needed to ensure reliable oscillation at the 1.80 MHz frequency.

ACKNOWLEDGEMENT. These articles could not have been written without the help of Ian VK2ZIQ, Ross VK2ZUY, and Tony VK2DKY, who know this equipment far better than I. I just put pen to paper! I must also thank Abe, our friendly disposals proprietor, who let us climb on his mountains of electronic gear, looking for parts.

CIRCUITS

The Circuits of the equipment in this series of articles are held in the Federal Office. Photocopies may be obtained by writing to the Secretary WIA at PO Box 300 South Caulfield 3162. To defray the costs of this service a suitable donation would be appreciated.
SHACK CRAWLING
1930s STYLE

or THREE MEN IN A 'RUBBIDY-DUB-DUB'

Since pre-war days man’s mobility has increased dramatically but even the lack of high-speed reliable transport did not dampen the enthusiasm for ‘Shack Crawling’, half a century ago.

One promising morning three Southside Brisbane amateurs, viz Harry 4HR, Bill 4YO and Fred 4RF set out in a gregarious frame of mind to visit a few cross-town Northsiders, one in particular being Arthur (Chilla) 4SD — a round trip of about thirty miles. Lacking wheels of any sort, they harrowed a Baby Austin Seven HP Tourer which, although mobile, probably would not have passed a machinery test. In high spirits, the three scrambled aboard.

As such vehicles can now be seen only in glossy magazines or at Vintage Displays, a short description is in order. The Baby Austin Seven was a small, lightweight, low priced, economy ‘jalopy’ of narrow proportions and held together with a minimum of parts; in the modern vernacular it might have been described as ‘a cheap heap’, especially if secondhand. Alongside its more cumbersome, heavyweight counterparts of the day it looked almost like a toy. This writer had the misfortune to own a Baby Austin Seven Tourer in the late 30s and more time was spent repairing it than driving it. In fact it was affectionately nicknamed ‘JIGSAW’ — at every bump it fell to bits. As long as the motor compression was 100 per cent its full seven HP could, by planting the foot, maintain a reasonable speed. However, once wear and tear set in the vehicle was usually re-named ‘Baby Austin Seven Kanardy’ — can hardly go downhill with the wind, let alone up any.

Apart from a few small patches of missing skin, the occupants had proved more durable than the Baby.

However, where there’s a will there’s a way. Having pooled their pocket money and filled the tank, they naturally didn’t want to see the liquid vaporize itself in the dirt at their feet — besides cash was a scarce commodity in those immediate post-depression days, even though a gallon of gas could be got for a mere eighteen cents. It was a simple matter to put the Baby back on its feet and, as all four wheels appeared to point in the same general direction, it was decided to carry on undaunted — that is, if what was left of the velocipede would work. So, gathering up the broken bits and pieces, the trio gingerly climbed back into the Austin Seven and, wonder of wonders, the motor motored and the steering steered. They had already found out about the ‘anchors’...

Apart from a periodic, spasmodic splutter from the motor, the round trip was safely accomplished. Needless to say, returning the jalopy to the lender presented an anxious moment. However, the owner, though obviously not pleased at the spectacle, philosophically accepted the situation that better a battered Baby than three battered amateurs.
THE GROUND PLANE ANTENNA

J A Gazard VK5JG
2 Corbin Road, Medindie Gardens, SA 5081

The ground plane antenna is very popular on VHF both with amateur and commercial stations. It consists of a quarter wave vertical element and four quarter wave horizontal radials with angles of 90 degrees between them. It is usually fed by a coaxial cable, the centre conductor of which goes to the vertical and the outer is joined to the radials at their centre point. An even simpler version could be useful on the HF bands.

When a signal is fed to the antenna currents will flow into the radials and they will be equal and opposite in each pair of opposed radials. Therefore any radiation due to these currents will be cancelled, the radials will not radiate and will have no radiation resistance. The resistance or impedance of the radials will be just the “copper” resistance and will be close to zero.

The currents flowing in the radials will therefore consume near zero power and all the power will be concentrated in the vertical which has a low angle of radiation. This is the property which makes the GP antenna successful. The GP can be considered as a vertical dipole in which the lower half consumes no power and has zero resistance so that the impedance of the GP should be half that of a dipole, that is 35 ohms. This is approximately so.

Now if this reasoning is correct then one pair of opposed radials will be sufficient to cancel the field of the radials so that a GP should function just as well with only two radials set at 180 degrees. To test this idea the following simple on-air tests were carried out:

1. The strength of a 144 MHz signal radiated by GP antenna was measured by an S-meter at a point about 9 km away. Two opposite radials were then removed from the antenna and the signal strength measured again. There was no change in the signal strength or the SWR when the radials were removed.

2. Only one radial was removed. Again there was no change and rotating the antenna showed no directional effect. This result surprised at first because it was thought that the unopposed radial would radiate, change the low angle pattern and have a directional effect; also that there would be a change in the SWR. However it was later realised that the opposed pair of radials would have zero impedance and would thus “short out” the unopposed radial so that it would have no effect.

3. Two radials were removed leaving two radials at 90 degrees. There was a pronounced directional effect — the signal varying from a maximum of slightly above that when the four radials were in use to appreciably less as the antenna was rotated. The SWR changed from 1.5 noted in the previous tests to 1.2 indicating that the impedance was now closer to 50 ohms.

These tests although not very precise support the reasoning that a GP with two opposed radials will perform just the same as one with four. There is little to be gained in cost and convenience by using only two radials at VHF but on the lower frequency bands the use of only two radials would greatly simplify the erection of a GP antenna.

Figure 1 shows how a two radial GP antenna for the new 18 MHz band could be set up in a back garden. It would use only a light wood pole, plastic cord, and wire and would be easy to erect and adjust. With adjusted wire lengths the antenna could be used on the 28, 24, 21 and 14 MHz bands but would require a taller pole for 7 MHz.

Next to a beam the GP with its low angle of radiation is generally considered to be the best DX antenna so that this set-up should be worth trying.
Although it is the age of SSB, transistors, ICs and sundry exotic means of generating radio signals, some newcomers to radio, as a hobby, probably don’t realise it was not always as now — especially on the VHF front.

The days of AM (amplitude modulation) may be long since gone, which is a shame as it still has its uses. Some “new” explorers to two metres may like to try their skill at getting simple gear to work; here is something to whet your appetite. The author got a great deal of pleasure building and working with it; the cost: next to nothing. Fig 1 shows a single valve two metre source.

I daresay it could be transistorised quite easily, for those who may not be familiar with valves. Fig 2 is a suggested circuit.

Fig 1 Single valve two metre source.

I wonder how many stations there are, still using AM on two metres. I am aware of a few around Brisbane. I think a comeback to AM would be a good thing on VHF where there is plenty of band, just waiting to be used. However, try your luck with these. Put your theory into practise and add your own PA.

Fig 2 Single transistor two metre source.

TECHNICAL EDITOR’S NOTE

The circuits described here produce many harmonics in addition to the desired one at 144 MHz. In some applications these could cause problems.

Note also that the power available at 144 MHz is very limited. You won’t drive a following PA stage beyond the mW region.
THE NICHOLLS "WOODPECKER" BLANKER

I am sure that all HF operators (unless you only work on 80 metres) are familiar with the "Woodpecker" over the Horizon Radar and the problems that it can cause to reception. At times it can run well over S9 and wipe out very strong amateur signals.

Many of the current model transceivers now have noise blankers that are intended to cope with the Woodpecker problem but readers of Amateur Radio reviews will have noted that few of these blankers are as effective as they could be. Older transceivers with normal noise blankers have no hope at all. However all is not lost. For some time now, NICHOLLS COMMUNICATIONS have been producing their WOODPECKER BLANKER which they claim is the best answer available to the problem.

Let me quote from their description of the unit.

"The Woodpecker can be wired directly into most noise blanker circuits provided in HF communications receivers. Used in this fashion, it can reduce the strength of the interference by up to 70 dB. Alternatively, for receivers without a built in noise blanker, the device functions as an audio stage blanker and offers relief from the audible effects of the Woodpecker. To facilitate this, the Woodpecker Blanker incorporates its own audio amplifier and plugs directly into the headphone or tape outputs from any receiver. The circuit employs the principle of "synchronous blanking", in which a local crystal-locked oscillator generates a reference signal to control the blanking circuit. This is possible because the Woodpecker radar transmissions use a consistent, precisely defined pulse repetition frequency. The blanker is synchronised manually with the incoming interference pulses, and subsequently remains in sync for lengthy periods."

The Nicholls blanker is available in either kit form or completely built up and ready to go. It is, however, necessary to wire in a connection to your transceiver noise blanker and provide a 12 to 15 volt DC power supply. In general the connection to the transceiver is quite simple and instructions are included that cover most popular models. A suitable miniature coax connector must also be fitted to the transceiver. Luckily many transceivers provide spare RCA type sockets on the rear panel.

For our test, I used a Kenwood R-820 receiver which was also modified to provide the required 12 volt DC operating voltage.

THE WOODPECKER BLANKER ON TEST

First find your Woodpecker. When I hooked the blanker up, I thought someone must have passed the information to the intruders alerting them to switch the thing off. A bit like the local two metre repeater which is always on the air — until you want to line up your receiver!

However like the bad penny it turned up at last. First thing of course, it is not necessary to turn on the noise blanker in the transceiver for Woodpecker blanking. All control is done from the Woodpecker blanker itself. For IF blanking, which we are now set up for, the delay and width controls
but don't try to use it for CW reception. The blanking pulses will remove about 50% of the signal. With voice reception of course, it is possible to lose a considerable amount of the transmitted signal and yet still retain a fair degree of intelligibility.

The action of the NICHOLLS BLANKER is really quite remarkable. Even with the Woodpecker running S+20 dB it is possible to copy signals around the S5 mark. However when I say copy, I don't mean perfect 'armchair' copy — you will be working hard, but the signal will be there.

One of the problems is to know when the Woodpecker has stopped. The blanker is like a Woodpecker in reverse. There are holes in place of strong signal pulses.

Now for a few slight problems. Adjustment of the width and delay controls is fairly critical to get the best effect. If you are tempted to turn the blanker off to see if the Woodpecker has disappeared, the controls will need to be peaked again.

Now to the action of the audio section of the blanker. This is designed to be used with a transceiver or receiver that does not have a noise blanker. A couple of common ones that come to mind are the FT-200 and the FRG-7. Audio output from the headphone jack is fed to the audio input socket on the front panel of the blanker. Headphones are plugged in, volume adjusted and the width and delay controls set in the same manner as before. I found that the best effect was obtained with a fast AGC action and possibly no AGC at all. With slow AGC; the receiver is shut off during the Woodpecker pulses and no amount of external blanking will restore the wanted signal. The overall action of the audio section of the blanker is certainly not as good as the IF blanking, but with careful adjustment of receiver and blanker excellent results can be obtained.

Next slight problem. The headphone jack on the blanker is not a stereo type, so your Supermarket type phones will only work on one side.

The general construction of the NICHOLLS BLANKER is quite reasonable. The front panel looks attractive and good quality components are used throughout. One other slight problem however is the DC power connector. A miniature audio type plug is used for this which if inserted incorrectly could short out the input supply. A concentric type DC connector should be used here.

The instructions supplied are complete and well written. A full parts list, circuit diagram, board layout and waveform diagrams are included.

Our review Blanker was supplied by NICHOLLS COMMUNICATIONS PO Box 246, Jamison, ACT 2614 to whom all enquiries should be addressed.
On the 28th May the new divisional premises of VK2 were officially opened. This is a story of the lead up to this exciting and important day.

The NSW Division’s new premises at 109 Wigram Street, Parramatta, “Amateur Radio House”, was officially opened on Saturday 28th May, 1983 by Mr Gary Punch, Federal MP for Barton. Distinguished guests at the opening included Mr Stan Dickson, Mayor of Parramatta, Mr John Milton, NSW State Manager of the Department of Communications, Federal President of the WIA Mr Bruce Bathols VK3UV and three Life Members of the NSW Division, Mr Bill Moore VK2HIZ, Mr Cec Bardwell VK21R and Mr Keith Howard VK2AKX.

The opening was the culmination of three years of preparations and negotiations by NSW amateurs, particularly members of Divisional Council both past and present. The idea to sell the Crows Nest property had been around for over ten years but was first discussed seriously at the Fourth Conference of Clubs in May 1981 when a motion recommending that “Council investigate selling the Atchison Street property and purchasing property in the Granville/Parramatta area” was carried. At the July 1981 meeting of the Divisional Council, Stephen Pall VK2PS (then VK2VHP) was authorised to research the feasibility and costs involved with a move to the Parramatta area. After negotiations with four leading estate agents, Steve presented a four page report to council and the Fifth Conference of Clubs. This report was then presented to all members for decision at the March 1982 AGM of the Division. The motion to sell and move to Parramatta was carried with a majority of 2:1.

Thanks largely to Steve’s excellent preparation and research, the move to Parramatta was effected within four months. The Crows Nest property sold for $410 000 and after purchase of our new two storey brick building at Parramatta for $345 000, a net gain of about $40 000 was realised after payment of transfer fees, advertising and legal expenses.

Those of you who have moved house will appreciate the amount of work involved, and the Division is greatly indebted to not only Steve, but our Honorary Solicitor Fred Herron VK2BHE who handled all the legal aspects and transfers of monies, and the then Divisional Secretary Athol Tilley VK2BAD who supervised transfer of property and conducted the great volume of correspondence involved throughout the move. A new Administrative Secretary Mrs Joan Condon was employed after interviewing fifteen applicants and the new office opened for business in September 1982.

Nearly $25 000 has been spent partitioning and furnishing the office and library area on the first floor which is carpeted and air-conditioned. The Divisional library now has over 10 000 magazines and books on display in thirteen bookshelves arranged around the lounge area. Special thanks must go to two members of the Division: Bill Hayes VK2AJI, who spent four years collating and sorting in the basement stack room at Crows Nest, and Aub Topp VK2AXT who is the present Honorary Librarian and is responsible for the fine display at Parramatta. (PS Donations are always welcome). The building is open five days a week from 11 am to 2 pm and Wednesday evenings from 7 to 9 pm.

When the room downstairs is let, the resultant rent will more than cover the running costs of the new building. It is thanks to the support of all members over the years who have contributed to the NSW Division that this fine facility for amateurs has been made possible.
AMATEUR RADIO IN SPACE

Astronaut Owen Garriott plans a historic astronaut-to-private-citizen link-up during the STS-9 mission, currently scheduled for launch on 30 September, 1983.

There will be an amateur radio transceiver aboard STS-9. Dr Owen Garriott, an amateur radio operator, will use a hand-held radio during part of his off-duty time to communicate with some of the thousands of amateur radio operators around the world. Garriott’s callisign is W5LFL. Use of the transceiver will be limited to one hour a day. All amateur radio operations for STS-9 will be in the range 145.51 MHz to 145.770 MHz FM. Transmissions will be made on 145.910 MHz. Twenty kilohertz steps will be used to transmit and receive.

Garriott will wear the standard in-flight headset when operating the radio. Plans call for Astronaut Garriott to use the equipment during his off-duty periods in such a way as not to interfere with other mission activities. Random contacts will be made with individual radio amateurs in various parts of the world, thus providing the first occasion in the history of the space programme for individual citizens around the world to speak directly with an astronaut in space using their own equipment from their own homes and automobiles.

While there will be practical limits to the number of two-way contacts possible during the course of a single shuttle mission, both radio amateurs and non-amateurs possessing receivers and scanners will be able to listen to transmissions by W5LFL as the spacecraft passes overhead.

This operation will directly support the objectives of the US Council for World Communications Year 83 by directing public attention to another important dimension of space communications in which astronauts and private citizens in countries all around the world are brought into direct contact for the first time in history.

Confirmation cards will be issued by the American Radio Relay League to all of those making contact with the spacecraft during the mission, as well as to those submitting evidence of reception of Astronaut Garriott’s transmissions via W5LFL.

It may also interest you to know that STS-9 will be the first flight of the Spacelab, a joint effort of NASA and the European Space Agency. The crew will be John Young, mission commander; Air Force Major Brewster H Shaw, pilot; Dr Owen K Garriott and Dr Robert A Parker, mission specialists. The prime or onboard payload specialists selected by ESA and NASA for this flight are: Ulf Merbold, a German physicist, and Byron K Lichtenberg, a biomedical engineer. The second European, Wubbo J Ockels, a Dutch physicist, and the second American, Michael Lampa, a physicist, will act as flight backups and will be deeply involved with the payload operations from the ground throughout the duration of the mission.

Information supplied by:
Mrs I L Scott
Public Services Branch.
Office of Public Affairs.
NASA.
Houston, Texas, 77058 USA.
It is two years since I commenced writing these notes and although the bands are on the downward trend, a lot of new countries have been activated and worked by VK's for a new one towards their DXCC score. The rarer countries are still there but it requires more patience to develop the art of finding the elusive country that will be a new one for your score and when it is found it will be a lot harder to dig it out of the noise to make a successful contact.

I commenced with one helper, Eric L30042 who has not missed one monthly report. Now it has grown to many more subscribers from most states, and new ones are still appearing from time to time. To those that have supplied information or written notes of thanks and given me the incentive to continue, sincere thanks. To those operators and listeners that have thought about sending in a report and have not done so, please do, as any information helps, even if it is duplicated with another report. It helps to verify what may have been discarded as a dubious rumour. At all times the endeavour is to bring to you, the reader, accurate and up to date information about past and forthcoming DX, QSL managers and routes to assist all readers to achieve more confirmed DX countries, and general interesting DX news.

During the period of writing the column, I have been able to build up reciprocal agreements with DX editors of other magazines world wide, so that we can exchange documentation of what is happening around the world. It has and will continue to be my policy that no information used in the column will be discarded as a dubious rumour. At all times the endeavour is to bring to you, the reader, accurate and up to date information about past and forthcoming DX, QSL managers and routes to assist all readers to achieve more confirmed DX countries, and general interesting DX news.

LARGE CLASS
Bill P29BR and another staff member of the Papua New Guinea Technical University set up a demonstration amateur station as a public relations exercise. The results were overwhelming and now this busy duo have a class of some 110 that will be sitting for the amateur exam in November. With some luck a number of new P29 calls will be heard on the DX bands early next year.

MAIL INTERCEPTION
Herick FH0FLO still claims that his mail is being interfered with. Please do not put callsigns on the envelopes, but simply Herick Maudit-Larive, PO Box 200, Tampon 97430 France. This should reach him intact.

Without saying, it is not necessary to have your own call or any other give away that the letter concerns your hobby.

FURTHER DOCUMENTATION
Don Search, who administers the ARRL DXCC programme, is not satisfied with the credentials that have been presented by Peter S2BTF, and at this time he is rejecting claims on this station. The lastestation from this area, that had the green light, was S21GW and that was in late 1981.

HU1SS
According to a report in “QRZ DX” JH3DPB anticipates a JA group will be QRV for three weeks from the 10th August.

Recently a group of JA's have had lengthy discussions with the Prime Minister of XU in an effort to establish amateur stations there. Apparently the man they were talking with was Son San. Son San is the head of the Khymer People's National Liberation Front (the "Khymer Serei") which is one of the two guerrilla governments, the other being the "Khymer Rouge" which over threw the US backed Lon Nol government in 1975.

What countries are going to recognise what licences if they are issued? Don Search, the gentleman looking down the microscope on QSL cards at ARRL Headquarters is in for a few not so restful weeks ahead if this comes off, even if it only turns out to be a well organised propaganda stunt.

DONATIONS OR CONTRIBUTIONS?
The above paragraph has jogged my memory that no cards have been forthcoming from the updated calls of the 1Z9 group that were active in early March. Could this be a genuine "bottom of the harbour" scheme which includes my investment of two "greenies" for cards and photographs?

Another long awaited answer, this time to the tune of ten "greenies" is that 7J7Y Diploma which was promulgated late last year. It is known that another VK amateur fulfilled the requirements and applied. Neither that person or myself have gained a glimpse of any mail from the palace in Jordan.

TURKEY
It is believed that a new law was passed in Turkey in April which will legalise amateur operations in that country this year. This indeed is excellent news for the amateur fraternity as a whole though it would be prudent still not to advertise the hobby on any correspondence to friends in that country.

OMISSION
In relating the statistics of VK0HI in this column (June p29) VK5 was unintentionally omitted from the listing. In fact 126 VK5 operators contacted VK0HI on SSB and five of these appeared more than three times and fifteen more than twice in the log.

STRANGE PREFIX
Remember the “DXpedition” using the unusual call 4T3S that was emanating from the ruins of Sechin in early April and the excellent signal that was being received by all and sundry in the eastern states.

The operator was Carlos OA4CIT and he kindly forwarded Austine VK3YL, a photograph of himself at the operating position along with his QSL card.

SMOM
The next planned operation of the rare station 1A0KM is October and November. The driving force behind the whole operation since its inception has been Mario IOMGM and due to his business commitments, as an attorney, the station has not been manned as originally was envisaged.

T31 AND KH1
For those that missed out on Erik SMOAGD when he was in the area there may be another chance for these elusive calls.

From all reports received it appears that Doug T30DB will be operating from Central Kiribati and American Phoenix towards the latter part of this month if the carefully laid plans come to fruition.
THIRTY METRE NET
Stewart VK2LS is running a daily net on 10.146 MHz USB (just outside the prohibited area of 10.141.5 – 4 kHz) at 0700 UTC and presently covers stations from the VK2, 3, 4 and 5 call areas. The object of the net is to increase usage of the 10, 18 and 24 MHz allocations. Don’t be shy, place a dipole in the air and join in. You will be made welcome.

ANGOLA
There is a strong possibility that OK3TAB and his helpers will sign OK3TAB/D2A again in the near future. Their last operation was in 1979 and with the new DXers since that period, business for them should be brisk.

FATHER MAKSYMILIAN KOLBE

Father Maksymilian Kolbe, a Polish Franciscan friar, was canonised on 10 October 1982 by Pope John Paul following a joint proposal to the Holy See by both the Polish and German churches.

Fr Kolbe was incarcerated in Auschwitz concentration camp during World War II. On the morning of 2 August 1941 a man escaped while being taken to work. The authorities immediately retaliated by killing ten people from each block of the camp.

In Block 14, Fr Kolbe asked that he be taken in place of one of the ten who had a wife and children. This was agreed to and Fr Kolbe was killed by a lethal injection on the 14th August.

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The man whose place he took is now an elderly crippled Polish farmer, according to the satellite TV pictures and commentary that was received in this country. This gentleman was presented to Pope John Paul II during his recent trip to Poland.

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To settle who was the first VK to work various countries on the new WARC bands should not be a momentous task and I am willing to sort it out. If contenders for the honour to send copies of documented evidence such as QSL cards to me, I will select the first stations to work each new band and publish the results in this column. If there are no contenders by the first of November it will be taken that Graham’s claim is valid for all the “firsts” as noted above.

Graham in his letter mentions that there are very few amateurs on these new bands but signals are there as his proves with the extract from his log. How about it DXers, let us populate all our bands this year in commemoration of WC8Y3.

MORE ON THE WARC BANDS

An interesting letter from Lindsay VK5GZ, commenting on the activity on these bands and some of the good DX he has heard and worked. Lindsay notes that he has more CW contacts on 30 metres than any other band and some of the good DX he has heard and worked. This was agreed to and Fr Kolbe was killed by a lethal injection on the 14th August.

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MORE ON THE WARC BANDS

An interesting letter from Lindsay VK5GZ, commenting on the activity on these bands and some of the good DX he has heard and worked. Lindsay notes that he has more CW contacts on 30 metres than any other band and the recent acquisition of Dan C31XO in the log book has spurred his interest.

Lindsay’s equipment is an Icom 730 into dipoles and inverted Vee’s for coverage across the spectrum.

Lindsay, it is felt that the readers of this column will look forward to further reports from you on the activity of the 10, 18 and 24 MHz bands in future issues.

CELEBRATIONS
It was a pleasure to have a SSB QSO with Soupy W5NW on twenty metres at 0723 UTC on the 20 June. Not unusual to hear this big signal in VK at anytime on either CW or SSB, however this was a celebration, as it was Soupy’s sixtieth anniversary of obtaining his amateur licence.

Many of Soupy’s friends congregated from the Oceania area to wish him well and many more years of happy operating with his XYL Beth W5DUR.

Soupy, W5NW
Soupy has dedicated all his spare time to the hobby since he gained his licence at the age of sixteen and over the years that he has been licensed and it could be said that he has never made an enemy. This is the type of person Soupy is. Soupy has 354 DXCC countries confirmed according to the ARRL DXCC list. Quite an effort! Think of the QSO’s over this period, a total would look similar to an ISD telephone number.

AX3ITU
All cards that have been received by mail have been replied to and the balance of contacts that were made have had cards placed in the bureau on their behalf.

RADIO TELEGRAPHY CHAMPIONSHIP
The first European Radiotelegraphy Championship supported by the IARU Region 1 Division will be held in Moscow in December. The contest has been organised by the USSR amateurs for World Communications Year 1983. Many events are on the programme, including tests for speed and accuracy in both reception and transmission for both lady and gentleman operators, also special events are envisaged for men and women under 18. This is one country that is fostering the continued use of telegraphy on our bands.

VISITOR FROM ACROSS THE TASMAN
Arthur VK3UX and his daughter Betty, played host to Bill ZL4AW on his recent whistle stop tour of the VK eastern states. Both amateurs have been long standing members of the ANZA Net on 21,203 MHz at 0500 UTC daily and the International Pacific

AMATEUR RADIO, August 1983 — Page 25
DX Net that is held on Tuesdays and Fridays at 0600 UTC on 14.265 MHz.

No photo of such a meeting would be complete without the presence of Percy VK3PA, who has been the anchor man of these nets over a period of many years. Arrangements were made and Percy made the trip to Arthur’s OTH.

These three operators have an aggregate of 140 years of operating experience between them since they were licenced and on appearances many more hours will be spent at the hobby in the decades to come.

CONGRATULATIONS

On a quick scan through a recent edition of CqDX, produced by the DARL it was noticed that John VK6AJW took out the Oceania continent top score in the 1982 European DX Contest. John had a score of 50900 points.

Another excellent performance was by VK6NCW who gained himself a certificate for his high score and weekend of effort. Thanks to these and other operators who ably represented the VK prefix on this weekend.

DEMOCRATIC REPUBLIC OF YEMEN

Pierre, J28AZ, over many years of travelling to this country on business now says he has permission to operate.

Anticipated starting date, 24th August for eight days.

He will be using the callsign 7O1AB. Limitations have been placed on his countries list.

SAN FELIX

Still not to be overlooked this year. A CE group hope to activate San Ambrosio or another nearby small island. These alternatives are due to the military situation on San Felix.

IA ORANA

Did you work French Polynesia (FO8/TO8 or FO0/TO0) during 10th to 17 July? The Radio Club of French Polynesia was participating in this years “Tiurai Special” which coincides with French Bastille Day.

Stations that contacted at least three stations on at least two different bands qualify for an attractive multi-coloured certificate.

QSL information for FO/TOs — 8 HL, HO, DF, HI and OFB is via WB6GFJ.

Certificate is obtainable for 12 IRCs from RCFF, BP5006, Pirae, Island of Tahiti, French Polynesia.

WCV83 IN SYRIA

Syrian Radio Amateurs shall be using a new prefix to celebrate World Communications Year.

Four stations will be operating in all bands with the callsign of 6C1AA, 6C1AM, 6C1AN and 6C1AO. Operation will be during the period of: 0000 UTC Saturday, 15 October, 1983 until 2400 UTC Friday 21 October, 1983. During this period no station in Syria shall be using the VK prefix.

PROFILE DK2WH

Many VK operators will possess the fine QSL card that shows the ivory carving of famous “Erbacher Rose”. One such operator that uses this picture is Gunter DK2WH.

Gunter obtained his licence in mid 1968 at the age of sixteen and his equipment comprised a HW32 into a five band ground plane. Gunter was “hooked” on DX from the very start of his amateur activities and took the opportunity in the late 70s to purchase land nearly on top of a mountain in the area that he lives so that he could build a house and have plenty of estate for an antenna farm with farmland on the other side of the road.

Early 1981 saw the new house completed and the beginnings of an antenna farm with dipoles for 80 to 40 metres and a Mosley MP 33 for the higher bands. Gunter has updated his equipment to the Drake “C” line running into a L4B amplifier and now also runs a Siemens T100 teleprinter.

Gunter is supported in his hobby by his XYL (though unlicensed) and their seven year old daughter and all of his spare time, from his demanding occupation of teaching mentally handicapped children, is taken up with his hobbies of amateur radio and playing the trombone in a band.

VDHH was the 297th country for his DXCC and of these he has 293 confirmed.

HAPPY ZL OPERATORS

A gang of keen DXers is one way to describe the Johnston family from Papakura NZ. Dave ZL1AMN, XYL Aola ZL1ALE and daughter Carol ZL1AJL are all in the bracket of having confirmed in excess of 300 countries. Dave mentions in a letter that when he has Heard Island confirmed he will be able to obtain the ARRL 315 countries sticker.

This family is not new to the hobby by any means as Dave is a retired NZART Councillor, Vice President of the local NZART Branch, part time lecturer at licence classes and Editor of the Club Magazine. Dave and Carol will be remembered for their part in the last Kermadec Island expedition which took place in late 1977.

The “antenna farm”, which allows action from 432 MHz to 80 metres, at the families OTH which is five hundred feet above sea level and has a clear look across the Tasman.

Dave is looking forward to his retirement in October 1984. Plans and “bookings” for such events as Thanksgiving Dinner for Aola and herself with Tom ex KH6HDA (a well known callsign that shows up in VK logs many times), a fishing trip with Tony KL7AF from Kodiak Island, visits to many of Aola’s XYL operator friends in Vancouver and that is only for starters. Thoughts of a visit to the UK are
still in the embryo stage but a guess is that GM
does not conform to the M2/M3 type. The
can only be ensured by tests on board the

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**QSL VIA**

3D6AK-G3WPW, 4K1QAV-UA1QAV, 5R8AL-
WA4VDE, 5Z4MX-3M3CKS, 6UWOC-FD7ZJ,
6UWOC-FD7ZH, 6W8FZ-DJ7BG, 9G2XZ-AK3F,
9Y4NP-W3HNNK, AH9AA-K6WHEF, AX2ITU-
VK2WJ, AX3ITU-VK3AHJ, C31X0-F6GOW,
C312Q-11FQHM, C6E0AE-WA3HUP, D68AM-
WB2QHD, EA9KF-EA9IE, ED1LT-EA1MC,
EK9C/0-U6KCAE, EK9D/1-K9XCAR, F2JD/
TR6JD-F6AJA, F6ERH/TR8YBL-F6AJA,
FG0HUL/F-N3COMP, FH0PSH-KC8A,
FH0PSH-KC8A, FH0YH6-F6AJA, FY0HM-
F6AJA, FY7BTC-F9LM, HC1BP-N4BPO,
HM2MC-K84IT, H/2SVD-VE5CZ, H/2VVP-
W1FJ, J2BDT-D6FAD, J3AVT-WBUV,
J3AH-WB2LC, JS7DF-N4CRR, J3WJ-
N3AWS, JD1YAA-JA1WU, JD1YAB-JARL,
JD6F-EA5RE, JX6BAA-LA7J0, JJY9RC-
W1VBI, KH6LW-KH7-KE6JE, OF0BA-
OH2BAZ, 7F4A8-WA2PPN, T30AT-G3KZF,
T30CH-W9SLT, TJ1AF-N4AIM, T05R/V-
FC5VR, TR8BD-XDW4T, TR8MYA-JA7BG,
VK3WY-VK3ER, VK92S-VK6YL, VR6KY-
LA7JO, VR6TC-W6HS, XT2BG-F2BS,
Y28PD-RU2T, YK1A0-AK1JU, YK9A0-
Y5HD, YK9AX-VL17, YL9A-AE1JU,
YQ0AO-ZP0KU, ZL2A0-AK1JU, ZL2AD-
ZL2ZLJ, ZL2BE/A-ZLZHE, ZL2DE/C-
ZL2HE, ZL2DEG/ZL2HE, ZP0FX-W3HNNK,
ZPSXN/9-N4DQW.

**WORKED ON THE EAST COAST**

14 oC

14ZK

14ZL

14ZM

14ZP

14ZQ

14ZR

14ZS

14ZT

14ZU

14ZV

14ZW

14ZX

14ZY

14ZZ

**CW SWLing with Eric L30042**

28MHz

BY70K (0700 UTC), H0L5Z, H1Q8F, UK5MAF.

21 MHz

BY1FK, BY8A, DLQW/P, E57SMP, F86AD, F8OAD,
G3D8X, H5KQOD, HLOD, K6G4A, K6HZQ, K6P4HC,
K6T9X, K6W6JU, T88AD, UKQJAA, CY7TE, K7THM,
K8EMX, YO2B0Y, Z81HI, Z84U, Z86ARK, SW1EJ.

14 MHz

FK9EH, F80DP, FY7B0, H1L1CX, KP2J, KB06Q, SP2J,
T30AT, UI0BK, N6YK/AV2A, CY7WJ, TO7GAS, Y80AFA,
Y85DEK, 9N2M0.

10 MHz

A3SMS, DL1SV, F3NB, FB8Q0, G4YCD, GM3GJB,
J6HWW, J6T7P, K026FX, OZ4CB/A, V3EOU,
V35XU, V66UM, OZL2GM/YV5.

7 MHz

C07RM, CT0DJ, OJ0GP, EA20P, FB8Q0, H25KCK,
H9BAU0, H932CC, KJ7Y, L19KOP, ON7HE, SP2JCK,
U0PCR, UBSADIN, U69YAE, UK10AV, UK2LAA, CYSUC,
VK9NC, VP2MM, Y80NP, YQ6FDE, Z9CKC, Y5I2E.

3.5 MHz

G3LZT, K7A7F, SM0C6P, UK2BBB, UK0ICO, UW4AB,
VK9NS, W5R5K, KYDS.

1.8 MHz

VK54S(1), VK9NS, ZL1HY, ZL2AKV.

**QLSs received by Eric L30042**

3D2ER, 302MK, 524CV, 5J2LL, 5Q5WR, AK1UP, W69K/G7,
BY8A, ZL3T2C, ZL4FGC, DL1K*, O6LRX*, DJ2IK*,
O6LRX, F6ARC*, FM7AT, G3NGW*, G3TGW*, G5ORY5,
HBA2MD*, H9BOXY*, H9JH0V, H1L1VH, J3BDU, J3BAON/J1Y,
J1RBEY/H1J, K606A, L11UG/28 MHz beacon), O36GW*,
W28K/PJJ7, UD60LK, U2Q6GLR, VP96A/28 MHz beacon),
VK9NC, ZL2PR, ZB3K, XZK5, K6DD0*.

* Denotes 10 MHz confirmations.

**QLSs received by Steve VK2PS**

DU7RUL, F80V, C21RC, ZK2RS, Z96IK, Z96MF, ZL4OUE,
UA2DQZ, UA4LUC, UA4GCP, UK9BS, UK3JBC, UK3DFH,
UA1AKD, Y90PH, YH010D, O9TJ, 6FGRB, 6F3FM,
Y80AF, VK9A, 12FAR, ZK2MM, VK8U, FB8KU, HLOD, HUF5.

**THANKS**

Assistance with information for these notes has been forthcoming from amateurs including
VKS 2PS, 3BY, FR, PA, UX, YJ, YL, 5G2, 6FS, HD, NE and Eric L30042. Overseas amateurs who
assisted included G3NBC, ON7WV, ZL1AKM, Research from magazines, including BREAK IN,
BQ DX, CO, HOWS DX, DX NEWSLETTER, DX
POST, DX PRESS, JAN and JAY O'BRIENS QSL
MANAGER LIST, QST, REGION 1, 2 & 3 NEWS and
WORLD RADIO.

The closing date for information for the October notes is 23 August.

Thanks to all sources of information.

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**BUYING, SELLING or WANTING?**

Check HAMADS first. Eight lines free to all WIA Mem-
bers.
At the 1982 Federal Convention the Federal Council prepared a number of policy statements. These were to be ratified by September 1982 by divisions and published, however to my knowledge they have not appeared in Amateur Radio so here is the WICEN and Emergency Communications Statement.

**POLICY STATEMENT — WICEN AND EMERGENCY COMMUNICATIONS**

Recognising that:
- The obligation on amateur radio operators to respond to emergency transmissions they receive;
- The desire of amateurs to offer their services in emergencies;
- ITU Resolution 640, which states that certain amateur bands may be used by administrations to meet the needs of international disaster communications;
- The frequently unpredictable onset of disaster situations;
- The value of training and preparation prior to any emergency or disaster;
- The existence of amateur Third Party Traffic Networks (TPTNs);
- The complimentary nature of WICEN and TPTN and the likelihood of amateurs interchanging between these activities;
- The need to accredit amateur emergency communications with disaster control agencies;
- The fact that not all amateurs will wish to be actively involved in disaster communications training;
- The Council:

1. Seeks a requirement for WICEN training and exercises together with exposure of other amateurs to WICEN message handling and voice procedure;
2. Observes that WICEN message handling and voice procedure should be aligned with that used by the SES for improved inter-operability;
3. Seeks standardisation of message forms based upon the general format and layout of the SES message form;
4. Confirms the requirement for declared and publicised WICEN calling frequencies in all the amateur HF bands.

Mr Butler was elected Secretary-General of the ITU by its Plenipotentiary Conference, held at Nairobi in October 1982, and took office on 1 January 1983. He has served as Deputy Secretary-General of the Union since 1968 on being elected, after nomination by Australia. He is seconded from TELECOM (Australia).

**CHESS AND AMATEUR RADIO INTERNATIONAL — CARI**

CARI is a newly formed international club for people wishing to play chess via amateur radio.

The club is organised by Vince K2VJ, PO Box 682, Cologne, New Jersey, USA 08213, who publishes a quarterly newsletter with details on how to set up local or international games.

You can contact Kevin VK3ASM or Craig VK3CRA both QTHR or check into our local CARI net on Wednesday night 1000 UTC 3.567 MHz and you will be very welcome whether a beginner or an expert.
COMPUTER PROGRAMME FOR STATION LOG AND QSL CARD PRINTING

This programme was provided by M. Mohan, VE6AZM. It is written in BASIC and, with minor modifications can be used on any computer with a BASIC compiler.

A menu is displayed when the programme is run to allow the following choices to be made:

1. Display log by callsign (displays all QSOs with given callsign)
2. Display log by date (displays all QSOs on a given date)
3. Enter a new contact (just that)
4. Print QSL by a call (prints a QSL for each QSO with that callsign)
5. Print QSL by date (prints a QSL for each QSO on that date).

To change the programme to suit your situation change VE6AZM to your call in all places where it occurs, except in line 100. Don't forget lines 918 & 926. Do not enter line 1000 on. Change lines 931, 932, 996 to incorporate your details.

The details of changes to be made for different machines are not given here because, to be reliable, access to all of the major machine types would be required. At least 4 K of RAM would be required for a useful log. If you are very active you will need more. For example 1000 QSOs may require 64 K of RAM.

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To use the programme:

1. Run the programme
2. A menu is displayed.
3. Select the choice you want and follow the menu.
4. Enter the required data.
5. The programme will print the log or QSL card.

If you make any changes to the programme, please update the comments accordingly.

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AMATEUR RADIO, August 1983 — Page 29
The ubiquitous presence of electrical and electronic equipment in today's living has benefited mankind immeasurably, but we are paying an ever increasing price for this service, not only in monetary terms but in terms of Electromagnetic Interference. The very use of this equipment is causing ever increasing interference, and in consequence, social and legal problems.

Cable TV systems were built in Canada almost thirty years ago. But it is new for amateur and other radio services beginning the day cable TV system began to use mid-band and super-band frequencies. It is due to leaks in cable TV systems which allow signals in the cable to leak out and interfere with radio systems on the outside. Of course, those same leaks make the cable system susceptible to interference leaking into the cable.

In years gone by, whenever amateurs had interference problems, only the complainant (most often a private individual), the amateur and DOC were involved. With a little cooperation these problems were quickly resolved. However, amateurs and amateur clubs involved with cable TV interference problems will have to play an entirely different ball game.

The opponent is a company rather than an individual; two umpires with different objectives in mind will do the judging, and the corrective measures will be very costly and time-consuming to implement. Amateurs can win if they are prepared to understand the game and take advantage of all the opportunities that it creates.

Cable TV systems are regulated under the Radio Act by the Department of Communications which grants Technical Construction and Operating Certificates, and under the Broadcasting Act by the Canadian Radio-television and Telecommunications Commission which grants licenses. According to the two Acts, the license has no authority unless both the Technical Construction and the Operating certificates are valid. Therefore, the Department of Communications has the power to close down a cable system if a case of interference were not resolved. HOWEVER, DOC WOULD BE VERY RELUCTANT TO DEPRIVE A CITY OF UMPTEN CHANNELS OF TV.

This is where we arrive at the psychological situation — "How much chance would the Amateur Service have against a whole city?" The catch 22 is, that once a system, or equipment, of this nature is allowed to get a foot in the door it becomes a creeping disease which is protected by its consumers, while its controllers sit back and relax all the way to the bank... We should remember CB which caused the DOC an awful problem, while providing the entrepreneurs with a pot of gold.

There is no easy answer to this "catch penny" situation, however. The Amateur Service can help to ensure that the promoters of such systems and schemes do not sneak to our back door by, each and every member of the Amateur Radio Service, doing his or her best to continually monitor all trends and events in the world of commercial communications and electronics.

To see what opportunities are available for amateurs to get a case of Cable TVI resolved, we should start by familiarising ourselves with both of the authorisation processes.

Proofs of performance are important. They show the DOC that the system performance is essentially meeting standards of the Department. Broadcast procedure 23 sets out the standards (including the radiation standard) and how they are to be measured. A proof has to be submitted one year after a system commences operation and one year prior to the expiry date of the Certificates. Again, we have a loophole! Once the system has started serving consumers, it's virtually impossible to shut it down... "Remember Channel O and 5A?"

It is essential that you know the radiation limits that the Cable Company has to meet and how they are measured. Because leakage in the 2 metre band from a cable system which meets the DOC standard (10 microvolts per metre at three metres from the cable) will result in a receivable signal in modern amateur equipment sixty feet from the cable, one cannot assume that, since a signal is received, the standard is exceeded.

Another warning for Australia... Therefore, the leakage from the cable lines must be measured at a number of locations throughout the interference area to confirm that the leakage exceeds the DOC requirements.

It is a time-consuming task but, because DOC inspectors may not have time to do the investigations...” “Another warning for Australia!...” there may be no alternative. Be sure the carrier measured comes from the cable and not directly from some distant transmitter. Test equipment (receiver, transmission line and antenna) should be calibrated. You may be pitted against a Cable Company and/or DOC engineer on the matter of measurements and you want to have a good case technically.

Now, equipped with measurements that prove interference, you can go and talk to the cable company to get them to repair the leaks... some hope, based on USA experience. If they are reluctant, bear in mind that locating and repairing the leak can cost many thousands of dollars, especially if the system is not well maintained.

The Canadian Cable Television Association recognizes that leaks result not only in interference to, but also make a cable system susceptible to interference from, other radio services. Leakage is therefore of concern to the Association and its members. The Association has produced a "Radiation Monitoring Handbook" to assist member companies. Included in the handbook is advice on how to monitor a system for radiation leaks, measure radiation and locate leaks. Technical help is also available to the companies from many other sources. Accordingly, amateurs should not become involved in any more than helping cable technicians locate leaks.

Amateurs should not overlook another complication. House and apartment building "wiring" when improperly done, can cause terrible interference problems and, depending on who owns and maintains the distribution system in the building, may be beyond the control of the cable company.

At the present time, the Australian Department of Communications is attempting to administer the finite electromagnetic spectrum with grossly inadequate mandatory legislation, and an inadequate number of staff to properly supervise the use of one of our most important natural, and extremely vulnerable resources.

This warning from Canada is an illustration of the vulnerability of government control bodies when they are involved with com-
Members of the Amateur Service should, in the interest of the continued well being of our Service, keep a very close watch on this psychological/financial manoeuvring by those in society who are concerned only with profit... Remember, cable TV was used here only to illustrate this potentially disastrous situation. The psychological implications can equally apply in many similar areas — “Let us heed the warning from Canada”.

Acknowledgements to TCA MAGAZINE and VE3NR

STEWART ELECTRONICS OPENS NEW STORE
Due to an ever increasing demand and requests for an outlet closer to the city and western suburbs Stewart Electronics has opened a new sales outlet at 437 City Road, South Melbourne. The new store will carry the same range as the Huntingdale head-office and will be well supported with daily distribution of stock. Callers are most welcome and full counter/cash sale facilities are available.

GFS MOVES QTH
GFS Electronic Imports have moved to new premises at 17 McKeon Road, Mitcham, Victoria. (Next door to their old shop).

Due to Greg’s ever increasing overseas franchises the previous location was becoming too small. The new store has a larger display area with an ever increasing range of goods.

Call in and inspect the new premises. Greg and Alf will make you most welcome.

Note: Postal address and telephone number remain the same.

Below — GFS Electronics’ new show room.

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Below — GFS Electronics’ new show room.

DICK SMITH OPENS IN TOOWOOMBA
As a convenience to our many customers who live in the Darling Downs area, the important retailing centre of Toowoomba, Queensland has become the host for the latest Dick Smith Electronics store.

Now Toowoomba’s electronic enthusiasts (and enthusiastic beginners as well) will have, at their doorstep, everything from components to kits, home computers, telephone products, HI FI equipment, electronic games, etc.

Located at the corner of Ruthven and Bowen Sts, the phone number is (076) 38 4300. Toowoomba store manager, Brian Marney (pictured here), and his specially trained staff are looking forward to serving you.

So, why not drop into Dick’s new Toowoomba store, have a look around and take advantage of the fantastic specials and direct import prices.
NEW

2.3 GHz Microwave Downconverter Kit.  Price $89

The RX-2300 includes all components, teflon PCB, case and BNC connectors. May be tuned to any 30 MHz segment between 1.69 and 2.7 GHz. Included in this range are Weather Satellites, NASA Space Shuttle TV and Audio, NASA beacon on the moon.

NEW BROAD BAND VHF/UHF BEAMS

LOG-S, 100 to 520 MHz Log Periodic Beam, 9 element 1.02 metre boom, 9.5 dBi gain, 200 Watts $89 + 10 P&P

LOG-SP, 65 to 520 MHz Log Periodic, 13 elements, 3.07 metre boom, 11.5 dBi gain, 200 watts. $125 + $10 P&P

ANTENNA ROTATORS

We stock EMOTATOR rotators, the rotator that has been serving the Australian amateur for over 20 years.

103 SAX MEDIUM DUTY $235 + $10 P&P
502 SAX HEAVY DUTY $366 + $10 P&P
1102 MSAX EXTRA HEAVY DUTY $484 + $10 P&P

SHORTENED TRAPPED DIPOLE FOR 80, 40 & 20 METRES

A-248D Approx 60 ft long, includes wire, insulators and traps. $93 + $7 P&P

1983 callbooks

NOW READY!

US CALLBOOK $26 + $3 P&P
FOREIGN CALLBOOK $25 + $3 P&P

ATN ANTENNA’S

GFS keep the ATN range of HF, VHF and UHF beams. Write for a brochure on the full range.

COME AND CELEBRATE WITH US IN OUR NEW LARGER SHOWROOM

SQ-61 6 metre SWISS QUAD’S 12dBD gain. were $171
now $89 + $10 P&P
ONLY DURING AUGUST.

We also stock HF, 2 metre on 70 cm high performance SWISS QUADS. Write for details.

2 metre RINGO, 9 dBi gain omnidirectional vertical antenna. **$60 + $10 P&P**

NEW EXTRA

LARGE

12 INCH

24 HOUR

QUARTZ

CLOCK

MFJ-105 **$125 + $6 P&P**

True 24 hour quartz wall clock has huge 12 inch diameter face. Gives excellent visibility across computer/radio room.

Fifteen seconds per month accuracy.

Single "AA" battery provides over one year operation, immunity from power line failure and eliminates power cord.


KEEP YOUR QSL CARDS NEAT & TIDY

with our Plastic QSL Card Holder. Each pack includes two 20 pocket plastic card holders.

**Price $3 + $1 P&P**

RTTY THE EASY WAY

AFSK MOD-DEMOD FOR RTTY, ASCII, 45 to 1200 BAUD

MODEL MDK-17 KIT

* Interfaces directly to baudot Type Machines. * Provides for all Combinations of TTL or high voltage send-receive systems. * Only single + 12V Supply required. A high Gain Amp/Limiter and active band pass filter precede an XR2211 Demod I.C. * Good Data recovery is assured, even under difficult conditions * Excellent temperature stability is provided by an XR2206 I.C. in the tone generator. * Sense invert capability * LED indication of transmit tones, receiver tuning and valid signal. * Auto start output available (TTL). * Supplied with comprehensive documentation.

MDK-17 Kit **$106 + $10 Airmail, Assembled and Tested $161**
PERSONALITIES ATTENDING THE MT GAMBIER CONVENTION

Beven VK5TV.

David VK5KK.

Woody VK3AGD.

Harry VK3XI.

Eric VK5LP.

Ian VK3BUF.

David VK5ZOO
WIN A VHF CONVERTER COMPETITION

GFS Electronic Imports of 17 McKeon Road, Mitcham, Victoria have kindly donated a MFJ VHF Converter for the lucky WIA member whose name is drawn from the correct entries submitted.

The converter allows you to listen to Rural Fire Brigades, VHF Marine & Coastguard and allows you to enjoy all the benefits of your handie-talkie such as scanning, programmability, frequency readout, excellent sensitivity, selectivity, stability, limiting and AM rejection. A great prize.

Post your entry today.

ANSWER THIS QUESTION

What has twice as many edges as it has sides and two thirds as many corners as it has edges. It also has twenty one markings.

RULES

The contest is open to all members of the WIA, with the exception of all people and their immediate families associated with the production of Amateur Radio. One entry per member, each entry to be hand-written on the back of a standard Australia Post approved small envelope.

Entries must be received no later than the last mail, Friday, 30 September, 1983 and the winning entry will be the first correct answer drawn by the Editor of AR, on the 4th October.

The Editor's decision will be final and no correspondence will be entered into regarding the decision. Results will be published in November AR.

All entries to: AR Competition Box 300, Caulfield South, 3162. On the back of the envelope your name, address, callsign and the answer to the problem.

Only entries in the above format will be accepted. All others will be disqualified.
AMATEUR BAND BEACONS

FREQ CALLSIGN LOCATION
50.005 H44HIR Honiara
50.008 JA2IGY Mic
50.020 GB3SIX Aylesbury
50.060 KH6EIQ Pearl Harbour
50.075 V6S5X Hong Kong
51.020 ZL1HUH Auckland
52.013 P29SIX New Guinea
52.100 VK0AI Macquarie Island
52.200 V8KVR Darwin
52.250 ZL2VHP Palmerston North
52.300 VK6RTV Perth
52.320 VK6RTI Carnarvon
52.350 VK6RTU Kalgoorlie
52.370 VK7RST Hobart
52.420 VK2RSY Sydney
52.425 VK2RGB Gunnedah
52.436 VK3RMV Hamilton
52.470 VK7RNT Lauceston
52.510 ZL2MWH Mt Cimic
144.400 VK4RIT Mt Mawbullah
144.420 VK2RSY Sydney
144.465 VK6RTW Albany
144.475 VK1RITA Canberra
144.480 VKKF Darwin
144.550 VK5RSE Mt Gambier
144.600 VK6RTT Carnarvon
145.000 VK6RTV Perth
145.400 VK7RNT Lauceston
147.400 VK2RCW Sydney
342.410 VK6RTI Carnarvon
342.420 VK2RSY Sydney
342.440 VK4RBB Brisbane
342.450 VK3RMB Mt Bunninyong

No changes appear in the beacon list this month.

Last month I mentioned the unusual consistency of VK5RSE on 144.550 and operating from Mount Gambier, in that it is always available at this QTH. On the Monday following the SERG Convention at Mount Gambier, Peter Becker VK5KBF invited me to inspect the beacon site, so I was duly directed to a building on a small rise at Glencoe, about 23 km north west of Mount Gambier, and there it was! To say I was surprised would be an understatement! The antenna is a horizontal dipole joined to the chimney of the house with an ordinary TV mast about 2 m long and the co-ax goes down the chimney to the equipment cunningly hidden inside. The beacon is beautifully made with all the usual protection circuitry and a few other things besides. The site barely clears the surrounding pine forests but despite all this, it is reliable, and serves its purpose as a beacon very well. Any directivity which might exist from the antenna would favour both Adelaide and Melbourne!

SIX METRES

Gil VK3AUI phoned to report that on Saturday 18th June Peter VK0AP at Macquarie Island worked Stan VK3VD who was at his Allambee establishment in the Gippsland area at 0425. The beacon at VK0AP was received from 0400 to 0500. At the same time, ZL TV was noted, also a signal from Chatham Island, so it is apparent some form of enhanced propagation from that southerly direction enabled the contact to be made with Peter. Stan was unable to raise any other 6 metre stations either locally or elsewhere.

Graham VK6RO has sent a copy of the May 1983 Japan "Ham Radio" magazine which contains some interesting information. Again my Japanese is not good but I decipher the following: The Hong Kong boys are really getting into the 6 metre act and Steve VS6EJM reports the following will be on this year: VS6CT, VS6BT, VS6AL, VS6FX, VS6EL, VS6GW, VS6XLE, VS6XL, VS6XM, VS6XLA. They will be using 50.110 for CW and this will be the main calling frequency, 50.200 for SSB and 50.300 for FM.

From the same "Ham Radio" comes advice that 5Z4CS is now QRT. Also some QSL information: A35GW: PO Box 46, Nuku'alofa, Kingdom of Tonga. FK8EM: PO Box 1576, Noumea, New Caledonia. CR9CT: Via KB2XS, Rudolf F Lehnert: PO Box 1150, Princeton, New Jersey, 08540.

The Japanese 6 metre operators continue to work exotic places, and one wonders with the obvious increased level of activity generated by Cycle 21 whether the type of contacts they are having may not continue despite the decline of the cycle, perhaps not as consistent as at the peak, but it is certainly looking good for them, even if not for VK. The report covers the period from March to 24/4/83, and call signs being worked include all areas of VK, with prominence to VK4 and VK8, ZL1, ZL2 and ZL3, many contacts to New Guinea and other places such as KG6JDX, DU1BN and many others in DU, YC1CHG, H44PT, HS1SD, FK8EM, A35GW, FK1SB, YBOACB, V6S5MQ, FK0TAA, FK6EM, KG6IN, YB1CS, YB1BZ, YB2BSP, HL4XK, YC2DPP, V6SEL, VS6GW, HL1UH, FK8AX, HL5BAS, YCOVM, HL2AIB, ZK2RS, and many of these were worked on more than one occasion. Whether we are working them from VK or not it still indicates there is plenty of interest in 6 metres around the Pacific yet, hopefully it will continue.

THE MOUNT GAMBIER CONVENTION

On the local scene I have been on leave and the gear hasn't been on other than FM in the car so there is little to report. However, the car took me to Mount Gambier and the South East Radio Group Annual Convention which was very well supported by both VK5 and VK3. The Committee had obviously done a lot of ground work in preparing for the Convention as a very elaborate programme of events had been arranged and taxed the ingenuity of the participants. Some new ideas added much interest to the proceedings, plenty of trade support with many of the latest goodies to look at, or buy. A stall with second-hand material for sale was of interest, and of course the famous SERG tea provided by the ladies on the Sunday night was a winner as usual. Much improved arrangements for the meals was a credit to the organisers and they were able to handle the very large gathering in record time.

VK5 won the SERG trophy again thanks to the efforts of VK5KK, VK5CK, VK5AVQ, VK5ACE, VK5TV and some others. However, the VK3 crews did not disgrace themselves and managed to carry home quite a few trophies. The winner of the home-brew competition was David VK5KK with a 28 MHz transceiver, all solid state. When questioned as to why a dedicated VHF type like he obviously is, should be fiddling around with 28 MHz equipment, David replied, with tongue in cheek, that it was useful to supply 28 MHz energy for VHF equipment!

After the Convention I stayed in the area for a few days and met up with Chris VK5MC at Hatherleigh and had another look at his home-brew equipment and was able to observe him operating his 144 MHz equipment via the rhombics on two mornings, unfortunately this time without a great deal of success, although signals were heard from KG6DX well above the noise.

After leaving there, a few days were spent with mother-in-law (to satisfy the petticoat government), and then on to Ray VK3ATN, who I am pleased to report seems to be getting along pretty well after his accident when his tower collapsed in a gale and he tried to ride it to the ground! He is very busy making antennas for a living, but is still very interested in EME and hopes to get there again in the not too distant future. He is already doing some work on his 15.5 m dish which has been lying around for a number of years. Best wishes for a complete recovery Ray.

I noted also that Steve VK5AIM gave himself a birthday present recently and took his new FT290R on holidays to Victoria, and was able to drag himself away from the repeaters long enough to have a few contacts on the machine using SSB! Steve even worked back home town Elizabeth on 7.070 MHz (well!!!) using the FT-7114 and 432 from NSW.

Gordon McDonald VK2ZAB has written with some further news of his many VHF exploits during May. He says "Looking at my log I find there is too much in the beyond 200 km category to write about! I have made 108 contacts over 200 km and I know of many others made between other parties. So where do we start?"
North East Radio Group, Greg Williams VK3BGW holds the Club Trophy for group performance by a club, surrounded by members, YLs and YFs.

"I therefore report on contacts which are significant because they are either beyond 400 km or else have some other point of interest:

1. Contacts, Sydney to Melbourne on 2 metres: Doug VK3UM and I have managed to pass callsigns and signal reports on 6 occasions during May. This path is just short of 700 km. Signals are generally S1 but occasionally and briefly go to S2-3, except for meteor pings.

2. Contacts, Canberra to Melbourne on 2 metres, 460 km. Ralph VK1RK has made contact with Doug VK3UM on numerous occasions. Glen VK1KAA has also worked VK3UM several times. VK1RK also worked VK3ZHP on 27/5.

3. Sydney to Bendigo, 2 metres, 614 km. I worked VK3XDP on 6/5, Peter was 5/3 here and gave me 5/4.

4. Other significant contacts on 2 metres: VK2ZAB to VK2YEZ 474 km, 2/5, 11/5, 18/5, 23/5. John is at Griffith. VK2ZAB to VK2XDH 356 km, 6/5, 7/5, 21/5, 27/5. Doug is in Armidale and the Channel 5A translator limits his operating time to early mornings and this limits my operating times to weekends.

5. On 432 MHz: VK2ZAB to VK2KAY 300 km, 1/5, 17/5 and 27/5. VK2ZAB to VK1VP 260 km 5/5 and 21/5. These contacts indicate VK2KAY and VK1VP have good receivers as VK2ZAB is running 10 watts! VK2KAY to VK1VP 486 km, 11/5 and 17/5.

"General and conclusions: Country NSW stations equipped with 70 cm SSB include VK2KAY, VK2XDH (Armidale), VK2ADY (Tamworth) and VK2DOA (Narrabri). The Griffith gang have 70 cm but are repeater bound. Moves are afoot in VK1 to try the path to Melbourne on 70 cm.

"On 2 metres VK3UM has run a CW call several times and has been heard in Sydney by VK2AAS, VK2BKO, VK2ZRU, VK2ZHT and VK2ZAB. He has been heard in Gunnedah by VK2KAY and in Narrabri by VK2AKU and VK2DOA.

"Brian VK2AKU in Narrabri and Darcy VK2KAY in Gunnedah are running 2 metre skeds to Brisbane and northern VK4. Others in Melbourne are turning their beams north, with VK3ZBJ and VK3XQ coming to mind. Where are the VK7 SSB stations?"

Thanks for a very newsy letter Gordon and you make us quite envious down here. It seems Channel 5A has effectively eliminated all 2 metre operation from Western Victoria which often started contacts which eventually ended up in Melbourne for those in VK5. We now seem to be almost as isolated as VK6!

"As if all the above wasn't enough, another letter has come from Gordon VK2ZAB with some more hot news. "Working near the shack on 5/6 a CO call came up on 2 metres turning out to be Garry VK3ZHP, who was 5/3 in Sydney, later rising to 5/5, at 2345 (4/5 UTC time). After establishing contact we both paused to allow other stations listening to call in, but no takers. Tried 70 cm but no joy. Using other means we called in some other stations in both cities and this resulted in several contacts to Melbourne stations, viz: VK2ZAB to VK3ZHP, VK3BKF, VK3UM, VK2ZRU to VK3ZHP, VK3UM; VK2ZHT to VK3ZHP, VK3BKF.

"Canberra stations VK1RK, VK1KAA and VK1ZQR also worked the Melbourne boys. I also had a scratchy contact with Peter VK3ZDP in Bendigo. Another station with a callsign which appeared to end in JJ was also heard in Sydney. All so strange, a few weeks ago it had never been done before, now it is becoming commonplace!"

"Well, it's always been said you have to be in it to win it, and it would appear the general overall vigilance of some stations is paying off, and others are reaping the side benefits. Maybe it will be a time soon for Sydney and VK5 to make it again, it certainly is quite a few..."
years since I last worked into Sydney on 2
metres but would certainly like to do so again.
Have 160 watts to a pair of 13 element yagis at
24 m and a 3SK97 masthead pre-amp for
starters, but the QTH is rather poor, but
always willing to try!

THE LEAST SUCCESSFUL VET
Although not strictly amateur radio I was
quite tickled by the following in the June 1983
"Propogator" of the Illawarra Amateur Radio
Society.

"In the course of his duties in August 1977,
a Dutch veterinary surgeon was required to
reat an ailing cow. To investigate its internal
gases he inserted a tube into that end of the
animal not capable ol facial expression and
struck a match.

"The jet of flame set fire first to some bales of
hay and then to the whole farm causing
damage estimated at $90,000. The vet was
later fined $280 for starting a lire in a manner
suitable, -from the Book of Heroic
Failures.

Lyle VK2ALU continues to keep us infor-
med on the progress of the re-installation of
the Dapto EME equipment, shifted some
years ago from its former location where it
was subject to damage from vandals. Cur-
rently Lyle reports work is proceeding with
the painting of shelving, and Jim VK2DLJ
being given the material and working drawings
for making up the main part of the dual mode
feed horn for 1296 MHz. The low level driver
stage for the transmitter is now complete and
is giving 2 watts output from 400 milliwatts
input. When installed in the drive chain, this
will provide more than adequate drive for the
power amplifier to give 120 watts output. Most
of the mechanical work is now completed on 2
receiving pre-amplifiers of the DL7YC design."
From "The Propogator".

OTHER NEWS
Steve VK5AIM provides me with info from
"The Short Wave Magazine" published in
the UK. Included this time is a note on 6 metres
that Paul G4JJE has set out to work the other
thirty nine stations in the UK who have been
allocated licences, and so far has found
thirteen of them. It didn’t take them long to
learn the art of crossband contacts to 2
metres, but Paul does things a little differently
from most in that on 27/2 he worked DJ5MS 6
m and a 3SK97 masthead pre-amp for
scoring purposes.

 portable to portable.
Points for portable to home stations are half
the above points.
Any contact with the official station of the
Club VK3APC will count as double points for
that contact.
Entries will be accepted from any portable
station providing that only one operator
operates that station at any one time.
Entries are to be in the form of a log extract
with all points calculated and totalled and be
posted to the Contest Officer, Moorabbin
and District Radio Club, PO Box 88, East Bentleigh.
3165 to arrive no later than four weeks after
the contest.
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NEW ACCESSORIES FOR JIL SX-200 SCANNING RECEIVER

GFS Electronics recently announced the release of a number of new accessories to suit their JIL SX-200 Scanning receiver. All four are designed to further enhance the already high performance of the scanner which is the only one of its type designed to cover 26 to 88 MHz, 108 to 180 MHz and 380 to 514 MHz AM and FM.

The first, known as the Model CVR-1B Scanverter, allows the SX-200 to cover 216 to 580 MHz. It simply plugs in series with the SX-200s external antenna lead. After adding 12 volts DC the SX-200 has full frequency coverage from 26 MHz to 514 MHz with no gaps except for the 88 to 108 MHz FM Broadcast band. The range 216 to 380 MHz encompasses a number of military frequencies as well as frequencies used by the Space Shuttle crew for direct communication to tracking stations.

The Model CVR-2 Globscan shortwave converter turns the SX-200 into a broadcast and shortwave receiver. It provides coverage from 550 kHz to 26 MHz enabling the user to receive all normal broadcast stations as well as thousands of overseas signals from shortwave stations. Like the CVR-1B it simply plugs in series with the external antenna lead of the SX-200. Priced at $199 and $189 respectively the CVR-1B and CVR-2 turn the SX-200 into a full coverage programmable receiver from 550 kHz through to 514 MHz with the exception of 88 to 108 MHz.

Also available and designed to increase the JIL SX-200s facilities, are two user assembled and installed kits.

The A4-AM kit allows the SX-200 to automatically select the AM mode whenever it receives and Airband or 27 MHz Marine/CB frequency. The facility is also manually overideable so that the FM mode can be used in either of these bands, if required. The EXP-32 memory expander kit provides the SX-200 with an additional 16 memory channels. With this kit installed a total of 32 memories are available and may be selected in two separate banks of 16 or the entire 32.

Prices are $32 and $53 for the A4-AM and EXP-32 respectively. For full details of all four products contact the suppliers: GFS Electronic Imports, 15 McKeon Road, Mitcham, Victoria 3132. Phone (03) 873 3939, Telex 38053 GFS.

NEW VIDEO ENHANCER/STABILISER

The MFJ-1421 (PAL) is a combination Image Enhancer, Stabiliser and Distribution Amplifier especially designed for the PAL TV System.

It is unique in a number of areas including its built-in Noise Cancel Control. This control overcomes the problem of increased picture noise as enhancement is increased, a problem which plagues most other image enhancers available here.

It also features a built-in Sync Stabiliser for improving video with poor sync, a video gain control which is particularly useful when using the MFJ-1421 (PAL) Distribution Amplifier Section. Also provided is switching for direct bypass of the unit.

Price of the MFJ-1421 (PAL) is $224 plus freight. For further information contact GFS Electronic Imports, 17 McKeon Road, Mitcham, Victoria 3132 (PO Box 97 Mitcham). Phone: (03) 873 3939.

NEW HIGH GAIN DIRECTIONAL ANTENNAS FOR SCANNING RECEIVERS

GFS Electronic Imports recently announced the release of two VHF/UHF antennas. They are high gain broad band directional types designed for use in a wide variety of VHF/UHF applications, particularly suited for scanning receiver use, and provide excellent performance in fringe areas when compared with a standard discone.

Known as the LOG-S and LOG-SP the new antennas are of the log periodic type. The Model LOG-S has 9 elements with an average gain of 9 dB and a bandwidth of 100 to 520 MHz. Boom length is 102 metres. The LOG-SP has a bandwidth of 65 to 520 MHz. 13 elements and an average gain of 11.5 dB with a boom length of 3.07 metres.

Both antennas are also quite suited to transmission applications over their designed bandwidth. Maximum input power handling is 200 watts.

Price of the LOG-S is $89 plus $10 freight and the LOG-SP is $125 plus $10 freight.

For further information contact: GFS Electronic Imports, 15 McKeon Road, Mitcham, Victoria 3132. Phone (03) 873 3939.
RTTY OPERATING PROCEDURES

Those who have just obtained RTTY gear are well advised to do a lot of RTTY printing (listening) before going on air. Also it is a good idea to keep off the DX bands until you have got some idea of good operating procedure. One of the first considerations in good RTTY operating is to remember the other fellows equipment may not be the same as yours and consequently you should as far as possible operate in a way that will suit any normal equipment.

If you use a communications computer don't forget many others are using mechanical systems and although your operating procedure may be acceptable to other computer operators it may well be most annoying to those using mechanical systems. Those using mechanical systems should remember computer line lengths are often not the same as theirs, usually only about half their length, so anything set out in columns or any mechanical system RTTY pictures will usually be meaningless on a computer screen.

Both computer and mechanical system operators should realise that although the operators should also remember some of the signs on their keyboards are not standardised and may not print out at the other end in the way you sent them. In addition to letters and figures the following miscellaneous signs are also normally standardised — full stop, comma, question mark? hyphen - brackets on and off ? oblique stroke / and colon : These will usually be received as you sent them. There are many other signs on your keyboard but be cautious about using them when you don't know what equipment is being used at the other end. Computer operators should also remember some of the signs on their keyboard are only useful for ASCII and do not operate on Baudot RTTY.

An example of the miscellaneous signs problem is as follows. I often work a friend who uses a Teletype machine and if I am sending a $ sign to him I send a % sign from my keyboard and in order to print a dollar sign on my paper he needs to send a @ sign from his keyboard. Of course while we are understanding each other perfectly others printing us may well be getting something different again and wondering what is going on. When you don't know what the other fellow is using, better to spell out dollars etc to avoid confusion.

In order to understand the reasons for some RTTY operating procedures I will outline some contrasting details of mechanical and computer systems. In a mechanical system the printing is on paper (often called “hard copy”) and with the computer it is shown on a screen (often called “glass copy”). In reception the mechanical system must have proper carriage return (CR) and line feed (LF) signals sent to it in order to prevent overprinting. Overprinting means the same paper is printed on more than once and in so doing all the information thus combined is made unreadable. However signals received on a computer system will not overprint as when a display line is completed the computer automatically goes to the next line not needing any CR or LF signals to do so. Two computer operators could happily work each other all day without sending a single CR or LF signal but any mechanical system operator trying to copy them would curse them for doing so.

Mechanical systems will be around for many years to come and computer operators should be considerate of those using such systems.

Most computer systems automatically send a CR and LF signal at intervals to suit mechanical copying systems and this interval called “line length” is normally adjustable by the computer operator. Most mechanical systems have a line length of about seventy characters thus the word spaces between them total seventy across the width of the page. As line lengths differ with different makes of machines it is best to stick to a short line length and sixty three has been found a good number of columns to use. With mechanical systems the operators should likewise remember that the line length of their machine may be greater than some other machines and not extend their lines right to the right hand side of the paper, once again sixty three is a good number of columns and this does not waste much paper. With computer systems there is often a switch where the operator in reception can switch off CR LF as this often wastes space on the screen and is unnecessary with the computer starting new lines automatically.

The following is a guide for normal practice in RTTY operating.

Baudot speed should be set at 45.45. Shift should be set at 170 Hz. Using FSK on HF bands, shift polarity should be such that the highest RF frequency is Mark and the lowest is Space. When using a SSB transceiver with audio generated FSK this would mean using LSB on all HF bands. Using AFSK on VHF/UHF bands the tone frequencies should be Mark 2125 and Space 2295 Hz.

Your licence allows you to use either Baudot or ASCII codes but as normal mechanical systems can't print ASCII, computer operators are advised to normally stick to Baudot.

Normal operating procedures such as for phone or CW are also used on RTTY. You call CO etc and use call signals in exactly the same way except for a few additional points I now mention. As RTTY requires more exact tuning than CW or SSB it is normal practice to give a few seconds of tuning up signal at the beginning of each transmission. This is usually a string of RY letters repeated for as long as necessary. RY contains all the possible combinations of Mark and Space for each of the five Baudot code positions thus being a good test signal to tune up on.

Another thing needed for mechanical RTTY is to start each transmission with a CR LF and letters (LTRS) signal. This makes sure the receiving machine starts at the left of the page printing on a new line and printing letters. The receiving machine may for example have been printing figures and have stopped in the middle of a line. If you now send a full line without CR LF and LTRS this machine would print a string of figures and miscellaneous signs for the remaining half line and then overwrite on the last printing position until you send a CR LF and even then if you don't send LTRS it will remain printing FIGS until you do send a LTRS signal. In other words all your efforts are wasted because you failed to send CR LF and LTRS at the beginning. It is also good practice to use CR LF and LTRS at the end of any long transmission thus leaving the receiving machine ready for the next call or message. Additionally many operators
adopt the practice of sending a LTRS signal at the beginning of each new "hard copy" line in case the receiving machine has, due to some false fade out or QRM signal, accidently gone into FIGS during the last line. In all this we are assuming the message is in letters as if it were in figures the reverse procedure would be used.

The following are some practical examples of calls.

CR LF LTRS RYRYYYRYYY- RYRYYY RYRYYY CQ CQ CQ CQ DE VK5XYZ VK5XYZ VK5XYZ AR K. Of course CR LF and LTRS only stand for pressing the right key of that name in each case but the remainder is typed out exactly as it would be sent. CR LF LTRS RYRYYYRYYY- RYRYYY VK2ABC VK2ABC VK2ABC DE VK5XYZ VK5XYZ AR K (or if you prefer KN instead of K).

Some would argue that CR LF and LTRS should also be sent at the end of each transmission and this is good practice with long transmissions but in the above case as calls will probably be repeated several times before a contact is made it is in my opinion hardly necessary to repeat CR LF and LTRS at the end of each short transmission as the beginning of the next one will do that anyhow. If you are breaking into an existing QSO do this at the end of a transmission, just send your callsign two or three times no RY CR LF or LTRS at this time and make it very brief in case you are doubting. Additionally it is very important to net exactly with the last transmission that you are following so you will be printed with no retuning. In the above examples the number of RY signals have been reduced somewhat, of course the number used depends on the band conditions etc and if conditions are poor more will be sent than if conditions are good. Also once contact has been made it may be unnecessary to send RY signals at all. Normal amateur abbreviations are also used in RTTY, however only use the well known ones unless you know the person receiving them will understand.

In the above you will note no mention of CW or phone identification signals. It used to be mandatory to use this additional identification but it is now no longer obligatory to do so. However, I consider it is a good idea to use CW or phone IDs if there seems to be some deliberate amateur QRM on your signals. As it is only necessary to put in your callsign once in every ten minutes, using callsigns at the beginning and end of every short transmission is a waste of time and quite unnecessary. In such cases it is possible to omit callsigns completely for ten minutes once communication has been established but I usually prefer to use them either at the beginning or the end of all my short transmissions.

When working with a group it is not necessary to send all the callsigns of every station in the group each time you make a transmission. One practice is to only use the call of the next station in line to transmit de your own callsign at the beginning and end of your transmission. I prefer to use the callsign of the station preceding you at the beginning of my transmission and the callsign of the station to follow me at the end of my transmission. It seems to me you should acknowledge the fact that you have heard the station preceding you hand it over to you as you are in effect answering his calling you in. Of course there are as many procedures as there are operators but I trust this short explanation of RTTY procedures will start any new operator on the right track.

WIA 1983 FEDERAL CONVENTION

I had hoped that the Convention held over the ANZAC weekend would officially recommend RTTY frequencies in HF bands but this was not to be. This matter was discussed and this discussion will continue until and during the next Federal Convention to be held in 1984. Certain guidelines have been laid down for consideration and these matters will be bought up at the 1984 Convention. I suggest that all RTTY Clubs and concerned RTTY operators should make sure their thoughts on these matters reach the Federal Technical Advisory Committee (FTAC) in plenty of time to be considered before the next Convention. Write to FTAC, PO Box 300, Caulfield South, Victoria 3162.

I note in the June AR VK4 Notes that their Radio Club Workshop 1983 have proposed certain RTTY Calling Frequencies in the HF bands. These are very general and wideband. Space limitations, however, I do question the term "Calling Frequencies" referring to a band of frequencies. To me a calling frequency is normally a single frequency where you establish communication and then move elsewhere to continue the contact. However, as the recommendation is generally quite good I believe it would be a good idea for all other states to accept it at least until the WIA proclaim some RTTY frequencies.

NEW RTTY CLUBS

I would like to welcome two new RTTY Clubs formed or being formed, one in Tasmania and one in the Northern Territory. To contact the VK7 Group listen for VKs-7MM Martin, 7W2 Geoff, 7WJ Jack, 7AX Tony, 7DP Don, 7AH Tony and 7WP Ross.

To contact the NT Group listen for VKs-8ZMW Bill, 8HA Henry, 8CAW Karl, 8KW Bob, 8DI Barry and 8FT Frank. By the time this list is published no doubt there will be other calls to add to this list. All the very best to these clubs and I trust members will find their Club both helpful and enjoyable.

BUILDING A KIT

As I am often getting enquiries concerning where to get RTTY Kits for building modulators and demodulators etc I intend from time to time to supply information re such kits. The kits described this month come from The Australian National Amateur Radio Teleprinter Society (ANARTS) and the description is from their Newsletter AREWISE. Space does not permit giving details of all their kits so only a few will be mentioned this time.

ETI-730 DEMODULATOR — This unit is a reasonable performance demodulator of audio frequency shift keyed signals. The demodulator drives a 40-80 milliamp loop. The demodulator uses a hard limiter stage, low "O" active filter discriminator which is adjustable, two stage low pass filter, automatic threshold correction stage, normal reverse switching, AC comparator, logic driver and keyer driver. The project is a very basic demodulator. The constructor should also look at the series of ETI articles which, when matched together, form a complete system. Input — high impedances, 1-10 volts. Baud rate 45 to 75 baud. Frequency shift 2000-3000 Hz, adjustable. Outputs — logic, printer and loop activity (LED1) drivers. Components — IC's 6, TR. 2, Resistors 34, Caps 17. Auto start ETI May-80. Input stage and Uart ETI March-80.

ETI-731 MODULATOR — This unit is a phase coherent tone generator, sine wave AFSK, mark and space tone signal generator. Mark and space tones are adjustable. The circuit is used with the ETI-731 Demodulator. The tone generator has three adjustable level outputs. The circuit is of the Twin 'T' Oscillator design. Input — TTL, mark strappable high or low. Output 0-5 volts. Frequency Adjustment two Pots mark and space. Components IC's 2, TR.5, Diodes 1, Resistors 28 and Caps. 9.

I don't have space to describe it now but another very popular demodulator kit the DT 600 is also available, it is more expensive than the ETI-730 but in my opinion well worth the extra money. For these kits write to ANARTS, PO Box 860, Crows Nest, NSW 2065.

I would also like to hear from any others that supply kits. Please send me details in the form of a brief description that will be suitable for publication.

RD CONTEST

I have received some support in my efforts to stir up RTTY operators' interest in the 1983 RD Contest, and I have now received a letter from the chairman of FTAC re RTTY calling frequencies to be used in this contest. These frequencies are those mentioned in the VK4 notes on page 58 of the June issue of AR.

The letter refers to these as provisional RTTY calling frequencies (I assume a final decision will be made at the next WIA Federal Convention). Where these frequencies fall in a phone band it advised that most likely the top third or thereabouts of the exclusive narrow band segment would be the safest area in which to operate.

73 from Bruce VK5XI.

RADIO AMATEUR OLD TIMERS CLUB

Members of the RAOTC are reminded that the 7 MHz QSO Party will be held in conjunction with the New Zealand Old Timers Club on Monday the 8th August 1983 from 0800 to 1100 UTC.

Rules for this party can be found in Amateur Radio, February issue (page 20).
Reading through amateur journals, DX newsheets and listening to on air chatter, many operators are expressing the opinion that Spratly Island should be deleted from the DXCC countries list. My initial comment is, why Spratly Island? Don’t get me wrong. I am with the rest of the amateur population who mourn the loss of life during the recent DXpedition to Spratly, but to me the question still remains. It seems ludicrous that we can talk about the deletion of Spratly Island and at the same time talk about the inclusion of Peter the First Island. (If you are not sure of the location it is approximately 68° S and 90° W). I would suggest the dangers in reaching this location would be great and if it becomes a new DXCC country it will not be long before someone tries to put it on the air.

There are two possible viewpoints. Firstly, do we recognise that in man there is a natural desire to attempt the seemingly impossible? (No-one said we should stop trying to climb Everest or conquer Space). Alternatively we can take the second course and only recognise, as DXCC countries, those areas that are regularly inhabited. If we are going to change the rules, let’s try and anticipate trouble and be wise before the event instead of after. For myself I do not wish someone to put his life at risk so I may advance my DXCC total by one.

**DXCC Countries**

Another XZ5A type operation is in the offing. It has been reported that a group of JAs are trying to get permission to operate in a part of Kampuchea that is held by the Khmer People's National Liberation Front. It is not known what callsign would be issued and if this operation would count as XU. The problem is that most countries, ours included, do not recognise the present Vietnam controlled government of Kampuchea.

Further, it is not certain whether they recognise the KPNLF, so once again we have a DXCC problem. Will it count or not? In line with the amended rules (see July AR) it looks as if this one could also suffer the same fate as XZ5A.

Whilst on the subject of DXCC, there is some doubt, whether DJ5RT/TT8 had a legitimate licence particularly as an HB9 operator was issued with the call TT8AD. At the present time I have been accepting this operation with the proviso, if it subsequently turns out to be an unlicenced operation, credits already given will be deleted. My advice is to work TT8AD while you can. (He is very QRV at weekends on 21 MHz CW).

**BARG and WZVD Awards**

Maurie, VK3XEX, has supplied an update on awards that are available from the Ballarat Amateur Radio Group and the Western Zone Victorian Division.
Send YL or XYL's name and your callsign with $2.00.

The current awards are:
- Gold Rush Award
- DX Widows Award
- Western Districts Award
- Lake Goldsmith Rally Award

The Begonia Award is now no longer available. All the above awards may be obtained from VK3XEX, Maurie Batt, RSD, Rokewood Junction, Victoria 3351.

INFORMATION REQUIRED
If your award has not been listed during the past two years and you would like to have some publicity, drop a line to me with all the details.

Many Thanks.
73 es DX, Mike VK6HD.

Refer April AR, p 54 for details of this award.

DON'T MISS OUT!!
ORDER YOUR
1983/84
CALLBOOK
NOW

The 1983/84 edition will be on sale in September with new look call listings and over 3000 new and updated call-signs.

Place your order now to avoid disappointment.

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Graham Ratchiff VK5AGR

INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Check-in: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz Summer: 7.064 MHz

AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday
14.035 MHz

AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday
28.880 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 have been received from Bob VK3ZBB (ups and downs) and Gary VK5SZK (JAS-1). In recent weeks the University of Surrey team, responsible for the ongoing operations of OSCAR 9, have perfected a new bootstrap loader to ensure error free loading of data sourced from the ground station into the onboard spacecraft computers. Consequently the UOSAT control centre is now able to load a much larger weekly bulletin (14.5 kilobyte maximum) for the dissemination of amateur satellite news. These bulletins in recent months have become the major source of news for satellite users in Australia as the traditional HF links, that have in the past provided the information, have become very unreliable due to diminishing sun spot activity. The bulletin is generally available along with the telemetry and digitalkiller experiment on Friday, Saturday and Sunday. Transmission is on 145.825 using 1200 baud ASCII (1 start + 7 data + even parity + 3 stop bits) with 1200 Hz and 2400 Hz tones (Kansas City Standard). In view of their accuracy and conciseness I have included, directed from the latest bulletins, the most topical and pertinent items. Our thanks to the UOS-UOSAT team.

AMSAT OSCAR 10 LAUNCHED
The latest Amateur Radio Communications Spacecraft, OSCAR-10, was launched successfully on board an ESA Ariane Rocket at 11:59:03 UTC from Kourou, French Guiana on Thursday 16 June. The spacecraft has been placed in a geosynchronous transfer orbit prior to motor firing to take it to a highly elliptic 63 degree inclination orbit due to take place shortly. The spacecraft carries two transponders (435 MHz to 145 MHz and 1268 to 436 MHz) and four general and engineering beacons (GB: 145.810; EB: 145.987; GB: 436.04; EB: 436.02 MHz). The 145 MHz beacons will be operated intermittently whilst initial power budget tests are performed. The transponders will not be available for general use until the spacecraft has been fully commissioned in some four to six weeks time.

Congratualtions to AMSAT and ESA on a perfect launch.

OPERATIONAL STATUS OF OSCAR 10
The 145.810 MHz general beacon on board OSCAR 10 was activated some 2.5 hours after launch and telemetry data has been received by many stations. Preliminary analysis has indicated the spacecraft spin axis to be aligned towards the sun and the corresponding low battery charge rate will mean that the beacons will only be activated for short periods until the spin axis has been re-aligned. The 145.810 MHz GB has been transmitting CW and PSK telemetry.

Information now to hand states that the firing of the kick motor originally scheduled for orbit #3 has now been postponed to orbit #50. This delay is to allow realignment of the spacecraft's attitude to ensure that the required orbital parameters are achieved.

OSCAR 10 GENERAL BEACON CW FORMAT
The following format is utilised for the CW telemetry of the general beacon.

HI HI AMSAT OSCAR 10 AT *** UTC
Orbit *** MA *** 256 TLM: UBAT *** V
TBAT *** C IARRAY: * A SA ** DG SPIN ** RPM satellite status. (Herein is contained the bulletin concluding with) AMSAT OSCAR 10 HI HI.

The figures shown as " are inserted by the onboard computer and are real time values at the time the bulletin is transmitted. UBAT is the primary battery. TBAT is its temperature. IARRAY is the solar panel current. SA is the spin angle referenced to the spin axis. SPIN is the spin rate about the Z axis. The MA value following the orbit number is the mean anomaly and is referenced to 256, eg a value of 128 indicates it is at apogee and a zero value is the perigee.

OSCAR 10 PRELIMINARY ORBITAL ELEMENTS

EPOCH TIME: 83.16B.050000000
Fri June 17 01 12.00 1983 UTC
ELEMENT SET: 1
INCLINATION: 8.6080 deg

RA OF NODE: 249.1370 deg
ECCENTRICITY: 0.7290751
ARG OF PERIGEE: 178.3420 deg
MEAN ANOMALY: 86.820 deg
MEAN ANOMALY: 2.2958060 rev/day
DEAY RATE: 0.0023431 rev/day ~ 2
EPOCH REV. 1
SEMI MAJOR AXIS: 24277.706 km
ANOM PERIOD: 83.168.05000000
BEACON: 145.810 MHz

OSCAR 10 MEASUREMENTS

BEACON: 145.8100 MHz

The spacecraft remains stable in a flat (end over end) spin with a decreased +Y/-Y facet temperature gradient of around 5C. Further experiments with the boom and scientific magnetometer have confirmed that the boom has been straightened and the tip mass re-oriented successfully to within 15 degrees of the spacecraft Z-axis. The tip mass has been retracted to the top face of the spacecraft. The magnetometer data has remained stable and will facilitate navigation and future attitude manoeuvres. Assuming that no significant changes occur to the tip mass, no further boom experiments are scheduled.

OSCAR 8 STATUS (7 JUNE 83)
Following the OSCAR 8 battery charge problems that have occurred in recent weeks the following message has been received from W9KDR: . . . "Do not attempt communication through the OSCAR 8 transponders during this low voltage emergency. Presently OSCAR 8 is in Mode A and command stations have been instructed to return to Mode D (recharge) when telemetry tests are complete. Telemetry received in Mode A indicates the battery voltage has dropped to a point that has caused the telemetry to "hang up". The present frame of 180, 252, 324, 496, 568, 696, even after several days of recharge, indicates that the battery is not charging. Observations so far indicate that OSCAR 8 is following a similar battery problem that OSCAR 7 suffered. It is quite possible that any future operation of OSCAR 8 will be during times that the spacecraft is in sunlight. Presently we are in a minimum sunlight period which complicates matters even more. REMEMBER — No operation until further notice. 73 Bernie W9KDR . . ."

JAPANESE AMATEUR SATELLITE (JAS-1)
On a recent trip to Japan, Gary VK5SZK visited JARL Headquarters. Through his interpreter Gary expressed an interest in satellites, and was subsequently introduced to the presumed co-ordinator for the JAS-1
The proposed specifications are:

1. Launch
   - Date: Early 1986
   - Vehicle: H-l Test Rocket
   - Agency: National Space Development Agency of Japan
   - Site: Tanegashima, Japan

2. Orbital Parameters
   - Geosynchronous orbit: Medium altitude, circular orbit
   - Periods: 120 minutes
   - Altitude: 1500 km
   - Inclination: 50 degrees
   - Access distance: Average 6000 km

3. Tracking, Telemetry and Command
   - Tracking: JARL and world-wide amateur stations
   - Command: JARL and specific world-wide amateur stations

4. Satellite
   - Weight: 50 kg
   - Dimensions: 400 mm x 400 mm x 300 mm (Heights), hexahedron
   - Communication: J-mode

(1) Analog system:
   - Frequencies allocation
     - Up-link: 145.9-146 MHz
     - Down-link: 435.9-435.8 MHz
   - Output power: 2 W (PEP)

(2) Digital system:
   - Frequency: 435.7 MHz
   - Modulation: FSK, 1200 Baud
   - Memory: 1 M Byte
   - Output power: 1 W (carrier power)

---

Oscar 9 formulae update

Telemetry sensor allocation:

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>PARAMETER</th>
<th>UPDATE: 26 Apr 1983</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Secondary S/C Computer (F100L)</td>
<td>CAL EQUATION</td>
</tr>
<tr>
<td>01</td>
<td>Solar Array Current +X</td>
<td>1.2N MA (0.125A × 1A)</td>
</tr>
<tr>
<td>02</td>
<td>Battery Half Voltage</td>
<td>200 + 1.12N MA</td>
</tr>
<tr>
<td>03</td>
<td>Radiation Detector A O/P</td>
<td>N/100'(1.01)</td>
</tr>
<tr>
<td>04</td>
<td>Radiation Detector B O/P</td>
<td>40N'(1.04) Counts/S</td>
</tr>
<tr>
<td>05</td>
<td>Magnetometer Expt HY-Coarse</td>
<td>40N'(1.04) Counts/S</td>
</tr>
<tr>
<td>06</td>
<td>Magnetometer Expt HX-Coarse</td>
<td>Int(NY/63.5+0.869)'8054-FY</td>
</tr>
<tr>
<td>07</td>
<td>Magnetometer Expt HZ-Coarse</td>
<td>1nt(N/63.5+0.869)'8103-FX</td>
</tr>
<tr>
<td>08</td>
<td>Battery Pack-A Temperature</td>
<td>(474-N)'5'(1.01) degrees C</td>
</tr>
<tr>
<td>09</td>
<td>Spacecraft Facet Temperature +X</td>
<td>(474-N)'5'(1.01) degrees C</td>
</tr>
<tr>
<td>10</td>
<td>Visual Display Expt CCD Current</td>
<td>1.2'(N-30) MA (0.15A × 1A)</td>
</tr>
<tr>
<td>11</td>
<td>Solar Array Current -Y</td>
<td>200 + 1.12N MA</td>
</tr>
<tr>
<td>12</td>
<td>2.4 GHz Beacon Expt Power O/P</td>
<td>(N-145)'0.45 MW</td>
</tr>
<tr>
<td>13</td>
<td>Radiation Expt EHT volts</td>
<td>N volts</td>
</tr>
<tr>
<td>14</td>
<td>Radiation Detectors Expt Current</td>
<td>N+20/(8)'(0.983) MA</td>
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<tr>
<td>15</td>
<td>Magnetometer Expt HY-Fine</td>
<td>FY=18.55'(NFY-495.7) see 05</td>
</tr>
<tr>
<td>16</td>
<td>Magnetometer Expt HX-Fine</td>
<td>FX=18.53'(NFX-496.45) see 06</td>
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<td>17</td>
<td>Magnetometer Expt HZ-Fine</td>
<td>FZ=18.34'(NFZ-493.55) see 07</td>
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<tr>
<td>18</td>
<td>Battery Pack-B Temperature</td>
<td>(474-N)'5'(1.01) degrees C</td>
</tr>
<tr>
<td>19</td>
<td>Spacecraft Facet Temperature -X</td>
<td>(474-N)'5'(1.01) degrees C</td>
</tr>
<tr>
<td>20</td>
<td>Spacecraft Computer Current</td>
<td>1.2'(N-25) MA (0.125A × 1A)</td>
</tr>
<tr>
<td>21</td>
<td>Solar Array Current -X</td>
<td>200 + 1.12N MA</td>
</tr>
<tr>
<td>22</td>
<td>Battery/BCR +14V BUS</td>
<td>N/50'(1.056)</td>
</tr>
<tr>
<td>23</td>
<td>Sun Sensor +Z Axis</td>
<td>N/200'(1.01)</td>
</tr>
<tr>
<td>24</td>
<td>10.4 GHz Beacon Expt Current</td>
<td>(N-40)'4'(0.97)</td>
</tr>
<tr>
<td>25</td>
<td>Magnetometer Expt Temperature</td>
<td>(467-N)'6.85 degrees C</td>
</tr>
<tr>
<td>26</td>
<td>Magnetometer Expt Current</td>
<td>(N/8)'0.9945</td>
</tr>
<tr>
<td>27</td>
<td>Telecommand Receiver Current</td>
<td>(N-16)'8'(0.952) MA</td>
</tr>
<tr>
<td>28</td>
<td>Radiation Expt Temperature +X</td>
<td>(474-N)'5'(1.01) degrees C</td>
</tr>
<tr>
<td>29</td>
<td>Spacecraft Facet Temperature -Y</td>
<td>(474-N)'5'(1.01) degrees C</td>
</tr>
<tr>
<td>30</td>
<td>Battery Charge Current</td>
<td>2.9N MA</td>
</tr>
<tr>
<td>31</td>
<td>Solar Array Current +Y</td>
<td>200 + 1.12N MA</td>
</tr>
<tr>
<td>32</td>
<td>Power Conditioning Module +10V</td>
<td>N/60'(0.93)</td>
</tr>
<tr>
<td>33</td>
<td>Telemetry System Current</td>
<td>(N-16)'30'(1.084) MA</td>
</tr>
<tr>
<td>34</td>
<td>2.4 GHz Beacon Expt Current</td>
<td>0.4'(N-11)'(1.072) MA</td>
</tr>
<tr>
<td>35</td>
<td>Magnetometer Expt Temperature</td>
<td>(N/82)'1.67</td>
</tr>
<tr>
<td>36</td>
<td>Magnetometer Expt Current</td>
<td>(N-7)'4'(1.014)</td>
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<tr>
<td>37</td>
<td>145 MHz Data Beacon Power O/P</td>
<td>(474-N)'5'(1.01) degrees C</td>
</tr>
<tr>
<td>38</td>
<td>145 MHz Data Beacon Current</td>
<td>(474-N)'5'(1.01) degrees C</td>
</tr>
<tr>
<td>39</td>
<td>PRI S/C Computer Temperature -X</td>
<td>2.86N MA</td>
</tr>
<tr>
<td>40</td>
<td>Spacecraft Facet Temperature +Y</td>
<td>1.28(N-50) MA (0.075A × 1A)</td>
</tr>
<tr>
<td>41</td>
<td>+5V Line Current</td>
<td>2N/300'(1.12)</td>
</tr>
<tr>
<td>42</td>
<td>Power Conditioning Module + 5V</td>
<td>N/200'(1.01)</td>
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<tr>
<td>43</td>
<td>Sun Sensor -Z Axis</td>
<td>(N-36)'3'(1.038 MA</td>
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<tr>
<td>44</td>
<td>HF Beacons Expt Current</td>
<td>(N-102)'1.792</td>
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<tr>
<td>45</td>
<td>435 MHz Data Beacon Power O/P</td>
<td>(N-34)'3'(1.053 MA</td>
</tr>
<tr>
<td>46</td>
<td>435 MHz Data Beacon Current</td>
<td>(474-N)'5'(1.01) degrees C</td>
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<tr>
<td>47</td>
<td>435 MHz Beacon Temperature</td>
<td>(474-N)'5'(1.01) degrees C</td>
</tr>
<tr>
<td>48</td>
<td>Spacecraft Facet Temperature -Y</td>
<td>3N MA</td>
</tr>
<tr>
<td>49</td>
<td>Spacecraft Facet Temperature +Z</td>
<td>1.3'(N-60) MA</td>
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<tr>
<td>50</td>
<td>+10V Line Current</td>
<td>0.0158N-0.0224N'(N''=CH 32)</td>
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<tr>
<td>51</td>
<td>-10V Line Current</td>
<td>(N-663.44)'+183.486 (NT)</td>
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<tr>
<td>52</td>
<td>Power Conditioning Module -10V</td>
<td>-(N-336.55)'-189.54 (NT)</td>
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<td>53</td>
<td>Navigation Magnetometer Y-Axis</td>
<td>-(N-496.5)'194.54 (NT)</td>
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<tr>
<td>54</td>
<td>Navigation Magnetometer Z-Axis</td>
<td>(N-16)'10'(1.009 MA</td>
</tr>
<tr>
<td>55</td>
<td>Navigation Magnetometer X-Axis</td>
<td>(474-N)'5'(1.01) degrees C</td>
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<tr>
<td>56</td>
<td>Speech Synthesiser Current</td>
<td>(474-N)'5'(1.01) degrees C</td>
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<tr>
<td>57</td>
<td>CCD Imager Temperature</td>
<td>(474-N)'5'(1.01) degrees C</td>
</tr>
<tr>
<td>58</td>
<td>Telemetry System Temperature +Y</td>
<td>(474-N)'5'(1.01) degrees C</td>
</tr>
<tr>
<td>59</td>
<td>Spacecraft Facet Temperature -Z</td>
<td>(474-N)'5'(1.01) degrees C</td>
</tr>
</tbody>
</table>

The navigation magnetometer is subject to temperature drift which can cause clipping of the output.

NOTE: The axis labelling now employed is right-handed for all sub-systems.
UPS AND DOWNS

A regular listing in overseas magazines is the compilation of all satellite launches and re-entries. Bob VK3ZBB has now offered to prepare similar information for inclusion in this column on a regular basis. Thanks Bob for your offer and I look forward to the next listing.

The listing of "Ups and Downs" for March/April 1983 is as follows:

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Nation</th>
<th>Date of Launch</th>
<th>Period</th>
<th>Apogee KM</th>
<th>Perigee KM</th>
<th>Incln Deg</th>
<th>Facilities</th>
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<tbody>
<tr>
<td>1983-020A</td>
<td>ASTRON</td>
<td>USSR</td>
<td>23 Mar</td>
<td>98 hr</td>
<td>200 000</td>
<td>2000</td>
<td>5.5</td>
<td>SI</td>
</tr>
<tr>
<td>1983-021A</td>
<td>COSMOS 1447</td>
<td>USSR</td>
<td>24 Mar</td>
<td>101.2</td>
<td>829</td>
<td>806</td>
<td>98.8</td>
<td>W SAR</td>
</tr>
<tr>
<td>1983-022A</td>
<td>NOAA8</td>
<td>USA</td>
<td>28 Mar</td>
<td>104.9</td>
<td>1017</td>
<td>977</td>
<td>83</td>
<td>SI TM</td>
</tr>
<tr>
<td>1983-023A</td>
<td>COSMOS 1448</td>
<td>USSR</td>
<td>30 Mar</td>
<td>90.3</td>
<td>402</td>
<td>207</td>
<td>72.9</td>
<td>SI TM</td>
</tr>
<tr>
<td>1983-024A</td>
<td>COSMOS 1449</td>
<td>USSR</td>
<td>31 Mar</td>
<td>2 Apr</td>
<td>39 023</td>
<td>483</td>
<td>62.9</td>
<td>TV CS</td>
</tr>
<tr>
<td>1983-025A</td>
<td>MOLNIYA 1</td>
<td>USSR</td>
<td>4 Apr</td>
<td>90.3</td>
<td>291</td>
<td>284</td>
<td>28.5</td>
<td>M</td>
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<tr>
<td>1983-026A</td>
<td>STS 6</td>
<td>USA</td>
<td>5 Apr</td>
<td>1086.1</td>
<td>35 388</td>
<td>21 857</td>
<td>2.4</td>
<td>To be GS at 54°W SL</td>
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<tr>
<td>1983-027A</td>
<td>COSMOS 1450</td>
<td>USSR</td>
<td>6 Apr</td>
<td>94.7</td>
<td>515</td>
<td>474</td>
<td>65.9</td>
<td>SI TM</td>
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<tr>
<td>1983-028A</td>
<td>RAUGA</td>
<td>USSR</td>
<td>7 Apr</td>
<td>1440</td>
<td>25 870</td>
<td>1.3</td>
<td>TV CS</td>
<td></td>
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<tr>
<td>1983-029A</td>
<td>COSMOS 1451</td>
<td>USSR</td>
<td>8 Apr</td>
<td>11 Apr</td>
<td>634.2</td>
<td>35 974</td>
<td>24.1</td>
<td>To be GS at 128°W CS</td>
</tr>
<tr>
<td>1983-030A</td>
<td>SATCOM 6</td>
<td>USA</td>
<td>12 Apr</td>
<td>100.3</td>
<td>826</td>
<td>786</td>
<td>74</td>
<td>SI TM</td>
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<tr>
<td>1983-031A</td>
<td>COSMOS 1452</td>
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<td>35 974</td>
<td>172</td>
<td>24.1</td>
<td>M</td>
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<tr>
<td>1983-032A</td>
<td>XXX</td>
<td>USSR</td>
<td>17 Apr</td>
<td>2 Apr</td>
<td>9 Apr</td>
<td>2 Apr</td>
<td>74</td>
<td>SI TM</td>
</tr>
<tr>
<td>1983-033A</td>
<td>ROHINI 37</td>
<td>India?</td>
<td>20 Apr</td>
<td>2 Apr</td>
<td>9 Apr</td>
<td>2 Apr</td>
<td>74</td>
<td>SI TM</td>
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<td>USSR</td>
<td>22 Apr</td>
<td>9 Apr</td>
<td>8 Apr</td>
<td>2 Apr</td>
<td>74</td>
<td>SI TM</td>
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<tr>
<td>1983-035A</td>
<td>SOYUZ T8</td>
<td>USSR</td>
<td>22 Apr</td>
<td>10 Apr</td>
<td>8 Apr</td>
<td>2 Apr</td>
<td>74</td>
<td>SI TM</td>
</tr>
</tbody>
</table>

KEY: GS — Geosynchronous
      M — Manned
      TM — Telemetry
      TV — Television
      SI — Scientific Instruments
      CS — Communication Systems
      SAR — Search and Rescue Facility
      SL — Satellite Communication Link
      W — Weather Observations

THE FOLLOWING SATELLITES HAVE DECAYED

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date of Launch</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983-012A</td>
<td>COSMOS 1442</td>
<td>11 Apr</td>
<td></td>
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<tr>
<td>1983-018A</td>
<td>COSMOS 1446</td>
<td>30 Mar</td>
<td></td>
</tr>
<tr>
<td>1983-024A</td>
<td>COSMOS 1449</td>
<td>15 Apr</td>
<td></td>
</tr>
<tr>
<td>1983-026A</td>
<td>STS 6</td>
<td>9 Apr</td>
<td></td>
</tr>
<tr>
<td>1983-029A</td>
<td>COSMOS 1451</td>
<td>22 Apr</td>
<td></td>
</tr>
<tr>
<td>1983-035A</td>
<td>SOYUZ T8</td>
<td>22 Apr</td>
<td></td>
</tr>
</tbody>
</table>

Together with 44 other objects.

HELP PREVENT PIRATES

Keep bands for licensed amateurs.

DO NOT sell transmitting equipment to unlicensed operators.

RTTY/CW

Advanced split-screen ASCII, BAUDOT, CW software for Commodore computers . . . $59

VIC 20 computer — 5K RAM, 8 colours, hi-res graphics, 4 voice sound generator . . . $299

Commodore 64 computer — 64K RAM, 16 colours, hi-res 320*200 pixel graphics, sprites, sound synthesizer . . . $699

Both computers feature 20K BASIC & operating system, RS 232, parallel user port — disc drives, printers, joysticks, paddles, light pens, games, utilities etc available.

Versions also available for PET/CBM 3000, 4000 and 8000 series (includes SSTV send) — POA.

HIGH TECHNOLOGY COMPUTER SYSTEMS PTY LTD

87 Swan Street, Richmond, Vic 3121 ph (03) 429 1966 ask for Mike VK3BHM or Joel VK3ZKE
Last month’s column on zero-beating has generated some interest, so we’ll go a step further now by describing a couple of situations where the technique comes in handy.

Let’s say, for example, that ZZ1FB has just reappeared on the HF bands for the first time since 1897. ZZ1 is a tiny island in the Pacific, which is never heard from because it’s under water at high tide, but the amateur who just bought it won’t know that for a few hours yet. Anyway, he’s up, you just have to work him, and you are in a dogpile with 10,000 Js and twice as many Ws.

Now you might think at first that it would be a good idea to zero-beat ZZ1FB’s signal — but that’s a lot of people trying to do it and it’s pretty darned crowded. After a while you will realise that you can’t hear the guys the ZZ1 is working at all and it suddenly dawns on you that he’s done what any phone operator would do — he’s tuning across the edges of the dogpile perhaps 10 kHz away where he has a chance of copying somebody.

What you need to do is determine whom he is working and where. There is no easy way to do that but it can be done with patience and a bit of concentration. Say it’s JA1ABC about 8kHz up. Having found out who and where, all you have to do is zero-beat the JA1 and ‘tail-end’ him. You wait until they’ve just finished and hit the key, zero-beat on the same frequency, and if you have done it properly, the ZZ1 will think the JA has decided to send something else, and all of a sudden he’s listening to you.

Of course it is a lot easier if you have two (or more) VFOs, and even then it might take two or three attempts before you are rewarded with a ZZ1 in the logbook.

The other area where the zero-beat technique is handy is during a contest. Usually there is so much QRM around that a station calling CO has everything on his receiver wound down as tight as possible, and if you go back to him a few hundred hertz off his frequency he simply won’t hear you. Zero-beat him and you’ve got a good chance of making that point or multiplier, or maybe just the satisfaction of having used some expertise!

Another technique which is overdue to be mentioned is break-in operation. Strictly speaking, break-in means the ability to receive between the dots and dashes as you are sending. More often this is referred to as ‘full-break-in’, while receiving momentarily between words or phrases is known as ‘semi-break-in’.

There is a tendency for state-of-the-art bells and whistles rigs (your FT-Ones and TS-930s, etc) to offer full break-in, but it is very tricky to get used to. The first time you use it you are bound to end up in a muddle, because the background noise on receive is turned on and off in time with your sending, so the effect is ‘negative Morse’ — very distracting. I suppose the answer would have to be to turn down the AF gain till you can just hear the station you are working if he should try to ‘break you’. If you have too much trouble, and turn the AF gain all the way down, you might as well not have break-in, because you aren’t receiving anything in between.

Semi break-in is available on most modern transceivers by way of the VOX circuitry. To use it you set the rig for VOX operation and each time you key the rig the VOX relay trips and holds the rig in transmit mode until a set period (VOX Delay) after you release the key. You should be able to set the delay period so that the relay drops out between words or sentences, but you will have to adjust it when you change speeds. At very slow speeds you could probably set the delay to zero and thereby simulate full break-in, with the relay tripping between the dots and dashes, but this is not recommended — it’s not too good for the relay.

The Q-Code QSK is used in conjunction with break-in operation, but modern usage is a bit different from the original, which came about in the good old days of separate receiving and transmitting equipment and antennas, and/or split-frequency working. Nowadays, if a station asks you “QSK?” he wants to know if you can break back and forth with him rather than using callsigns at the beginning and end of every transmission. Usually he will send something like “QSK OK? BK” and you just respond with an R if you want to operate that way. Each station ends a transmission with BK (break, sometimes sent as BK but usually as separate letters) and callsigns are only used every once in a while (at least once every ten minutes to comply with regulations). It considerably speeds things up and you should certainly try it.

That’s pretty well filled the column for this month. Next month we’ll talk about tuning out the garbage. Till then 73.

PHOTOS WANTED

We are trying to compile a two page album for inclusion in AR later in the year. We have some but do need more. Put your name on the back so we can return them to you.

TRELEFTH JLRS PARTY CONTEST

Phone section Saturday 24th September at 0300 UTC to end Sunday 25th at 0300 UTC.

CW section Saturday 1st October at 0300 UTC to end Sunday 2nd at 0300 UTC.

All licensed men and women are invited to participate. OMs exchange RS or RST and QSO number starting at 001. YLs exchange RS or RST and QSO number starting at 0001 and JlRS members RS or RST and QSO number starting at 5001. Separate exchange is required. QSO numbers must be used in PHONE and CW contest.

Entry in each contest is limited to ONE of the following classes — A: more than four bands. B: less than three bands.

Scoring:

• Phone and CW will be scored as separate contests. Separate log for each contest.

• Each contact with the same station on different bands will be counted.

• OMs score one point for each contact with YL, five points for JLR member. YLS score one point for OMs and five points for each YL contacted.

• Multiply the number of contact points by the total number of prefixes worked in each band.

Copies of all Phone and CW logs must show claimed score, band, mode, RST, callsign worked and power transmitted and be SIGNED by the operator and postmarked not later than 20.10.83. Typed or printed logs please. To JA1YL, Kuni Kan 4-5-38-489 Hyakunincho, Shinjuku-ku, Tokyo 160, Japan. Certificates will be sent to all participants who submit a log.

Until next month 33/73/88 from Margaret VK3DML.

AMATEUR RADIO, August 1983 — Page 47
VK/ZL/OCEANIA Contest 1983

The W1A and NZART, the National Amateur Radio Associations in Australia and New Zealand, invite world-wide participation in this year’s VK/ZL DX Contest.

Phone section to be held for twenty four hours from 1000 UTC, Saturday, 1st October to 1000 UTC, Sunday, 2nd October.

CW section will be held for twenty four hours from 1000 UTC, Saturday, 8th October to 1000 UTC, Sunday, 9th October.

RULES

There shall be five main sections in this contest:

(a) Transmitting Phone.
(b) Transmitting CW.
(c) Receiving — Phone and CW combined.

For VK/ZL only

(d) Transmitting Phone — eight hour section.
(e) Transmitting CW — eight hour section.

All amateur bands may be used but no crossband operation is permitted.

VK/ZL stations, irrespective of the location, DO NOT contact each other for contest purpose EXCEPT on 80 and 160 metres.

Only one contact on CW and one contact on Phone per band is permitted with any one station for scoring purposes.

Only one amateur is to operate any one station under the owner’s callsign. Should two or more operate any particular station, each will be considered a competitor and must submit a separate log under his own call sign. This is not applicable to overseas competitors operating club stations.

Cyphers. Before points can be claimed for a contact, serial numbers must be exchanged and acknowledged. The serial number of five or six figures will be made up of the RS prefix of the station contacted, band, serial number sent by the other station.

Note W1, K1, WA1, WN1, A1, N1, are all separate prefixes and count as multipliers. W6AA/1 would count as “W1” not as “W6”.

80 metre section: for contacts on this band between VK and ZL, each VK and ZL call area is considered a “scoring area”, with each contact counting 10 points. Each different call area will count as a multiplier.

160 metres section: as for 80 metres except each contact counts as 20 points.

Logs: Overseas Stations

(a) Logs to show date, time in UTC, callsign of station contacted, band, serial number sent, serial number received. Underline each new VK/ZL call area contacted. Separate logs must be submitted for each band.
(b) Summary sheet to show call signs, name and address, equipment used, and for each band, QSO points for that band.

VK/ZL Stations

(a) Logs to show date, time in UTC, callsign of station worked, band, serial number sent, serial number received.
(b) Summary sheet to show call sign, name and address for each band, QSO points for that band, claimed score for that band. All band score computed from sum of points from each band, multiplied by the sum of the multipliers on each band.

A separate log for each band is required starting with 001 for each band.

Awards: Separate awards for Phone and CW.

A — World:
(a) Certificates to the top scorers in each country (call areas in W, J, U).
(b) Depending on reasonable degree of activity, separate awards may be made for top scorers on different bands.

B — VK/ZL:
(a) Top scorers in each call area of VK/ZL.
(b) Top scorers on individual bands.

Eight hour section:
(a) and (b) as above.

Entries to:
WIA VK/ZL Contest Manager VK3BGW
1 Noorabill Court
Greensborough
Victoria 3088

Note: W1, K1, WA1, WN1, A1, N1, are all separate prefixes and count as multipliers. W6AA/1 would count as “W1” not as “W6”.

80 metre section: for contacts on this band between VK and ZL, each VK and ZL call area is considered a “scoring area”, with each contact counting 10 points. Each different call area will count as a multiplier.

160 metres section: as for 80 metres except each contact counts as 20 points.

Logs: Overseas Stations

(a) Logs to show date, time in UTC, callsign of station contacted, band, serial number sent, serial number received. Underline each new VK/ZL call area contacted. Separate logs must be submitted for each band.
(b) Summary sheet to show call signs, name and address, equipment used, and for each band, QSO points for that band.

VK/ZL Stations

(a) Logs to show date, time in UTC, callsign of station worked, band, serial number sent, serial number received.
(b) Summary sheet to show call sign, name and address for each band, QSO points for that band, claimed score for that band. All band score computed from sum of points from each band, multiplied by the sum of the multipliers on each band.

A separate log for each band is required starting with 001 for each band.

Failure to remove duplicate contacts will incur heavy penalties and greater than two per cent duplicates will disqualify the entry. Awards: Separate awards for Phone and CW.

A — World:
(a) Certificates to the top scorers in each country (call areas in W, J, U).
(b) Depending on reasonable degree of activity, separate awards may be made for top scorers on different bands.

B — VK/ZL:
(a) Top scorers in each call area of VK/ZL.
(b) Top scorers on individual bands.

Eight hour section:
(a) and (b) as above.

Entries to:
WIA VK/ZL Contest Manager VK3BGW
1 Noorabill Court
Greensborough
Victoria 3088

For VK/ZL, entries to arrive before 31 December, 1983, and from overseas by 31 January 1984.

SWL SECTION

The rules are similar to the transmitting section but it is open to all members of any SWL Society in the world. No transmitting station is permitted to enter this section.

The contest times and logging of stations on each band per weekend are as for the transmitting section except that the same station may be logged twice on any band — once on phone and once on CW.

To count for points, the station heard must be in QSO exchanging cyphers in the VK/ZL DX contest and the following details noted — date, time in UTC, call of the station heard, call of the station he is working. RS(T) of the station heard, serial number sent by the station heard, band, points claimed.

Scoring is on the same basis as for the transmitting section and a summary sheet should be similarly set out.

Overseas stations may log only VK/ZL stations, but VK receiving stations may log overseas stations and ZL stations, while ZL receiving stations may log overseas stations and VK stations.

Certificates will be awarded as listed in the section under awards.
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CONTEST CALENDAR

AUGUST
6-7 European CW Test +++
13-14 Remembrance Day Contest Rules in June AR
13-14 DARC WAE CW Test +++
13-14 SARTG RTTY Test +++
17 QLP Activity
20-21 VK Novice Test
20-21 Scandinavian CW +++
24-25 Scandinavian Phone +++
27-28 All Asian CW Test

SEPTEMBER
3-4 DARC Corona "CORONA" 10 m RTTY
10-11 G QRP Activity
10-11 DARC WAE Phone Test
17-18 VK Novice Test
17-18 Scandinavian CW +++
24-25 Scandinavian Phone +++

OCTOBER
1-2 VK/ZL Phone Contest
6-7 GARTG SSTV Test
15-16 VK/ZL CW Contest
29-30 CQ WW DX CW Test

NOVEMBER
12-13 DARC WAE RTTY Contest
26-27 CQ WW DX CW Test

All tests marked with *** are not yet confirmed.

PLEASE NOTE THE RD CONTEST

The practice of one operator operating two stations simultaneously is considered not to be within the spirit of the contest and any logs suspected of this will be disqualified.

VK NOVICE CONTEST

Don't forget the VK Novice Contest in September. Let's generate some interest for this contest which had such a poor showing last year. This contest is a marvellous opportunity for all to participate and gain awards.

The maximum speed for CW has been reduced to 10 WPM to encourage this mode.

The maximum speed for CW has been reduced to 10 WPM to encourage this mode.

Contest Champion

The contest for the 1982 year have been completed and the available results are listed below. The results of the VK/ZL contest are not usually available until the June edition of AR. Therefore the trophy is awarded in the latter part of the year and held for the following year.

The contest for the 1983 year began with the John Moyle National Field Day and will continue with the Remembrance Day Contest. To become eligible you must enter and to stand a chance of winning you should try for a high score (positions one to ten) in each of the contests.

Good luck.

The winner of the contest champion trophy for 1982 is VK5QX, for being the most consistent high scorer and participator in the VK contest scene.

RESULTS FOR THE 1982 CONTEST

<table>
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<tr>
<th>CALLSIGN</th>
<th>JM</th>
<th>VK/ZL</th>
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<td>10</td>
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</tr>
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<td>38</td>
<td>10</td>
<td>—</td>
<td>10</td>
</tr>
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<td>7</td>
<td>14</td>
<td>14</td>
</tr>
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<td>10</td>
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<td>7</td>
<td>14</td>
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</tr>
<tr>
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<td>9</td>
<td>9</td>
<td>—</td>
<td>9</td>
</tr>
<tr>
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<td>10</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>6RZ</td>
<td>10</td>
<td>9</td>
<td>3</td>
<td>—</td>
<td>3</td>
</tr>
</tbody>
</table>

REG Dwyer, VK1BR
FEDERAL CONTEST MANAGER
Box 236, Jamison, ACT 2614

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH
CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW. 2077

Readers of this column will have seen, over the last several issues, listed examples of intruder stations using AM, RTTY, and CW modes of emission. There are, of course, other modes being employed by intruders, which are forbidden to the amateur operator, and are therefore very difficult, if not impossible to resolve and identify. The best thing we can do is to keep an eye on them, and see if they appear to be coming up on a regular basis, and start reporting them if this seems to be the case.

Probably one of the most important aspects of the problem is on the amateur bands is the need to resolve and identify. The best thing we can do is to keep an eye on them, and see if they appear to be coming up on a regular basis, and start reporting them if this seems to be the case.

No doubt we are all aware of the problems regarding the presence of an intruder station on the amateur bands is the need to NOT OSY when he appears.

Obviously this is going to present the amateur operator with some problems, as some of the intruder signals, as we know, are quite strong. However, I find it a measure of satisfaction NOT OSY if an intruder comes on top of my QSO. This is precisely what the intruder station wants — you to move aside for him. If you don't mind being bullied, then by all means shift frequency, or abandon the OSO altogether. But this certainly won't encourage the intruder to use this own frequencies, and move away from YOUR bands.

If you are QRM'd by an intruder, stay with it, and let him suffer the QRM from your LEGITIMATE SIGNAL. I rather suspect that, even although the amateur's power output is usually rather lower than that of the intruder, the intruder will become aware that someone else is on the frequency, and, with any luck, it will cause the intruder some hardship.

No doubt we are all aware of the problems caused by a CW signal coming up on top of us when we are conducting a CW QSO. Hopefully, the same problems will be encountered by the intruder, when we stay on our legal frequency. But the difference of course, is that the amateur operator IS THE ONE ENTITLED TO BE THERE.

Past experiences have shown that intruders will QSY if there is enough interference from an amateur station, particularly when both modes employed are that of RTTY. However, don't waste your time trying to out-talk Radio Beijing or Radio Tirana on 40 metres. Most importantly, don't cause any QRM to an unidentified station, unless you are one hundred per cent sure that the offending station is in fact an intruder. We have enough problems with intruders without the need for amateurs to QRM each other! The intruder problem is a continuing one, and needs continuing efforts by us all to try and resolve it. Please support the Intruder Watch, if only occasionally.

Page 50 — AMATEUR RADIO, August 1983
Well, the annual Remembrance Day Contest has rolled around once more. This contest is held in memory of those Australian amateurs who made the Supreme Sacrifice with their lives for our Nation during the Second World War. It usually is staged as closely to VJ Day — the date on which hostilities ceased, and the year 1939 is over the weekend of the 13th of August from 0800 UTC until 0759.

For further details regarding the rules of the RD, refer to the June issue of this magazine on page 42. Don’t forget that there is a receiving section of this contest, open to all SWLs. However, I expect that some of you will be tied up assisting with local amateurs in their logkeeping chores. Anyhow, all the best to you in the “RD — the friendly contest”.

**RADIO NETHERLANDS**

It now seems unlikely that Radio Netherlands will conduct any further experiments over shortwave in the exchange of computer data transfer. Recent evaluation of their Phase Three broadcast on 4th November, based upon 550 recorded reports from listeners, has proved to be disappointing. Only 178 were sufficiently qualified to provide a perfect or near perfect readout at the rate of 300 baud. The faster 1200 baud rate failed to come out on shortwave, and is therefore too unreliable.

As well, all of the successful printouts came from within Europe. Evidently multi-hop propagation does not give a sufficiently constant signal level or strength to remain within the tolerance levels of the home computer. Yet another problem was that the relay from the Hilversum studios to the two relay bases in Bonaire and Madagascar via Intelsat communications satellite was also unsatisfactory and unreliable. This prevented any coherent data being provided by listeners to these relayed transmissions. Because of phase distortion on the satellite circuit, as well as the digital to analogue converters, employed on voice and music programmes, failed to re-convert the computer audio to its proper shape. Because of these difficulties and the unreliability of satellite circuits at the present time, it is clear that there is no future to using the relay bases without the use of special modems.

Therefore, these results have indicated to Radio Netherlands that there is no point persisting with these experimental transmissions on shortwave of data transfer, until technology improves.

**SUCCESSFUL COMPUTER DATA TRANSFER**

However, as computer data transfers seem to be successful on MW and FM, particularly in Holland, Radio Netherlands will be including data transfer on taped transcriptions of their Media Network programmes. These are made available to local radio stations on MW and FM throughout the World. There has been a successful weekly programme over one of the Dutch domestic networks devoted to computers, which includes data transfers without any reception problems, even at 1200 baud. However, because of the problems experienced with different brand computers with programming language, a sort of computer esperanto had to be developed to facilitate the exchange of data between brands such as Commodore and TRS-80.

Known as BASICODE, this system has been in use successfully in data transfer between different computer models for over a year now. Recent improvements to the system have been developed and a handbook in English or Dutch has been written explaining it, together with an accompanying cassette. These should be available shortly from Radio Netherlands. For further details regarding price and postage information, please write to the following address:

*Media Network Computer Experiments, English Section, Radio Netherlands, PO Box 222 1200 JG, Hilversum, The Netherlands.*

**SATELLITE SWLING**

Satellites have been in the news lately, with the successful launch of AMSAT-OSCAR 10 in mid-June, as well as the projected amateur activity from the next space shuttle flight in November. It is interesting to note that Radio Netherlands has released a twelve page booklet explaining satellites for the shortwave listener. This follows up on a recent segment on Media Network devoted to this subject. Written by John Branegan, this booklet tells how to monitor some of the satellites with just an ordinary shortwave receiver and a simple antenna, explaining how experiments can be done in propagation and importantly how to keep track of the satellite. This booklet is free and is available from the above address.

**WATCH FOR THESE**

There are two very interesting programmes coming up this month on shortwave radio. On the 14th of August, you can hear an account of an event that happened over 100 years ago. Krakatoa was a mountainous outcrop between Java and Sumatra, which suddenly exploded, killing thousands of people. The noise of its eruption was clearly heard many thousands of kilometres away in Adelaide, while the cloud of debris in the sky provided spectacular sunsets for many months afterwards. Tune to the BBC World Service on Sunday the 14th August at 1430 UTC, or on Friday the 19th at 2330 UTC for an account "Krakatoa — the Island that Exploded".

On Wednesday the 17th August, Radio Netherlands is broadcasting a special report entitled "A Bridge Too Far". This is an account of the mighty air-borne army assault for a narrow corridor of land near the Dutch town of Arnhem launched in 1944. Reporter Bob Chaundy will be with a reunion tour by some participants in this battle, which was code-named Operation Market Garden. Was this operation a daring success or a failure? Judge for yourselves at either 0748 or 0848 UTC on 9.770 or 9.715 MHz. Note that 9.715 will only carry the 0848 release.

Well, that is all for this month. Until September, the best of listening and 73 — Robin VK7RH.

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CONTACT US FOR QUOTES
MURPHY STRIKES WITH VENGEANCE

Our old friend, Mr Murphy really let his hair down in Novice Notes, page 30, last month. The reactance table referred to was omitted and the drawings of Figures 6 and 7 were transposed although the text was correct.

<table>
<thead>
<tr>
<th>Line Length (degrees)</th>
<th>Resistance (ohm)</th>
<th>Reactance (j x ohm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
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<tr>
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<td>97.8</td>
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<td>0.0</td>
</tr>
<tr>
<td>210</td>
<td>57.1</td>
<td>-37.1</td>
</tr>
</tbody>
</table>

TABLE 1 — REACTANCE VS LINE LENGTH

No matter what kind of ATU you use you will, from time to time, find an antenna that won't tune satisfactorily on one band. Back in the old days (before 1965) when AM rigs with PI couplers were common, the problem of not being able to load up on one band frequently occurred. It was solved, in most cases, by increasing the length of the transmission line. The same solution will be found to be just as successful with the ATU problem. We all know that a quarter wavelength line can be used to transform a small resistance to a large one. We also know that a half wavelength will not change the impedance if connected between a load and a transceiver. See Figs 6, 7. But what happens for other cable lengths? By using a calculator programme supplied by Evan, VK3ANI, I have been able to calculate the changes of impedance for a 50 ohm line equals a quarter wavelength etc. The results are given for five degree increments up to thirty degrees and then in thirty degree increments. Negative values of reactance are capacitive reactance and positive values are inductive. The table is done this way to make it independent of frequency.

The mathematically inclined should study Fig 8 as the values in Table 1 are for series components. That is for a 100 ohm load or termination connected to a thirty degree long line the impedance seen at the other end of the line is a resistor of 57.1 ohms in series with a capacitor of 37.1 ohms reactance. Inspection of Table 1 should reveal a periodic (repetitive) variation of impedance values as the line length is increased. In this example the resistance varies between 100 and twenty five ohms every ninety degrees. The reactance varies from zero through a maximum capacitive reactance of about forty ohms and back to zero for the first ninety degrees. As the line length is increased further the reactive portion again increases to about forty ohms and back to zero but this time it is inductive. The cycle is repeated every 180 degrees.

This is a result we might have anticipated as we know that adding a half-wavelength line does not change impedances. This also allows us to remove all the exact half-wavelengths (on paper or in our imagination of course) to see what fraction remains. The transformation caused by that fraction is the transformation of the whole line.

For example a line 390 degrees long is equivalent to one only thirty degrees long as far as impedance transformation is concerned. The more knowledgeable reader will be saying that line loss has an effect too. So it does but on HF the effect is reasonably small and will not affect our general conclusions and comments.

So where have we got to? Well if our ATU has problems in tuning a particular load because the load is too high or too low we can now see a solution. That is by adding up to a quarter-wavelength of feeder a more manageable load will be presented to the ATU. In some cases up to a half-wavelength may be required.

One further point to note is that if the VSWR on the line is greater than 2:1 then the range of impedances will be greater than shown in Table 1.

At a later date I will discuss VSWR in more detail and bury a few sacred cows in the process.

JULY'S BEST PHOTOGRAPHS

The judges selected the underside view of the TR7950, page 21, Trap Vertical on the roof of the GPO, page 15 and Ken VK3KC operating SSTV, page 9.

These photographs will now be considered for the AGFA CAMERA prize at the end of the competition in June 1984.

73 DE VK3AFW AR
REGULATED 13.8 V POWER SUPPLY

In the May issue of AR you published an article of mine concerning the construction of a Regulated 13.8 V Power Supply (page 14).

The article has created quite a deal of interest and I have received many requests for information. One of the requests has been for the supplier of the voltage regulator used — it appears to be difficult to obtain in states other than Victoria.

Would you please place an entry in the next issue (if possible) advising that Voltage Regulator U A78HG is obtainable from Stewart Electronic Components, 44 Stafford Street, Huntingdale, Vic 3166 at $7.92 each, plus tax.

Yours faithfully

Desmond Greenham, VK3CO
23 Stewart Street,
Seymour, Vic 3660

EMF FOR ICOM IC-22S

I refer to the article “Simple External Frequency Selection for the ICOM IC-22S” in AR, April 1983 (page 22).

The usefulness of this accessory is very greatly increased if used in conjunction with a table relating frequency to switch positions. In the DRAGNET article such a table was referred to. It was compiled by Trevor Mayhew, VK2YEP and published in an earlier edition of DRAGNET. This part was edited out of the AR article.

Anyone familiar with binary numbers can easily produce such a table. A modified version of Trevor’s table is shown in Fig 1.

Inspection of the table shows that it should be possible to operate the IC-22S beyond 147.975 MHz and I have verified that this is so, using a dummy load, of course. Therefore care is needed when using the device and also when setting up the internal diode matrix.

A minor typographical error has been carried across from the DRAGNET article — the last word in the third last paragraph should be “correct” rather than “covered”.

I was interested to find an allusion to the prior existence of the technique in the article by Ian Jackson, VK3BUF in AR, March 1983 (page 15). I will be following up Ian’s suggestion regarding replacement of R141 in the near future. (See note.*)

Yours faithfully

Reg Fookes, VK2AKY
19 Delagoa Place,
Caringbah, NSW 2229

*Readers attention is drawn to the correction printed in AR July, (page 39), re R141.

WCY 83

ARRL PRESIDENT VISITS THE WHITE HOUSE

ARRL President Clark W4KFC, who serves on the Council for World Communications Year 83, attended ceremonies at the White House when President Reagan officially announced US participation in WCY83.

Fig 1 — IC-22S Frequency Code
A dot signifies that the Switch is closed.

Also in attendance were other members of the WCY Council including the Under Secretary of State, William Schneider, K2TT.

A reception to celebrate WCY83 was also hosted by William K2TT at the Department of State.

America is really taking WCY to the top. Let us in VK be positive with our hobby and let the outside world know that amateur radio does exist.

Adapted from CO magazine April 83.

AR

AMATEUR RADIO, August 1983 — Page 53
OPENED BY A SPECIAL BROADCAST FROM VK2WI

OF EFFORT WE STAND A GOOD CHANCE OF TAKING OUT 9.58. THE HIGHEST OF ALL DIVISIONS, SO WITH A BIT THIS YEAR VK2 HAS A WEIGHTING FACTOR OF RULES).

JUNE AR FOR THE 13TH AND 14TH AUGUST (SEE REMEMBRANCE DAY CONTEST IS COMING UP ON 6TH NOVEMBER, AND AGENDA ITEMS FOR DISCUSSION MUST BE RECEIVED AT THE DIVISIONAL OFFICE BY THE 22ND AUGUST.}

PARRAMATTA, NSW. 2150 ITEMS FOR OCTOBER AR MUST REACH THE OFFICE BY THE 22ND AUGUST.

COUNCIL REPORT

DIVISIONAL COUNCIL MET ON THE 17TH JUNE AT AMATEUR RADIO HOUSE. THE GLEN INNES AND DISTRICT AMATEUR RADIO CLUB AND THE FAR SOUTH COAST AMATEUR RADIO CLUB WERE AFFILIATED WITH THE NSW DIVISION, BRINGING THE TOTAL NUMBER OF AFFILIATED CLUBS TO THIRTY THREE. MATTERS ARISING FROM THE RECENT CONFERENCE OF CLUBS WERE FURTHER DISCUSSED. COUNCIL DECIDED TO INVEST $5000 IN PREMIER STATE BONDS, TAKING ADVANTAGE OF THE HIGH RATE OF INTEREST OFFERED. FOURTEEN NEW MEMBERS WERE ACCEPTED TO THE DIVISION.

REMEMBRANCE DAY CONTEST


NOVICE COURSE

THE COFF'S HARBOUR AND DISTRICT AMATEUR RADIO CLUB IS CONDUCTING ANOTHER NOVICE RADIO CLASS AT THE ORANA HIGH SCHOOL. THE THEORY INSTRUCTOR IS RICK FLETCHER VK2BKX, WITH HARRY ALDERSN VK2EP IN CHARGE OF CW. THE COURSE BEGAN ON THE 13TH JULY, BUT IF YOU ARE INTERESTED THEN CONTACT BRIAN LACKIE VK2DLM AT 60 YELLOW ROCK ROAD, URUNGA.

HERE AND THERE

IN THE JUNE MINI BULLETIN JIM BOUTT'S CALLSIGN WAS INCORRECTLY GIVEN AS VK2NPO, AND SHOULD BE VK2NPA. APOLOGIES JIM. THE NEXT CONFERENCE OF CLUBS WILL BE HOSTED BY THE CENTRAL COAST AMATEUR RADIO CLUB ON THE 6TH NOVEMBER, AND AGENDA ITEMS FOR DISCUSSION MUST BE RECEIVED AT THE DIVISIONAL OFFICE BY THE 16TH SEPTEMBER. BROADCAST OFFICER PETER JEREMY VK2PJ IS LOOKING FOR ADDITIONAL VOLUNTEERS TO JOIN THE BROADCAST ROSTER AS ANNOUNCERS AND ENGINEERS FOR EITHER MORNING OR EVENING BROADCASTS. IF YOU WOULD LIKE TO JOIN THE BROADCAST TEAM EITHER ADVISE ON THE CALLBACKS OR CONTACT THE DIVISIONAL OFFICE. PLEASE FEEL FREE TO CALL IN AT DURAL ANY SUNDAY TO SEE WHAT GOES ON IN PUTTING THE BROADCAST TO AIR.

NSSW MEMBERS AND CLUBS ARE INVITED TO SUBMIT NEWS ITEMS FOR INCLUSION IN THESE NOTES TO THE NSW DIVISION, PO BOX 1066, PARRAMATTA, NSW, 2150. ITEMS FOR OCTOBER AR MUST REACH THE OFFICE BY THE 22ND AUGUST.

AFILIATED CLUBS

GLEN INNES AND DISTRICT AMATEUR RADIO CLUB PO BOX 26, GLEN INNES, NSW, 2370. MEETINGS: LAST TUESDAY OF MONTH AT 7:30 PM AT THE GLEN INNES HIGH SCHOOL, AGM IN JULY. NETS: EACH SUNDAY AT 8 PM ON 3.560 MHZ. COMMITTEE: JIM BOUTT, VK2BQ. PRESIDENT, RUSSELL SCOTT VK2ERS. SECRETARY, LYN CAMERON VK2BSF. TREASURER, RICHARD CAMBRIDGE VK2BV. GRAEME WILLEY VK2EBU. ANTHONY BERGER VK2BGQ. CLASSES: EACH WEDNESDAY FROM 11:30 TO 12:45 AT THE HIGH SCHOOL, AS PART OF THE "INTEREST ELECTIVE" PROGRAMME. CLUB STATION: VK2GQ.

FAR SOUTH COAST AMATEUR RADIO CLUB PO BOX 339, MERIMBULA, NSW, 2548. MEETINGS: FIRST FRIDAY EACH MONTH AT SPRINGWOOD HIGH SCHOOL, GROSE RD, SPRINGWOOD. NETS: EACH SUNDAY AT 8:30 PM ON 3.540 MHZ AND 9 PM ON 3.560 MHZ. COMMITTEE: JIM O'BRIEN, VK2BHU. PRESIDENT, OWEN ROBERTS VK2PJC. VICE PRESIDENT, RON RIDE VK2BFO. SECRETARY. TERRY HOWARD VK2XBK. TREASURER. REPEATER: VK2RFS CHANNEL 6750.

BLUE MOUNTAINS AMATEUR RADIO CLUB PO BOX 54, SPRINGWOOD, NSW, 2777. MEETINGS: FIRST FRIDAY EACH MONTH AT SPRINGWOOD HIGH SCHOOL, GROSE RD, SPRINGWOOD. NETS: EACH SUNDAY AT 8:30 PM ON 3.540 MHZ AND 9 PM ON 3.560 MHZ. COMMITTEE: BRIAN LACKIE, VK2EP. PRESIDENT, RON RIDE VK2BQ. SECRETARY. TERRY HOWARD VK2XBK. TREASURER. REPEATER: VK2RBM CHANNEL 7050, VK2RUT CHANNEL 8375.

QSL BUREAU

INWARDS

CARDS FROM OVERSEAS AND OTHER STATES OF AUSTRALIA ARRIVE AT REGULAR INTERVALS AND ARE SORTED INTO FILES WHICH ARE AVAILABLE AT EACH WIA MEETING. THOSE MEMBERS WHO CANNOT ATTEND MEETINGS ARE INVITED TO FORWARD SOME STAMPED SELF-ADDRESSED ENVELOPES TO THE ABOVE ADDRESS WHEN INCOMING CARDS WILL BE DESPATCHED. PLEASE NUMBER THE BACK OF YOUR ENVELOPES TO INDICATE WHEN THE LAST HAS BEEN USED.

OUTWARDS

EACH OUTGOING CARD MUST HAVE A QSL STICKER AFFIXED TO ITS BACK AND IT IS DESIRABLE TO PLACE THE CALLSIGN OF THE RECIPIENT ALSO ON THE BACK OF THE CARD TO FACILITATE SORTING. QSL STICKERS ARE AVAILABLE FROM THE ABOVE ADDRESS FOR $2.00 PER SHEET OF 100. CARDS ARE POSTED REGULARLY IN BULK BY SURFACE MAIL TO THE QSL BUREAU OF THE ADDRESSEE'S COUNTRY OR TO HIS QSL MANAGER, WHEREVER HE OR SHE MAY BE.
Greater community awareness of amateur radio was essential, the President of the Victorian Division, Jim Linton VK3PC said recently.

Recent issues such as the question of radio masts, phone-patching and the Radio Communications Bill, which was to come before Parliament, all showed a lack of awareness by members of the general public as to the extent, value and nature of amateur radio, he added.

"It is absolutely vital that our hobby of amateur radio is recognised," he said.

"The recent bush fire emergency showed how little public awareness exists. The WIA, being the oldest radio society must get the recognition it deserves. "CB received a lot of publicity during its boom period and unfortunately amateur radio became confused with it in the general public's mind."

Jim said that he had three primary aims to achieve during his term in office. They were:

- To improve the awareness of amateur radio in the community.
- To improve communications between the Divisional Council and zones, clubs and members.
- To improve the image of the Divisional Council amongst members.

While Victoria had the largest number of amateur members of any division, it was essential that the number of members be increased, Jim added.

"Many amateurs just do not realise the services that the Institute provides in representing their individual interests at an official level, such as the recent Victorian inquiry into high radio masts." Jim said.

"If you listen to any amateur repeater you'll hear people using them regularly who are not members of the WIA. They seem to be using them completely unaware of who provides the facility — sometimes I don't think they are. Yet these same people are the first to criticise, if for some reason a repeater is out of action. They just don't appreciate that $32 a year would go some of the way to helping to provide the facilities they are using."

Communications between the Victorian Division Council and zones, clubs and members was a two-way contact, Jim said.

"We have to let the members know what is happening and they have to let us know their views," he added.

"How often do you hear people moaning on air, but if you suggest that they come to a meeting and say the same thing they are often too busy. "Sure, we on the council have to reflect the members views but it is difficult to do that unless amateurs join the Institute and take an active interest in its affairs."

"Quite frankly, in the past, the Victorian Divisional Council probably was not attracting the right number and calibre of people, but the new Council is a group of highly enthusiastic people dedicated to amateur radio."

"It is my aim to ensure that the image of the Victorian Divisional Council is held more highly."

Jim, a 36-year-old journalist, joined the WIA in 1962 as a Junior Associate (SWL). In 1971 he was a member of the broadcast committee as an announce on the weekly Sunday broadcasts, and at the same time was a committee member of the Eastern and Mountain District Radio Club.

In April 1981, Jim started the "Stop the Russian Woodpecker Campaign" and later the same year was made an ex-officio member of the Victorian Divisional Council to help with the issue of radio masts — an ongoing task.

In the same year he began campaigning for Telecom to lift its prohibition on phone-patch and following a meeting with Telecom, Jim conducted Australia's first authorised phone-patch experiment with DOC and Telecom approval.

Jim is continuing the campaign saying: "Phone-patch will eventually be approved for radio amateurs in Australia — it's only a matter of time."

In 1982 he began assisting the WIA in Victoria with public relations and earlier this year joined the VK3 Divisional Council and was official observer at the WIA Federal Convention in April, assisting Federal Councillor, Alan Noble VK3BMM and Alternative Councillor Des Clarke VK3DES.

PRESIDENT

Jim Linton, VK3PC.
Age 36. Occupation — Journalist.
Portfolio — President.

SECRETARY

Ian Palmer, VK3YIP.
Age 37. Occupation — Communications Engineer.
Portfolio — Secretary.

VICE-PRESIDENT

Bill Wilson, VK3DXE.
Age 49. Occupation — Electronic Service Engineer.
Joined Council in 1983.
Portfolio — Vice President.
WANTED
TO BUY
Ham gear, CB equipment, Hi Fi, video, car stereo, large or small quantities.
WE BUY AND SELL
ANYTHING ELECTRONIC
ANY QUANTITY
ANY CONDITION
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Richmond, Victoria.
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JOIN A NEW MEMBER NOW!

Des Clarke, VK3DES.
Age 53. Occupation — Retired.
Joined Council in 1981.
Portfolio — Treasurer, Alternate Federal Council and Outwards QSL Manager.

Margaret Wilson.
Occupation — Typist/Clerk.
Portfolio — Minute Secretary.

Fred McConnell, VK3BOU.
Age 47. Occupation — Installation Inspector, SECV.
Portfolio — Disposals Officer.

David Johnson, VK3YWZ.
Occupation — Civil Servant.
Portfolio — Vice Chairman & Council News Co-ordinator.

Alan Heath, VK3KZ.
Joined Council in 1978.
Portfolio — Chairman.

TREASURER

MINUTE SECRETARY

CHAIRMAN

VICE CHAIRMAN & COUNCIL NEWS CO-ORDINATOR
The KENWOOD TM-201A 2-meter FM mobile transceiver and TM-401A 70-centimeter FM mobile transceiver are designed to be the ultimate in compact size and light weight, allowing maximum flexibility in automotive installations. New microprocessor controlled operating features, improved receive and transmit circuitry, a powerful 25 watts (TM-201A) and 12 watts (TM-401A) of RF output, and an easy-to-operate front panel control layout are packed into these new, ultra-compact radios, providing extended flexibility and ease of operation.

**ULTRA COMPACT AND LIGHTWEIGHT**

Measures only 5.6 (141) W x 1.6 (39.5) H x 7.3 (183) D, inch (mm) and weight only 2.8 lbs (1.25 kg), ideally sized for installation in today’s compact automobiles.

* The depth of 7.3 inches (183mm) is the maximum effective length using flexible antenna cable and connector.

**25 WATT OUTPUT, WITH HI/LO POWER SWITCH**

The TM-201A produces a powerful 25W of RF output from a surprisingly compact design. (The TM-401 produces 12W of RF output at HI power position.)

**DUAL DIGITAL VFO’S BUILT-IN**

Features dual digital VFO’s, with front panel VFO-A/B switch.

**5 MEMORIES PLUS “COM” CHANNEL**

Memory 1 is for the priority alert function. Memories 2 and 3 store a single frequency, and permit repeater operation using the OFFSET switch. Memories 4, 5 and the COM (common) channel store transmit and receive frequencies independently, allowing operation on repeaters having both standard and odd offset.

**PRIORITY ALERT SCAN**

With ALERT switch “ON”, once every 6 seconds the unit scans back to memory channel 1 for approximately 0.3 seconds to monitor the activity on the priority channel (CH-1).

**MEMORY SCAN AND PROGRAMMABLE BAND SCAN**

MS switch initiates memory scan. Skip memories in which no data is stored. In both memory and band scans, scanning stops on busy channel and automatically resumes after 6 seconds.

**HIGHLY VISIBLE YELLOW LED FREQUENCY DISPLAY**

Four digit yellow LED display featuring improved visibility indicates receive and transmit frequencies. An S/RF LED bar meter with “BUSY” indicator, plus “MR” (Memory recall), “ALERT”, and “ON AIR” LED indicators are provided.

**OPTIONAL FC-10 FREQUENCY CONTROLLER**

An extremely compact optional frequency controller, model FC-10, may be easily connected to the TM-201A/TM-401A and can be mounted in any convenient location.

**EXTERNAL HIGH QUALITY SPEAKER SUPPLIED**

The TM-201A and the TM-401A are supplied with a compact, high quality, external speaker, (no internal speaker) providing flexibility in installation for maximum convenience.

**OTHER FEATURES**

• AUDIBLE “BEEPER” CONFIRMS OPERATION
• UP/DOWN microphone is supplied
• HIGH PERFORMANCE RECEIVE/TRANSMIT SPECIFICATIONS
• REPEATER OFFSET SWITCH AND REVERSE SWITCH
• OPTIONAL TU-3 TWO FREQUENCY TONE ENCODER
• EASY-TO-INSTALL MOBILE MOUNT
• LITHIUM BATTERY BACK-UP (estimated 5 years life)

**ANY CUSTOMERS EXPERIENCING DIFFICULTY IN OBTAINING KENWOOD EQUIPMENT SHOULD CONTACT TRIO-KENWOOD AUSTRALIA DIRECT AT HEAD OFFICE.**
CONGRATULATIONS
Bill Orr, W6SAI, and I enjoy reading AMATEUR RADIO each month and would like to congratulate you and your associates on the high-class job you do on this fine amateur radio journal. It sets a standard which is, I am sure, admired worldwide and achieves a fine balance between the technical and human interest sides.
And it is improving with every issue!
Best wishes to all our VK friends.
Sincerely,
Stuart O Cowan, W2LX, KM2XDU
Radio Publications, Inc.
Box 149,
Wilton, Conn. 06897, USA

SPRATLY ISLAND

This letter was written to the DX Editor

The Spratly Island tragedy serves very well to illustrate how our hobby has failed to move with the times. What was originally a good idea has become a nightmare as old ideas are overtaken by current realities. In the process DXpeditions are becoming unacceptably dangerous and costly, legally questionable and the real purpose of the DXCC award is being lost.

In times past, when radio was a key concept of DXCC was to work the world and the use of national prefixes was a convenient and valid basis for the award. The complexity and validity of this approach has now reached a point where the whole purpose of the major amateur awards needs to be reassessed in more rational terms.

To begin with what the DXCC really measures is an ability to place a workable signal anywhere on the face of the globe. Secondly, it requires evidence of legal operation. Where the present system falls down is that it requires the controlling bodies, eg ARRL, to make political decisions. Something it is supposed to do.

A more equitable system should surely be to divide the globe into areas based on the navigational grid, for example 20 x 20 degrees giving 324 areas. DXCC and WAZ are largely politically based whereas a grid system is not and hence would not involve a non-political body in making political judgements.

A grid system would have a number of advantages:
• The worked all areas, WAA, could be made more prestigious by its very nature of working the globe.
• It would encourage portable/mobile operation and thus more technically difficult operations.
• DXpeditions would be safer as dangerous places, both in a military sense and a physical sense, could be avoided.
• WAC and WAZ could be redefined in terms of assemblages of base grids and could thereby make Siberia and Antarctica “continents” as well as the traditional areas.
• WAC and WAZ could become steps towards the prime WAA award.

There would still be under this scheme, a place for the concept of countries by limiting these to those whose administrations are recognised de-facto or de-jure by the UN and who allow amateur operations. Two letters, one to the Secretary General and another to the administration concerned would be enough to establish this fact. Such an award could be "Worked All Nations".

WAPX would remain as at present and could become the award that people who like to cover their walls with paper, make their objective. However, the amateur controlling bodies would have to be ruthless in allowing credit only for those prefixes which are not in political dispute. Such a policy would, for example, eliminate Burma at the present time.

I believe that a scheme along these lines is used in some places for VHF purposes, and as such is not a new concept. Considering the danger and dispute that characterises the DXCC at present perhaps the time has come to extend the principles to the HF spectrum as well. Whatever system is adopted it must satisfy the requirements:
• of being capable of administration without entering into political judgement
• of minimising the danger to amateur operators who choose to visit remote regions
• of presenting a real technical challenge in working all areas on the face of the earth with the subsidiary benefit of encouraging portable mobile and possibly QRP operation

I would be very interested in seeing what ideas others may come up with to deal with this very important problem.

With best regards
John Andersen, VK5Z7O
230 Young Street,
North Unley, SA 5061

DELETE THE SPRATLYS

In response to the devastating news regarding DJ3NG and DJ4EI, the Blue Mountains Amateur Radio Club urges Australia to take the lead in deleting the Spratly Islands from the DXCC lists.

Why wait for the DX Advisory Committee in Newington (Connecticut) to do it? Is their word gospel? By taking the lead in opposing Spratly’s inclusion, we set an example to the world, and maybe encourage other nations to delete this “country” from their DXCC lists.

We join many amateurs around the world in condemning the perpetrators of this tragedy, but hasten to point out that it wouldn’t have occurred if Spratly had not have been elevated to the status it now enjoys by a couple of people in Connecticut.

Whilst Spratly remains on the countries list, someone will activate them, as did DJ3NG and DJ4EI during D.U.I.CK’s expedition not one month after the DL group’s tragedy. While the temptation is there, adventurous amateurs will place their lives in danger. This is unacceptable and thus, such temptation must be removed for our own sakes.

Yours faithfully
Blue Mountains Amateur Radio Club
Le Cullen VK2WU
Secretary
P0 Box 54, Springwood, NSW 2777

PROFIT MAKING ADVERTISING

I have read the letter by Norm Melford, VK3ZTN in AR June 1983 and I wish to add the following to what has already been said.

I too have seen advertisements for a wide variety of equipment such as high power 2 kW amps for 26-27 MHz, up to 240 W transceivers covering 26-27 MHz, cordless telephones, door openers, radio alarm systems, etc.
It would seem that no matter what the advice is and no matter how illegal it is, that all one has to do is import and sell a large number of such items and they will eventually be legalised by the DOC. The key wording here being “profitable marketing by the creation of a demand for such items and not giving a damn what you sell and who you sell it to. Today anyone who has the cash can purchase any type of transmitting equipment that is available on the market with no questions asked not like, just after WWII, when a variety of AM/CW transceivers (even knuddy ones) appeared in the disposals market. one had to sign a declaration that the transmitting section would be dismantled within a certain time before one could purchase such items.

Yours sincerely
Graham Muirhead, VK5ZCM
P0 Box 38
Magill, SA 5072

HELP NEEDED

I live too far away from the major centres so I’ll have to ask for assistance from other amateurs who also have a problem when it comes to deciding among the ever-increasing variety of makes and models of second-hand radios and equipment that is offered for sale!

I would treasure a reference directory of amateur radio equipment, describing all the gear on sale since, say 1960, together with the year it first hit the market and the price it sold for. A brief description listing the salient points of the manufacturer who would be all that would be necessary.

Such a directory would culminate with current manufacturers offerings and possibly could be incorporated with our call book, and would undoubtedly make that reference book even more useful.

How do others feel about this? Surely I can’t be the only one considerably confused when trying to sort out, say 2 metre rigs from the model numbers in the ‘Hamads’!

This would be of great benefit to our novices with the purchase of a first HF rig. (Some of the old valve sets are still excellent performers)

Yours faithfully
73 John Brennan VK4KSZ
P0 Box 26, Innisfail 4860

Any volunteers? — Editor

LICENCES

With reference to the letter in June AR ‘From VK7PW, Peter Wolf, on the matter of the examination for the Novice Licence being too easy. I feel as he has a background making the examination easy for him to pass he has not considered the situation of a lot of novice licence holders who have had to work very hard to achieve their licence. and for various reasons are not capable of doing better, and would..."
thereby be deprived of a very beneficial hobby that keeps them in touch with people. I hope to eventually pass the AOCP.

Yours faithfully
Bron Brown VK3NTO
99 Foam Street, Rosedale 3959

SINCERE THANKS

A letter of sincere thanks to those amateurs (many unknown) who enabled an urgent message to reach me, at a time of communication disruption. The terrain was saturated. 50 km south of the Gorge car bogged, three hour extrication, return to Injune. Phoned Gorge for road info, they had message from Tim to phone my home QTH friend VK3DTH Rex — car bogged, three hour extrication, return to Injune.

Days later, XYL and I were 'floodbound' at Moura (phone and mail unpredictable) — met VK4NHX Mick — used his rig to contact Rex at home, who then phoned my family in Victoria advising both safe at Moura.

Heartfelt thanks to all concerned, especially Tim, Andy and XYL Chris, Ray and Carol. Mick and Barbara. Keith and Beryl, who made homes and rigs unreservedly available under those trying circumstances — such is the amateur radio fraternity.

73 Reg VK2ELB and XYL E1I
63 Buffalo Crescent, Thurgogoa via Albury 2640

IONOSPHERIC PREDICTIONS

Once again I write to enquire about your 'Ionospheric Predictions' (courtesy Dept of Science and Environment IPS Sydney) on the matter of "Ionospheric Predictions" (courtesy Dept of Science and Environment IPS Sydney) on the matter of "Ionospheric Predictions". The Grallex symbols referred to are Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions". The Grallex symbols as noted in the text of "Notes on the Predictions".

CORROborATIVE Datos

It was with quite some astonishment, dismay and alarm, followed by concern that I noted that the article 'To Heard and Back' by Dave Shaw, VK0HF/VK0HI published in the May and June issues of 'Amateur Radio' were marked '1983 Copyright Amateur Radio'. The article clearly carried an amplification of this fact in the following words appended thereto: "This article may not be printed in part or whole without the prior written permission of the Editor of Amateur Radio".

My first thoughts were, surely someone has made a bad mistake. Further contemplation of the subject produced the conclusion that our hobby was now definitely being prostituted to commercialism. If this was not the case why should an article of general interest to DXing amateur radio operators all over the world carry such a marking?

I am well aware that the mountaineering component of the Heard Island expedition 1983 may have aims with regard to recouping radio equipment and possibly making a profit and of this I have no criticism, however let the experience gained by us as 'AMATEUR' radio operators provide a lesson.

It is an almost certain fact that without the support of amateur radio world wide the expedition would not have taken place. Similarly, the amateur radio component would never have made it on its own as a viable operation. It can be noted that other expeditions have had to include a variety of interests to help cover costs.

The lesson referred to is that we must stand up for our rights when in engaging in any joint ventures with people who may not properly understand the true meaning and spirit of amateur radio as a hobby.

However, back to the copyright matter.

By this action you have made it, whilst not impossible, at least difficult and inconvenient for our fellow amateurs all around the world to print for the benefit of others articles from the story of one of the most important DXpeditions in amateur radio history and one which could have certainly put Australia well and truly to the forefront of the international amateur DX scene. These inconvenienced amateurs range from editors of minor club newsletters, sundry DX amateur radio history and one which could have contributed financially to the expedition and many would be most interested in written reports on same.

Thus, why did our magazine do something which to my mind runs completely contrary to the spirit of amateur radio and which in my memory has never before happened?

Please don't tell me the magazine was legally forced to do it. Let's face it, many amateurs worldwide contributed financially to the expedition and many would be most interested in written reports on same.

So, could you please put my mind at rest and confirm for me that in this instance a mistake has been made in printing an article on the article referred to. Further, should this really be the case could you please publish in the interests of amateur radio in general a complete waiver to the copyright claims?

Yours sincerely
Ian J Hunt VK5UX
9 Dexter Drive, Salisbury East 5109

Amateur Radio Magazine normally extends reprinting rights to kindred societies and many other publishers subject only to Amateur Radio Magazine receiving credit as the source. Such rights are generally on a reciprocal basis.

From time to time Amateur Radio Magazine publishes material where some additional conditions apply. In such cases a note regarding copyright is published. One other article has already been printed with such a note this year. Both requests to reprint 'To Heard and Back' have been acceded to.

The Editor

STOLEN EQUIPMENT REGISTER

The VK2 Divisional Office currently maintains a register of stolen radio equipment. With a comprehensive listing of such equipment, members about to purchase gear can contact the office during normal hours of business and check with the Register before completing the transaction.

Through this service, it is hoped to be able to track the interstate or intrastate movement of stolen radio equipment and hopefully find the people responsible for its theft and distribution.

If you know of equipment which has been stolen or lost or require further information contact the VK2 Divisional Office.

ATN ANTENNAS

A Victorian Approved Decentralised Secondary Industry

Registered Office:

56 CAMPBELL STREET, BIRCHIRCH, Vic 3483

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Contact ATN Antennas, a company with a proven track record for over 35 years, for the most comprehensive range in Radio Astronomy Education and Research Facilities and VHF, HF & UHF Antennas.

Write to us or your local dealer for a free catalogue on our complete range.

AMATEUR RADIO, August 1983 — Page 58
Predictions courtesy Department of Science and Environment IPS Sydney. All times in UTC.

- Less than 50% of the month

- LP = Long Path; all paths are Short Path.
A DMM you can be proud of

... At a price you can afford!

Basic DCV accuracy 0.1% (7040)
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A breakthrough in price, performance and quality!

Our new Models 601 and 7040 Digital Multimeters are superb quality instruments that will serve you faithfully for many years. They feature all the accuracy, facilities and rugged serviceability that you're ever likely to need. — At a remarkably low price.

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This range covers subjects to what the appetite of anyone interested in computers from the very beginner going out to buy their first computer to the more experienced dabbler.

A SMALL SAMPLE OF THE COMPUTER BOOKS

HOW TO BUY AND USE MINICOMPUTERS AND MICROCOMPUTERS
by William Barden, Jnr. 240 pages for $14.95.

This book explains the basics of computers, their software and hardware, peripheral devices and various language and techniques available.

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A small (approx 140 x 215 mm) reference to translate computer jargon and terminology into easily understood language. More than 12,000 definitions which will be invaluable to computer veterans and novices alike.

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This book will help to learn to mix text, LORES and HIRES together anywhere on the screen in any combination, to make a one wire mod to open up whole new worlds of 3D graphics and other special effects and a fast and easy way to tear apart and understand somebody else's machine language programme.

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44 Stafford Street, HUNTINGDALE, Vic 3166. Phone: (03) 543 3733
437 City Rood, SOUTH MELBOURNE, Vic 3205. Phone: (03) 690 8333
Obituaries

GLEN ARTHUR VK4GJ
Glen Arthur became a silent key on 17th May 1983, having held the callsign VK4GJ since July 1936. Licence number 4348 and after the war, since 1946. He was the holder of a First Class Commercial Operators Certificate of Proficiency and was for many years employed as an engineer in Broadcast Stations.

Glen also had letters in music and at sometime had his own dance band which played at Brisbane’s Clubland which was only recently demolished.

CW was Glen’s main amateur interest although he was an ardent “home brewer”, adapting disposals gear and throw-away items such as toothbrush handles etc. to his needs.

With sadness we record the passing of another “OLD TIMER”.

Clive VK4CC AR

JOHN DICKENSON VK3VKO
It is with deep regret that we announce the passing of John Dickinson, VK3VKO on 17th of June.

John became interested in the radio hobby in 1976 and acquired his call sign in January 1980.

He was well known on the PNG-net and made many friends all over the world as an active international 10/10 member.

He will be sadly missed by all who knew him. Our sincere sympathy is extended to his wife and teenage daughters.

John Hill VK3WZ AR

FRANK BAKER
It is with deep regret we announce the passing of Frank Baker, brother of Joe, VK28JX columnist of “Listening Around”.

Condolences are extended to Joe and the family from the Cocktail Net.

CAN YOU HELP?
Alan Shawsmith, VK4SS is compiling a history of amateur radio in VK4 during the years 1930-39 inclusive, for the Queensland Division of the WIA. If any reader obtained a VK4 licence during this period, or knows someone who did, Alan would very much like to hear from you.

It is sad but true that most of the OOTs who obtained a ticket in the 1920s are now SKs — and in a few years the same will be said of those licensed in the 1930s. The Queensland Division’s records are not yet complete but it would appear that already over one-half of these latter are also SKs. These are the statistics no-one can avoid.

So, help the WIA record for posterity the names, calls and details of all those who prewar took out an amateur licence. Write to VK4SS, 35 Whynot Street, West End, Qld 4101.

OBITUARIES

Stolen Equipment

ICOM 22S 2 m Transceiver and Yaesu Gutter Mount and Base stolen on 25th May, 1983.

Anyone with information about this equipment should contact the owner, John Latham, VK2KFK or North Sydney Police Station. The transceiver has a 12 pin socket on rear.

Silent Keys

It is with deep regret we record the passing of —

GLEN ARTHUR VK4GJ
JOHN REGAN VK3PEN

Disposing of your old rig?? Please ensure it goes ONLY to someone licensed to use it on YOUR bands.

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.

• Please insert STD code with phone numbers when you advertise.

• Eight lines free to all WIA members. $9 per 10 words minimum for non-members.

• Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.

• Repeats may be charged at full rates.

• QTHR 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 resold for merchandising purposes.

TRADE HAMADS

23 CM LOOP YADIS AND POWER METERS, semi rigid coax, PTFE PC board. Waveguide, Flanges, Gun and Mixer diodes and our 3 cm transceiver module are a few items from our lists. SAE to MICROWAVE DEVELOPMENTS, 6 Netley Road, Mount Barker, SA 5251.

AMI00N FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE to: RJ & US IMPORTS, Box 157, Mortdale, NSW 2223 (No enquiries at office. 11 Macken Street, Oakley, 2223) PLEASE NOTE: Business closed during October.

CB RADIOS S69: Walkie talkies, short wave radios, military, outback, business, amateur, marine, repairs, RTTY Siemens 100 A printer $120. base mic S45, ultrasonic alarm $35. all ham bands on a single 6 H

AMATEUR RADIO, August 1983 — Page 63
whip. 1.8 to 30 MHz, for base or mobile $300. aerials, installation, demonstrations. 40 Ch CB conversions, accessories, new rig weekly. BRIDGE DISPOSALS. 12 Old Town Plaza, opp Bankstown Railway Station, NSW. Mail order service and all enquirers to 2 Griffith Avenue, Roseville, 2069, or phone Sam VK2BSV. 7 pm to 9 pm only on (02) 407 1066.

NOVELTY WALL PLAQUE/ASH TRAY Special design for Australian radio amateurs individually personalised with your callign... [text partially obscured]

WANTED — NSW

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WANTED — VIC

RECORDS — I collect 78s of Jazz and popular music of 1920s and 30s. Can anybody help? I will buy your old records and make a 78 rpm, 12" single if desired KVN3J. QTHR or ph: (03) 546 4924.

WANTED — VIC

EMAC 874, VK4WR. QTHR or ph: (07) 41 1315

HANDBOOK AND/OR MANUAL for ICOM IC-22S. Buy for borrowing for copying. VK4AAC. QTHR or ph: (07) 390 6423.

HUSTLER 5TV. 600 or 4-400A bases and oil filled high voltage caps for linear PSU. Details to VK4SZ. QTHR or ph: (07) 61 3286.

KENWOOD TS860S. 6 transvert to suit TS200S. Must be first class order complete with manual and leads. Write VK4KGY, QTHR or ph: (07) 28 1442 after 6pm.

FOR SALE — NSW

COMPLETE SSB $52. 144, 442 MHz, 350 W out. EMAC triodes. R. Graham. (02) 642 0122.

DECEASED ESTATE of Mac VK2CM. late of Dubbo. FT101E VGC. VGC. FL100 linear VGC $300. R1000 VGC $400. All in orig cartons with h books and serv manuals. Heathkit Model 0-12 S CrO $100. Inquiries Jim. VK2JJO. QTHR or ph: (066) 82 2685.


MONOBAND YAGI for 15 m. 3 elements. S40. Price firm. VK2DET QTHR or ph: (07) 48 7703.

SWAN 350 with power supply and PTT mic. 400 W WEP. Works well $300. VK2BRO. QTHR or ph: (02) 713 1831.


YAESU FT-810E tcvr. FT-101B VFO. spare filters, manuals, ext dipole display project 80%. complete. VGC. Little use $700 ONO RTTY Mod 15 print. Mod 14 T/D. Mod 14 repertor and 1200 V standing push. very good condition base for the T/D and patch box for local loop operation $150 ONO. Peter. VK2DKR. QTHR or ph: (02) 713 1831.

YAESU FT-107DMS 10-160 m WARC bands. 12 mems. AC/DC scan band. AM filter fitted, instructions as new. $600 VK2NAU QTHR or ph: (07) 27 47 56.

WANTED — WA

MIRAGE B10B VHF all mode amp with 10 dB preamp. 10 W input/80 W output. $180. Phil. VK6SF. QTHR or ph: (098) 51 1670.

YAESU FT-78 MOBILE tcvr. mobile bracket, mic etc $350. ICOM IC-520E 5 m SSB port $150. Will pay freight. Nigel VK6KHP. QTHR or ph: (091) 85 1779.

FOR SALE — WA

KEENWOOD TS220S SSB/CW tcvr with SP 520 spkr and MC50 base mic. Used as Rx S490. VA-23 Rank Arena colour video camera adaptor. (new) $50 Peter. L50892. OR ph: (085) 22 3967.

FOR SALE — SA

KBRUCESMITH 49

HEATHKIT HW140 SSB tcvr. 80-10 m with HP82B power supply and h. GC $285. Freight extra. VK4AAC. QTHR or ph: (07) 390 6423.

IC 502 — 5 portable. mic and inst book. VGC. used only as base station $180. VK4KAL. QTHR or ph: (071) 85 1496 nights only.

TS130 V LOW POWER HF tcvr. 80-10 m incl WARC bands. Rarely used in GC. Org packing with manual. Ross. VK4AGK (QTHR as VK4KRM 1982/83 Call Book) or ph: (075) 65 1445 weekends only.

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MIRA6E B10B VHF all mode amp with 10 dB preamp. 10 W input/80 W output. $180. Phil. VK6SF. QTHR or ph: (098) 51 1670.

YAESU FT107E MOBILE tcvr. mobile bracket, mic etc $350. ICOM IC-520E 5 m SSB port $150. Will pay freight. Nigel VK6KHP. QTHR or ph: (091) 85 1779.
FT726 V/UHF ALL MODE TRIBANDER

- USB, LSB, FM, CW modes
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FT980 HF ALL MODE COMPUTER AIDED TRANSCEIVER
Built-in computer control using 8-bit microprocessor (80C85)

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- Power output 100 watt SSB, CW; 25 watt AM; FSK
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25 Watts of FM, SSB, CW for 2 Meters

ICOM presents the most advanced all mode, two meter base station available today... the IC-271A.

25 watts of power from 12 VDC or from 240 VAC with the optional internal power supply/32 full function memories/multimodes/subaudible tones/PLL locked to 10Hz/high visibility, multi-color fluorescent display/BIT readout/scanning/dual VFO's/new size.

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New Repeater Earns Its Keep
Digi-Control for IC-720A
Five-Eighths Vertical for 6m
John Moyle from an Island
Spratly Island by a Survivor
WIA Video Tape Catalogue
NEW TELEREADER
CWR-675EP
BRINGS NEW DIMENSIONS TO SHORT WAVE MONITORING

This new wonder machine is especially designed for the inquisitive shortwave listeners, amateurs, professional monitoring institutions, Government, Press, etc. An entire new world is opened to those who are willing to explore it. Monitoring weather, press, ship traffic, embassies, interpol and many unusual services can prove to be fun! And for permanent record, just press the button and the inbuilt 40-column printer will do the rest for you. The CWR-675E and CWR-675EP are similar except that the CWR-675EP has the built-in printer.

CWR-675EP

The CWR-675EP is a compact electronic communications terminal designed for reception of Baudot and ASCII Radio Teleprinter (RTTY) signals as well as Morse code (CW) signals. The CWR-675EP includes built-in RTTY and Morse demodulators, video generation circuits, and 5" diagonal measure video screen. The built-in video screen of the CWR-675EP eliminates the need for a separate video monitor in receive-only applications. Moreover, 40 columns thermal printer kit PK-675 can be added optionally to the unit. The CWR-675EP no longer needs any external unit. And, like the other TELEREADER terminals, the CWR-675EP runs on 12 VDC. This makes the CWR-675EP easily usable in mobile or portable locations where AC power is not available. The internal RTTY demodulator allows selection of all three standard shifts (170, 425, 850) for reception of “High Tones” (U.S. Standard) or “Low Tones” (IARU Standard). A parallel ASCII printer output is provided for connection to an external receive printer in addition to the optional built-in printer. TTL level (low voltage) input and output connections are provided in addition to the normal audio input from the receiver.

CWR-675EP (with printer) $1095.
This is where amateur radio really came into its own. We’re exhausted from the sheer effort required in flying through strange areas. And despite the modern Bell Jet Ranger helicopter having all modern safety and navigational aids possible, Dick at times needed proving its worth to me. This flight was... Dick VK2DIK, completed the final leg of his solo round-the-world helicopter flight by landing at the Bell Helicopter factory at Fort Worth, Texas USA.

During this long and gruelling flight, Dick captured several world records and ‘firsts’ including:

- First solo helicopter flight around the world
- First single engined helicopter crossing the Atlantic
- First helicopter flight with all 3 engines after a Jumbo
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- First solo helicopter flight with all 3 engines after a Jumbo
- First solo helicopter flight around the world

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HF/VHF Mobile Antenna System

The Yaesu antenna system for HF and VHF. You buy the antenna and mount base and 2 M transceiver with up to 3 watts output. 13.8V DC supply makes it perfect for mobile use. Dual time constant for SSB or FM operation. Reverse polarity protection too. Works great with our FT-280R and FT-208R or any 2M transceiver with up to 3 watts out. The best value in Australia. Cat D-2546

30 WATTS

Now $89.50

SUPER COMPACT ALINCO ELH-230E

Don’t pay more! This amp does a better job and will cost you less. This is an all mode, high efficiency linear amplifier for meters. 30 watts output with only 3 watts in 13.8V DC supply makes it perfect for mobile use. Dual time constant for SSB or FM operation. Reverse polarity protection too. Works great with our FT-280R and FT-208R or any 2M transceiver with up to 3 watts out. The best value in Australia. Cat D-2546

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2 METRE FM-FT230R

The FT-230R uses the latest breakthrough in microelectronics, providing you with unbeatable flexibility with single and dual bands, a full 25 watts output. Advanced micro processor control gives you over 50 combinations of single and dual bands, a full 25 watts output. Advanced micro processor control gives you over 50 combinations of single and dual bands, a full 25 watts output. Advanced micro processor control gives you over 50 combinations of single and dual bands, a full 25 watts output. The most incredible 2 metre FM around and you won’t do better than buying your Yaesu from Dick Smith Electronics. Cat D-2893

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Genuine Yaesu
Amateur Radio Mics

The YD148 Dual Z Desk Mic. Smart styling, great performance and dual impedance, it’s used with Yaesu P-10B, P-10A or P-10D or the Yaesu FT-208R or FT-208R. Cat D-2899

Now $499.95

Ye7A Standard Mic

With Scanning

The favourite mic of all active Yaesu users. The Y7A is the best all-around mic for your Yaesu. Cat C-1118

Now $169.95

YM39 Dual Z Desk type

WITH SCANNING

Similar to above but for Yaesu mic with switch for dual impedance. This one, also, has extra push buttons for use on scanning transceivers. May be used on other transceivers by using different pins. Cat C-1128

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FT ONE*

You’ve dreamed of owning a transceiver like this. Now your dreams can come true! Compare the Yaesu FT ONE with other multi-band transceivers, you’ll find it offers much, much more - and at a lower price! Yaesu FM Transceiver, with built-in dynamic microphone, 10 memories and a full 25 watts output. Advanced micro processor control gives you over 50 combinations of single and dual bands, a full 25 watts output. The most incredible 2 metre FM around and you won’t do better than buying your Yaesu from Dick Smith Electronics. Cat D-2893

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radio proves it's value round-the-world flight!

The most up-to-date Communication radio in the world

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HI POWER YAESU HF TRANSCEIVER

SP102

Features a large 120mm hi-speakers with selectable low and high-cut audio filters, allowing 12 possible response curves. Headphones can be connected to the SP-102. Filter allows audio tailoring for each bandwidth and mode of operation. Two input jacks provided. Cat D-2883

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**Optional FM Board**

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Mini-Multi's MSC33 offers top performance. 10, 15 & 20 metres and its compact design makes it ideal where space is a limiting factor. Durable and lightweight, it is particularly suitable for mobile or portable installations. Featuring separate and matched Hi-O input for each band. It feeds with 50ohm coax and delivers maximum front to back ratio. The MSC33 has a SWR of less than 1.5:1 at resonance.

Cat D-4303

- Maximum element length: 6.3 metres
- Boom length: 3.8 metres
- Weight: 8 kilograms
- Rated at 600 watts PEP
- Average gain: 8.68

**VALUE ONLY**

$99.95

**AMAZING VALUE**

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**A thrifty HF Transceiver**

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With all solid state no-tune circuitry, the FT-77 is ideal for today's amateur on the move. With Yaesu's new CAD/CAMTM circuitry it represents the 'state of the art' in reliability, simplicity and economy.

Cat D-2915

- All amateur bands including WARC
- 12 volt operation (24V optional supply)
- Nominal 100 watts output
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- 0.5uV sensitivity (SSB & CW)
- Computer aided design, computer aided manufacture

**ONLY $449.95**

**GREAT VALUE ONLY**

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**FM Unit**

Plug in PCB to give your FT-77 transmit and receive. Great with converters or for working W & K on 10m. Cat D-2918

**Marker Unit**

Accurate marker to help you make sure you're not trespassing outside your band. An absolute must. Cat D-2919

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**SAVE $120 ON THIS EXPERIMENTERS MOBILE RADIO**

**FRG 7700/ SW**

For the professional monitor or serious SWL! If you want the best, you want the Yaesu FRG 7700 SW. Complete shortwave coverage with ease of operation the others only dream about. Just look at these features:

- 2MHz-30MHz continuous
- ALL Mode - includes FM (great for working with converters)
- Digital frequency readout, with digital clock
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Ask for a copy of our brochure showing you what the FRG 7700 SW can do for your operation. Cat D-2861

**FRG 7700 HF 150kHz - 30MHz version also available.**

Cat D-2840

**ONLY $539**

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There's a lot more to listening pleasure than just the HF bands! Listen in to the exciting world of VHF radio. All the services, amateurs etc. etc. 50-59, 118-130, 140-150kHz. Cat D-2844

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The FRG 7700 works with many types of antennas, but best with a low impedance active antenna. This coupler ensures optimum performance always. Cat D-2916

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Don't want to string up an antenna outside? Use the active antenna/powerful preamplifier plus a whip antenna will pull in stations you didn't think possible. Cat D-2945

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**HPI POWER YAESU HF TRANSCEIVER**

**FC102**

A fantastic new super high performance HF transceiver has arrived. The FT102 has all the amateur bands plus the new WARC bands. Special high voltage JET RF amplifier provides exceptional dynamic range - well beyond 100dB. Adjustable Noise Blanker even works on the 'Woodpecker'. Three 6146A/6SN7 tubes provide remarkable tone quality. Includes 12 types of tuning and high-cut audio filters. allowing 12 possible combinations.

This newly designed antenna tuner is ideally suited for use with the FT-102. Station Power handling capability of 1.2kW. Sandwich L/C network will match a wide variety of antennas (including a single wire to your transceiver). Cat D-2881

**ONLY $1049**

**$1225**

**Optional FM Board**

**Cat D-2882**

**$72.50**

**INcredible Value ON ANTENNAS**

V5JR 5 Band Vertical

If you're typical of most amateurs, you live in a suburb, where space is a premium. You need an efficient antenna but there are usually objections putting up a beam. You need your V5JR vertically unobtrusive in your backyard, but you'd be pleased to give your hobby without worry! Cat D-4305

**VALUE ONLY**

$99.95

**AMAZING VALUE**

$349

**FM Unit**

Plug in PCB to give your FT-77 transmit and receive. Great with converters or for working W & K on 10m. Cat D-2918

**Marker Unit**

Accurate marker to help you make sure you're not trespassing outside your band. An absolute must. Cat D-2919

**ONLY $15.95**

**VALUE ONLY**

$799

**STOP PRESS:**

**New Government regulations mean 30% duty must be added to new shipments of Amateur radio transceivers.**

Dick Smith Ham Shacks are located in the Dick Smith Stores listed below.

You'll find a licensed amateur at each Shack.

- Sydney 125 York St 267 9111
- Sydney 6 Bridge St 27 5061
- Geelong 114-138 Pacific Hwy 439 5311
- North Ryde 1185 and 199a Warrigal Rd 380
- Gosford 315 Mann St 25 6325
- Mount Waverley 359 Lakemba 6173 8934
- Richmond Bridge Rd 4278 1614
- Springvale 3481 Dandenong Rd 5307 6233
- Brookvale 131 Islington Rd 291 6238
- Conondale 82 Clayton Rd West 6247 3372
- Essendon 7580 Butter St 93 4300
- Adelaide 274 Wright St 217 1967
- Port Melbourne St 128 6194
- Epping 101 St Albans Rd 451 8666
- Hobart 276 Burnside Rd 25 8350

**Cat D-2885**

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Introducing the
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Remarkably Compact, High Performance
Broadband Tribander with Quad-Band Option

New Para-Sleeve Design
The Explorer 14 is a new antenna design we call PARA-SLEEVE which uses an
"open-sleeve" dipole optimized for maximum bandwidth and directivity. Here is the
concept. A central dipole, driven directly by the transmission line, has a ½ wave
resonance on the lowest operating frequency. Two shorter sleeve elements, tightly
coupled to the central dipole, modify its impedance to create a ½ wave resonance
to the highest operating frequency. This para-sleeve system is expanded by the ad-
dition of 15 meter traps and 20 meter element tips. A revolutionary new concept
for HF tribanders. So unique, we've applied for a patent.

Broadband Performance
The Explorer 14 will load solid state transceivers to maximum output with VSWR below
2.1, eliminating the need for an antenna tuner. You'll have edge to edge broadband
performance on 20, 15 and 10 meters with gain and front-to-back ratio competitive
to giant tribanders that cost twice as much or more. You'll be able to work stations
you cannot even hear with a dipole antenna. And, the Explorer 14 handles max-
imum continuous legal power with a respectable safety margin.

Short Boom Save Space and Money
If your space or budget was too limited for a long boom tribander, chances are the
Explorer 14 will fit both. The boom is only 14' (4.3 m) long and the turning radius
requires only 17'3" (5.3 m). The compactness of the Explorer 14 reduces its overall
weight and windload surface so you can mount it on a roof tripod, a mast or a tower.
For example, the Hy-Gain CD-4510 rotator and HG52 tower are a perfect match for
the Explorer 14. This saves you the cost of an extra heavy duty rotator and tower.

Superior Construction
The Explorer 14 includes passivated stainless steel hardware and heavy gauge,
pre-formed element and mast brackets. High grade 6063 T832 thick wall swaged
aluminum tubing is used throughout. A BNR66 balun is included and a new Beta
Multi-Match provides DC ground to reduce lightning hazard and precipita-
tion static. It's a rugged, easily assembled antenna that survives winds
up to 100 mph (160 km/h).

Quad Band Option
You can add a fourth band, either 30 meters or 40
meters to the Explorer 14 with the QK-710
kit. A kit that attaches to the central
dipole and is easily adjusted for
either 30 meters (WARC) or
40 meters at minimal
extra cost.

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AMATEUR RADIO, September 1983 — Page 5
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* Computer-Aided Design/Computer-Aided Manufacture

FC-700 ANTENNA TUNER

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In addition to the above antenna, Butternut Electronics Co. also provides a vast range of other electronic products and components. For complete information concerning the HF6V and other Butternut products, amateur and commercial, contact the sole Australian distributor:

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Page 8 — AMATEUR RADIO, September 1983
SIX METRES, PART RETURNED

Last month, we published a special insert detailing the Department of Communication’s advice on approval to operate in the six metre segment, 50-50.150 MHz.

This was as a result of negotiations which have been conducted for over five years, for a return of the band, 50-52 MHz. In the very early stages, we were advised that as the band 50-52 MHz was now allocated to the Broadcasting Service, when television Channel O commenced operation, we would have little, if any chance of regaining any portion of that band whatsoever.

We were able to demonstrate to the Department, that successful overseas experiments were being conducted in the lower portions of six metres, whereas on many occasions, propagation was not possible at 52 MHz. Such being the peculiarities of this band.

Over many years, as technology improves, the community at large demands more radio spectrum facilities. Demands on the limited resource of practical radio spectrum are increasing daily.

Mobile radio telephone communications ability is a specific requirement. It seems many small businesses with two or three vehicles on the road, want to be able to communicate instantly with their representatives. Gone are the days when a commercial business can expect to receive a private channel for its exclusive use. Many such businesses must share a specific channel, and there can be no guarantee of privacy of communications.

At each WARC conference, frequencies are shuffled around to suit the requirements of most services. Every service seems to want more, but the resources are limited.

Commercialisation of the radio spectrum is big business. There is much income to be made by a government in the licencing of various frequencies. Television and Broadcasting stations pay dearly for the privilege of spectrum usage, and it is no wonder that objections are raised when the Amateur Service requests an extension to its allocations.

We have been granted, albeit a limited access, portion of a band initially removed from the Amateur Service for commercial purposes. We have overcome what may have been thought the impossible. In this respect, we must now justify our actions, and prove to the authorities and outside commercial interests, that we indeed are a respectable service. Specific restrictions have been placed on amateur usage of the new allocation, and this is basically that no interference is to be caused to any Channel O transmission.

Further, except for Western Australia, the External Territories and Antarctica, operation is restricted to, outside of Channel O transmission hours.

We are the secondary service in this band allocation, the primary service, Broadcasting, will be given the protection it demands from interference of secondary station transmissions.

We expect a review of this allocation to be made in approx twelve months. Therefore, it is important that users of this new segment should ensure that accurate logs are kept, and the restrictions of operating times are strictly adhered to.

We should also strive to ensure we don’t try to ‘bend the rules’, and accept the restrictions placed on us.

Failure to do so will result in permanent loss of this band allocation.

I trust we can live up to what is expected of us.

B R Bathols, VK3UUV
WIA FEDERAL PRESIDENT
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The R70 is an ideal general coverage receiver to complement any amateur shack. Use it with your existing transmitter or transceiver to provide dual receiver capability.

An option for FM allows listening to the 10 metre FM activity.

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. Key features include dual digital VFO's, eight memory channels, memory scan.

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EPROMS – COPIED AND PROGRAMMED
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So you want to work an astronaut in space? Well, the timetable to launch is growing short for Dr Owen Garriott, W5LFL. He’s scheduled to go into orbit on 30 September, in the Columbia, and the Flight Directors and engineers are polishing the fine details on a flight plan that calls for up to an hour a day of amateur operating by Owen on 2 metres.

During the mission, he will sign “W5LFL from Columbia”, using a transceiver specially built for the flight. Five manufacturers volunteered to provide the equipment. At this writing, NASA engineers at the Johnson Space Centre in Houston are running evaluation tests to choose the entry best suited to the flight... “STS-9”, to give it the official NASA designation.

The radio will be powered with alkaline batteries and will run 5 watts, FM modulated. Transmissions will be in the range 145.51-145.77 MHz and Garriott will listen between 144.910 and 145.470 MHz in 20 kHz increments.

Exact times and frequencies are still being worked out. The mission is scheduled to last nine days but don’t look for Owen until day three. It will take that long to get the Columbia bedded down and the European built Space Lab 1 working properly. The Space Lab is the prime payload on this flight, and most important we amateurs like to consider our payload.

The radio will be operated from the aft flight deck. Garriott will place his split ring antenna in a window that overlooks the Space Lab. This works because the payload bay is operated with the lab facing toward the earth and that puts the amateur antenna into line of sight perspective during most of the flight.

W5LFL has been authorized by NASA to operate up to an hour a day. The astronauts work 12-hours-on and 12-hours-off, so Owen plans to use the time on either end of his 8-hour sleep periods for 2 metres. (Co-sponsors of the project are AMSAT and ARRL).

The flight directorate has mapped out the places where amateurs are concentrated. The flight path, at an inclination of 57 degrees, goes over most of the heavily populated areas on earth.

Flying at an altitude of about 200 statute miles, Garriott will have line of sight to a distance of about a thousand miles. His speed will be around 17 thousand miles an hour. This means he will be on-station up to a maximum of 8 minutes at any given point, less than that most of the time.

Based on results from OSCAR, however, AMSAT tells us we can expect to receive full quieting signals, even on a hand-held radio with a rubber duckie for an antenna, while the ship is passing overhead. On transmit it will take at least ten watts and a gain antenna, however, to stand a fighting chance of getting through and being heard by W5LFL.

On the air, Owen plans to transmit on even minutes and listen on odd minutes during the times selected for operation. He will identify his location and call areas for which he will stand by. For the most part, his transmissions will be spent acknowledging the calls that he has been able to log.

For us earth-bound mortals, it is recommended that you transmit only your call during the odd minutes.

If you call and are not acknowledged during the flight, don’t give up hope. Garriott will tape record all amateur activity and the tapes will be used as a log, after the fact, for QSLs. But you may have to settle for an SWL QSL!

The station will only be able to go on the air at selected times, primarily dictated by the astronaut schedule and the physical location of the ship as its orbit criss-crosses the globe, 15 to 20 orbits at most are expected to be effective. Even on a good pass, only a few dozen stations can be worked... but even ten watt transmitters have a chance of getting through, according to the AMSAT and NASA engineers.

As a group, we do a good job of operating on this flight, hopefully there will be many more similar operations in the future. Tony England, W0ORE, for example, another astronaut, hopes to take equipment with him when he flies in 1985. So it well behoves the amateur fraternity to put its best operating foot forward with an eye toward the future. Help police the action in your area.

You’ll need separate transmit and receive capability because W5LFL does not plan to operate the normal 600 kHz split. A hand-held will do well on receive. At least ten watts and a simple gain antenna should be used on transmit. Unless you have the experience of tracking satellites, it is recommended to stay with a simple antenna... one that is mounted high enough to see the horizon. Check your antenna handbooks for designs.

Contributed by: Jim McLeod, VK2WLO

---

**THUMBNAIL SKETCHES**

*J W McDermott. Ex VK4JM. 1930.*

Jim, of 1913 vintage, started his radio career at Glen Eagles, near Beaudesert, with crystals and batteries. He later moved to Rosemount near Nambour where he built a 240 VAC power supply using a motor cycle engine, single cylinder, to drive the alternator until reticulated AC became available and he moved to Nambour.

A licensed electrician, Jim became prominent in the district as a radio serviceman in which calling he is still active.

*Peter Brown VK4PJ
VK4 Amateur Historian
16 Bede Street, Balmoral, Qld 4171*

In his younger days he operated the cinema in Maroochydore, using incandescent lamps, assisted by Arthur VK4AW.

Jim’s father and brother also obtained amateur radio licences and they were all also keen sailors, building their own boats. Wartime service as a WO, AEME, included security work and lecturing on advanced electronics.

Jim is a member of the Institute of Radio and Electronic Engineers London and a registered Technical Engineer with the Council of Engineers London.
NEW REPEATER EARNS ITS KEEP

Jeanette Wiley, VK2EJW
24 Blessing Street, Glen Innes, NSW 2370

GLEN INNES CHANNEL 7 REPEATER

The Glen Innes repeater, VK2RNE, operating on channel 7, repeater input 146.350 MHz and repeater output 146.950 MHz, came into operation on Saturday 9th July 1983. It had been in the planning stages since 1977 when the North West Amateur Radio Group was formed to provide repeater coverage in Region 2, NSW.

VK2RAB, channel 5 Gunnedah and VK2RMl, channel 7 Moree were both established by this group at sites where other installations were already present. (County Council and Telecom). Applications to establish the repeater at a similar site near Glen Innes were refused so the search began for a suitable site in the area. In 1981 a site was found and the club voted to go ahead with the project.

The present location, some 30 km south-west of Glen Innes and 1503 metres above sea level was tested by a party using an IC22S and a “Slim Jim” at six metres. Stations from the coast and from Narrabri, Tamworth, Armidale, Inverell, Moree and Glen Innes could all access the site without much difficulty.

The NWARG holds the licence for the repeater and supplied the transmitter and receiver sections, the cavity filters and the aerials. The Glen Innes and District Amateur Radio Club was made responsible for the site, repeater accommodation, tower, power supply, control box, solar panel and labour — a huge task considering club membership is currently only twenty one.

The repeater itself is a converted STC MTR 10-151B with ten watts output. The transmit and receive sections were separated by Reg, VK2ATS. Richard, VK2BYV built the control box (the ident board, timing circuitry etc).

A Glen Innes resident at the time, who has since gone home to England, Nick Butt, is a solar power genius. He worked on the solar power supply system to make it as efficient as possible. It is his personal design and he built it himself. The club could not afford to purchase it from him with money, but some club members provided labour on his farm instead.

The repeater is exclusively solar powered by a Solarex 2.1 amp panel charging two 6 volt batteries in series, supplying 12 volts 110 amp hours. When no signal is detected by the repeater for a few minutes everything but the receiver shuts down, so the total standby current consumption is only 110 mA. When a signal is detected the transmitter and control sections come back on and the repeater idents. The time out period is approximately 4 mins 30 secs.

After six months of tests the WIA repeater committee suggested swapping crystals with VK2RMI Moree. With Coffs Harbour being channel 1 it was felt that there could be some idea of the difficulties encountered can be imagined. This was just a bare mountain top; no electricity, no running water and access by four wheel-drive vehicles only. It is a very bleak site — cold and windy. Most working bees took place in temperatures barely above 0° C and the day the repeater was installed the ground had snow on it all day.

For support the 21.5 m tower, donated by Ivan VK2BIO, has three concrete footings with 1.8 m rock bolts. Because the site experiences extreme winds three guy wires were added later for extra peace of mind.

The Glen Innes Rescue Squad provided equipment and know-how to move the tower from Glen Innes, where it had been sanded and painted by members, to the site. This was not an easy exercise. Glen Innes, drought struck for four years, had had millimetres of rain and the track up the mountain was very slippery. Many times members had to lift the back end of the tower back onto the track after it had slipped off. All were very relieved and satisfied to see the tower vertical, complete with lightning arrester and aerials mounted. The aerials, half wave collinear with approximately 6 dBi gain are mounted Rigging the Antenna*.

The Glen Innes Channel 7 repeater is available to all licence holders in Region 2. Please contact the Glen Innes Amateur Radio Club, 24 Blessing Street, Glen Innes, NSW 2370 for further details.

Rigging the Antennas.
with the transmit aerial at 6 m and the receive aerial at 15 m. Hopefully this is enough separation to prevent desensing problems. Graeme, VK2EBU had the honour of being first man up the tower to release the ropes.

The group were held up several times by wet weather, but over several weekends a concrete slab was put down and a shack built to house the repeater equipment.

Finally came the big day. On Saturday 9th July, the repeater was installed and there was plenty of excitement as all heard the first ident. For the rest of Saturday and Sunday the repeater had plenty of use! Most distant signals into the repeater so far have been Dalby in Queensland and Newcastle.

The local amateurs hope that the repeater will be useful, not only for socialising on air, but also for emergency situations. It should give good coverage of the nearby Gibraltar Range National Park in case WICEN should be called out to assist in a search, as well as assisting liaison throughout Region 2.

A feature of this whole project is the excellent cooperation and assistance received from the Lands Department, Severn Shire Council, Glen Innes SES and Glen Innes Rescue Squad. There has also been support in the form of materials and assistance from local businessmen. It is amazing how little this project has cost the club but finances are now at rock bottom and the project couldn't have managed without their help.

It is difficult to name everyone who has helped, but here is a list and apologies if anyone has been omitted: Richard VK2BYV, Reg VK2ATS, Mike VK2NBT, Peter VK2KDA, Russ VK2ERS, Graeme VK2EBU, Ivan VK2BIO, Tony VK2BGQ, Ian VK2EJL, Lyn VK2BSF, Dave VK2ZYD, Phil VK2XPB, Dallas VK2ECC, Angus VK2PNV, Bill VK2NXT, Rob and Mark Dunk, Bryan Burgess, Brian Donnelly, Mike Digby, Geoff Kiehne, Malcolm Lane, Bob McLeod, Peter and Graham

Fletcher, Bill and Brendan Byrne, Nick Butt, Russ Davies, Wayne McCarthy, Richard Tucker and Jeff Beness.

If anyone is interested in more information about the repeater please write to the club via PO Box 26 Glen Innes.

Postscript: A few hours after completing this article it was learnt that the repeater has indeed earned its keep already. Phil VK2XPB was travelling near Inverell and came across a car accident. Three chaps were very badly injured. Phil called "Mayday" on channel 7 and Reg VK2ATS dropped everything to answer. Ambulances were despatched immediately and the three were taken to hospital without delay.

Photographs supplied by Jeanette Wiley VK2EJW
The unit to be described is built around the keyboard of a discarded desk calculator and uses only seven digital integrated circuits. When connected to the IC720A via the accessory socket it interfaces with the transceiver's internal central processing unit (CPU) and permits immediate selection of operating mode, VFO A or B and frequency or alternatively, the variation of any one of these operating parameters on its own. The controller also incorporates the facility to override the housekeeping circuitry of the CPU which includes the inbuilt inhibit of the transmit mode for frequencies outside the amateur bands, thus making the IC720A a true general coverage transceiver.*

The process of encoding the internal CPU by means of the controller is as simple as entering a ten digit number on a calculator. Having the control unit connected to the IC720A does not in any way interfere with normal manual control of the set if desired. Description of the keyboard controller is somewhat simplified if it is considered in two parts, ie the keyboard binary code generator and the logic board.

**THE KEYPAD LOGIC GENERATOR**

This part of the control unit is built quite simply by wiring the appropriate keys of a discarded calculator keyboard to facilitate the generation of the binary codes corresponding to the numerals 0 to 9, the address code specific to the CPU of the ICOM transceiver, the two VFOs and the five available operating modes, ie upper side band, lower side band, AM, CW, and RTTY. In addition a key is required to activate the RT control line and a switch to enable or disable the RC line as required (the RT and RC controls will be dealt with later).

Data is encoded in 8421 BCD. This data is generated by using the various keys of the calculator keyboard to ground the cathodes of discrete diodes in an array connected to four data lines denoted D8, D4, D2 and D1. The two examples shown in the circuit below will, I am sure, preclude the need for further explanation. The type of diode used is not critical. I used 1N914s because they were the cheapest available.

The IC720A handbook does not provide any coding information. It does, however, identify the access points of the accessory socket although the method of identification gives very little indication of the function of the various lines. Those of relevance are as follows:

<table>
<thead>
<tr>
<th>Data Bus Lines identified as</th>
<th>DB8</th>
<th>DB4</th>
<th>DB2</th>
<th>DB1</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB8PIN 24</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>DB4PIN 23</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DB2PIN 22</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>DB1PIN 21</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

4 Data control lines
Data Bus Control Input PIN 16
RC Control Input PIN 18
RT Signal Line PIN 20
DV Data Valid Line PIN 19
+13.8V (Switched) PIN 2
Ground PIN 8

As was pointed out above the handbook does not furnish any encoding data and at this stage I would like to express my gratitude to Garner Annett VK3NZZ for his article in ARA Vol 5 No 3 in which he describes in detail, not only the relevant data codes but also the message format and control level data for the CPU. The encoding table below furnishes the data necessary to wire up the diode array for the keyboard.

**DATA UNIT ON KEYPAD**

<table>
<thead>
<tr>
<th>Address Key</th>
<th>USB Key</th>
<th>LSB Key</th>
<th>AM Key</th>
<th>CW Key</th>
<th>RTTY Key</th>
<th>VFO A Key</th>
<th>VFO B Key</th>
<th>0 Key</th>
<th>1 Key</th>
<th>2 Key</th>
<th>3 Key</th>
<th>4 Key</th>
<th>5 Key</th>
<th>6 Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
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<td>0</td>
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<td>1</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

To the astute observer it will be evident that in a number of instances the same binary code is used for two different entities, for example 0000 denotes numeral 0 and also Upper Side Band. The encoding sequence takes care of this anomaly.

**THE LOGIC BOARD**

A full circuit diagram is provided and clearly identifies all relevant data and control lines. I do not propose to discuss the circuit function in detail; however, a list of the functions it carries out may be of interest.

1. Suppression of key bounce
2. Generation of control levels necessary for programming or reading the CPU
3. Sequencing of control levels where necessary
4. The provision of a visual indication of the data on the Data Bus Lines and the logic level of the DV line.

Layout is not critical, all components are cheap and readily available. Construction should pose no problems providing one observes the rules relating to the use of CMOS and TTL integrated circuits. My unit was assembled on a piece of vero board. There is no reason why CMOS ICs cannot be used throughout if desired. I would, however, make the point that if this is done, the power supply level must not exceed five volts; the CPU in the IC720A tends to malfunction when presented with Logic Levels in excess of those normally available from TTL.

**ACCESSING THE CPU AND MESSAGE FORMAT.**

It is assumed at this stage that the diode array and logic board have been assembled.

---

Bob Young VK4BRY
9 Boblynne St, Chapel Hill 4069
and interconnected and that routine circuit checks have been made. I would suggest that it is most important to ensure that every key to be used on the keyboard generates the correct binary code when depressed.

**STEP 1** Depress and release the address key, then depress and release the RT key. If all is well, the DV indicator (green LED) will be lit and so also will be the red LEDs associated with the DB8, DB4 and DB2 lines.

This procedure places the address data bit on the Data Bus and raises the Data Bus control line to a logic 1. Releasing the address key allows the Data Bus control line to return to logic 0 and depression of the RT line raises the Data Bus control line to logic level 1 allowing the indicator LEDs on the Data Bus lines to read the last bit of data (the address) sent to the CPU. NB. Some form of readout at this point is necessary. The process of addressing the CPU takes a finite time dependent on the state of the internal housekeeping circuit and at times it may be found necessary to repeat the actual address procedure. I mention this point specifically because it will be of relevance to those interested in further developing the controller to the stage of having multiple memory and scan facilities.

**Step 2** The remaining data is entered into the CPU simply by pressing the appropriate keys in the correct sequence which is as follows:

1. Desired mode ie USB, LSB, AM, CW, RTTY.
2. Desired VFO (A or B) and
3. Six digits in descending order of significance in order to define the desired frequency of operation. At this stage a glance at the digital readout on the IC720A will show that the transceiver is now ready for operation on the frequency that has just been keyed in. The desired VFO and mode of operation may not be as required. The explanation for this will be given later.

The entry of a data bit into the CPU requires the following:

a. The appropriate data bit must be placed on the Data Bus lines
b. The Data Bus line is then raised to logic level 1

**Note** With respect to the entry of the actual frequency data, the first digit entered will define tens of MHz thus if you wish to enter a frequency of say 7.065.0 MHz be sure to enter the digits 070650. If you fail to do this the CPU will be confused, you may be confused and the readout on the transceiver will suggest that it has suddenly become a VHF rig! You will also find that the receiver has gone very quiet. In the event of such an error, one merely has to readdress the CPU and encode the correct data.

**The RT Control Key**

Once the CPU has been accessed (step 1) repeated actuation of the RT key steps through, in normal sequence, the data stored in the CPU. With each operation of the RT key a specific data bit in the CPU will be displayed in BCD form by the red LEDs wired to the Data Bus Lines. By way of example, let us assume that the set is tuned to lower side band, VFO A and a frequency of 7.050 MHz. You wish to operate on upper side band VFO A and 14.050 MHz. Access the CPU by depressing the address keys and RT keys in turn, then depress and release the upper side band key, VFO A is OK therefore press and release the RT key four times. Clearly it is just as easy to encode the CPU in full each time but for those interested in understanding the true function of the RT line will be important.
confusing. One tries to rush the encoding procedure, particularly when handling the RC line, and if the debounce function is not set correctly, there will be no problem. If however the RC line is held at logic 0 for any length of time, the CPU could no longer be accessed in the normal way. Further, manual tuning of the transceiver appeared to be lost also. Experience has shown that no harm is done to the equipment but when such an impasse results it becomes necessary to switch off for about thirty seconds and start all over again.

3 A hint for those interested in adding memory and/or scan functions to the control unit. As it stands at present, the encoding has been reduced to one of sequentially activating and deactivating the simple switches. There is one snag; it is necessary to check that the first two operations have in fact accessed the CPU before encoding can begin.

To make full use of the memory function of the IC720A a permanently active back-up power supply for the CPU is required. Apart from the obvious risk of fire and equipment damage resulting from a supply failure occurring in the absence of the operator, even the briefest loss of line voltage results in loss of data in the memory. The controller described facilitates rapid selection of any desired mode of operation. VFO and frequency and virtually obviates the need for the one memory function dependent upon a back-up supply. It should be possible to construct a controller such as the one described for a somewhat lower cost; the back-up power supply providing, of course, a suitable keyboard can be salvaged from some other equipment. The controller makes operation of the transceiver substantially easier, and with minor modifications could be an invaluable aid to a blind operator.

A FEW POINTS WORTHY OF NOTE

1 With the circuit provided the time constant for the debounce function is perhaps a bit long. Providing the encoding process is carried out slowly and deliberately, there will be no problem. If however one tries to rush the encoding procedure, the results, to say the least, will be quite confusing.

2 When the controller was first put into service it seemed a good idea to encode the required data and then access the CPU on the assumption that when necessary, the next data entry could be fed to the CPU starting with the mode key. To put it simply, the CPU did not go along with my "good idea". It was noted that after about one minute the DV indicator LED would go out and that the CPU could no longer be accessed in the normal way. Further, manual tuning of the transceiver appeared to be lost also. Experience has shown that no harm is done to the equipment but when such an impasse results it becomes necessary to switch off for about thirty seconds and start all over again.

THE RC LINE SWITCH

The CPU incorporates an internal housekeeping circuit which in normal operation takes into account the setting of various buttons on the front panel of the set, for example VFO A, VFO B and the various buttons to define operating mode. When the RC line is held at logic 0, priority is given to the internal housekeeping circuitry, i.e., if the buttons on the panel are set for lower side band and VFO B and an attempt is made using the key board to change operating mode VFO and frequency, it will be found that although the frequency will change to the one desired, the set remains with the mode and VFO functions unaltered and in complete correspondence with the setting of the buttons on the front of the set. Setting the RC line to logic 1 overcomes this difficulty. With the RC line at logic 1 the keyboard has priority and the CPU will process data exactly as it is encoded from the keyboard. As a matter of interest setting the RC line to logic 1 also serves to disable the inhibit on transmit mode for frequencies outside the amateur bands.

THE DV LINE

Essentially this line is used to furnish a visual indication that data is valid at each step of the encoding process. In short, if the green LED goes out you have made a mistake, or a malfunction has developed.

WHO IS THIS AMATEUR?

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

Anyone who has listened regularly on the bands during these last forty-five years must have heard his pleasant, well-spoken voice, either working DX or ragchewing. He first became interested in wireless in the early thirties when he built a two tube regenerative receiver and heard amateurs in QSO. The 'bug bit' and, to use his own words he said, "That's for me!". Consequently, he took out his licence on 21st June 1937, operating firstly in Brisbane, then for many years in Gympie before returning to Brisbane and finally settling at the seaside resort of Brighton, Queensland.

His first transmitter was a MOPA, using a 201A final; this meant ORP operation of a few watts maximum. Like so many old devotees of his era, his station was completely homemade for a long time until he eventually changed to SSB and commercial gear.

Professionally he was a Broadcast Technician with several Queensland commercial radio stations, viz 4SB, 4BU, 4LG and 4GY. A man of many talents, he did his stint as a DJ (called announcing in those days) and as the station's sales representative. He retired from broadcasting in 1970 and operated a mixed business at Paddington, Brisbane for eleven years; now he divides his time between fishing, gardening, music appreciation and amateur radio — in other words, lives the life of Riley.

A long time member of the WIA he was active with the Wide Bay Burnett Branch for many years. As a final clue, he appeared on the front page of AR in October 1964 together with a group of scouts at the Jamboree on the Air. You've guessed rightly — his call is VK4XR (Xray Romeo) and his name is Eric Chippindall.
The antenna to be described is a vertical consisting of two five eights wavelength sections in phase. With the design sizes given it has an SWR of 1.05:1 at 52.6 MHz and less than 1.5:1 over the 52-54 MHz band. It has withstood some fierce winds at its installed height of twenty seven metres and gives good omnidirectional coverage.

My first design used small diameter tubing but was too flexible and had the disconcerting habit of bending like a banana in strong winds so the top half became horizontal! Signal reports had to be given as “S5 to windward”, or “S3 to leeward with gusts to S6”. With the tube sizes now specified the antenna is light but strong, and I have minimised holes and other stress points as they hasten fatigue failure. Although my design is for 6 metres the principles can be applied to other VHF antennas.

COMPONENT MANUFACTURE — FOR 52.525 MHz DESIGN FREQUENCY

Draw cut a length of 19 mm outside diameter by 1.42 mm wall thickness aluminium tubing to 3460 mm (5/8 wavelength by 12 mm).

Cut a length of 25 mm outside diameter by 1.6 mm wall thickness aluminium tubing to at least 5130 mm which allows about 300 mm for clamping to a support. I used a full 5.5 metre length.

Deburr and file a radius on the inside ends of the tubes.

Machine a 270 mm length of 25 mm diameter hardwood dowel so that 150 mm is a close sliding fit inside the 19 mm outside diameter tube. Turn down the other end of the dowel so about 100 mm is a slide fit in the 25 mm outside diameter tube. When turning down the dowel avoid sharp edges at the diameter changes. Heavily radius the ends of the dowel to reduce stresses where the tubing flexes under wind loads. Waterproof the dowel by dipping it in marine varnish, epoxy resin etc. If you don’t seal the timber it can absorb moisture, expand and will easily split the tubing.

Bend up the phasing loop from aluminium or brass wire of about 3 mm diameter starting with a length of about 1425 mm which allows enough for 2 loops for screws to be inserted. Avoid sharp bends or nicks in the wire as these promote stresses. After making the U-shape I rolled it round a 150 mm paint tin to make it more compact and durable.

Bend up the lower phasing stub. Although you can use aluminium wire I used brass welding rod (3 mm diameter) so that I could solder the coax wire directly to it. To prevent galvanic corrosion I fitted stainless steel washers between the brass and the aluminium. The starting length for the stub is about 1425 mm to allow for bending a loop for a screw.

Make up 4 or 5 insulating spacers about 40 mm long. I used black polypropylene strip
just slide inside the 25 mm outside diameter tube and drill a hole for a self-tapper exactly 12 mm in from the tube end.

Remove the stepped dowel and fit it now into the 19 mm outside diameter tube. Drill a hole for a self-tapper 12 mm in from the end of the tube, making sure the two holes in the dowel are in line.

Assemble the lower phasing stub to the 25 mm outside diameter tube using a stainless steel self-tapper (and stainless steel washers if you used brass or copper wire). Space the stub from the tube using the insulators and nylon cable ties round the tube.

Assemble the two tubes together with the stepped dowel and attach the phasing loop with two stainless steel self tappers. Use an insulator strip and cable tie to support the centre of the phasing loop if you have rolled it into a circle. Fit a cap or plug into the top of the 19 mm outside diameter tube to keep water out.

I sanded the aluminium tubes at each screw hole and applied a dab of "Aloxin" or similar conductive paste to improve electrical contact.

You now have a monstrosity over seven metres long — but it should not prove too difficult to carry and lift up to the vertical. Some care is needed to prevent accidental damage to the phasing loop and stub during erection.

**TUNING**

I hammered a one metre length of suitable sized water pipe into the ground to act as a clamping support for the antenna during tuning.

The co-ax shield is attached to the circular clamp and positioned approx 150 mm up from the stub attachment point. The co-ax centre wire is attached to the stub via a crocodile clip about level with the shield position.

Connect an SWR meter into the co-ax about one metre from the feed point. Feed a low power carrier at 52.525 MHz (or your design frequency) into the antenna and slide the co-ax connections up or down to achieve minimum SWR.

Subsequently, when my antenna was raised to five metres the point of lowest SWR moved up to 52.6 MHz and didn't alter further at the installed height of twenty metres, so I didn't bother trying to retune it to the design frequency.

If you used brass or copper wire for the phasing stub you can solder the co-ax wire to it. If you used aluminium you need to fit some sort of clamp and use "Aloxin" etc to make a permanent connection.

I use a quarter wavelength co-ax balun to balance the feed but couldn't detect any difference without it. The balun is coiled into a 150 mm circle and it and the co-ax feed line are clamped to the antenna using more nylon wire ties (they sure come in handy.) Make sure you waterproof the end of the co-ax.

The antenna can be clamped to its support using U-clamps or similar making sure you position them over that internal reinforcing dowel. Use insulating tape to separate dissimilar metals. The antenna is at earth potential at this point.

Following are readings of SWR taken after raising the antenna firstly to five metres, then to twenty metres.

<table>
<thead>
<tr>
<th>FREQUENCY (MHz)</th>
<th>SWR at 5 m above ground level</th>
<th>SWR at 20 m above ground level</th>
</tr>
</thead>
<tbody>
<tr>
<td>52</td>
<td>1.05</td>
<td>1.15</td>
</tr>
<tr>
<td>52.5</td>
<td>1</td>
<td>1.15</td>
</tr>
<tr>
<td>53</td>
<td>1.3</td>
<td>1.4</td>
</tr>
<tr>
<td>53.5</td>
<td>1.4</td>
<td>1.5</td>
</tr>
<tr>
<td>54</td>
<td>1.5</td>
<td>1.6</td>
</tr>
</tbody>
</table>
Circular Clamp and method of attaching Coaxial Cable.

Re-inforcing Dowels and attachment of Phasing Stub.

I also discovered that the SWR dips to a minimum of 1.6:1 at 38, 42.5 and 47 MHz, and rises to a maximum of 3.2:1 at 39.9, 44.5 and 49 MHz. Fascinating, but don't ask me what it all means!

Undoubtedly you can vary the construction and materials to suit what you have available. The critical dimensions are the lengths of the tubing and the phasing wires and these are given by standard wavelength calculations.

Mechanically it is important to reduce stress points (or reinforce them) and to minimise galvanic corrosion between dissimilar materials. The extra effort of fitting radiused, reinforcing dowels and using stainless steel hardware will ensure maximum life and reliability.

See you on 6FM.

LIST OF MATERIALS
One 3460 mm length aluminium tube 19 mm outside diameter by 1.42 mm wall thickness (6061 grade preferred), one 5130 mm length (or longer) aluminium tube 25 mm outside diameter by 1.6 mm wall thickness. Two 1425 mm lengths 3 mm diameter aluminium wire (or brass, copper). Welding rod or fencing wire could be used. One 750 mm length 25 mm diameter hardwood dowel (broom-handle etc).

One 200 mm aluminium strip about 20 mm wide x 1.2 mm thick (for circular clamp round 25 mm outside diameter tube). Alternative — stainless steel hose clamp. Five or six insulating spacers approx 40 mm x 12 mm x 3 mm. One plug or cap to fit 19 mm outside diameter tube.

Three 20 mm x 10 g stainless steel self-tapping screws. Approx 8 stainless steel washers to fit screws. One 25 mm x 6 mm stainless steel machine screw with nut. Approx 9 x 150 mm nylon cable ties. A tube of "Aloxin" or similar conductive paste suitable for aluminium.

Ar

Family Radio

The Russell family of Coolbellup, WA believe amateur radio is a family affair.

Arthur is a newcomer to the bands, obtaining his licence (VK6NAR) in November 1982, but in this short time he has not let the grass grow under his feet.

Arthur tunes up his "Telephone Exchange".

Recently he bought an old telephone exchange and built his transceiver, multi metre, aerial rotator etc into it. His XYL is his QSL manager and the children climb the trees to connect the antenna wires.

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EXERCISE “SES MITCHELL”

Ted Gabriel VK4YG
WICEN CO-ORDINATOR REGION ONE, QUEENSLAND
3 Corkill Street, Freshwater, Qld, 4872

Queensland’s highest mountain, Mt Bartle Frere, 1622 m (5230 ft) is located 55 Km (34 miles) south of Cairns and rears up behind the small sugar mill town of Babinda. This mountain and its near neighbour to the north, Mt Bellenden Ker, 1541 m (5120 ft) lie close to the aircraft approaches to Cairns and have, over the years, claimed many aircraft unfortunate enough to fly too close to them in cloud. It was on this basis that the Babinda group of the State Emergency Service planned an ambitious search and rescue exercise to cover a period of forty eight hours, and invited all local emergency service groups to participate.

Another purpose of this exercise was to test portable HF and VHF radio equipment under tropical rainforest conditions in order to find suitable units for the SES since present portable communications equipment such as 27 MHz handhelds were virtually useless in the North Queensland environment and most back pack type HF rigs too heavy to lug up tropical mountains.

The Cairns group of Region One WICEN was asked to provide back up communications for the SAR teams and a forward base communications centre in the field.

Accordingly, Oxley VK4BKO and Ted VK4YG attended planning meetings with the SES where it was determined that at least four unrestricted or ‘K’ licencees would be required to accompany the SES teams so we formulated our operational plan on the use of the Cairns repeater, VK4RCA and several VHF Simplex channels.

The Cairns repeater is located at the television station on Mt Bellenden Ker, the antenna, halfway up the 92 metres mast is at an altitude of 1628 metres making it the second highest in the country. Its range is quite remarkable and it has the ability to reach into some of the seemingly inaccessible corners of this rugged mountainous region.

A twin engined aircraft lost in the area was only discovered when Telecom technicians on their way up to the station on the 4.8 km long cableway smelled the petrol fumes from the ruptured tanks.

Our operational plan was submitted to the local DRI on the basis that a WICEN net controller would assume control of the repeater as required for primary traffic to ensure the safety of personnel on the mountain and that free periods for general use would be allowed for non exercise traffic where possible. This plan was approved by the DOC.

Since Cairns WICEN had earlier surveyed many emergency forward base sites with VHF operations in view the choice for this exercise was not difficult.

A ridge rising up from Woopen Creek on the Russell River south of the mountain gave a direct line of sight on this side while the repeater on Mt Bellenden Ker covered the northern and eastern faces.

Thus two primary channels were allocated to the WICEN operators with the climbers — Repeater 6950 and 51 Simplex plus a separate medical emergency channel on 53 Simplex. A command link from forward base to Babinda SES HQ was set up on Ch 52 Simplex and three VHF mobiles were available.

WICEN operators with the SES teams were Colin VK4EX, Andrew VK4KGA, Albert VK4AEG and his son Michael VK4NDD.

Forward base net controllers and operators were Oxley VK4BKO: 2 l/C and RTTY operator, Ted VK4MH, Gordon VK4AGZ, Allen VK4BAJ, John VK4VKL, Bill VK4VGA, Anne VK4NXK and Phyl VK4NGD.

Saturday morning 26th March was overcast and raining as group leaders gathered in the pre dawn gloom at Babinda SES for briefing. While waiting Ted VK4YG spoke with canefarmer Silvio Grass with cane farmer Silvio Grass who, in April 1942, was a member of the team which climbed the mountain to search for an American B25 Mitchell bomber which had crashed in bad weather while returning from a bombing raid in New Guinea. Silvio said that after locating the aircraft and burying the crew members they later had to climb back up again with an American party to recover the bodies.

As we watched the young SES members quietly and carefully checking their packs and equipment, we realised that for some of them this was not the first time that they had been up that mountain in their ‘back yard’. Indeed some had recently been out searching for a light aircraft which was lost on a flight between Mount Isa and Cairns and has not yet been found. Also, some SES team members were carrying light weight altimeters and since it is almost impossible to determine map grid refer-
ences in rainforest the altitude on a known track is given as a position report.

Following briefing the SAR teams were transported to the start of their respective climbing tracks and the exercise commenced.

Colin VK4EX and Albert VK4AEQ were carrying ICOM IC2As with extra battery packs and Andrew VK4KGA had a Yaesu 290R with extra energiser batteries. The WICEN forward base at Woopen Creek had a Kenwood TR9000 into a 6 element yagi on Channel 51. IC2A handhelds were sufficient for use into the repeater which was line of sight. An IC22S mobile provided a command link on Ch 52 to Gordon VK4AGZ in his mobile at Babinda SES HQ while another IC22S was available for the medical emergency channel (53) or as a spare.

A field telephone connected us to an SES forward base further along the same ridge where operators were monitoring HF and VHF channels.

After preliminary radio checks with the climbers the forward base operators settled down to routine watch keeping, hourly position reports and message traffic.

The weather was anything but pleasant with frequent showers and periods of gusty wind, while the mountain was completely concealed behind a mantle of cloud. Some people were even doubting if the exercise should proceed, however, it was pointed out that aircraft don't usually fly into mountains in clear sunny weather!

While our forward base was reasonably dry, odd wind gusts would blow water over equipment and one gust did just that to Oxley's Tono keyboard — undaunted, he proceeded to pull it all apart and with the help of John VK4VKL, managed to dry it out and get it operating again. Although subjected to frequent showers duty operators did not grumble as they realised what their mates on the mountain had to contend with.

The SES Welfare group were delivering hot meals in special canteens and off duty operators could 'boil the billy' in Ted's caravan. Had the weather been fine it was planned to provide the climbers with hot meals in special canteens and off duty operators could 'boil the billy' in Ted's caravan. While another IC22S was available for the medical emergency channel (53) or as a spare.

At 1130K a notable 'first' for Region One Cairns WICEN took place with the transmission and receipt of a RTTY message from Cairns WICEN Co-ordinator, Ken VK4KD, on the Gold Coast. Anne VK4NXK, typed the message into the memory of the Tono and Oxley VK4BKO, sent it on its way on 20 metres thus demonstrating that in the Queensland WICEN RTTY network we now have a superior high speed method of handling bulk emergency traffic even under portable conditions in the field.

Teams 'Charlie' and 'Delta' arrived back at Babinda around mid-day and were given a warm welcome and an equally warm meal by the ladies of the SES Welfare group, most of the team members had bleeding leech punctures which were quickly attended to by the medical orderlies. 'Bravo' team, as Andrew advised us, halted at 1245K on the way down for a rest and a light meal and finally arrived back at base around 1500 hours.

After the evening meal and stand down time WICEN operators were able to relax but a listening watch had to be kept in case of emergencies. Light and power were supplied from a small covered 'power house' consisting of two 350 watt gen sets which were run alternatively. Even colour TV was available in Ted's caravan.

Sunday 27th March: Dawn and it was still raining and 'that' mountain was again covered with cloud — the first calls from 'on high' informed us that everyone was well even if somewhat damp and cold. Teams 'Delta' and 'Charlie' were instructed to return to base while team 'Bravo' were to collect suitable items of aircraft wreckage that they could carry for donation to the Australian War Museum and to local museums. An early weather forecast indicated clearing showers with freshening E-SE winds.

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At debriefing the Cairns WICEN team were praised for the efficiency of their VHF communications, the SES described their
THE ICOM IC-R70 RECEIVER

It is perhaps strange that as the ICOM Company were one of the first to produce a general coverage transceiver, it is only over the last few months that their first receiver has been released. They have no doubt had the technology required to do this for several years. One wonders what their market research on the production of a receiver only turned up. Whatever, several other Japanese firms have undoubtedly been doing very nicely selling their receivers now for some years. One thing however is certain, that when ICOM do something, they do not follow fashion but follow a method of design and presentation that sets their equipment apart from the others.

As might be expected, the R-70 has that ICOM look. In fact at a quick glance it could easily be mistaken for the IC-740 transceiver. It also incorporates many of the features that we have become used to in the ICOM amateur transceivers. As we shall later see, the R-70 has a performance that is in every way comparable with the IC-720A transceiver and performance has not been compromised by the introduction of gimmicks.

Let’s have a look at the features of the IC R-70 receiver. Front panel size is the same as the IC-740 but depth is about 100 mm less. The height matches the IC-720 and ICOM intend to produce an adaptor to allow the 720A and the R-70 to operate as a fully integrated system with VFO control from either set. At the time of our review this adaptor was not available so I am unable to comment on its effectiveness.

The R-70 is an all mode receiver with provision for AM, CW, SSB, RTTY and FM reception. It has three speed tuning system and two separate VFO’s. Coverage is from 100 kHz to 30 MHz in 1 MHz steps but it is possible to change the stepping rate from 1 MHz to amateur band selection only. The noise blanker is designed for either normal electrical interference such as power line noise and car ignition noise or for the Woodpecker. Pass band tuning and a notch filter are provided to pull through the hard ones and an RIT control allows an offset from the selected VFO frequency. A monitor control allows you to listen to a companion transmitter and would no doubt be useful when the R-70 is teamed with the 720A.

The only facility that the R-70 does not have is a memory. Strange that ICOM did not use the 730/740 system or even enlarge on this. There is also no scanning offered. There is of course no analogue dial readout. Frequency indication is via a very bright six digit readout that also shows the mode and VFO selection. To finish off the line up of facilities, there is a tone and squelch control.

The R-70 is a triple conversion receiver with IF frequencies at 70.4515 MHz, 9.0115 MHz, 455 kHz and then back to 9.0115 MHz. The last IF is used in conjunction with the second IF frequency to produce the bandpass tuning. The pre-amp in/out facility on the 730/740 has been taken one step further on the R-70. There is now a Pre-amp in plus an attenuator position. The R-70 is normally AC operated but our review model was fitted with the optional 12 volt DC operation kit. The FM reception facility is also an optional extra which was fitted.

Other options are a 500 Hz CW filter and an extra 455 kHz SSB filter. This latter item was fitted to our review receiver but no mention is made in the instruction manual as to its effect or specification. The rear panel has quite comprehensive facilities. Again there is no information in the instruction manual as how many of them could be used. There is a 24 pin accessory.
THE ICOM R-70 IN USE

On initial switch on the receiver comes up on 15 MHz if the general coverage mode is selected or on 7.1 MHz if the amateur band mode is selected. Side band selection is automatically chosen to give LSB on 7.35, and 1.8 MHz and USB from 10 MHz up. The digital indicator at the left of the frequency readout will also show that ‘U’ or ‘L’ side band is in operation. As is common with all ICOM gear, it is necessary to retune when the sideband is changed, the frequency difference being 3 kHz. It’s a pity that ICOM haven’t seen fit to make one of these a constant function of the other. The tuning is not continuous. Once a particular frequency has been selected it is not possible to tune out of this range. To go up or down, it is necessary to push the ‘Band Up’ button. Not only that but it is necessary to give the button a push for each and every MHz one wants to go up or down. However in general the operation of the R-70 proved to be very satisfactory. The three tuning rates have been well chosen and are the same as the 730/740 transceivers. The 10 kHz steps give a tuning rate of 1 kHz per knob rotation, the 100 kHz steps 10 kHz and the 1 kHz steps an ideal band scanning rate of 100 kHz per knob rotation. In my past reviews I have had some harsh things to say about noise blankers. The blanker in the R-70 is, without doubt, the best of the current breed. Its action on eliminating the Woodpecker is excellent and can certainly make the difference of copy or no copy. The blanker action is equally good on ignition and other electrical type noises.

By using the two VFO’s it is possible to up the receiver on two frequencies on two entirely different bands, that is two amateur bands or two short wave bands. Unfortunately the selected mode will not follow. If, for instance, you chose USB on 14.2 MHz with VFO one, your only choice would be LSB on 3.6 MHz with VFO two. If AM is required on 80 then it will be necessary to reselect USB on 20. With the R-70 operating from a constant AC supply then the last frequency tuned to will reappear when the set is turned on again. However, you will not listening to a contact and decide to go up a MHz and then come back, your original frequency will have been lost unless you swap VFO’s before the change of tuning.

All this sounds rather complicated but does not cause the confusion you might think and actual operating is, in most cases, easy.

The notch filter and the bandpass tuning are both similar to the set up in the IC-740. They are, however, now concentric rotary controls in place of the slide type. As such they are easier and smoother to operate. Performance of both is similar to the 740.

The tone control performed much better than the 740. At full effect it produced a drop of 12 dB at 2.5 kHz, -7 dB at 1.5 kHz, -5 dB at 1 kHz and -2.5 dB at 700 Hz. AGC action of the R-70 is very good. Listening across the various bands in all modes, there was no sign of pumping or popping with a very constant output level. To check this, the crystal calibrator was fed into the receiver to produce signals varying from an indicated ‘S’1 to ‘S’9+30 dB with the preamp switched in. Audio output only changed by .5 dB over this range, an excellent figure.

The response of the SSB filter was checked by feeding in a weak signal, the output measured with the AGC switched off. The -6 dB points were at 200 Hz and 2.7 kHz. The output was down to -40 dB at 2.9 kHz. The response of the optional CW filter was checked in the same way, the -6 dB points being 400 Hz and 1.1 kHz with a very sharp cut off beyond these points. The notch filter was checked across the audio range. The actual drop in audio output was a constant 20 dB except below 500 Hz where it increased to 25 dB. When listening to a signal at normal level, 20 dB will reduce a heterodyne to almost inaudible point.

It was noted that when the 100 kHz calibration was fed into the receiver to produce an ‘S’9+30 dB signal many spurious signals appeared throughout the tuning range, with a large amount of white noise on either side of both the wanted and spurious signals. In contrast to this, the
R-70 proved to be one of the best performers I have checked on the broadcast and long wave bands. Used with a long wire antenna about 20 metres long, broadcast and aircraft NDB stations were received with a notable lack of cross modulation. Frequency drift was checked by running the receiver in zero beat with VNG on 7.5 MHz. Any slight drift could be checked by comparing the tone beep against the same tone as heard on an AM receiver running alongside. It was noted that even with the tuning of the R-70 set to the 10 Hz rate it was not possible to set the tone to the exact frequency. The initial error was estimated at about 5 Hz. After about one hour's operation the R-70 had drifted around 25 Hz. Quite a superb effort! Due to the method of frequency generation in the R-70 the total drift should not differ greatly on any other frequency.

INSTRUCTION MANUAL

The instruction manual is good in some respects and very poor in others. Operating information is well covered but while there are details on how to install some of the options, there is no information on the available options themselves. Strange indeed. You will have to chase up the information on the available options yourself. A circuit diagram is included but no other service information at all. For a receiver bordering on the professional class this is poor. Maybe ICOM have a service manual in the pipeline but as I have previously stated with ICOM reviews I have yet to see one for any model.

CONCLUSIONS

Perhaps some readers might have taken some of my remarks as being rather critical, but in summing up I would have to give the R-70 almost top marks. If you are looking for multiple memories and flashing lights then you will look elsewhere. The R-70 has a solid professional feel. Sure there is room for improvement but after all it doesn't cost $3000 either. If you need a general coverage receiver with first class performance that will still be going well in years hence, then this might well be the one you are looking for.

Our review receiver was supplied by ICOM AUSTRALIA of Duke Street, Windsor, Vic. 3181.

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**EVALUATION AND ON AIR TEST OF THE ICOM IC R-70 RECEIVER**

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>RATING</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging</td>
<td></td>
<td>Excellent quality carton with carry handle.</td>
</tr>
<tr>
<td>Size</td>
<td></td>
<td>Reasonable size.</td>
</tr>
<tr>
<td>Weight</td>
<td></td>
<td>Quite reasonable.</td>
</tr>
<tr>
<td>External Finish</td>
<td></td>
<td>Very well finished and clean appearance.</td>
</tr>
<tr>
<td>Construction quality</td>
<td></td>
<td>Well up to the usual ICOM quality.</td>
</tr>
<tr>
<td>FRONT PANEL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location of controls</td>
<td></td>
<td>An excellent layout, plenty of room for everything.</td>
</tr>
<tr>
<td>Size of Knobs</td>
<td></td>
<td>Some knobs rather small but control action very smooth.</td>
</tr>
<tr>
<td>Labelling</td>
<td></td>
<td>SSB reverse and narrow CW confusing, otherwise satisfactory.</td>
</tr>
<tr>
<td>'S' Meter</td>
<td></td>
<td>Brightly illuminated. 'S' and Sinpo calibration.</td>
</tr>
<tr>
<td>Status Indicators</td>
<td></td>
<td>Could use a few more.</td>
</tr>
<tr>
<td>VFO knob action</td>
<td></td>
<td>The best in the business. Three tuning rates.</td>
</tr>
<tr>
<td>Dial readout</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analogue</td>
<td></td>
<td>Bright and accurate. Does not show RIT frequency shift.</td>
</tr>
<tr>
<td>Digital</td>
<td></td>
<td>Plenty of facilities but no information on how to use them.</td>
</tr>
<tr>
<td>REAR PANEL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RECEIVER OPERATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VFO stability</td>
<td></td>
<td>Hard to fault. See test section.</td>
</tr>
<tr>
<td>Digital dial accuracy</td>
<td></td>
<td>Spot on calibration.</td>
</tr>
<tr>
<td>Memories</td>
<td></td>
<td>Only second VFO useable as limited memory.</td>
</tr>
<tr>
<td>Bandpass tuning</td>
<td></td>
<td>Reasonable reduction in high end QRM.</td>
</tr>
<tr>
<td>Notch filter</td>
<td></td>
<td>Excellent reduction of heterodyne interference.</td>
</tr>
<tr>
<td>Spurious responses</td>
<td></td>
<td>Very clean.</td>
</tr>
<tr>
<td>'S' meter</td>
<td></td>
<td>Realistic response with pre-amp in.</td>
</tr>
<tr>
<td>Signal handling</td>
<td></td>
<td>No trace of overload under normal operating conditions. But see test section.</td>
</tr>
<tr>
<td>Sensitivity</td>
<td></td>
<td>With pre-amp is on a par with contemporary equipment.</td>
</tr>
<tr>
<td>Pre-amp/attenuator</td>
<td></td>
<td>As above. Pre-amp needed most of the time.</td>
</tr>
<tr>
<td>RF gain</td>
<td></td>
<td>Smooth progressive action.</td>
</tr>
<tr>
<td>Squelch</td>
<td></td>
<td>Works on all modes. Quite handy.</td>
</tr>
<tr>
<td>Tone control</td>
<td></td>
<td>Well chosen response. See test section.</td>
</tr>
<tr>
<td>Noise Blanker</td>
<td></td>
<td>One of the best yet heard. Even works on the Woodpecker.</td>
</tr>
<tr>
<td>QUALITY OF RECEIVED SIGNAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal speaker</td>
<td></td>
<td>Well balanced response.</td>
</tr>
<tr>
<td>External speaker</td>
<td></td>
<td>No mention made of any option.</td>
</tr>
<tr>
<td>Headphone output</td>
<td></td>
<td>Stereo Headphone compatible. Some hiss audible.</td>
</tr>
<tr>
<td>Power output</td>
<td></td>
<td>Plenty of audio with low distortion. See test section.</td>
</tr>
<tr>
<td>Manual (owner's handbook)</td>
<td></td>
<td>Lots more information needed.</td>
</tr>
</tbody>
</table>

Rating Code: Poor * Satisfactory ** Very Good *** Excellent ****
JOTA (Jamboree On The Air)

The 26th JAMBOREE ON THE AIR is scheduled to commence at midnight on Friday 14th October, 1983 and to terminate at midnight on Sunday 16th October, 1983. JOTA is an exercise conducted annually by the Scout Association with the co-operation of amateur radio operators throughout the world.

In a large number of areas it has been an outstanding success whilst in other areas it has been either non-existent or a dismal failure. The results are dependent entirely on the enthusiasm and preparation on the behalf of scouts and amateur radio operators.

Last year I took the position of JOTA liaison officer at the last moment having held off hoping another amateur with more experience would volunteer. I should have known better. They say OLD SOLDIERS NEVER VOLLUNTEER.

On contacting the Scout Association I was told to contact Eric Van De Weyer for scouts and Mrs Valda Lambert for guides which I did and I must commend in particular the help and co-operation which I received from Mrs Lambert.

An example of what can be done even at short notice was the result of an enquiry from Mr Colin Taken of theMosman district scouts. The request for assistance was passed on to the Manly Warringah ARC who immediately got to work on the project.

Today — NOT next week — next month is the time to prepare to participate. I know that at times you meet up with a lack of enthusiasm, should this be the case let me know so that in conjunction with the Scout Association we can endeavour to inspire the necessary enthusiasm in areas not giving these boys and girls the opportunity to participate. May I add that this is not a condemnation of leaders in these areas for they may have their hands more than full with existing exercises and know only to well their limitations.

To participate contact the local Scout or Guide leader and offer your assistance but do insist that suitable supervision by provided by the group concerned for you are the licensed radio operator not a scouting leader, kindergarten teacher or youth counsellor.

Confirm the location at which you will be operating and the number it is anticipated will be participating. Do not take on more than you can capably handle. Liaison with your local scourer as to a firm schedule on the size and times of groups is essential.

The erection prior to JOTA or the careful planning of portable antennas, can be a rewarding exercise undertaken in co-operation with the scouts. Do not overlook the advantage of high gain wire antennas. Quads, yagis, log periodics and the like can all be made up with wire and even if fixed can, with reference to the IPS reports, give quite amazing results if you do your homework now.

Try to arrange some prior instruction for the boys and girls participating on operating procedures. Remember your first QSO how fluent were you at the time, have they prepare some topics on points of local interest to pass on to their contacts — interesting exercises they had taken part in at school, scouting, holidays, travel. Help them over the HM — AR — AR — AND etc. You may not be a public speaker but you have learned something in the art of communication, pass it on, that is what youth and this world needs. Don’t Waffle.

Amongst the scouts you may find some capable CW exponents, try to foster this art. Have you RTTY facilities? Some of the nimble fingers amongst the guides could upgrade your station.

Another thought on antennas, don’t overlook the simple vertical or dipole which has an advantage over beams for local contacts. Did it really matter if your first QSO was over 10 km or 10,000 km. Try to arrange skeds with other participating groups to keep the action going when DX is not on.

Remember in most instances you will need the assistance of fellow licensed operators, make firm arrangements in plenty of time. Never allow your station to be operated without the supervision of a licensed radio operator. Your equipment and your good name are both of real value.

Ensure beforehand that all your equipment is in A1 condition. How long can you operate portable? Have you arranged extra fully charged, back up batteries. Play it safe not only with AC and DC but remember that whilst a nine year old wolf cub may be the perfect radiator of AF he would be a sizzler when it comes to RF.

There are a number of Scout Radio Stations operating in Australia and they run a net on the first and third Sundays of each month. Net station for these nets is VK4SAA with a back up by VK4BNK the frequencies and times are 7.090 MHz 2330 UTC, 21.190 MHz at 0001 UTC, 14.109 MHz at 0030 UTC with 21.190 MHz. Information on scout amateur radio activities will be publicised on these nets.

For information on JOTA liaison contact your division for additional information. Best wishes to all for a pleasant and productive JOTA 1983.

Simon Sebato and friend from 1st Clifton Gardens Cub Pack enjoying JOTA '82 with the help of Manly Warringah District Radio Club.

AMATEUR RADIO, September 1983 — Page 25
JOHN MOYLE FIELD DAY ON AN ISLAND

Dennis Hardie VK6KOZ
35 Lawson Street, South Hedland, WA. 6722.

There is a radio club in the remote Northwest of Western Australia, the North West Amateur Radio Society based in Port Hedland with chapters in Wickham, Karratha and Newman. It is one of the largest "clubs" in Australia, not in numbers but in the area covered by our membership from Wyndham in the North to Boyup Brook, South of Perth. The club call sign, as used portable on the weekend, is VK6ANW.

Each chapter runs its own VHF Repeater and a new chapter in Exmouth, with the assistance of the other chapters are in the process of building a repeater to cover that area.

This year the club decided to enter the John Moyle Field Day Contest operating from Delambre Island which is 16 kms off the coast of Wickham at the top end of the Dampier Archipelago.

Most of the organisation was done via the repeaters. There is excellent ducting and contacts, over 200 kms are normal, it is not unusual to talk to Bali in Indonesia.

Repeater Frequencies (MHz) Wickham 146.100/146.70, Hedland 146.400/147.000, Karratha 146.200/146.800, Newman 146.300/146.900.

VILLIANS IN THE STORY

Dave VK6ADR, Dave VK6YA, Clement VK6AFA’s son, Brian VK6A1H, Dennis VK6KOZ, Mathew VK6NU’s son, Mark VK6VV, Peter, Trusty Assistant, Rossco VK6SL’s OM, Maria VK6APA’s XYL and Shawn and Craig, the sons of VK6K02.

Others who assisted but didn’t make the island as the story will reveal were Pattie VK6SL and family, John VK6AFA and family, Ron VK6KRD and family, Norm VK6NU and other son.

THE CAMP

It was planned that the boat “PHOENIX” a 6 m aluminium craft with twin 80 hp outboards and Rossco (VK6SL’s OM) in his 6.4 m fibreglass boat with a 200 hp motor would take some people and most of the equipment over on Friday morning. This equipment included three generators up to 3 kw, two tower sections one with winch and pipe extension, five transceivers, two ATU’s, extension leads, coax, tools etc, as well as enough camping gear for the expected twenty five people.

Dave VK6ADR and Brian VK6A1H were late into Wickham as their water pump failed near Whim Creek, a famous country pub. Dave VK6YA went out to tow them in. Peter, myself and my two boys went over to the island to start setting up camp. Rossco, the two Daves and Brian arrived two hours later.

The first major task was to assemble the antennas.

THE ANTENNA SYSTEMS

The finished article was made up of the tower with the TH3 at 8 metres and the four element 6 m beam at 10 metres above the sand. The beams were fitted to the rotator after much arguing as to who had put two of the TH3 traps in the wrong place. The whole lot was then lifted using a small but very long block and tackle and guyed back to three star pickets driven into the sand. The wind didn’t stop blowing from then on and the system didn’t show any sign of giving way. I can’t say the same however, about the tents, which needed constant work to keep them on the ground.

On the beach there are two rotary clothes hoists which local fishermen put in to give some shelter for day trippers. One of these was used for the three element 10 m beam which finished up about 4 metres off the sand. Due to the wind we had to tie a rubbish bin to the clothes hoist to stop it turning in the wrong direction.

The five element, 2 m beam was stuck on a pipe and stood near the door of the tent at 2.5 metres above sand.

For working 160 m, 80 m and 40 m we had a random length of wire from the top of the tower to a pipe on a sand dune 100 metres away.

We also had, and used until the wind became too strong, a balloon filled with hydrogen. The wire antenna was to be at about 40 metres above ground which was achieved from time to time. We got reports at 5 x 9 + 20dB on this system where we were only 5 x 9 on the long wire, so the idea was good but not the conditions. The wire
L. A.-Wickham and Mark VK6WV at the yacht club. We could pick up Maria, Mathew, Clement, Shawn, Craig and any equipment which was not needed on the island.

**THE BOAT**

On Friday evening, Rossco returned to Wickham for the night. Both boats went so we could pick up Maria, Mathew, Clement and Mark VK6WV at the yacht club. We were in contact with Mark via the Wickham repeater so we all arrived at the yacht club at the same time. The sea had been getting rougher throughout the day and was running about 1 metre high into the boat ramp which made it very difficult getting Rossco's boat onto the trailer. We left the other boat at anchor and could sometimes hear it hit the bottom. When Rossco's boat was out of the water we loaded gear onto the boat for the trip back to Delambre.

It was dark when we left the yacht club but we had a flood light on the tower to guide us to the island. On the way over we were beating into the waves so the trip was very slow and wet, and we were over half way across before we could see the light at the camp.

It didn't take long to unload the boat, anchor her off the beach and get some hot coffee and food into us.

**DIDASER STRUCK**

At about 10 PM Dave (6YA) came over and said something looked odd about the boat. When we got the light onto the boat we could only see the silver triangle of the bottom of the bow.

We swam out to investigate and found the bow floating with the motors on the bottom, the boat of course was upside-down.

It didn't take long to get organised. We eased the boat in toward shore on the main anchor which fortunately, was well dug in. We then brought out another anchor from the beach and managed to turn the boat up the right way and run the boat bow first onto the beach. For the next hour we kept the boat pointing up the beach while the tide came in and went out leaving the boat high and dry we found that the bung was missing, it had unscrewed itself hitting rocks on the bottom when at the yacht club.

Equipment washed ashore from the upturned boat.

This whole episode took about four hours and the maximum effort of all concerned, as the waves were breaking onto the beach. The sea didn't calm down until morning.

After a short sleep it was up looking for gear while the tide was out. Surprisingly, we recovered most of the equipment mainly scuba diving equipment. The lighter gear had washed ashore so was easily recovered by the children.

This episode put a damper on the enthusiasm of most of the people but we worked on the principal that as all the radio gear was there and set up we might as well carry on with the contest.

Via 2 metres we advised all the other participants of the problem and asked them not to turn up.

On Saturday Rossco brought out a spare battery and some DWF to flush out the two outboards. We managed to get one of the motors running so we were able to get back to shore under our own power at the end of the weekend.

When Rossco returned to Wickham on Saturday afternoon, he took Dave (YA) Maria, Mathew, Clement, Shawn, Craig and any equipment which was not needed on the island.

**THE CONTEST**

Throughout the twenty four hours we managed to work about 290 contacts on all bands except 160 m, so our preparation had paid off. The noise levels on the island were very low, which made it easier to hear the more difficult stations. (Heard Island 5 x 9 + on Friday evening.) Our main problem at night was turtles. The baby turtles travelling from their nests to the water were attracted to the lights of the camp. More time was spent taking them down to the water than working the contest but it was an interesting diversion.

Within two hours of the contest ending we had broken camp, lowered and dismantled the antennas and loaded the boats. The “Phoenix” on one motor could not reach planing speed so we ran a tow-line out to Rosco's boat and the extra horse-power allowed us to travel at 25 kph. The rest of the return trip was uneventful except we lost Dave's (VK6ADR) car, the water pump had not been repaired as promised and the car was locked in the local service station and of course the proprietor couldn't be found. Dave got his car back the next weekend.

**THANKS**

Thanks must go to all members of the North West Amateur Radio Society and families for their assistance with organising the weekend. My personal thanks to those on the island for their help with the boat.

Special thanks to Rossco and Pattie for all the running around on the weekend and the hot shower and meal on Sunday afternoon.

The weekend was an education in more ways than one, for all of us, and it proved again that an amateur in need has many friends, Thank you.
The following article was forwarded to the DX Editor by Ken Hail, VK5AKH. Ken received the article from Baldur Drobnica, DJ6SI, a member of the ill fated expedition to Spratly Island in April. Here in Baldur’s words is a full account of the expedition.

**SPRATLY ISLAND** © 1983

Baldur Drobnica, DJ6SI

In February 1983 several OM’s of the Cologne-DX-Club met to discuss the realisation of a DXpedition to Peter and Paul (PYOP). DJ3NG and myself doubted if PYOP was sufficiently activated in November 1982. Therefore Gero and I decided to spend our birthday-money in a different DXpedition. At Spratly was number one in the list of the most requested countries, we chose 1S. Another advantage in going to the Spratly Islands was that there were no tedious procedures obtaining an Amateur Radio Licence. Considering the geographical point it was decided it would be best to realise the DXpedition from Brunei. Many contacts were made with OM’s in Brunei. During weekly skeds and E-mail possibilities were discussed. At the time it was learned that in VS5 a DXpedition to 1S was discussed for Christmas 1982. We were told that there were no suitable boats in VS5 which could go to Barque Canada.

In the German magazine “YACHT” we found an advertisement of a German captain, who chartered his catamaran from Singapore, and duly got in touch with him. Captain Peter Marx. Additionally we had constant skeds with 9V1WC. We introduced Peter Marx to Henner 9V1WC. The preparations in Singapore were very satisfactory. All heavy equipment was careful for there, such as generators, gas, etc.

Our journey was originally planned for 21st March, but Captain Marx advised us against this date as the monsoon season lasted very long this year and the wind would blow against us all the time. He preferred 3rd April. On 31st March DJ3NG, DJ4EI, DF6FK and DJ6SI took the plane to Amsterdam and from there to Singapore, to be met by 9V1WC. Together we made last minute purchases, such as mats etc. Henner and his XYL had secreted the equipment and pushed him through the garret also. On fore-deck we found that our water supply was very satisfactory. All heavy equipment was dangerous plasticedge. We could not reach the dinghi was fastened to the ship and the hulls of the catamaran were peppered with shots. We called for Diethelm a few more times, but no sign or sound from him.

Still under shelling we drifted off the coast. At the time of the malicious attack we were south-west of Amboyna Cay. As the wind below from the north-east we drifted away from the sandbar.

After about an hour the firing ceased because of its non-effect. Now the time of summary had arrived. Gero had to explain and repeat his last radio message. Had the contact been confirmed. Yes — Pat had everything OK. Peter believed that the US Airforce should arrive within two hours with a search party. That meant hope. Then we saw to our clothing. Gero, Norbert and I were in swimming shorts. Jenny wore a wrap-around-skirt. Peter was in shorts. Gero was top-less, I wore a yellow snow-shirt and a tiny hat and the others had T-shirts on. Norbert also had a hat but no-one had shoes.

In the boat we found a screw-driver, a preserving-jar, a little basket, a cloth and a plastic-bottle with a cut-off top, for scooping. That was all we had no water! Neither Peter Marx saw our dinghi. A fortunate coincidence had burnt the rope with which the dinghi was fastened to the ship and the dinghi had fallen into the water. Peter asked his wife Jenny if she thought she could get it. In the shelter of two empty barrels, which she held before her, she reached the boat and rowed it in our direction. All climbed aboard. As we were searching for Diethelm we saw the hulls of the catamaran were peppered with shots. We called for Diethelm a few more times, but no sign or sound from him.

Maybe to the equator night lasts for twelve hours. A lot of time to ask many questions. How had Diethelm died. Strangely enough there was no debate.
The next day we lived with the hope that a nice big plane would start from Manila, which would drop us life-saving equipment until they were able to pick us up. The day went by and nothing happened. The next day dawned with calm weather. Flying tuna — no plane. We could not count on ships in this part of the world. Because of its reefs, sandbars and shallow waters it was marked as “Dangerous Grounds” in the sea-charts. Ships pass this area in the far distance as too many have been stranded on the sandbars before.

On the fourth and fifth days it was sure that no-one was searching for us! The thirst tortured us. Gero tried to distill water — without success. Small fish, really tiny ones, swam into our bucket. Still wriggling they were swallowed greedily. To our despair we lost the basket. At the bottom of the boat we felt tiny colonies of mussels and scraped them off with our fingernails and sucked them. Gero weakened considerably. His skin was too sensitive and sunburn and shivers tormented him. Clothes were exchanged. Norbert gave his T-shirt to Jenny, she gave her wrap-around-skirt to Norbert and Gero so both had sunscreen during the day and a cover at night.

I unscrewed the machined steel plate which was meant to hold the outboard-engine. Later on we used it as a signal-plate which reflected the sun to draw ships attention to us. The back was used as a diary, engraving the most important events, such as the date DJ4EI died — why does no-one search for us — where was the US Airforce? On the ninth day, by about 13:00 hours local time I had to engrave Gero’s death as well. I intended to put the plate back in its place later on, so that when the boat was found it could give hints as to what had happened to us.

During the sixth or seventh night a ship passed, fully illuminated, only about 400 m from us. No chance to give signals. Never-theless, great joy and rising hope. Now we knew, that the constant north-easterly wind had carried us into the shipping route. But it was too early to rejoice. During the following day, no ship in sight. Another long cold and wet night. We had filled the two diesel-barrels with seawater and used them as a drag-anchor, so the boat went quite steadily. Nevertheless, some waves hit us by surprise in our sleep and for some time we could not find sleep again.

Shortly after sunrise a big ship came along, but it passed and did not see us. As it should happen more than once later on as one or two ships passed that day and another night, and our hopes for rescue fell. Gero’s condition grew worse, again ships during the night and the following day. Then I told all on board that I had heard a voice during the second night — loud and clear — that we would be rescued on our tenth day. We prayed often.

On the ninth day Gero died. It was terrible not to be able to help. Norbert told us, Gero had drunk seawater during the night. At 14:00 hours we said a prayer and buried Gero in the sea at about 7° 52’ N, 109° 44’ E. Shortly afterwards we saw a big plane without country-index. It flew in circles and we hoped it was looking for us. But its interest was in a Russian trawler which passed by on the horizon. And then night again. The following day ships came only in the afternoon, some of them quite near. The letters “DATSUN” were very clear. A little later a tanker “LPG” only 300 m from us, passed by. No reaction. Norbert was in a very bad state. He had hallucinations. He would not survive the following night. The captain got considerably worse too.

Suddenly a ship very near, only 200 m from us. We waved frantically, even tried to shout. Perhaps someone on deck might hear us. It passed very quickly. Very tired, already resigning, we waved behind her. We had given up, it was already too far away. We prepared for another night. Then Jenny saw it first.

The ship that had passed us had changed its course, had turned 90° and stayed in place. Later we were told that the First Officer YAMADA had seen us and had reported it to Captain INOSE. After he had stopped the engine he had lost us. The ship drew a circle around us, found us again and went into the lee. We went on board via the gangway they had lowered for us.

During all those dreadful days we were not hungry, only the thirst had tortured us. During the first fourteen hours on board the “LINDEN” we drank about twenty litres of water. The Japanese crew of the “LINDEN” cared for us marvellously. The wounds were looked after, cabins were cleared for us, clean beds and clothes were provided immediately. Slowly we picked up condition again. I had lost 15 kg and weighed only 60 kg. Our bodies had scratches and ulcers.

On arrival in Hong Kong we were examined by a physician on board the “LINDEN” then a police patrolboat took us to the harbour and from there in an ambulance to the Queen Mary Hospital. After minor treatment we left the hospital and went to the Hilton Hotel where we received treatment for our wounds by a doctor of our choice. On arrival in Singapore we were welcomed heartily by Henner 9V1WC and his XYL Brigitte.

Besides the grievous loss of our friends we counted up the balance of our material losses.

One OMNIB, one IC 720, one IC 730, one matchbox, one ELBUG, Microphones, Earphones, one two-element Fritzel-beam, one P 50 beam from DJ2UT, two aluminium-masts, Dipole, two 220 V/12 V generators (Honda and Bosch) and many tools etc.

We also lost approx 20 000 DM ($US10 000).

Additionally we lost all our clothes and money, in my case $US2000 cash. Also there was flight and charter totalling 5500 DM each. This can all be replaced, but not our dead friends.

I have written to our government on behalf of the whole crew and proposed the Captain and First Officer of the “LINDEN” for decoration for the way in which they reacted and cared for us so marvellously. We will never forget them, and will always be thankful.

Baldur in happier days operating DJ6SI/6W8.

Written by Baldur Drobnica, DJ6SI
Translated by XYL of DJ6AP
© by DJ6SI
Well, Spring has arrived once again. It is also the start of the S-83 period, which commenced on the 4th of this month from 0100 hours UTC. On this date, the various international broadcasters alter their operational frequencies to take account of seasonal effects of propagation. The months of November, March, May and September and the first Sundays within those months, have been chosen for international stations to make their alterations. Normally, you will not find that too many stations will change their frequency usage that month. Nevertheless, it still is a good exercise to check frequency occupancy. This could indicate that there have been changes, and some of the lowered powered stations, not normally audible, can be often heard underneath the stronger senders.

HF propagation has certainly been disappointing, particularly during the hours of darkness. Signals have markedly deteriorated even further on signals above 11 MHz. When this occurs, it is recommended that you try the lower frequencies, as propagational characteristics on these frequencies are improved even more than during the maxima of the Sunspot cycle. From experience, I find that 3.5 MHz performs very well during the Sunspot minima. The amount of strong 2L stations heard at exceptionally strong levels attest to this. Also many Latin American and Asian stations are heard on the 60 and 90 metre tropical bands, but the African stations are noticeable by their absence. I understand that others have heard them on the long path during our local daylight hours.

On the 6th and 7th of July, I came across a station broadcasting in Spanish on 6.900 during the lower frequencies, as propagational characteristics on these frequencies are improved even more than during the maxima of the Sunspot cycle. From experience, I find that 3.5 MHz performs very well during the Sunspot minima. The amount of strong 2L stations heard at exceptionally strong levels attest to this. Also many Latin American and Asian stations are heard on the 60 and 90 metre tropical bands, but the African stations are noticeable by their absence. I understand that others have heard them on the long path during our local daylight hours.

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The station does identify itself as Radio 15 dell Septiembre. Naturally, no addresses are given where reception reports can be sent. Personally, I estimate that the power of the sender must be two or three kilowatts. Their professional style of presentation is also indicative of a permanent transmitting site within Central America.

Recently, I was very fortunate in being able to test out the Realistic PRO-2002 scanner. This model is programmable, via keyboard access, over 50 channels. The frequency range is between 68-88 MHz, 108-136 MHz (AM), 136-174 MHz and 410-512 MHz UHF. It has five memory banks in which you can store the required channels. Power requirements are 240 volts AC or 12 V DC negative ground. Personally, I think the unit is a trifle too large and conspicuous to have in a mobile installation.

Performance from this scanner was very surprising, in comparison with a Regency M400E that I had along side. In some respects, superior to that scanner. Although I had the scanner hooked up to my two metre ground plane antenna, the set seemed to pick up signals fairly easily. I am sure that if I had a proper VHF/UHF ground plane or discone antenna, I would have obtained better results. The Realistic PRO-2002 is comparable to the JX-200 as the Regency M400E does not have the 108-136 Air band included, and only scans twenty channels.

As I had the unit over a weekend here in Launceston, naturally activity on the various channels was light, except for certain predictable channels. The model I had under test, did not seem to be plagued with those annoying lockouts, that I have encountered with other brands. Naturally, there are some, but not as many as indicated in the manual. The manual itself was written for the American version of this scanner, the main difference being that the Lo-band of 30-50 MHz is included to the 68-88 MHz band on the Australian model.

There are many individuals interested in listening and scanning across the VHF/UHF bands, following on what is happening in their local area. Personally, I am not that interested in snooping around the VHF bands, preferring instead to monitor the range of frequencies between 3 and 30 MHz.

At present, I am evaluating the Tono 9000E communications terminal. Once mastered, it opens up a new world to the SWL and amateur. I realise that some have found the unit too complex, but with patience, I have found it has revealed many and different forms of communications, that were alien before.

In the course of listening between the various international broadcasting allocations, I am sure that you have come across many strange stations and signals. A recent publication has been a help to me in identifying and locating the source of these utility stations. Called the Confidential Frequency List, it has been compiled by Oliver Ferral, Chief Executive Officer of Gifler Associates, that well-known outlet in the US catering for the needs of the SWL. It lists all the known SSB and CW outlets of the utility stations between 4 and 30 MHz. A companion volume is available with the stations using RTTY, entitled "A Guide to RTTY Frequencies".

I have found this volume an inestimable aid to my utility monitoring. My copy came through the DX club I am connected with, but I believe that they are available either through Dick Smith in Sydney or the Technical Book and Magazine store in Melbourne.

At present, I have been watching the news come in from one of the many international newspapers on 20.079 MHz. Unfortunately, it is in French, yet I can follow what is being sent, from the lessons I learnt while in school many years ago. I have found VK1MM's article on RTTY frequencies in the April issue of AR very helpful, also.

Well, that is all for this month. Until next time, the best of 73 and good DXing!

Robin VK7RH

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**MAGAZINE REVIEW**

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice.

**QST. MARCH 1983.** Converter and test equipment for 70 cm. (C) Antenna impedance. (NG) Impedance measuring. (P) Baluns (G).

**CO. APRIL 1983.** Special Antenna Issue. (G) LCD displays. (G).

**CO. MAY 1983.** DX Contest results. (G).

**HAM RADIO. APRIL 1983.** Cheap Video monitor. (G) Loaded dipoles. (T).

**73 MAGAZINE JULY 1983.** Morse Code Trainer chip. (G) Heard Island. (G) Special code lover's issue.
A welcome to Mary Ann, WA3HUP, to our DXCC lists. Mary Ann should need no introduction particularly to those who, like myself, have received QSLs from her. The following DXCC confirmations are in the melting pot. F6FIC/TZ — it is not certain whether this licence was renewed, and when he was signing LA2EX/3XI. S2BTF had a licence in 1979 and there is some doubt whether this licence was renewed, and therefore his present operation is in doubt. Finally DJ5RT/TT8 — at present there has been no confirmation whether this station received authorisation from the Chad authorities.

**DXCC TOP LISTINGS**

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**WAVKCA AWARD**

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MFJ-410 “Professor Morse” lets you...
COPY CW FASTER AND UPGRADE QUICKER

New MFJ Random Code Generator/Keyer sends unlimited random code in random groups for practice. Never repeats same sequence. Tailor level to your ability. Vary speed 5 to 50 WPM. Vary spacing between characters. Speed Meter. Full Feature Keyer.

$233 + $7 P & P
Sends unlimited random code. Never repeats same sequence.
Tailor level to your ability. Vary speed 5-50 WPM.

MFJ ACCESSORIES FOR THE SWL

ACTIVE OUTDOOR RECEIVING ANTENNA covering 50 kHz to 30 MHz using telescopic whip.

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At lower frequencies performance is equivalent to that of a long wire. At higher frequencies it provides gain. Supplied with 50 feet of coax.

$192 + $7 P & P

MFJ-959 RECEIVER ANTENNA TUNER has low noise 20 dB preamp for weak stations. Match antenna to receiver for maximum signal. 1.6 to 30 MHz. Can use 2 ant., and 2 rcvs. Select tuner, tuner with preamp, tuner with 20 dB attenuator, bypass. Gain control. Coax, phono jacks. 9-18 VDC 9x2x6 in.

NEW C-9900E 2m MOBILE IN STOCK.

Price $413 + $10 P & P

* ULTRA SLIM LINE 31H X 178D X 138W cms
* Ga As FET front end, 0.15 uV @ 12 dB SINAD
Write for a brochure and full specifications.
ANTENNA TUNERS TO SUIT ALL REQUIREMENTS UP TO 3 kW

MFJ-941C 300 Watt Versa Tuner II

Has SWR/Wattmeter, Antenna Switch, Balun. Matches everything 1.8-30 MHz: dipoles, vees, random wires, verticals, mobile whips, beams, balanced lines, coax lines.

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Many amateurs, on achieving the Certificate of Proficiency to operate on the amateur bands, commence DXing with the enthusiasm of a firecracker. Generally, in most cases, particularly the way the bands have been of late, this burst of enthusiasm wanes very quickly and their interest moves to other facets of the hobby.

A few are tenacious enough to stay with it and patiently listen and meticulously scan the DX bands trying to add to their DXCC countries list and reach 100 countries confirmed. You never think that you will make it. How did all those “old timers” ever make 200 and 300 is the question that you ask yourself. Every new country you work, you total up the cards to see if you have missed one that may be claimable.

The dedicated send off cards direct to the QSL route that is nominated as soon as the QSO is finished and the wait begins. Will he QSL? is the question in your mind, you patiently await the mail deliveries and your cards from the bureau. You wonder about each card and when will it be returned so that you may add it to your total. On receipt of any new card the household reverberates with your enthusiasm to continue.

Is it all worth it? I personally think that it is even though my thoughts are that the art of DXing and QSLing are on the wane in this country. Whether this is due to economics, the failure of achieving confirmation for that special QSO and cancerous commercialism that has crept into DXpeditionings, one is not sure.

In this country it is apparent that only a small percentage of amateurs are genuine DXers and in my opinion it is on the decline. This is true if the percentage of VK’s that contacted the VK0HI DXpedition is any indication. Is it too hard and time consuming in our modern society where one can relax in front of the TV and watch an entertaining programme interspersed with pet food ads or if they indulged their household in a video entertainment that their whim desires.

What do the readers of this column think? Do you concur or disagree with my thoughts? Your comments would be appreciated but be warned there is no prize of a free DX credit for any letter received.

ANGUILLA

Still need Anguilla confirmed? Many do and your big chance could be during November and December this year.

The Anguilla Contest Team are going into action again. They will be participating in the CQWW CW DX Contest on the weekend of 26-27 November and in the ARRL 10 Metre Contest on 10-11 December. In between times they will be operational on all bands.

In a note from the co-ordinator Jeff K8ND, he reminiscently recalls the happy QSO’s that the group had with VK’s on previous visits and hopes that they can rekindle old friendships as well as creating many new ones.

The callsigns will be VP2E and VP2EV. QSLs can be had through K8ND, 4410 Norwell Drive, Columbus, Ohio 43220 USA.

SMOM

Mario and his group did make an unexpected appearance on the first weekend of July and the deserving who monitor the band were rewarded with a new country. For those that missed out, and there are quite a few, September and October should be rewarding particularly on twenty metres. All QSL’s to Mario 10MGM.

POLAND

The authorities allowed the use of the special callsign SN0JP to commemorate the visit of Pope John Paul. Those lucky enough to QSO this station may obtain a special card direct from PO Box 150, Poznan 9, Poland.

MAYBE

The Andaman Islands are again in the news with an application by two VU’s to launch an expedition to that area. Many VK’s want this rarely occupied country and it is to be hoped VU officialdom can be convinced to give the green light to this venture.

CRITICISM

Many disgruntled operators complain bitterly about the length of time required to get a confirmation from a DX expedition. Probably you cannot make everybody happy all the time but one recent expedition went to a lot of pains to present a first class card for the lucky operators that worked a new country. Perhaps the bemoaning operators talking across town with their linear tubes glowing red didn’t realise that the photograph that graced the card had to come back with the logs, be processed, a quality printer had to be engaged and it had to be slotted into his already heavy commitments. The most time consuming operation of the whole exercise was trying to find many entries that were in local time or at times that appeared to be in celestial time and date.

The bumper sticker that is seen on many vehicles this day and age of “Engage brain before opening mouth” is very apt in my humble opinion.

QUERY ANSWERED

Ask and you receive help. This has been the case of a request for details on the CW Net (p35 July AR). Allan VK3AE, has reminded your scribe that full details appeared on p12 July 1974 AR. Rex VK2YA also went to the trouble of explaining how it works and his letter is printed in part to whet the appetite of intending participants.

“I noted your comments on the CW NET in July issue of AR’ and it may be of interest to know that this net assembles between 0000 UTC and 0200 UTC each Sunday. Each net contains a Net Control Station and he (or she) starts the operation by calling ‘CQ CQ CQ CW NET de VK . . . QNI’.

“As the participating stations break into the net, the NCS assigns them a frequency starting with 7.003 and then 7.006, 7.009, 7.012, 7.015 and so on at 3 kHz intervals. Each of the paired stations stays and engages in friendly dialogue. After each pair finishes, they report back to the NCS. If they wish to stay in the net, the NCS re-pairs them and so on until 0200.

“There is no MEMBERSHIP as such. Any AOCP qualified operator can take part. There are no fees and there is a wide range of operating speeds. However, the ‘speed boys’ inevitably slow down to meet the needs and skills of the others in their pairs.

“A series of ‘Q’ Signals specially designed for net operation is used. For example, ‘QNI?’ can mean ‘May I join the net?’, ‘ONX’ means ‘I want to leave the net now’ and so on.

“I might mention that this net has been running for over 520 weeks — which looks to me like ‘over ten years’. The leading hand in the net organisation is Eric VK2BII. He arranges for various operators to act as NCS on a roster basis, but, in case there are hitches, Eric is almost always on hand to ensure that the net starts on scheduled time.

“In short, this net is a very worthwhile activity and I can certainly recommend it to all CW enthusiasts. Incidentally, some participants use hand-keys, others use ‘bug keys’, others use electronic keyers and the more affluent use KEYBOARDS!”

Thankyou Allan and Rex for your interest and what about joining Eric VK2BII in the near future. You will be made very welcome.

KERMADEC AT LAST

Warwick ZL3AFH, a DXer and island hopper for many years has been assigned to the Kermadec Islands weather station.

Kermadec has a high priority on the wanted countries list of many amateurs in VK an overseas countries so he is going to be kept very busy.

Remour has it that he will arrive this month but will not be ORV on a regular basis until around Christmas time. If he is active before the New Year it will be a nice Christmas present for the lucky ones.
PRIBILOV ISLANDS
This island group is located about 500 kilometres north of the Aleutians and about the same distance from the mainland of Alaska. Presently this group is classified as the Aleutians and previous applications for separate DXCC status have been denied due to the 800 kilometre rule.

There is a new move a foot for another application and proof will be tendered to Newington that the Pribolov Islands are geologically distinct from the Aleutians, in the hope that the 400 kilometre rule applies.

Well here's hoping for a new one and the Alaskan DX Association are planning a visit this month. If you hear them, work them, and then cross your fingers. I personally will not hold my breath awaiting a positive answer as there would be no DX column next month.

CHRISTMAS IS COMING!!

With it getting to that time of the year again, it was thought that a mention regarding the posting of mail to overseas friends was in order. This being beyond my capabilities it was time to call in the experts and no expert could better be than the amiable and obliging Public Relations Manager of Australia Post, Jim Foley.

In Jim's words, here are a few words of wisdom —

Christmas might still seem light years away but now is the time to be thinking of overseas postcard and Christmas cards.

When buying cards, ensure that they are in good condition and the envelope so it can be returned to you if it gets lost in the post.

Parcels containing heavy items should be wrapped with heavy paper, and all parcels should be well sealed with tape and tied with cord. Again, Post Offices can provide brochures and advice to assist with packing and can also advise on articles that cannot be sent through the Post such as matches and flammable substances.

One overseas parcel facility worth special mention is the Surface Air Lifted service. This provides a mail medium speed delivery of around two to three weeks. Your Post Office can give details of countries serviced by SAL.

You should miss the surface mail closing dates. Australia Post later produces a brochure giving details of the closing times for air mail.

TRISTAN DA CUNHA

That hard to come by country is quite active with several stations proliferating the airwaves. Calls ZD9CB, ZD9BW, ZD9BX and a YL ZD9CS have been quite active on the bands.

CALLSIGN CHANGE

From November until the end of December this year, the prefix 6V will be used in lieu of 6W. Also for the prefix hunters, this country, from this date, will use figures to distinguish seven counties from 1-8. Figure 9 will be reserved for club stations and figure 0 for visitors.

FALSE START

Apparently the USSR has not yet released any of the WARC bands. QSL cards have turned up in the British and French Kingdom reminding that it was a mistake!

NEW SOVIET OBLAST

It is understood that the Soviet Oblast system has had a change or two with the forming of a new oblast by dividing an existing area into two. Any reader have any details on this one?

NEW PREFIX BLOCK

The FCC have allocated the new prefix back of KPS for Desecheo Island.

TRIPPING AGAIN

Jan and Jay O'Brien, publishers of the W6GO/K6HHD QSL Manager List are planning to return to French Polynesia in November. This time they plan to be armed with two stations and Jay hopes to concentrate more on the CW mode and particularly on 40 and 80 metres. Whether it is the DX or the tropical fruit that appeals to this happy couple is unknown but they should continue on to VK to meet some of their friends. If not this time Jan and Jay what about next time?

PETER 1ST ISLAND

Well it has been bandied around for a while as to whether it will or not be accepted. W1AW made an announcement that it will now be accepted. This, because of its co-ordinates, could prove to be a difficult and hazardous island to get to. Who will be the first to mount an expedition there is the big question?

AMSTERDAM IS TO DJIBOUTI

Alain FB8ZQ, enroute to his homeland will call at Djibouti and will be operational in November as J28CB.

TREKKING AROUND NEPAL

A chance remark by Ms Julie Lane, the Laser Scanner operator that produces the colour separations for the front cover of Amateur Radio, regarding a proposed trip to the foothills of the Himalayas, brought the remark from me that no trip could be complete to that area without a visit to Fr Moran 9N1MM, the pioneer of amateur radio in the country.

Arrangements were made with Moran via catching up with him on the South East Asia Net and Julie's invitation was confirmed.

I will leave Julie to tell her own story of this interesting personality located in the fascinating country of Nepal.

To the SE of Kathmandu is the village of Godavari. It was here that I met Father Marshall Moran. Fr Moran was born in Chicago in 1906 and went to school at St Ignatius High and later Loyola University. During 1924 he entered the Jesuit order and in 1929 headed to India where he began his career in Asia as a teacher. After a brief visit to Nepal in 1949 Fr Moran returned in 1951 and has lived there since May of that year. He has established several schools in Nepal, including St Xaviers at Godavari and St Marys at Patan.

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Special gang at 9N38MM celebrating the King's 35th Birthday. L to R: K7AW, WBOAT, VU2YOU, 9N1MM, J2LYV and JIM1RFT.

When I arrived Fr Moran was having a typical day — flat out! Apart from being administrator of St Xaviers he is involved in several community affairs and of course his interest in amateur radio, which goes back to his student days when he made radio receivers for the neighbours. All this contributes to a hectic lifestyle, not a bad effort for a seventy seven year old.

Having spent six weeks in Nepal I can appreciate why Fr Moran chose to live there. Kathmandu, the capital city, is an adventure
A view of the countryside from 9N1MM's QTH.

in itself. In the old section of the city you can wander through the street stalls that sell everything from handmade Tibetan carpets to false teeth. If you require public transport, the bicycle rickshaws race through the narrow dirt streets, dodging cars, beggars, tourists and cows, adding to the already chaotic scene.

The famous Monkey Temple in Kathmandu, suitable to most age groups and levels of fitness. If you can manage one of the longer treks it is worthwhile to experience the immensity of the mountains at close range. The views are utterly staggering and when the rhododendron forests are in bloom it's a breathtaking combination.

Julie waiting outside the dentist's for the bus to Godavari. (Note the ready to wear prosthetic teeth on display in the window.)

Eating your way around Kathmandu is a pleasant way to spend a few days at minimal cost. There are a variety of restaurants that have international cuisine and the traditional Nepali food. Of course the pie shops are hard to avoid with their mouth watering selection. One way to lose a bit of weight after eating so well is to go trekking.

The Napali people are most hospitable and welcome trekkers to their villages. I don't think you could meet a happier and more genuine people than the Nepalis and Tibetans. The only thing wrong with Nepal is that it instills the urge to return, hopefully that won't be far off.

Thankyou Julie and perhaps we could have an update on your next visit which it is believed will take place when leave and funds can be accumulated.

Thanks

In compiling this column information from such magazines as KH6BZF REPORTS, RADCQ, QSL MANAGERS LIST, WORLD RADIO, QRZ DX, VERON, DXEXPRESS, QSL DX, DX NEWS SHEET were used together with reports from VK's 2PS, YA, 3AE, BY, FR, PA, YJ, YL, UX, 6FS, NE, YF, SWL 30042 and Ms Julie Lane. Amateurs from overseas countries who have contributed include G3NBC, I8SAT, ZL1AMM and ZL1AMN. Sincere thanks to one and all.
SPECIAL EVENT STATION GB2MOD

GB2MOD is associated with the National Mod of Scotland which is an annual festival to encourage the study and practice of national songs, poetry and the Gaelic language.

This year, the Mod will be held in a town called Motherwell — situated in the Clyde Valley area of the Central Scotland — and will be known as the MOD OF THE CLYDE VALLEY.

A special event station — GB2MOD — will therefore be active from the town of Motherwell during the period 8-14 October, 1983.

The station will be continuously operational as propagation allows on these frequencies, when clear.

CW 28.07 21.07 14.07 7.02 3.57 MHz
SSB 28.51 21.31 14.21 7.06 3.67 MHz

A special event QSL card in both English and Gaelic languages — financed by Motherwell District Council — will be available for all contacts via the Bureau or direct on the receipt of the appropriate IRC's and addressed envelope.

It is hoped that as many amateurs as possible will make contact with this special event station thereby allowing the Mod's fame and success to be international as well as national.

Further details from: GM3PXK, Mid Lanark Amateur Radio Society, Wrangholm Hall, New Stevenston, Motherwell, Scotland.

USA AMATEUR RADIO STATION CALLSIGN ASSIGNMENT SYSTEM

All callsigns available for assignment to amateur radio stations by the FCC are arranged in lists according to the sequences given here. Callsigns are selected for assignment from these lists.

When all callsigns within a block have been assigned, the next assignment is made from the next consecutive block within the group.

The callsign format consists of the prefix, followed by the single digit, followed by the suffix.

The callsign prefixes can be one or two letters. Single-letter prefixes are either K, N or W. Two-letter combinations are either AA, AL, KA-KZ, MA-NZ or WA-WZ.

Some two-letter prefixes are not listed. WT is used for temporary licenses, WC-prefix callsigns were assigned to Radio Amateur Civil Emergency Service (RACES) stations prior to March 1978 (no new RACES Licenses are now issued; however, existing licenses may be modified and renewed). Additionally, some two-letter combinations are assigned by other US Government authorities to amateur radio stations not under FCC jurisdiction.

The suffix can be one, two or three letters. Single-letter suffixes are A-Z. Two-letter combinations are AA-ZZ. Three-letter combinations are AAA-ZZZ. As in the case of the prefix, and for similar reasons, some combinations are not used.

The following prefixes will not be assigned to stations in the contiguous 48 states: AH, KH, NH, NL, NP, WH, WL, WP. Pacific-area stations will be assigned KI, KL, KH, WI, WN, WZ, the following prefixes will be assigned to stations in the contiguous 48 states: AH, KH, NH, NL, NP, WH, WL, WP. Pacific-area stations will be assigned AH, KH, NH, WL, then Group B. Alaska-area stations will get AL, KL, NH, WL, then Group B. Atlantic-area stations will get KP, NP, WP, then Group B.

Special QSL Card.
In the "AM" days I remember the oft repeated statement "If you can't hear them you can't work them". Updating this to the RTTY era "If you can't print them you can't work them". In both cases these statements underline the importance of first correctly receiving the signal. With RTTY, part of correct reception is dependant on a suitable demodulator. There are plenty of good receivers available but some demodulators leave much to be desired. The demodulator converts the audio tones from the receiver into DC pulses either to work a mechanical printer or a computer type unit. The requirements of a good demodulator are much more stringent for HF bands than for VHF/UHF bands. The main difference being due to selective fading on the HF bands. With selective fading of an FSK signal the mark and space transmissions fade independently, some of the time mark will be strongest and at other times space will be strongest. If the demodulator design is such that it must have both mark and space signals present at a reasonable level to operate successfully, then very little will be printed from such a signal. If the demodulator can work from either mark or space or from both, then all will be received as long as at least one signal is coming through at a reasonable level.

Of course all the information necessary for correct printing is contained in either the mark or space signals so by transmitting both this gives the receiving station two chances instead of one to get a good printout. This dual transmission and reception system is similar to a diversity system and of course is superior to a single system when receiving conditions are bad.

Most of the remarks to follow will refer to HF band FSK working but the same demodulator can also be used with AFSK on the VHF/UHF bands. In this short description I will only cover rather basic points sufficient to give a ground work understanding of demodulators.

The term demodulator is now in common use but in some cases the name converter or terminal unit is used. Adding to the name confusion there is, on the market, a unit containing both a modulator and a demodulator and this is referred to as a demodemulator. In computer jargon such a unit would be called a modem coming from Modulator DEModulator.

Before we get into the workings of demodulators let's give some thought to the HF receiver that will be providing the audio tones to work the demodulator. Firstly, it must have very good frequency stability and bandspread tuning, as the tuning of FSK signals is more critical than that of SSB or CW. Secondly, selectivity a little sharper than the usual SSB bandwidth is helpful. The fitting of a 500 Hz CW type filter will give better copy where noise and ORM are a problem. However, first check that with such a filter fitted to your transceiver you can still receive audio tones suitable for working your demodulator. In some cases you may only be able to receive audio of around 800 Hz intended for CW work. Normally the filter would be plugged into a SSB filter position rather than a CW position to give suitable audio out frequencies. In some cases it may be necessary to detune the carrier oscillator to centre the mark space tones into the filter pass band.

In the early days of RTTY, when a shift of 850 Hz, valves and mechanical printers were the normal thing, a very simple FSK demodulator was sometimes used. To introduce practical demodulators we will first consider this primitive system.

Looking at figure one, the audio transformer steps up the audio from the receiver loudspeaker voice coil to the grid impedance giving a large voltage step up at the same time. The diode rectifies the audio and presents a negative voltage to the grid. A reasonable level of audio will produce enough negative volts to completely cut off the switching valve plate current. Thus with audio present the current though the printer electro magnet coils will cease and with no audio input the valve will have no bias and will conduct, allowing current to flow through the printer coils. The value of this printer current is controlled to the correct value by a suitable setting of the screen voltage.

To operate the system the receiver was tuned to zero beat on the mark signal and then only the space signal was present to produce RTTY audio output switching the valve on and off. This would work out quite well if signals were good with very little noise present. However, if there was noise present it would act as a space signal and cause many misprints.

An improvement could be made by tuning the secondary of the input transformer to 850 Hz to favour the space tone being used with mark on zero beat. The current through the printer coils was unaffected by the level of signal input as large signals just produced more valve cut off bias voltage than was necessary. With no signal input the valve current would prevent the printer from
The threshold corrector has nothing to do, but this is not the case with the waveform shown at the bottom of the diagram. In this case some selective fading or perhaps some mistuning of the receiver has caused the space signals to be much reduced in strength. A indicates the peak value of mark, C indicates the peak value of space and B is the normal no signal reference point or threshold from which the signals increase in either a positive or negative direction. When this sort of signal is fed into the threshold corrector, the output of the corrector gives a balanced value of mark and space.

Looking at the right of the diagram you will note X indicating the peak value of mark Z indicating the peak value of space and halfway between them is Y which is the new threshold or reference point established by the threshold corrector. The overall amplitude is reduced but the waveform is good, a great improvement on what was at the input of the diagram. In this case some selective fading or perhaps some mistuning of the receiver has caused the space signals to be much reduced in strength. A indicates the peak value of mark, C indicates the peak value of space and B is the normal no signal reference point or threshold from which the signals increase in either a positive or negative direction. When this sort of signal is fed into the threshold corrector, the output of the corrector gives a balanced value of mark and space.

One detector is connected to give positive output voltage and the other to give negative output voltage, as both outputs are combined, if some audio passes through both filters at the same time the strongest signal will determine the output voltage polarity. In normal operation mark may for example produce positive and space negative and thus the output will be rapidly switched from positive to negative as a RTTY signal is received. These DC pulsed signals will pass through the low pass filter, which will reject any high frequency audio and prevent any problems it may cause further on. As the mark and space signals may not always be the same amplitude or one may even be completely absent at times, this could cause problems and should be corrected. The pulses from the low pass filter are fed into the threshold corrector, which restores the balance of the mark and space signals when necessary. For example, if mark were twice the level of space at a given instant the threshold corrector would make both equal in amplitude at its output. This is obviously a very useful function and the device is indeed remarkable in its operation. It would take thousands of words to give a detailed explanation so I will simply show what it does with the aid of figure 3.

Let us assume the signal waveforms shown are being fed into the threshold corrector. At the top diagram an ideal letter R waveform is depicted, mark and space are exactly equal, mark being shown as positive and space as negative. With such a signal the threshold corrector has nothing to do, but this is not the case with the waveform shown at the bottom of the diagram. In this case some selective fading or perhaps some mistuning of the receiver has caused the space signals to be much reduced in strength. A indicates the peak value of mark, C indicates the peak value of space and B is the normal no signal reference point or threshold from which the signals increase in either a positive or negative direction. When this sort of signal is fed into the threshold corrector, the output of the corrector gives a balanced value of mark and space.
If your hobby was fishing, and you devoted quite a lot of time to its pursuit with possibly a sizeable amount of money tied up in gear, boat rental, possibly your own boat etc, and you found that nearly every time you went to spend some of your leisure time indulging yourself in the sport, someone came along and tried to spoil it for you, would you be upset? Would you remonstrate with the offenders? Supposing you had just settled down in your favourite spot for a couple of hours' quiet relaxation, the sun shining, the boat gently rocking, and even perhaps the promise of the odd bite or two, when suddenly up came one or more 'big gun' boats and proceed to harass you and make things generally uncomfortable, even to the stage where you had to up-anchor and move elsewhere (or go home) — would you do anything about it, or just quietly give in to the bullies and let them tell you where and when you could enjoy your day off? I rather think that most of us, given the same set of circumstances, would certainly have something to say.

OK — so you don’t fish — let’s assume that golf is your pastime. The story could well be the same — you spend your precious day off at the course, the weather’s great, and you’re just in the mood for a nice eighteen holes. But there’s a foursome behind you that keeps hitting through, breathing down your neck when you’re on the green, and making a lot of noise just as the wood comes down for the tee shot. At this stage, you’re not having much fun — right? Would you be moved to mention one or two things to the irksome foursome? (Politely, of course). Well, then — we’ve established, I think, everyone’s right to enjoy his hobby without interference from others, who may do so intentionally, out of ignorance or just with plain callous disregard for your rights.

WHAT ABOUT THE HOBBY OF AMATEUR RADIO?
Consider the scene — You’ve found yourself with a couple of spare hours (having successfully caught up with your domestic chores, or made mental plans to catch up tomorrow) and have decided to look for a ragchew on 80 metres, perhaps chase the elusive DX or possibly to look for the ONE contact you need for a particular award. You’re settled in the shack — all tuned-up, antennas still reasonably elevated, Murphy’s having the day off, and the microphone and key are at the ready.

"Let’s have a look at 20-metres" . . . Hmm; sounds like Europe is coming in rather well — "THERE’S A SP3 COMING IN". "I’ll go for him." Grab the mike — BANG — up comes a commercial RTTY station right on top of you, 10 over 9. You wait for a while, but the RTTY wipes out the SP3 completely . . . finally, the RTTY station goes QRT, but, naturally, the Polish station is nowhere to be found, "OK, let’s have a look at 15 metres." This time it’s a CW intruder, going hammer and tongs, RST 599 and no callsign. "What now — QSY, or go to the other room and operate the receive-only VHF TV unit?" Whatever you decide to do, the evening has been spoiled.

We have the first two examples of hobby-time being interrupted by inconsiderate people would perhaps not happen in reality too often, the third example, that of a QSO being ruined completely, or at best, made difficult, is a DAILY happening on the amateur bands. The next time it happens to you, send a report of the details to the Intruder Watch, via your Divisional Co-ordinator. Sure — that won’t make up for your lost contact, but it could, with the assistance of others who have found themselves in similar situations, help the Intruder Watch to make representations ON YOUR BEHALF to the offending administrations. Of course, it takes time . . . let us have those reports and we’ll do all we can to make things uncomfortable for those who show us no consideration. Find your Divisional Intruder Watch Co-ordinator through your Divisional Office, or check in the current callbook. Help to make UN-AUTHORISED stations QSY.

PS: That RTTY station may have been one of the ’BXT’ stations (BXT17, 44, 47, etc) which originate in Beijing (formerly called Peking).
GETTING RID OF THE GARBAGE

Wouldn't it be wonderful if the moment we began a QSO, everything else on the band just vanished? Think of it . . . no QRN, no QRM, absolutely nothing! Unfortunately it doesn't work that way, and it's just as well for the sake of anyone else who might want to use the band. There is no way we can get rid of all the other signals and noise, so we will always have to live with a certain amount of interference.

Although I don't think it's been expressed quite this way before, the goal of any receiver designer is to make it appear that there is only one signal on the band — the one you want to copy. There are really only two ways to go about this, by increasing the signal-to-noise ratio, or by increasing the selectivity. Receiver design should therefore be quite simple, shouldn't it?

It should be fair to assume that you have done everything you can to get desirable signals into your receiver's front-end, and made its job easier by controlling such things as beam direction and proximity to power-lines. What else can you do to get rid of the garbage?

Most modern receivers incorporate a number of features designed to increase selectivity, and improve the signal to noise ratio. Some features are optional extras, and still others can be added on between the receiver and the speaker or headphones. Let's start at the Intermediate Frequency or IF and see what can be done. In view of the number of receivers on the market now with multiple conversion (two or more IFs) it should be stated that for practical purposes, it doesn't matter which IF you apply these techniques to, although optimum combinations exist in some circumstances.

Think of the IF as a tunnel, into which go a potentially large number of signals, on a wide range of frequencies. The range of frequencies which is present at the IF is called the frequency (with some slight tolerance for drift computers in amateur radio. computers and amateur radio there are now

and possibly chirp), so you could conceivably

set up an IF system which allows a bandwidth of only a few hertz to pass, and that would theoretically be ideal for CW operation. In fact, you can't reduce the pass-band that far until you have located a signal you want to copy, otherwise it is very difficult to find the signal in the first place. So ideally, you should have a facility to vary the IF pass-band from fairly wide to very narrow.

This facility is afforded by selectable filtering and variable bandwidth tuning. Most modern transceivers offer a selection of IF filters with different bandwidths, and it is important not to get too narrow a filter if you cannot switch it out of the circuit (either by means of a filter switch or by going from CW mode to SSB, with its wider bandwidth). If you listen in SSB mode and then switch over to a 250 Hz filter, you will lose the received signal unless your VFO was tuned within 125 Hz of zero-beat. With some rigs it is possible to alter the width of the band-pass, or its shape, with the same effect more or less as adding in a filter.

In either case, the problems associated with a very narrow band-pass are quite well illustrated in the QO situation. If you call CQ, and are using a 500 Hz filter (or achieving the same effect with audio peak filtering or some other gadget), you will not hear a returning signal that is more than 250 Hz away from your transmitting frequency. Few and far between are the operators who routinely zero-beat and can come up spot on every time. For that matter, there are still a lot of less fortunate operators who have to make their own transmitters, and can't build in that much control or stability. When you call you should expect an answering signal to appear anywhere within a range of 2 kHz or more. So the trick is to listen with as little filtering as possible. Switchable filters are ideal, and listening in the SSB position is equally useful. Variable IF adjustments are fine for tuning any given signal you might be interested in, but it can be very tricky to get back to normal if you need to. Many experienced contest operators use audio peak filtering only for that reason — they can switch it on and off at the touch of a button, without any need to retune.

Another gadget which is of interest at the IF is the notch filter. This is a circuit which acts as a band-stop filter over a very small portion of the IF bandwidth, so that an interfering signal such as another CW station or an AM heterodyne can be blocked. They can be very effective, and a usual degree of effectiveness is quoted as -40 dB, which means that signals within the notch are suppressed by 40 dB in comparison with the rest of the IF bandwidth. It does not get rid of them completely, but can often reduce the level of interference to a mere annoyance.

If your rig is equipped with an IF shift control, the frequency of the IF itself is shifted a bit to either side, which can often eliminate interference from other stations including SSB (who of course would not be in the CW part of the band in the first place).

Beyond the IF capabilities, the audio stages can be made more selective too. The Audio Peak Filter (APF) was mentioned earlier, and it is probably about the most effective treatment. As with radio frequency CW signals, the audio consists of a single tone which can be made more or less inaudible with a single audio frequency. The APF provides a means of suppressing all but the wanted pitch, and usually has some means of adjusting the frequency of that pitch.

Among the other things that can be done at the audio end of the chain, a tone control for the output can work wonders with QRN. After all, one of the great things about CW is its simplicity, so not much is required in the way of fidelity when it comes to speakers.

Many audio filtering techniques can be applied outside the rig, between it and the speaker. Circuits can be found in most handbooks, and factory made devices are readily available from most suppliers of amateur gear.

You don't have to have many of the features discussed above to get rid of the vast majority of interference problems. If you take the trouble to find out how they work, and use them properly, you can indeed get rid of most of the garbage. CU next month.

Membership of either group is open to licence-holders and SWLs and provides members with ideas, circuits, programmes etc to help them make better use of their micro in the radio-shack. Both groups are non-commercial in nature.

The Sinclair Amateur Radio User Group (SARUG) is open to users of the Sinclair range of micros (zx81/TS1000 and Spectrum/TS2000). Full information may be obtained from Paul Newman G4INP, 3 Red House Lane, Leiston, Suffolk IP16 4JZ UK.

Radio Amateurs Microprocessor Techniques & Operations (RAMTOP) is open to all users of micros other than Sinclairs. Full details can be had from Revd P R Butcher G4NWH, The School, Wellingborough, Northamptonshire NN8 2BX.

Please note that in both cases two International Reply Coupons must be enclosed to ensure an airmail reply.

Both groups co-operate and this is proving very beneficial to members.
VHF UHF -
an expanding world

All times are Universal Co-ordinated
Time, indicated as UTC

AMATEUR BAND BEACONS

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<thead>
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<th>LOCATION</th>
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<td>Honiara</td>
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<td>ZL1UHF</td>
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<td>P29SX</td>
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<td>VK6RTU</td>
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<td>VK2RGB</td>
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<td>144.455</td>
<td>VK6RTW</td>
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<td>VK1RTA</td>
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<td>144.490</td>
<td>VK8JF</td>
<td>Darwin</td>
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<td>VK5RSE</td>
<td>Mount Gambier</td>
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<td>Brisbane</td>
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<tr>
<td>148.450</td>
<td>VK3RMB</td>
<td>Mount Bunninyong</td>
</tr>
</tbody>
</table>

* ZS1KX is a new beacon at Piketberg in Cape Province of South Africa and is 807 m ASL, and runs 16 watts to a ground plane antenna. It is alternatively operating in FSK and FM modes, and sends "CQ DE ZS1KX QTH PIKETBERG SA FSK MODE PSE QSL TO ZS1CT?".

"It is noted with interest that the RSGB is seeking permission to operate a 50 MHz beacon from their Headquarters with the callsign GB3NHQ. Initially it would only operate outside TV hours, but next year continuous operation is envisaged."

Dave Lewis GW4HHS has now worked nine of the now thirty eight 6 metre operators permitted in the UK but he complains of QRM as everyone seems to operate within a few kilohertz of 50.100! Now, where have we heard that before!

The above three items are contained in "The Short Wave Magazine" May 1983, and sent through the kindness of Steve VK5AIM. The next three short items come from the same source.

There has been a claimed "first" 2 metre EME QSO between Ireland and the USA. On 28/2/83 from 0115 to 0235 GI4FFL/A at the station of GI6EYO contacted K1WHS with signals peaking to 3 dB over noise. GI6EYO used a Drake TR-7 HF transceiver driving a 2 metre transverter with BF900 RF and mixer stages, plus BF981 masthead amplifier — an 8874 PA drives four Oushcraft 214-B yagis, with elevation control, as a height of 60 feet and fed with heliax cable. We say "well done" for the effort involved with a modest station set-up.

Interested to note that the now famous Mu Tek organisation in the UK has produced an interesting 2 metre pre-amplifier for 144 MHz using an MGF1200 GasFET in a 'noiseless' negative feedback circuit. The claimed performance includes an output figure of 0.9 dB or better, a gain of +13 dB, input and output third order intercepts of +14 and +27 dB respectively, and a power handling capability of one kilowatt in the SSB mode. It comes complete with a control sequencer. Looks like an interesting device.

The allocation of the forty 6 metre licences in the UK has come in for a lot of criticism, as was to be expected, mainly from those who were unsuccessful, and the flap is still flying. They are allowed to operate between 50 and 52 MHz outside BBC1 transmission hours, which commence at 0830 with the firing up of the old 405 line transmitters, which are due to close down in 1984. It seems about 50 amateurs expressed an interest in transmitting on the band, and 126 returned an RSGB questionnaire on the subject, and forty were selected:

VHF & UHF IN THE USSR

David Rankin 9V1RH/VK3QV has written from Singapore submitting a current list of records which have been attained by amateurs in Russia. David writes: 'A short explanation is in order. Control as a height M regularly receives copies of various Russian radio magazines. He goes through them and any interesting device translates into English. He makes a full translation of anything of special interest.

"The list of records attached is in the latter category. It is interesting to note that the literal translation for VHF/UHF in Russian is 'ultrashortwave'. Radio #3 was the March issue of 'RADIO' the RSF version of 'Amateur Radio'. Thus, full credit for the translation is due to the work of W4KMK.

"CHRONICLE: The Collectives at UK5EFL and UK5ECZ from Krivoy Rog are continuing their experiments on SHF. On 6th August they conducted a special outing to the shores of the Sea of Azov, taking equipment for 5.6 and 10 GHz. Contacts were established over a distance of 101 km. Thus a new category is established for the USSR RECORD FOR THE 5.6 GHZ BAND AND THE RECORD FOR THE 10 GHZ IS BETTERED . . . For 5.6 GHz a parabolic antenna with a 30 dB gain was used and transmitter power was 45 mW. For 10 GHz a 36 dB gain was used and transmitter power was also 45 mW."

"In the following table, a new item is introduced: '144 MHz — iono' which reflects achievements in DX communications established with the help of a previously little-known propagation mode — ULTRASHORTWAVE SCATTERING CAUSED BY UNEVEN IONISATION IN LAYER E OF THE IONOSPHERE (in foreign radio amateur literature this is called (begin English text) Ionospheric Scatter By Field Aligned Irregularities (FAI) (end English text) and also aurora E . . . The calculation of the QRB's for QSO's reported by UK's (except Moon ones), as previously, was carried out on a YeS-1040 A computer by A. Tarakanov, UA3AGX.

Table of Achievements by Ultrashortwaves in Distant Ultrashortwave Communication.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Callsign</th>
<th>Location</th>
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<tbody>
<tr>
<td>144 MHz</td>
<td>'tropo'</td>
<td>15.08.82</td>
</tr>
<tr>
<td>144 MHz</td>
<td>'aurora'</td>
<td>26.09.82</td>
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<tr>
<td>144 MHz</td>
<td>'meteors'</td>
<td>27.06.82</td>
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<td>144 MHz</td>
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<tr>
<td>144 MHz</td>
<td>'aurora'</td>
<td>10.08.82</td>
</tr>
<tr>
<td>144 MHz</td>
<td>'Es'</td>
<td>27.09.82</td>
</tr>
<tr>
<td>144 MHz</td>
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<td>26.09.82</td>
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<tr>
<td>144 MHz</td>
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The figures shown in brackets are probably the world standing record but I cannot vouch for the accuracy of these (VK5LP).

The allocation of the forty 6 metre licences in the UK has come in for a lot of criticism, as was to be expected, mainly from those who were unsuccessful, and the flap is still flying. They are allowed to operate between 50 and 52 MHz outside BBC1 transmission hours, which commence at 0830 with the firing up of the old 405 line transmitters, which are due to close down in 1984. It seems about 50 amateurs expressed an interest in transmitting on the band, and 126 returned an RSGB questionnaire on the subject, and forty were selected:

- 1712 km (1824 km)
- 1010 km (699 km)

The figures shown in brackets are probably the world standing record but I cannot vouch for the accuracy of these (VK5LP).

It is interesting to note that there seems to be some degree of VHF/UHF activity in Russia and they are prepared to go out to selected good locations for attempts at extending the distances previously achieved, so it seems there is little difference in this aspect of amateur radio there when compared with what is done from time to time in other parts of the world. Thankyou David for sending the information, something of interest from quite a different source.

6 METRE NET

Peter VK3XHH, Publicity Officer for the Victorian Railways Institute Wireless Club, VK3RI, has written advising the Club is currently operating a 6 metre SSB net every...
Sunday morning from 2315. The Club also
golds nets, when members, are available,
every day at 2315 and 0915. The weekday nets
are on a less reliable basis than the Sunday
net as they depend on shifts, leave availability
or retired members etc. The net frequency is
52.050 MHz, the 6 metre calling frequency.

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52.050 MHz, the 6 metre calling frequency.
line as we were worried about harmonics of 70 cm, particularly the second harmonic was potentially disastrous because of the 700 MHz work being done on the pulsars on the 300 foot dish and part of the time that was looking past the 140 foot dish. Apart from one scare which we decided was not our fault we did not cause any interference to the 300 foot antenna.

On the outside of the package was mounted the feed consisting of two fairly thick reasonably broadband crossed dipoles which became the focus of the antenna. These were connected by no more than 4 inches of semi rigid coax to a hybrid connected to one coax switch and then to a transmitter switch. Things were a bit hazy as Bill Brundage and I were running around trying to buy things and many changes were made from the original ideas. But there were three coaxial switches up the front end to change the polarisation, isolate the transmitter etc and a third switch to connect a noise source to enable the receiver system to be swept. After the switches there were some band pass cavity filters which Tom Clarke had collected and tuned up, the transmitter was a nominal 100 watts which actually gave out 150 watts! It was owned by AMSAT and operated at 12 volts 20 amps. We had problems getting such a supply but eventually got a large 30 amp unit using an SCR in the primary, on loan from people who wanted it back if needed as it was their spare! Our worries that there might be hash from the SCR switching were unfounded.

The receiver consisted of two GaAsFET pre-amplifiers, home made. Initially we were going to come down at 28 MHz with 28 MHz in one cable and 70 cm in the other but we found the local oscillator in the converter was radiating harmonics which were getting into the front end so we amplified the signal and brought it downstairs where it was split several ways. There were two spectrum analysers one at 70 cm and one at 30 MHz, the signal was then split two more ways to provide 28 MHz into an Icom 720A and a Drake TR4 receiver so there were two independent positions for tuning around the nominated frequencies.

The 150 watt solid state transmitter was driven by a Mirage 25 watt amplifier which in turn was driven by an Icom IC451 70 cm rig. Much padding down of signal powers was needed all along the transmit chain and high power pads had to be scavenged as all pads around a radio astronomy set up are low power, eg 2 watts. Facilities were included to allow signals to be passed through the system at a stage and the 10 watt IC451 if need be. Tom went to a lot of trouble to ensure that when you wound up the power on the IC451 that all drive levels were correct along the chain to you wound up the power on the IC451 that all drive levels were correct along the chain to

All equipment was tested in a special building which amongst other things gives a vibration test to check firmness of cables, mountings etc. Two days was spent in there debugging the equipment before it was finally mounted in the telescope.

Some final figures for the receiver were that the easiest place to measure the noise figure was at the input to the output of the hybrid, where it was agreed it was 65-70 degrees Kelvin which included a couple of switch losses in front of the pre-amps. It was estimated by the time you put on the hybrid and cross dipoles and you do a NF measurement of feed plus the rest of the system it was probably up to 110 k; by the time it was on the 140 foot dish looking at the moon with its radiation as well as receiver noise the figure would be up to 150 k.

The whole system was computer controlled; it appeared the beam width was about twice the diameter of the moon at 70 cm so we were sort of over limiting the moon, but we were able to tap the moon from horizon to horizon without trouble. Once the programme was written and the equipment set up we got echoes from the moon. By watching the total power on the chart recorder we started to drive off the centre position of the moon in each coordinate and we went in one direction enabling us to obtain stronger signals. The sun and moon were close together on the Friday with a consequent rise in received noise. Two days later they were much further apart so we didn't have that trouble then. The weather was cloudy most of the time and rained on the Sunday.

This was my first experience with EME and suitably impressed with our echoes coming back. SSB on 150 watts was no trouble with return echoes up to 15 dB above noise on the spectrum analyser. We could turn off the amplifier and get our signals back on SSB using only 10 watts from the IC451, and by turning the rig down to 100 mW we could still hear our echoes on CW!

As far as we know we are able to work everyone who called us and some signals were very weak. The transmitter was left on 432.095 MHz and tuning about 100 kHz from there with both receivers. The TR4 was used primarily as a spotting receiver and the IC720A the main working receiver. There was always one person tuning the band, sometimes two, with an automatic keyer for callsigns etc. We were conscious there were a lot of people out there wanting to work us so we made every effort to work anyone we heard. One hundred and thirty one contacts on CW and seventy two on SSB were made, to some stations more than once. Signal reports were up to 589 on CW and 5 x 8 on SSB, with most reports being in the excellent class. About 132 different stations were worked. All continents were worked even though it required a phone call to rustle up someone from South America (YV5ZZ). ZZ5JJ provided the African contact. There were many European and Japanese contacts apart from the USA and Canadian contacts.

Operators involved included WA4MVI, K8OCL, KB2M, VK2BMZ, N4QQ, W3JIW, K2AE, WB8AXN, WA2LOQ, ADST, KABQR and K8HUH.

Those participating concluded the amount of work had been very worthwhile and if nothing else had re-established the position of the Greenbank Observatory, and alerted operators around the world as to the possibilities of EME on a global scale. One area of exception was no contact with New Zealand.

The above is an extract from the large amount of material sent to me by Gerry VK2BMZ to whom I am indebted for his interest in informing me of the events. It has taken a fair amount of space in the notes but should be of general interest to most VHF/UHF operators and I guess others as well. Anyone want to start building an EME antenna?

LATE NEWS

Just to hand is a note advising the Department of Communications has agreed to allow VK stations to use the band 50.000 to 50.150 MHz on the basis of non-interference to Channel O. Stations in VK6, Antarctica and external territories will be allowed to operate on an unrestricted basis, all other VK areas will be permitted to operate outside of Channel O broadcasting hours. After such a long time its a welcome break to be allowed this section of the band again.

Other comments will be left until another issue but suffice to say if amateurs play the game according to the rules we may find a relaxing of the rules in the future to permit operation on a wider basis.

That's all for this month. Concluding with the thought for the month: "The reason most of us don't live within our income is because we don't consider that living." 73. The Voice in the Hills.

Have You Obtained Your New Call Book Yet?

The new 1983-84 Call Book is now available from your Division or Magpubs for $5.75.
WIA VIDEO TAPE CATALOGUE

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<th>Approx Dur</th>
<th>Col/ B&amp;W</th>
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<td>Model Aero-Nautical Mobile ATV</td>
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Lectures recorded at VK5 WIA HQ . . .

| No | RTTY | (VK5QX) | 40 mins | B&W | Copy Avail |
| No | Tracking Oscar | (VK5CL) | 40 mins | B&W | Copy Avail |
| No | Wire Antennas | (VK5RG) | 40 mins | B&W | Copy Avail |
| No | Loaded Wire Antennas | (VK5NN) | 50 mins | Colour | Copy Avail |
| No | Apollo 13 Disaster | (VK5JM) | 90 mins | Colour | Copy Avail |
| No | History of uProcessors | (VK5ZQF) | 60 mins | Colour | Copy Avail |
| No | Understanding uProcessors | (VK5PE) | 60 mins | Colour | Copy Avail |
| No | Winning Foxhunts | (VKSTV) | 45 mins | Colour | Copy Avail |
| No | An Aux Batt Charger | (VK5NX) | 25 mins | Colour | Copy Avail |
| No | Testing ATV TX | (VK5KG) | 50 mins | Colour | Copy Avail |

Getting Starting in . . . As above but made to mark WCY

| No | Amateur Television | (VK5KTV) | 55 mins | Colour | Copy Avail |
| No | Amateur Satellites | (VK5AGR) | 50 mins | Colour | Copy Avail |
| No | Amateur RTTY | (VK5JM) | 85 mins | Colour | Copy Avail |
| No | Amateur uComputers | (VK5IF) | 40 mins | Colour | Copy Avail |

These Video Tapes are available from the Federal Video Tape Co-Ordinator, John Ingham, VKSKG, 37 Second Avenue, Selton Park, SA 5083. (refer page 47.)
Contact each other and then separate, or a 15-20 kV ESD, although basically harmless. This short duration current flow produced by the triboelectric (frictional) charge currents are pulse that flows as a result of ESD may be some innocent metal object. The current pulse that flows as a result of ESD may be several hundred milliamperes with a delay constant of a few tenths of a micro second. This short duration current flow produced by a 15-20 kV ESD, although basically harmless can be quite painful.

Electrostatic discharge can be generated at any time by dissimilar materials, where the triboelectric (frictional) charge currents are flowing in opposition to each other. Charge generation occurs whenever two materials contact each other and then separate, or where there is relative movement between the materials. The voltage thus generated is a function of the degree of separation or relative movement in the triboelectric series, modified by the relative humidity. The Triboelectric Series is a galvanic order of non-conducting materials. In the order — cotton comes at the centre, teflon at the negative end, and air at the positive end of the scale. Therefore, by choosing materials which have minimum triboelectric spread, the incidence of ESD can be minimised.

Once the charge has been generated, the distribution of the charge depends on the material's resistivity. Conductive materials allow charges to be removed by grounding. Non-conductive materials have to be dealt with by supplying them with a constant stream of positive and negative air-ions. The charged non-conductor then attracts oppositely charged ions to its surface, thereby neutralising the non-conductor.

An object such as an antenna which is exposed to moving air containing, sand or dust particles, water, or snow, can become static charged. The potential which can result may be in the order of several thousand volts. This potential is limited only by the point at which the corona discharge occurs.

However, perhaps the most important area of electronics which has so much to lose from the effects of ESD, is solid-state. With the dramatic increase in the use of sensitive solid-state devices, in all aspects of communications and electronics, the incidence of damage due to ESD has increased significantly. To the extent, that most major manufacturers of communications and electronic equipment have embarked on a fully integrated programme of ESD protection on their production and assembly lines.

If we consider the components we are using today, the susceptibility range of most is below 500 volts. The range of typical electrostatic voltages developed by the various effects of everyday living and working range from 100 volts to 35 000 volts. Because our body susceptibility (minimum sensitivity) is from about 3000 volts (short duration — low current), we would often be unaware of the damaging effect of ESD, when handling modern sensitive components.

We are all familiar with component damage and component malfunction, these are usually connected with definite failures. Quite often damage from ESD is not so pronounced. It can be of an intermittent nature, or it can reduce the life of the components. In addition, the effects of ESD on electronic components is quite often not recognised as such, because failures due to electrostatic discharge are quite often masked by other failures.

In conclusion, there are a number of rules which, if followed, can help to minimise the effects of ESD on today's sensitive components:

- Disconnect power before removing or replacing sensitive components.
- Use only anti-static coolant spray.
- Touch the grounded chassis, with a hand, prior to removing or inserting an ESD sensitive device.
- Disconnect test equipment before use.
- Ground the ESD protective package before removing the replacement devices.
- When removing a device from an ESD protective package, avoid touching connections or circuitry.

This short article is intended as an overview, or brief outline, of the very complex and wide ranging issues of ESD. Nevertheless, we trust this outline will provide a basic insight into this growing problem. For those who wish to pursue the subject further, the National EMC Advisory Service does have a wide range of additional material.

AUGUST'S BEST PHOTOGRAPHS

The Judges at Quadricolor Industries and Waverley Offset Printing Group selected the front cover photograph and the judges at AGFA-GEVAERT selected the group photo on page 37.

These photos will now be considered for the AGFA CAMERA prize at the end of the competition in June 1984.
OPEN LETTER TO RADIO CLUB PROGRAMME ORGANISERS FROM THE WIA FEDERAL VIDEOTAPE CO-ORDINATOR

c/o 37 Second Avenue, Sefton Park, South Australia 5083

Here is a way for your club to benefit, in yet another way, from its affiliation with the WIA. You can provide your 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'll find this a boon, particularly if yours is a country club which often has difficulty obtaining a variety of expert lecturers for its regular meetings.

It's inexpensive and it's easy. Here's how it works...

Except for those titles for which the WIA does NOT hold a copyright licence, all you have to do is...

Supply me with a video-cassette of an "acceptable format"

Plus a stamped, return-addressed padded mailbag

and the programme 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 programmes 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 (Programme 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 "acceptable formats" are as follows...

VHS  (Size 200 x 110 x 30 mm, Mass 350 gr, 3 Hr max)

Umatic  (Size 260 x 180 x 40 mm, Mass 835 gr, 1 Hr max)

Philips N1500  (Size 100 x 140 x 50 mm, Mass 625 gr, 1 Hr max)

Of these the VHS is preferable as being smaller and lighter it is much less expensive to post.

I hope that this information provides you with sufficient information on how to successfully make use of this free service without further delay.

73
John F Ingham, VK5KG
FEDERAL VIDEOTAPE CO-ORDINATOR

LEARNING THE MORSE CODE?
Try the All New BT-1 — Basic Trainer For Morse Code

Advanced Electronic Applications in conjunction with ETS (Educational Technology and Services)*, has developed the BT-1 Code Trainer. ETS methodology, based upon research by a prominent mid-west university, has demonstrated that a typical student using this system and the BT-1, can learn Morse Code to speeds of 20 WPM in four weeks based upon two 20 minutes daily training sessions.

The pre-programmed BT-1 computerised trainer will allow you to achieve proficiency in Morse Code faster than any other known method.

No prior knowledge of Morse Code is required to use the BT-1. There are no tapes to purchase or wear out. The BT-1 operates from a 12 VDC source, the unit can also be used in mobile settings via the 12 VDC system.

* Education Technology & Services, see page 81 October 1981 issue of Ham Radio Magazine.

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MURPHY!!
The correct height of Mt Torbreck, Page 16, July AR is 1500m.
Following the successful launch of Oscar 10 as reported in this column last month, the chain of events that have transpired since the 16th of July and injected the satellite successfully into an intermediate orbit of approximately 3900 km perigee, 35 800 km apogee height and 26 degree inclination. A second and final apogee motor firing is scheduled within the next fortnight. All equipment on board the satellite was checked out so far including the main transponder with its antennas working perfectly. The firing had been delayed by about three weeks since the satellite’s attitude and spin rate, after separation, were not as expected. Indeed, whilst separation and orbital injection of the ECS 1 satellite were perfect the first acquisition of telemetry from the Oscar 10 satellite five hours after launch indicated that there were gross errors in attitude and spin rate. The satellite authority took rapid and effective action to guarantee the immediate survival of the satellite so that the situation could be analysed and further corrective action taken. During the past weeks the AMSAT project authority has established full control of the satellite and brought it into the correct attitude for a first firing of the restartable liquid propellant apogee motor. In doing so the AMSAT project authority has demonstrated the extraordinary operational flexibility of the design of its satellite and of the people who operate it. Examination of the launcher telemetry has shown that the dual launch system SYLDA had functioned nominally and that the original separation parameters (including satellite attitude and spin) had been correct. This fact has only now been confirmed by stored satellite telemetry data. Detailed investigation of both launcher and satellite data indicates with high confidence that 53 seconds after separation the third stage caught up with the satellite, this would explain the attitude and spin rate anomalies observed subsequent to separation.

This supposition of a physical contact is reinforced by observation of small shocks registered at that time by launcher vibration sensors and by indications that at least one of the satellite’s antennas is slightly damaged. The most likely reason is that the third stage caught up with the satellite and that debris collision was the cause. The most likely reason is that the third stage caught up with the satellite and that debris collision was the cause. Following separation of each satellite, the Ariane 3rd stage performs an attitude and spin change programme which is then followed by a lateral distancing manoeuvre of this stage. This sequence includes opening and closing of the 3rd stage oxygen valvs to control residual tank pressure and to provide thrust for the distancing manoeuvre. For future launches it is indicated that additional margins will be taken into account and the sequence of operations will be adjusted accordingly so that this kind of problem will not be encountered again.

From the above statement it would appear that disaster was very close at hand for Phase-3B. However, that is now of historical interest, and the future now appears very promising. We now await the second burn of the kick motor to place it at its final orbit position with the anticipated transponder turn on scheduled for mid-August.

OSCAR 10 TRANSPONDER FREQUENCIES

MODE B: Uplink 435.025 to 435.175, Downlink 145.975 to 145.825 inverted passband.

MODE: Uplink 1269.05 to 1269.85, Downlink 436.95 to 436.15 inverted passband.


UOSAT — OSCAR 9

The following three items are from UOSAT Bulletin-33 passed at 0000 UTC, 16 July 1983 — Tnx to the UOSAT team.

UOSAT SPACECRAFT NEWS

Power budget tests have been carried out on the UOSAT batteries during the last week to assess their capacity state and to assist power management. All non-vital spacecraft systems were switched off to allow the batteries to reach full charge and then a heavy load applied and the battery performance monitored throughout the entire orbit by the on-board computer. The heavy discharge during eclipse was of particular interest. The data has been collected and is being analysed at UOS. It was encouraging to see that the spacecraft continued to operate nominally even at low battery volts. Preliminary analysis indicates that the spacecraft runs with a marginally negative power budget over the weekends when the 2.4 GHz beacon is on in addition to other normal loads with the current sun angle and spacecraft attitude.
Standing of the space environment.

Experiments have been most encouraging.

Conference will be devoted to non-govern-
ment space research and exploration will be

An amateur digital communications space-

An extra checksum byte

The 2.4 GHz beacon will be switched OFF this
weekend whilst we complete our analysis.

The whole orbit data collection programme
was run at a number of times during this week
to collect the battery charge information. The
144 MHz beacon was only used for short
periods over Europe for most of these runs.

Telemetry channels recorded were: 2, 22,
23, 30, 32, 34, 53. The run times were: 12:16:20
and 15:19:08 on 13/07/83, 13:27:29 and
16:38:45 on 14/07/83, 13:10:02 and 14:44:50
on 15/07/83. The 16:38:45 one failed due to
operational error.

SPACECRAFT ATTITUDE

The spacecraft remains stable in a flat (end
over end) spin with a fluctuating +Y/-Y facet
temperature gradient of around 55 C to 65 C,
this possibly being caused by the HF antennas
deployment. Analysis and preparations con-

PAC SAT TESTS

Preliminary tests have been carried out on
UOSAT-Oscar 9 to evaluate the use of the
spacecraft in ‘PAC S AT” demonstrations. This
exercise will allow the PACSAT development
team to evaluate a number of techniques un-
der consideration for a future PACSAT — an
amateur digital communications spacecraft
using packet radio. These preliminary
experiments have been most encouraging.

On orbit 9658, 1196 packets of 8 bytes each (6
data, 2 checksum) were transmitted to UOSAT
from Surrey using the 438 MHz command
uplink. This link has previously proved difficult
for command transmission due to a priority
mechanism frequently giving preference to

UOSAT, JAMSAT and AMSAT-France. The

Included among the participants are AMSAT,

Nonetheless all good things come to those

Unfortunately

that no news is bad news.

and Bob VK3ZBB can also assist as per the

about the CW Net. The following QN code

Notes on Use of QN Signals

QSN* The net has traffic for you. Stand by.

Also forty seven other objects.

Also forty seven other objects.

ARRL QN Signals For CW
Net Use

CW ENTHUSIASTS

Refer “How’s DX” August for information
about the CW Net. The following QN code
may prove useful.

QNA* Answer in prearranged order.

QNB* Act as relay between and .

QNC* All net stations Copy. I have a message for all
net stations.

QND* Net is Directed (controlled by net control
station). QN x 1.

QNE* Net is Free (not controlled).

QNF Take over as net control station.

QNH Your net frequency is High.

QNI Net station report in. I am reporting into net. (Follow
with a list of traffic or QRU.)

QNJ Can you copy me? Can you copy —?

QNK* Transmit messages for to

QNL Your net frequency is Low.

THE FOLLOWING SATELLITES RE-
ENTERED OR WERE RECOVERED

1980-15A TRANS5 14 May
1980-83A COSMOS 1215 12 May
1982-76A COSMOS 1397 18 May
1983-012A COSMOS 1442 11 Apr
1983-024A COSMOS 1449 15 Apr
1983-026A 8T 6 9 Apr
1983-029A COSMOS 1451 22 Apr
1983-036A COSMOS 1454 22 May
1983-040A COSMOS 1458 11 May
1983-043A COSMOS 1460 20 May

arranging frequency—by

you, where possible, to

The QN signals above are special ARRL signals for use in

For use only by the Net Control Station.

Notes on Use of QN Signals

QSN* The net has traffic for you. Stand by.

QNO* Move frequency to and wait for to

finished handling traffic. Then send him traffic for —

QNT* Answer and Receive traffic.

QNU* You are GROMing the net. Stand by.

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CONTEST CALENDAR

SEPTEMBER
3-4  DARCorona “CORONA” 10 m RTTY
10-11 G ORP Activity
10-11 DARC WAE Phone Test
17-18 VK Novice Test
17-18 Scandinavian CW +++
24-25 Scandinavian Phone +++
24-25 12th JLRS Test

OCTOBER
1-2 VK/ZL Phone Contest
8-9 GARTG SSTV Test
15-16 VK/ZL CW
22-23 YLRL Anniversary CW Party
22-23 CLARA AC/DC Test
26-30 WW DX CW Test

NOVEMBER
5-6 YLRL Anniversary Phone Party
12-13 DARC WAE RTTY Contest
12 ALARA Contest
26-27 CQ WW DX CW Test

CONTEST NOVICE CONTEST

Don’t forget the VK Novice Contest in September. Let’s generate some interest for this contest which had such a poor showing last year. This contest is a marvellous opportunity for all to participate and gain awards. The maximum speed for CW has been reduced to 10 WPM to encourage this mode.

This contest was originally the Westliaes Radio Club Contest, usually held in September, and is designed to encourage Novices to gain skills in contest operation and to improve their abilities with possible thought to assisting in their upgrading to full call licences. The contest provides excellent opportunities for all Novices to compete on an even footing with all comers. The majority of points scored are contacts with novice and club stations and the minor points are scored with contacts with full call licences. The contest will take place from 0000 UTC 17th September to 0759 UTC 18th September, 1983 for all novice and full call amateurs.

OBJECTS OF THE CONTEST — To encourage contest working between amateur stations in Australia, New Zealand and Papua-New Guinea during a 24-hour period with special emphasis on contacts with novice and radio club stations.

STATIONS ELIGIBLE — 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. Except for radio clubs, no multi-operation working is allowed. Stations in your own call area as well as other call areas may be worked.

CONTEST BANDS — The novice allocations on 80, 15 and 10 metres may be used. This applies to full call stations as well. No crossband operation is allowed. Contacts should be phone or CW. CW operation: Maximum speed ten words per minute. To encourage the use of CW for the betterment of both novice and those operators who are not as proficient as maybe they should be, the maximum transmitting speed of CW will be limited to ten words per minute.

SCORING — Transmitting: For contacts with a Novice station — five points. For contacts with a radio club station — ten points. For contacts with a full station — two points. Listening: Novice/Novice contact — five points. Full Call/Novice — two points. Novice/Full Call — two points. Full Call/Full Call — two points. Any contact with a radio club — 10 points.

CALL PROCEDURE — Phone call “Call Novice” and on CW “CQN”. Stations may be worked only once per mode per band.

EXCHANGE — Phone RS report plus three figures. These three figures may start anywhere between 001 and 999 but when 999 is reached you must start again at 001. CW: RST report plus three figures on the previous basis. Radio club stations will add the letter “C” after the number above.

CONTEST SECTIONS — (a) Novice/Full Call Phone, Novice/Full Call CW, (c) Listeners.

LOGS — Logs must show UTC time, station worked, band, mode, number sent, number received, score claimed and score tally for each page. A front sheet must be attached showing the following: Name of operator, callsign, address, section entered and points claimed. Logs are to be sent to the Federal Contest Manager, Box 236, Jamison, ACT 2614, and must be post-marked no later than 12th October, 1983, and received no later than 29th October, 1983.

CERTIFICATES — Certificates will be awarded to the highest score from Novice Phone, Novice CW, Radio Club Phone, Radio Club CW, Full Call Phone, Full Call CW, Listener Phone and Listener CW in each division. A trophy to be known as “The Keith Howard VK2AKX Trophy” will be awarded to the entrant with the highest aggregate scores in the (a) and (b) overall sections and will be held by the winner for a period of twelve months. The decision of the Federal Contest Manager is final and no correspondence will be entered into.

THE 12TH JLRS PARTY CONTEST

 CW — Start Sat 1 Oct 1983 at 0300 UTC; ends Sun 2 Oct 1983 at 0300.

PURPOSE — JLRS shall sponsor the Annual JLRS Party Contest to promote the activity of women amateur radio operators and to further co-operation among them.

ELIGIBILITY — All licensed men and women operators throughout the world are invited to participate.

OPERATION — All bands and all modes may be used in accordance with operator and station licences. Crossband operation is not permitted. All contacts must be made from the same location. Net contacts and contacts with mobile stations or club stations will not count.


EXCHANGE — One RS or RST and QSO number starting at 001. YLs: RS or RST and QSO number starting at 001. JLRS members: RS or RST and QSO number starting at 5001. Separate consecutive QSO numbers must be used in PHONE and CW contest.

ENTRY — Entry in each contest is limited to one of the following two classes: A. more than four bands; B. less than three bands.

SCORING — 1. PHONE AND CW will be scored as separate contests. Submit separate logs for each contest. 2. Each contact with the same station on different bands will be counted. 3. OM’s: Score one point for each contact with YL and five points for each contact with a member of JLRS YL’s. Score one point for each contact with OM and five points for each contact with YL. 4. Multiply the number of contact points by the total number of different prefixes worked in each band.

LOGS — Copies of all PHONE and CW logs must show claimed scores, band, mode, RST, callsigns worked and power transmitted, signed by the operator, and be postmarked not later than 20th October 1983. Be sure your log is legible. Please PRINT or TYPE. Send logs to the Contest Custodian, Kuni Kan JA1YL, 4-5-38-406 Hyakunincho, Shinjuku-ku, Tokyo 160, JAPAN.

CERTIFICATES — All participants will receive a Certificate of the Contest Participation and a list of the result of the contest in December 1983. Then stickers shall be added to the Certificate at every participation for ten years from the issue of the Certificate.


(A copy of the list of callsigns of the 500 members of JLRS can be obtained (with SASE) from Marlene VK5Q0.)

ALARA CONTEST

ELIGIBILITY — All licensed operators throughout the world are invited to participate. Also SWL’s.

OBJECT — PARTICIPATION! YL works everyone. OM works YL’s only. One contest (combined phone and CW) run over 24 hours.

STARTS — Saturday 12th November 1983 at 0001 hours UTC.

ENDS — Saturday 12th November 1983 at 2359 hours UTC.

FREQUENCIES — All bands may be used. The following are suggested frequencies for easier location of contacts:

CW 28.100 to 28.110 PHONE 28.480 to 28.520

(C) Reg Dwyer, VK1BR FEDERAL CONTEST MANAGER P.O. Box 236, Jamison, ACT 2614
OPERATION — Phone and CW operation: Each station may be counted twice on each band for credit; once on phone and once on CW. All contacts must be made in accordance with operator and station licence regulations. No net or list operations, no crossmode. No repeater contacts may be claimed.

PROCEDURE — Phone: call “CQ ALARA CONTEST”. CW: call “CQ TEST ALARA”.

EXCHANGES — ALARA member: RS or RST, serial number starting at 001. ALARA member, name, YL non-member or OM RS or RST, serial number starting at 001.

SCORING — Three points for each completed contact with a station in the British Isles. Multipliers will be British Isles prefixes which are: G2, G3, G4, G5, G6, G8, GD2, GD3, GD4, GD5, GD6, GD8, G12, G13, G14, G15, G16, G18, G21, G23, G24, G25, G26, G28, G31, G32, G33, G34, G35, G36, G38, G41, G42, G43, G44, G45, G46, G48, GM5, GM6, GM8, GU2, GU3, GU4, GU5, GU6, GB8, GW2, GW3, GW4, GW5, GW6, GW8.

Contacts with GB stations will not count for points or multipliers.

For all entrants the total score will be the number of points on each band added together, times the number of multipliers on each band added together. Unmarked duplicate contacts will be penalised at ten times the points claimed. Entries containing five or more such duplicate will be automatically disqualified.

LOGS — Log sheets to be headed: date/time UTC; station worked; RS and serial number sent; multiplier: points claimed. Separate logs must be submitted for each band a summary sheet showing the multipliers worked on each band must be included.

DECLARATION — Each entry must be accompanied by the following declaration, signed and dated: “I declare that this station was operated strictly in accordance with the rules and spirit of the contest and agree that the decision of the Council of the RSGB shall be final in all cases of dispute”.

ADDRESS FOR LOGS — RSGB HF Contest Committee, c/o Mr P Miles, PO Box 73, Lichfield, Staffs, England.

CLOSING DATE FOR LOGS — Entries must be received by 1 December 1983.

AWARDS — Certificates of merit will be awarded to the leading station in each country and to the leading station in each overseas section (including El), top scorer overall, top scorer overseas, top scorer multi-band only.

RECEIVING SECTION — Rules as for the transmitting section except as varied below.

ELIGIBLE ENTRANTS — (a) British Isles: RSGB members only. (b) Overseas (including El): all licensed amateurs.

Note: In the column headed station being worked, the same callsign may only appear once in every multiplier logged except when the logged station is a new multiplier for the receiving station.

DECLARATION — Each log must be accompanied by the following declaration: “I declare that this station was operated within the rules of the contest and I do not hold a transmitting licence for frequencies below 30 MHz”.

AWARDS — Certificates of merit will be awarded to the leading entrants in each overseas section except as specified in scoring.

21/28 MHz RSGB CW CONTEST 1983

TRANSMITTING SECTION

ELIGIBLE ENTRANTS — (a) Single operator, multi-band only.

Operator, multi-band only.

FREQUENCIES/MODE — 21 and 28 MHz, phone only. Entrants are requested not to operate in the bands 21.400 to 21.450 MHz; 28.200 to 28.400 MHz and 29.100 to 29.700 MHz.

EXCHANGE — RS report and serial number starting at 001.

SCORING — Three points for each completed contact with a station in the British Isles. Multipliers will be British Isles prefixes which are: G2, G3, G4, G5, G6, G8, GD2, GD3, GD4, GD5, GD6, GD8, G12, G13, G14, G15, G16, G18, G21, G23, G24, G25, G26, G28, G31, G32, G33, G34, G35, G36, G38, G41, G42, G43, G44, G45, G46, G48, GM5, GM6, GM8, GU2, GU3, GU4, GU5, GU6, GB8, GW2, GW3, GW4, GW5, GW6, GW8.

Contacts with GB stations will not count for points or multipliers.

For all entrants the total score will be the number of points on each band added together, times the number of multipliers on each band added together. Unmarked duplicate contacts will be penalised at ten times the points claimed. Entries containing five or more such duplicate will be automatically disqualified.

LOGS — Log sheets to be headed: date/time UTC; station worked; RS and serial number sent; multiplier: points claimed. Separate logs must be submitted for each band a summary sheet showing the multipliers worked on each band must be included.

DECLARATION — Each entry must be accompanied by the following declaration, signed and dated: “I declare that this station was operated strictly in accordance with the rules and spirit of the contest and agree that the decision of the Council of the RSGB shall be final in all cases of dispute”.

ADDRESS FOR LOGS — RSGB HF Contest Committee, c/o Mr P Miles, PO Box 73, Lichfield, Staffs, England.

CLOSING DATE FOR LOGS — 31 December 1983.

AWARDS — Certificates of merit will be awarded to the leading entrants in each overseas section except as specified in scoring.

Special note for both sections: entrants are particularly requested to use standard size (A4) log sheets.
**British Amateur Radio Single Operator Section**

**1983 Spring Contest Results**

<table>
<thead>
<tr>
<th>Callsign</th>
<th>Points</th>
<th>Total</th>
<th>OSO’s</th>
</tr>
</thead>
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The Contest Manager gratefully acknowledges the receipt of logs from the following stations: DF7FB, E13CN, G4KZE, G8CDW, K4DVM, PA9ANG, JM10FJ, Y24NL, Y24UD/A, Y47YM, Y75OL and Y2Z2N. These logs are most useful and in a number of cases, essential to claims for certain awards so many thanks for your help.

A total of 144 Logs were received as a result of the 1983 Contest and a total of eighteen new Quarter Century Awards will be issued as a direct result of the Contest.

During the Contest, RTTY activity took place from the following Countries: Alaska, Argentina, Australia, Barbados, Belgium, Brazil, Bulgaria, Canada, Chile, Colombia, Czechoslovakia, Denmark, Dominican Republic, Eire, England, Finland, France, German Democratic Republic, German Federal Republic, Greece, Greenland, Hungary, Indonesia, Israel, Italy, Japan, Kenya, Kuwait, Lebanon, Liechtenstein, Luxembourg, Malaysia, Martinique, Mauritania, Mexico, Monaco, Morocco, Namibia, Netherlands, New Caledonia, New Zealand, Norway, Philippines, Puerto Rico, Romania, Saudia Arabia, Scotland, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Togo Rep, United States of America, USSR, Ukraine, United Nations (Geneva), Upper Volta Rep, Vanuatu, Venezuela, Yugoslavia and Zimbabwe.

VA2PE 1983 — FOURTH ANNUAL CONTEST EXPEDITION TO ANGUILLA

The Anguilla Contest Team will be active from the West Indies island of Anguilla (VP2E) from 21 November to 14 December, 1983. This will include contest operations in the CQWW CW DX Contest, the ARRL 160 Metre Contest, and the ARRL 10 Metre Contest. During non-contest periods they will be active on all bands 160-6 metres and CW and SSB.

CQWW DX Contest: 26-27 November 1983

During the CQWW DX Contest, several single-operator, single-band contest efforts will be active simultaneously using the call "VP2E". These efforts will be using kilowatt stations with monoband yagi antennas on 40 through 10 metres, and vertical antennas on 80 and 160 metres. It’s hoped to have operators on all bands (160 through 10 metres) during the contest: look around 20 kHz and 30 kHz above the bottom of each band.

Note that sunset will occur at approximately 2110 UTC and sunrise will occur at approximately 0950 UTC on Anguilla during the CQWW DX Contest.
This will be the first time that Anguilla has been available on CW to DX stations in an international DX contest.

ARRL 10 METRE CONTEST: 10-11 DECEMBER, 1983

During the ARRL 10 Metre Contest the group will be active on CW and SSB as a multi-operator, single transmitter station using the callsign 'VP2E'. They plan to operate above and below the US phone band as dictated by propagation.

LORD HOWE

The Down Under DXers Contest Club intend to activate Lord Howe Island for CQ World Wide phone test in October, 1983. The group will be on the island from 23 October to 2 November, and at this stage will be using the callsign VK2WU portable LHI. QSLs go to Les Cullen, VK2WU, PO Box 31, Winmalee, NSW, Australia, 2777, or the bureau.

They intend to be using yagis on 10, 15 and 20, and wire antennae for 40, 80 and 160. Listen for them on the usual phone frequencies on the high bands; on 80 they will Tx 3.695 and Rx 3.805+ MHz; on 160 metres they will be in the DX windows.

The statistics for the May Novice examinations were released recently. There are no surprises in these figures. As usual, pass rates are highest for CW sending (79.9%) and higher for regulations (64.3%) than for theory (49.9%). The theory figure is down a bit on the rate for last November (54.4%), but the May figures are usually lower than November. The range is from 46.7% for VK3 to 54.8% for VK7. These figures are significantly higher than the corresponding figures for AOCP, as previously discussed.

The big difference this year is the drop in the number of candidates sitting. There are always fewer at the May exam than in November — presumably because many classes aim towards the November exam. But the 489 entrants this time is the lowest number for some time. It will be interesting to see if this is just a temporary drop or a continuing trend.

As a result of recent comments about the place of CW in amateur licensing, I have had a fresh look at CW pass rates. As we know the pass rate for sending is always higher than for receiving at any exam — but why should the pass rate of 5 WPM be consistently much higher than for 10 WPM. Here are the figures for the last 10 exams.

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<td>3488</td>
<td>1337</td>
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<tr>
<td>NAOCP 5 WPM</td>
<td>2881</td>
<td>1592</td>
<td>55.3%</td>
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WORLD COMMUNICATION YEAR ACTIVITIES

At least three clubs in Victoria have organised activities in VK3 as part of WCY:

The Eastern and Mountain District Radio Club will hold its Communications Expo '83 — a combined exhibition and hamfest — at the Nunawading Civic Centre on Saturday 3rd September. One of its main aims is to educate the general public about amateur radio, so come along and bring a friend to share your day with you.

The Northwest Zone will open its new clubrooms at the Mildura Airport on 3rd September. This represents the culmination of a lot of hard work by a very small band of people. Visitors to the opening will be most welcome.

The Shepparton and District Amateur Radio Club, in conjunction with the Northeast Zone, has chosen 11th September for a combined field day to be held at Mooroopna, 3.2 km west of Shepparton. The events commence at 10.00 am local at the Mooroopna Scout and Guide Complex in Echuca Road, Mooroopna. Talk-in frequencies are: 3.596 MHz, 28.470 MHz and 146.650 MHz (repeater 1). Make it a family day: wives and children are especially welcome.

WIA BROADCASTS

It is very gratifying to see the number of news items which have been sent directly to the broadcast news post office box following some minor problems earlier. We advise that the address is now: Boradcast News, PO Box 308, Cheltenham, Vic 3192.

Plans are also well advanced, we are told, for the re-broadcasting of the Sunday morning broadcast somewhat later in the week. We’ll keep you advised on that as news comes to hand.

A few gaps still remain in the divisional record of past presidents, and help is sought from anyone who can supply authoritative information. We’re trying to determine who were the Victorian Presidents for the years 1921, 1922, 1926, 1927, 1928 and 1932. If you can possibly help, please contact the Divisional Historical Officer, John Adcock, VK3ACA.

The VK-ZL Contest now has a new manager. The Wireless Institute Federal Executive has accepted the offer of Greg Williams VK3BGW to fill this vacancy. Greg is also the Victorian Division Awards Manager, and has a number of ideas to ensure that VK3 wins the Remembrance Day Contest, this year.

The division notes with pleasure the upsurge of interest in the RTTY transmission mode. One reason for this is unquestionably the current availability of Siemens Model 100 Teleprinters. These are most readily obtained by contacting the divisional headquarters at 412, Brunswick Street, Fitzroy.

Amateurs operating RTTY on 2 metres in the Melbourne area have the benefit of operating via VK3RTY repeater, owned by the EMDRC. This unit is located on Mount Dandenong with an output frequency of 147.350 MHz, Duplex B. The repeater is accessed by sending a space character in Baudot code at the amateur standard of 45.45 Baud, with 170 Hz shift. The repeater also has the ability to transmit standard messages, on command, and has on file information such as test tones, test messages, and recorded information on the Victorian Division and the Eastern and Mountain Districts Radio Club. This information is updated at regular intervals, and provides an additional news outlet between Sunday morning broadcasts.

Finally for this month, a couple of notes for zone and club officials in VK3. First: This column is available to you — if you have items or pictures which you would like to be published in the column then please send them to me, QTHR.

Lastly a reminder that the Club and Zone Net is held every Sunday at 1000 UTC on 3.605 MHz plus or minus QRM. Surely it’s in the best interests of your club or zone members that you participate.

See you all next month. 73

Peter VK3JN
The TS-130 Series is an incredibly compact, full-featured reasonably priced, all solid-state HF SSB/CW transceiver for both mobile and fixed operation. It covers 3.5 – 29.7 MHz (including the three amateur bands) and is loaded with optimum operating features.

NEW RANGE SWR METERS

NO PRICE INCREASE YET

The TS-830S is a high-performance, very affordable, HF SSB/CW transceiver with every conceivable operating feature built-in for 160 through 10 meters (including the three new bands).

TW-4000A UHF/VHF DUAL BANDER TRANSCEIVER
As I mentioned in my last FB column, in July AR a lot of activity has been happening in the nations capital, (not all political). Our ATV is well on the way, and I am pleased that Bill VK1MX has giving me a report on the groups activities. So without further ado here is Bill’s report.

**ATV UPDATE**

Earlier notes in this column advised of the creation of an ATV group in VK1, following a visit by the VK3 ATV “Roadshow” gang. The group now consists of eight members and enjoys sub-committee status within the Division. After an initial flurry of activity, progress has been slower than we would have wished, largely through supply problems with minor, but key, components. The resulting delay meant that the commencement of the 1983 academic year caught up with some members, enforcing postponement of their transmitter construction. Sufficient components for fourteen VK3ATY transmitters have been obtained and at least five are now operational.

Simplex trials have been conducted over recent weeks, with results becoming increasingly promising as our understanding of the mode, the equipment and UHF propagation grows. These trials have unfortunately confirmed fears that the hilly Canberra terrain will restrict simplex operation. We have therefore been obliged to accelerate planning for the 50 cm repeater. Luckily, simplex trials from the proposed repeater site promise strength reports, walking-board displays etc. as colour-bar generation, received signal strength reports, walking-board displays etc. A 2 metre transceiver will also be incorporated, both to facilitate control and to provide full duplex audio. Given that most of the hardware will be already available, we also intend to install a message-storage and retrieval facility, handling both Baudot and ASCII transmissions. Output will be by walking-board display, upon reception of the addresser’s security code. This facility should widen the use of the repeater beyond the ATV enthusiast to any station equipped with RTTY or a computer. More details as they become available.

Anyone wanting further information about the VK1 ATV activity, should contact the group’s co-ordinator, Bill VK1MX, QTHR.

Thanks Bill for your most informative and interesting report. I look forward to receiving your next one. Any other group with information that I could use in this column please forward it to me.

**MEETING AGENDA**

26th September, IPS

Until next time, good DXing and good health.

73’s John VK1NEN

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**SPECIAL EDUCATION QSP**

Brenda VK3KT has available Trail Examination Papers:
- Theory, Novice, AOCP, Regulations.
- Also past CW exams from DOC. There are:
  - 10 exams at 5WPM
  - 10 exams at 10WPM
- Ten exams fill a C60 cassette tape.

INTERESTED? Send a tape and state your requirements and Brenda will transcribe it onto your tape.

Have you any complaints or other comments about the amateur examinations?

Please make your grievances known to Brenda VK3KT, your Federal Education Officer. Brenda may be found each Thursday evening on the Education Net at 1130 UTC, 3.685 MHz or write QTHR.

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**FIVE-EIGHTH WAVE**

Jennifer Warnarron VK5ANW
59 Albert Street. Clarence Gardens. SA 5039

For sometime now the Divisional Council have been concerned at the apparent gulf in communications between ourselves and our country members, including of course VK8. We have heard most rumblings from members, mostly because they feel that we are not interested in what happens to them. I can assure you that this is not the case, and we have been ‘stirring the grey cells’ in an attempt to come up with a solution.

For the past few years VK4 representatives at the Federal Convention have been telling us that their ‘clubs convention’, which is held just prior to the FC, has been a marvellous way of getting their clubs’ opinions on all manner of topics, and making the clubs feel that they really are part of the whole division. The only problem, as far as our division was concerned, seemed to be money, however we now feel that we have even found a solution to this problem. Therefore, I am pleased to announce that, all being well, the VK5 Divisional Council will be hosting a Convention of Clubs affiliated to the VK5 Division on 13th, 14th and 15th April, 1984.

Half the travelling expenses, and accommodation for one member from each club will be met by the division, however if the club wishes to send more than one member at its own expense or the members wish to pay their own expenses we shall of course be delighted to see them. The venue will probably be the ‘Pamarga Campsite’ at O’Sullivans Beach, great for that early morning run, or dip; and very handy for the South Coast Radio Club, whose clubrooms are right next door! You will be hearing more about this shortly, but in the meantime start thinking about the sorts of things you would like to discuss, and keep the weekend of the 13th/15th April, 1984 free.

The South East Radio Group held another of its very successful conventions on the Queen’s Birthday long weekend. Unfortunately I was unable to attend, but those who did are, I believe, already planning to go back next year. Congratulations to David VK5KK who brought the Trophy back for VK5, and to all those others who had a good time trying.

Merv Millar VK5MX, has for sometime seen the need for an encouragement award for homebrewers. Our September meeting is always the ‘Display of Members Equipment’ and although we receive one of the quarterly vouchers which John Moffat of ICS very generously donates (formerly known as the Kenwood Trophy) and prizes are also donated by the division, Merv still felt that something in the way of a Merit Certificate to encourage those who might feel less than competent, would be worthwhile. Needless to say, the council felt that Merv’s offer was most generous, and was only too happy to accept — so come on all you homebrewers, 27th September isn’t far away!
COUNCIL REPORT

Divisional Council met on the 15th July. Federal Councillor Stephen Pall VK2PS presented a report on a meeting between WIA representatives, DOC and the Federation of Australian Commercial Television Stations, which resulted in the limited release of the 50 to 50.15 MHz segment as outlined in the insert in last month’s AR.

Council requires information on Divisional Presidents and Secretaries prior to the war. Anyone who can assist should contact the Divisional Office. Peter Jeremy VK2PJ presented a report on the Queensland Radio Club Workshop, and this will be raised at the next Convention of Clubs. Council decided to install a logging recorder at Dural to record broadcasts for reference should any queries arise. Stephen Pall reported that a tenant had been found for the downstairs room at Amateur Radio House.

Council reminds all repeater groups to ensure that their repeaters comply with all the regulations. Repeater License within the 10 metres amateur radio band must be renewed every two years. Repeater licensees must not interfere with the operation of other stations on the same call. Repeater licensees must comply with all the regulations of the Registered Amateur Service.

DURAL

A four element triband beam and rotator has been installed at the Dural station for use during contest and WICEN activities. It is intended to operate the Divisional Station VK2WI during all of the Australian contests. During July the control unit of the Dural 2 metre repeater was replaced. The new controller, based on a Z80 microprocessor, now controls both the 2 metre and 70 centimetre repeaters, and an information sheet detailing the operation of these repeaters is available from the Divisional Office. Provision has been made in the hardware and software to allow additional repeaters to be added at a future time.

FISHER’S GHOST AMATEUR RADIO CLUB

The fisher’s Ghost Amateur Radio Club has only recently been formed and as the name implies, embraces the Campbelltown-Camden area. Nets are held on 80 metres each Friday at 1000 UTC on 3.580 MHz, and on 10 metres each Sunday at 1000 UTC on 28.520 MHz, both frequencies plus or minus QRM.

The monthly meetings are held at Bradbury Primary School, Campbelltown, on the fourth Wednesday of each month, commencing at 7.30 pm. An invitation is extended to anyone to attend the meetings as a visitor or intending member. Licensed Amateur Radio Operators may become Full Members, and all others may become Associates. For further information ring the President, Charlie VK2PMG on (046) 59 6388 or the Secretary, A J Harris VK2PFW on (046) 46 1476.

The Fisher’s Ghost Amateur Radio Club is affiliated with the WIA NSW Division.

SOUTH WEST AMATEUR RADIO SOCIETY CONVENTION

The 31st SWARS convention will be held this year in Tumbarumba over the long weekend 1st and 2nd October. The venue will be the Tumbarumba Show Ground, a very nice setting for a convention of this type. A programme of events has been arranged and also bus and car trips to the many scenic spots in the Tumbarumba District.

On Saturday a conducted car trip will visit many of the closer scenic places including Paddy River Falls. On Sunday a bus tour to Khancoban has been organised.

Amateur radio is very limited in Tumbarumba. Some hotel and on-site caravan accommodation is available, as are caravan and camping sites. For those who care to bring sleeping bags and blankets a Sports Pavilion is available with showers, etc. A deposit of $20 is required per room for accommodation bookings, which should be made by 16th September. For information and bookings contact Mr J Clode, Ournie via Jingellic, NSW, 2642, or phone (060) 37 3134.

The programme of events is as follows:

Saturday:

10 AM — Registration and morning tea
10.30 AM — 10 m transmitter hunt
12-2 PM — Barbercue lunch
2 PM — Conducted car tour
4.30 PM — 80 m and 2 m transmitter hunts
5.30 PM — 2 m pedestrian hunt
7.30 PM — Dinner — $10 per head, under 12 years free
9 PM — Films, rag chew, etc.

Sunday:

9 AM — Registration and morning tea
10 AM — Barbercue lunch
11.30 AM — 2 m talk-in
1 PM — Barbercue lunch
2 PM — 2 m scramble — all modes
3 PM — 2 m multi-transmitter hunt
3 PM — Return of bus trip
5 PM — Prize presentations.

Jeff VK2BYY

AMATEUR RADIO GOES TO SCHOOL

You may get to follow the example of Brisbane amateur Rob Green, VK4NBJ. Rob’s young son, Bradley, was telling his teacher at St Peters Primary School, Rochdale about dad’s amateur radio station. The teacher spoke to Bradley’s mum, Margaret about it and the upshot was that during a free period recently, the class were able to watch a video-tape introducing amateur radio to these ten and eleven-year-old boys and girls. The video-tape was obtained from the Institute by Rob who saw this as a unique opportunity to inform these children that there is such a thing as amateur radio.

Most schools these days have video recorders and teachers are always on the lookout for interesting and informative activities for free periods. Maybe you can follow up on this idea, particularly in the year of World Communication. There is a big audience out there just waiting to be told that amateur radio exists.

Bud Pounsett VK4QY

Box 638, GPO, Brisbane, Qld, 4001

in the year of World Communication. There is a big audience out there just waiting to be told that amateur radio exists.

AMATEUR ADVISORY COMMITTEE

A recent issue of QTC, our Queensland newsletter, inserted into all 4000 series postcoded ARs, told our members that they were the best operators in Australia. They had better be, because Queensland, it seems, has the only really active amateur advisory committee in Australia.

Do not think that here in the Sunshine State, we go on the air in fear and trepidation that Big Brother is listening. The members of the AAC are just a few ordinary amateurs who monitor our bands and firmly but politely, correct those of us who do not observe the regulations as laid down in the handbook. These amateurs are appointed to the committee by DOC and a DOC officer chairs the meetings which are held every two months. The AAC is not a WIA committee although several of the members are WIA members.

The Amateur Advisory Committee is a buffer between careless or thoughtless operators and officialdom. Here in Queensland, the AAC works, should not there be one in every State?
HEARTFELT THANKS

I have been requested by the members of the WICEN Region 3A and 4 groups, who participated in the communications exercise in conjunction with the James Hardie National Car Rally on 15th June 1983, to convey their heartfelt THANKS to all radio amateurs, who, in the true “Amateur Spirit”, immediately cleared the 3.605 MHz spot when requested to do so.

Due to peculiar propagation problems the 80 m spot became the busiest frequency to cover the event and thus the co-operation of all concerned was, and is, greatly appreciated.

Thanks again guys and gals.

John Aarssen, VK4DA
WICEN REG 4 CO-ORDINATOR
Box 597, Toowong, Qld 4066

THE “ULTIMATE” VHF QTH

I trust that you will find this letter regarding my 2 m experiences of sufficient interest to publish.

My location is one of those highly sought after elevated QTH’s with all antennas looking out across the water and no obstructions in any direction to interfere with VHF operation. Perfect I thought — and so it was to begin with. Using my IC290A and my dual 5th in phase, vertical antenna, the latter mounted on 20 ft mast fixed to the ridge of the roof, the house, I found that most of Melbourne and Geelong were within simplex range. In addition I could access ten VK3 repeaters and quite often VK5 and VK7 repeaters.

All went well until approx August 1982 when a paging system with a 60 dB over S9 signal appeared in the 3.620 MHz area. It was proved to be a 3rd order intermodulation product problem with my receiver and I learned to live with it. The situation today is different — on the 15th June 1983, between 0930-1030 EST I logged 76 different frequencies on which I had intermodulation problems — (four of these being on repeater output frequencies) — ranging in bandwidth from 5 kHz to 25 kHz. No doubt some of them were 4th and 5th order intermodulation products. However, it all but rendered 2 m useless and the thought of living in a valley became quite attractive, particularly as other makes of transceivers showed no improvement over my own.

The problem has partly been overcome by downgrading my antenna system and 2 m is again of some use to me. To those of you who are thinking of a new QTH atop a hill and who “try out” its 2 m capabilities from the “mobile” or with a “hand held” beware of what may be there when you ultimately put that antenna up at a higher level.

To those who are contemplating such a move I refer you to AR of October 1982, where a very good article appears dealing with the problem and the 15th June 1983 Bulletin where another informative article is published. Have you perhaps blamed a “button pusher” for interference at some time when in fact the cause is entirely different?

This is not a letter of complaint just a statement of my experiences in that “perfect VHF location” that so many of us look for. Perhaps the manufacturers could apply themselves to the problems of “overload” and “intermodulation” so that a “good QTH” can be used effectively.

Believe me intermodulation is alive and well and living in VK3.

Stan Williams, VK3DSW
2 Gannet Street, Mt Eliza 3930

AN OPEN LETTER TO ALL RADIO AMATEURS

1983 is World Communications Year. It is also the year that the BOYS BRIGADE celebrates its 100th Birthday.

Founded on the 4th of October 1883 by William Alexander Smith the Boys Brigade was formed out of a group of youngsters who attended Sunday School. They were encouraged by their leader to participate in drill, gymnastics and team games, as well as to continue with their religious studies.

From the small beginnings in Scotland, the Boys Brigade quickly expanded, and spread throughout the British Isles and Commonwealth. The Boys Brigade inspired many other groups. The Girls Brigade was started in Ireland in 1933 with the scouts following some sixteen years later.

Her Majesty Queen Elizabeth the Second is Patron. Her patronage extends to all Boys Brigades in the following countries: Great Britain, Ireland, Australia, Zealand, Cook Islands, Solomon Islands, Tuvalu, Vanuatu, Papua-New Guinea, Canada, Bermuda, Falkland Is, Bahamas, Honduras, Jamaica, Haiti, Antigua, Barbados, Guiana, British Virgin Is, Dominica, Grenada, St Kitts and Nevis,errat, Netherlands, Antilles, Trinidad, Hong Kong, Malaysia, Singapore, Sierra Leone, Ghana, Nigeria, Cameroons, Uganda, Malawi, Zambia, Zimbabwe and South Africa.

I would like to propose that all amateurs, amateur groups and societies approach the local Boys Brigade and open up your station to the Boys Brigade for the first four days of October 1983. During this period it would be hoped that stations try and operate at least three hours every day or a minimum of 12 hours on the 4th October.

Dates and Times of the event are suggested as: 1200 hrs Saturday 1st of October (midday local time) to 2400 hrs Tuesday 4th of October (midnight local time).

Stations will use the following frequencies ± 5 kHz for calling “CO Boys Brigade” or “CO BB 100”.

On 10 metres 28.480 MHz
On 15 metres 21.180 MHz
On 20 metres 14.240 MHz
On 80 metres 3.620 MHz

During quiet periods of operating, stations should listen on the hour and the half hour for new contacts.

A central contact all stations should QSY to other parts of the band to establish a full exchange of communication and avoid interference to other stations calling.

It is hoped this method of operation will enable a useful exchange of use your frequencies available and promote more contacts.

Normal modes of transmission to be used.

To all amateur radio groups I ask you to please get involved. Arrange a special club station and establish contact with your local Boys Brigade. They are making approaches to Amateur Radio Societies and groups, you could assist much to promote Boys Brigade by making a station available to them on the 1st, 2nd, 3rd and 4th of October, this year 1983.

It is hoped that this will be the first of many informal gathering of members of the Boys Brigade each year. Not only will it benefit the Boys Brigade and amateur radio it will assist to strengthen the links between amateur radio and other non radio groups and encourage a better understanding amongst all people that there is Peace and Goodwill available to all in the world.

I invite you to share with me any information about your proposed activities, as well as the actual events that happen before and after this period of celebration for the first 100 years of the BOYS BRIGADE.

I wish you much success.

Yours faithfully, Frank May (VK2DF)
Box 33, Rosebery, NSW, 2018

COPYRIGHT

I refer to my previous letter of 5th June, 1983 wherein I expressed my feelings regarding the unfortunate copyrighting of the article ‘To Heard and Back’ by Dave Shaw, VK3DHV/VK3HI.

Could you please inform both your other readers as well as myself as to just how many applications you have received from other papers/magazines for use of this article? Also whether or not such applications are for use of such eminent publications as QST, CO, 73, Radio Communications Ham Radio or perhaps even Break In, or World Radio. Have any of the major DX newsheets such as DX Bulletin also been included in such applications and may have been received?

It would also be of great interest to learn whether either Dave VK3DHV or Al Fischer KG6C/KV0CW have provided articles to any of the amateur radio magazines other than your publications.

The Editor of Amateur Radio Magazine has knowledge only of material submitted to Amateur Radio Magazine.

KINKY HINTS??

I have just been reading some amateur radio magazines from overseas and, in comparison, I feel our own Wireless Institute publication is as good, if not better, than most of them.

However, I was interested in the ‘Hints and Kink’s’ section published in ‘QST’, and I feel a page could be set aside in our own magazine, for the experimenters or innovators within the Australian Amateur Community. We do, as a nation, have a reputation of being very inventive and innovative, due to the distance we are from the major markets of the world. However, we have to our credit the invention of the ‘Stump Jump Plough’, also the first utility car and, believe it or not, the Hula Hoop.

It irks me to think that we could have been the first in many aspects of amateur radio if the inventors among us had had a public forum, to air their views. Let’s face it, nobody can sit down and write a long technical article, but most of us would be able to draw a rough diagram, with a short covering note, to explain the principle of the devices, or more importantly perhaps, the application of viable, cheap, easy to get at material for all aspects of our hobby. If only one per cent contributed an article per year, there would be enough material to keep a column going to benefit all, with perhaps the incentive of a yearly prize.

Your faithfully,
Frank May (VK2DF)
Box 35, Toowong, Qld 4066
EIGHTY METRE NETS

I would suggest that a list of all Australian 80 metre nets should be published in this magazine. This would provide two benefits. 1. Those wishing to join a particular net would know when and where to find it. 2. Those wishing to make a sked with a friend would know when and where to avoid a net.

It is obvious that nets are growing more popular and are increasing. Such a list would also help those wishing to establish a new net. We all realise that no one has a right to monopolise any one frequency (except for WICEN), but a properly run net enables a group of operators to use a single frequency thus helping to reduce congestion on the band.

As a starter, I would like to nominate the Tasmanian Devil Net which operates every Tuesday night from 1000 UTC on or about 3.590 MHz. You might also list WIA weekly broadcasts.

Your sincerely
Bob Jackson, VK7NBF
Falmouth House, Falmouth, 7215

Any Volunteers? — Ed.

WHAT PRICE DX?

I would like to add my comments to those made by previous contributors regarding the cost of QSL confirmations.

For many years now I have sent the more usual QSLs by the Bureau, and the rarer ones direct, in the ratio of approximately 50/50. Since by now every new country I work is relatively rare most of my cards go direct. I always inclose two IRCs (or a green stamp) and, most importantly, a self addressed airmail envelope. SAEs appear to be the single most important factor in obtaining a reasonable rate of return. Only a few cards had to be sent more than once. Among the ten confirmations outstanding there are only four to whom I sent my card direct, and they are all fairly recent.

As a result I have at present 206 countries confirmed out of a total of 216 worked, a success rate of ninety five per cent.

In today’s money two IRC’s plus air mail comes to two dollars. Assuming that fifty per cent of my total were sent direct the average cost of a confirmation, at today’s postage rates, runs therefore to $1.00. $200.00 over more than ten years, does not seem such an enormous sum to spend on one’s hobby, considering the money spent by most amateurs for equipment, whether home brew or commercial.

Best regards and 73s
George Cranby, VK3GI
P0 Box 22, Woodend, 3442

AR

**HELP**

INTRUDER WATCH

Please help INTRUDER WATCH by reporting all intruders.
Predictions courtesy Department of Science and Environment IPS Sydney. All times in UTC.

PATHS — Unless otherwise indicated (ie LP = Long Path) all paths are Short Path.

Less than 50% of the month
PERCY SARA VK2QV

On Tuesday, 21st June, 1983 "VK2 QUEEN VICTOR" left his earthly life and became a silent key.

Percy Sara was born in Sydney in 1920 and was educated at Sydney Grammar School. During the war he volunteered for service and was sent to England where he later joined 460 Squadron, Lancaster Bombers. Whilst training at Church Broughton he met Betty, a WAF who was destined to become his wife.

Unfortunately, on a mission over Germany as tail-gunner in a Lancaster, Percy's aircraft was shot down and he, and the rest of the crew parachuted to "safety" (thus qualifying for membership in the exclusive "caterpillar club"). A few days of freedom followed. However he was finally captured and handed over to the Gestapo for interrogation and ultimate processing to Stalag Luft 3. Two years as a POW did little for the health of any of the prisoners and eventually was responsible for Perce becoming TPI.

Percy and Betty married after his release in 1945. They returned to Australia and had their first child Geoffrey in 1946. As an ambulance Super-intendent, Percy transferred from Coolah to Bellingen as it was here in 1950 that the famous Sara Quads were born. Subsequently Percy, who by now had the callsign VK2QV, was one of the few amateurs able to decorate his QSL card with quads of a different kind.

The family left Bellingen in 1954 and returned to Sydney but it was Perce's wish to retire to the North Coast and they settled in Urunga in October 1980.

Percy immediately involved himself in community activities and took an active part in the running of the Coils Harbour and District Amateur Radio Club where he was Treasurer until his passing.

Retirement did not see him vegetate — indeed his interest in amateur radio expanded to include RTTY and computers. It is an example to us all that he had already acquired a love for others who were having difficulty. Percy passed away quietly in his sleep on Tuesday morning.

Our sympathy is extended to Betty and their family at the passing of "nature's gentleman" — he will be sadly missed by all his amateur mates.

Rick Fletcher, VK26KV

HARRY ROBINSON VK5HN

Harry VK5HN passed away suddenly on 12th May, 1983.

He was employed by the South Australian Fire Brigade in 1923 and was attached to the St John Ambulance Brigade as a driver and attendant. (In those days the ambulance was operated by the fire brigade.)

Harry joined the Brigade a few years before a fire aboard the ship "City of Singapore". This fire caused an explosion which resulted in three of Harry's firemen friends being killed.

It is said that if II were not for Harry's expert medical attention to others at the fire scene, the death toll would have been much higher.

Harry joined the ranks of amateur radio in the late 30's and was working at the art less than seven hours before his death.

He took great pride in his "radio career" and was always ready and willing to assist the "youngsters" of the amateur fraternity.

He will be sadly missed.

R GIL VK5NVM

BERT BEHENNA VK5BB

Bert VK5BB passed away on 8th July after a long illness. He was 65.

Bert was licensed about 1947 and was active on the bands until two years ago.

He had been a RAAF pilot and also worked at the Port Pirie Radio Station, 5PI, for many years.

Sympathies are extended to his wife and six surviving children.

Jenny Warrington, VK5ANW

W B (BILL) JOHNSON VK5AWJ

Bill became a silent key on 25th June, 1983. He came from New Zealand thirty years ago, where he had held the callsign ZL4HT and ZL2VO, and became VKSF2 for a time and then his licence lapsed until 1976 when he became VKSAWJ.

This callsign became familiar on HF and VHF — you could hear it most mornings "hand held, walking the dog in Vale Park" or else booming out on twenty metres, amplifier, monobander and all.

More recently Bill was seen and heard on Amateur Television, but only in the daytime, although his operating from home was restricted for the past year due to him being hospitalised in June 1982. He managed to get home for a few precious hours, several days each week.

These were the times he loved best — talking on air with his friends.

Most knew that it was only a matter of time, but his cherty voice and manner belied his terminal illness.

In fact the medical and nursing staff at the hospital admired his courage in his day to day living and agreed that his fascination with amateur radio was a major factor in his ability to cope with his ever increasing medical problems.

Bill continued to operate on two metres from hospital and, just the day before he died, was talking on the repeater arranging to send a cheerful message to friends in New Zealand.

For Bill the end was peaceful and dignified and although he will be missed by his many friends it is comforting to realise that, at last, his troubles are over.

Chris, VK5PN

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WANTED — NSW

AMATEUR RADIO, September 1983 — Page 63

Please note that all copy for November AR must reach PO Box 300, Caulfield South, 3162 no later than 23rd September.

Deadline

All copy for November AR must reach PO Box 300, Caulfield South, 3162 no later than 23rd September.

Hamads

Please note: If you are advertising items for sale and wanted please write on separate sheets, including ALL details, eg Name, Address, on bottom. Please write copy for your Hamad as clearly as possible, preferably typed.

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It is with deep regret we record the passing of —

A F Graydon VK2AIS

AMATEUR RADIO, September 1983 — Page 63
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Advertisers' Index

Amateur Radio Action IBC
ATN Antennas 63
Audio Telex Communications Pty Ltd 4
Bail Electronic Services 7
Cherrins Electronics Pty Ltd 62
CW Electronics Pty Ltd 6
Dick Smith Electronics 2 & 3
Eastern Communication Centre 10
Emtronics IFC
GFS Electronic Imports 32 & 33
High Technology Computer Components Pty Ltd 8
Magpubs 19 & 44
KBrucesmith 6
ICOM Australia Pty Ltd BC
Ian J Truscott Electronics 54
Hy-Tech Distributors 47
Hy-Tech Distributors 11
Northern Antenna Services 6
Quartz Crystal Laboratories 63
Radio World Pty Ltd 5
Stewart Electronics Components Pty Ltd 8
Trieur Distributors (NSW) Pty Ltd 8
Trio Kenwood (Australia) Pty Ltd 55
Vains Antenna Services Pty Ltd 59
Watchman Electronics 8
Williams Willis & Co Pty Ltd 59
Williams Printing Service Pty Ltd 59

Page 64 — AMATEUR RADIO, September 1983
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AMATEUR RADIO

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VOL 51, No. 10, OCTOBER 1983

Gavin VK3YK, WIA Secretary in 1933, peruses the first copy of AR as he ponders the advances of AR and the hobby over the past 50 years.

DEPARTMENTS
A word from your Editor .......................... 10
Advertisers Index .................................. 80
ALARA .................................................. 56
AMSAT AUSTRALIA .................................. 60
Awards — Paraguay, Cagou, SWL, Malta & Premier Town Awards .... 52
Book Review — New Call Book, 70 Years of Valves ............. 51
Club Corner ........................................... 26
Contests — Contest Champion ....................... 65
Education Notes ..................................... 46
Eight-Fifth Wave ...................................... 70
Forward Bias .......................................... 68
Hamads ................................................ 79
Here's RTTYI ......................................... 57
How's DX ............................................. 42

ARTICLES
A 70 cm Base Station Antenna by late Nev Fenton VK2BQ .................. 21
Golden Jubilee by Jim Linton VK3PC .................................. 12
Hey-Day of Home Brewing ........................................ 53
Jamboree on the Air by Jim Linton VK3PC .......................... 12
Jamboree on the Air by Peter Renton VK4PV ......................... 27
Message from the Minister for Communications ......................... 9
Mod for IC22S by Keith Heitsch VK4AHK .......................... 18
New Game — What's my Callsign? ................................. 75
Old Timer, Old Rig ...................................... 25
Pioneers of Amateur Radio in Australia by Maxwell Hull VK3ZS ........... 28

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Material should be sent direct to PO Box 300, Caulfield South Vic. 3162, by the 25th of the second month preceding publication. Phone: (03) 528 5962. Hamads should be sent direct to the same address.

International News ........................................ 36
Intruder Watch ......................................... 50
Ionospheric Predictions ................................... 76
Letters to the Editor ................................... 74
Listening Around ....................................... 49
Magazine Review ....................................... 48
National EMC Advisory Service ......................... 64
Obituaries — VK4BJ, VK2APV, VK22L, VK4FP ........... 78

Pounding Brass ......................................... 62
QSP ..................................................... 50 & 59
Silent Keys — VK5BB, VK7GW ......................... 78
Spotlight on SWLing .................................... 83
Thumbnails Sketches — VK2BWD, VK4YF, VK4ADJ ... 74
VK2 Mini Bulletin ...................................... 68
VK3 WIA Notes ....................................... 69
VK4 WIA Notes ....................................... 71
WA Bulletin & the answer to RR ......................... 72
WIA News — Log Book Keeping & 50 year Callsigns ....... 74
VIC WICEN News ..................................... 59

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AMATEUR RADIO, October 1983 — Page 1
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Dear Mr Bathols

It is with great pleasure that I congratulate the Wireless Institute of Australia on the Golden Anniversary of the Institute's magazine - Amateur Radio.

Since its inception, the magazine has contributed significantly to the technical and social needs of WIA members, and indeed, to the Amateur Service as a whole. I believe that it must be a matter of considerable pride to the WIA that the high standards initially set by this publication have been so consistently maintained over such a long period of time.

The magazine has always most generously provided a forum for dissemination of Government policies and I would like to take this opportunity of expressing my appreciation of the willingness with which the WIA has provided this service to the advantage of both my Department and the Amateur community. Since becoming Minister for Communications I have been particularly impressed to observe the cordial relationship which exists between the Institute and my Department's Radio Frequency Management Division.

It is indeed no mean feat for a publication of this nature to have provided the service it does so well to its members for half a century. I wish the magazine well in its role as a continuing source of information for the Australian Amateur and trust that its next half century will be as successful as that of the past fifty years.

Yours sincerely

Michael Duffy
This is the Golden Jubilee issue of Amateur Radio magazine. Amateur Radio magazine has now been published for fifty years.

Many changes have taken place over the years, changes in both the magazine and also in our hobby of amateur radio.

Whilst the technological changes have been great, the basic aims of the amateur service have remained the same. The technological changes have opened up many new areas of interest to the enthusiast.

Amateur Radio magazine production has evolved and this magazine is now the result of these changes. The technology of magazine production has moved forward at a similar rate as our technology advances and in many instances uses the same technology advances that have given us the amateur radio equipment of today.

Both the hobby of amateur radio and Amateur Radio magazine depend on the work of the enthusiasts who carry on with the basic aims of the Amateur Radio Service.

Happy Jubilee AR — and long may you continue to serve the members.

Gil Sones, VK3AUI

WITH THE PRESIDENT

It is good to receive some correspondence from members in respect of some of our editorials, it just goes to prove that there are some readers out there taking an interest in what is going on.

A letter from Syd VK3 ASC suggests my calculations of escalated costs of amateur equipment may have been incorrect in respect of the thirty percent tariff duty. I initially stated prices will escalate to forty to forty five percent above current retail prices (see August AR, P8). This figure was arrived at during informal discussions with some of the importers, however, on paper anyway, Syd is certainly correct.

Assuming all stages from importers, landed costs through to wholesale and retail distribution carry a mark up profit margin of twenty five percent, then the end user price should only be a twenty seven to thirty percent increase on current retail prices. This is still far too much, yet if my information is correct, certain 'hidden' costs could be added to the final selling price.

Perhaps the trade should take a warning, amateurs are prepared to be hit over the head, and pay their fair dues, but stamping us into the ground at the same time, could be just the straw to break the camel's back.

RD CONTEST

The VK5 division has raised a query from a member in respect of anomalies with the 1983 RD Contest rules. The major point in question was the rule change to exclude an operator running two separate stations simultaneously, that is, using his/her own callsign for one station, and a club callsign for the other.

I believe Reg Dwyer, our contest manager, has acted quite correctly with this one, by not allowing credit to be given in such cases.

Fair crack of the whip fellows, that is a case of wanting your cake and eating it too!

If operators are desirous of such activity, there is no objection to splitting your time between the two callsigns. Say, four hours with the club callsign, then four hours with your own, but not both together. What do others think?

GENERAL

Members might like to know that there is quite a lot of activity going on behind the scenes at the moment (as is always!).

After going through panic stations with the twenty eight percent tariff duty increase, which by the way is not settled yet, but we are working on it with some light at the end of the tunnel, we still have the new Radio Communications Bill to contend with. We are hopeful the Bill will have been tabled in Parliament by the time this item appears in print.
Much has been said about the Bill in this and other publications. Providing it gets through the politicians without too much alteration from its final draft form, we can expect far greater activity in respect of the policing of some illegal operations. Sales of equipment to unlicensed persons are being tightened up, and a general cleaning up of some of the anomalies associated with the old W and T Act. In many cases, the Bill will benefit the Amateur Service as a whole, but the odd individual who doesn’t toe the line now, is going to discover that the Department actually does have some teeth, and is prepared to use them.

SCANNERS

A hot issue at the moment revolves around scanning receivers. Various points have been published in the daily media. We are all a bit in the dark on this, as on one hand there is extreme pressure from law enforcement agencies and Telecom on the Department to ’do something’, yet on the other hand, there are countless thousands of scanning receivers in use by the general public. It puts the Department into quite a dilemma, doesn’t it?

It seems a pity that the horse is now eight furlongs down the straight, yet now we discover the starting gates are to be closed.

This tiger will attack if its tail is pulled hard enough, so how does one regulate a system which is virtually unregulatable? The short answer is — you can’t!

Our ancient laws and customs regulations are not keeping pace with today’s technology. We would like to suggest that some measure of protection could be given to those requiring privacy of radio communications, by installing scrambler systems immediately. Do the job properly too, and outlaw today import of scrambler detection devices, and put them under strict Government control, before some enterprising company starts to bring them into this country by the truck load.

The place to stop it is at the import stage, not after it has been landed and sold.

Ban publication of circuits of these devices in the name of National Security.

These types of measures must be taken immediately. There are too many examples of imported electronic equipment coming into Australia first, before the consequences of some have been realised.

Think first, then act, so that we amateurs can get down to running our hobby, as it should be, without political intervention.

HAPPY BIRTHDAY AR

This month starts the beginning of the second Golden Jubilee in the production of Amateur Radio magazine.

The first issue of Amateur Radio was published in October 1933. Please see Jim Linton’s special article printed elsewhere in this issue.

Perhaps most of our younger amateurs will still be around in October 2033, to see the Centenary issue.

How rapidly we have expanded in the past fifty years, and each day brings a new development in technology.

Wouldn’t it make an interesting prophecy to look into the future, to see what develops?

I guess myself and many others like me will be able to look down from the Ethereal Shack, perhaps we might say — “I still reckon tubes do a better job!”.

Happy 50th, AR.

Bruce R Bathols, VK3UV
WIA FEDERAL PRESIDENT

LOG BOOK KEEPING

As a result of negotiations between the Institute and the Department of Communications concerning log keeping requirements for amateurs.

The Department has advised the Institute that in accordance with the provisions of Wireless Telegraphy Regulation 31 (t), the following changes to the conditions governing log keeping by Australian amateur stations have been authorised:

Log keeping shall be optional, provided (a) every amateur station shall have a log book available in which to record distress and emergency traffic. In the case of a network carrying emergency traffic, a log shall be kept by the control station. (b) a log shall be kept by an amateur if requested to do so by an officer of the Department of Communications.

It is important to note that club stations are still required to maintain a log of all transmissions in accordance with the format detailed in Para 6.11 and Appendix 15 of the Amateur Operators Handbook.

Suitable log books are obtainable from your division or Magpubs.

PHONE PATCHING

Mr Peter Thomas of Telecom Australia has released guidelines on phone patching in this country, which includes the amateur service.

Mr Thomas stated that Australian radio amateurs would be able to use approved phone patch equipment that was wired in place by Telecom.

Further details of this arrangement may be obtained from Telecom Headquarters and November AR.
On the outbreak of hostilities AR was saved from death by another group of radio amateurs which nurtured the magazine through most difficult times.

It survived and soon after the war reached adolescence, blossomed into adulthood, weathered the times of change and in 1983 has attained a maturity that should see it around for as long as the hobby of amateur radio exists.

In researching this article it became clear that one man can be rightly described as "The Father of AR" — Harry Kinnear (ex VK3KN now VK4AVJ).

Later in this biography of AR Harry's own recollections of the early days are reproduced in his words — but now let us have a look at what others have to say about the magazine.

HOW DID IT ALL BEGIN?

Bob Anderson VK3WY, Assistant VK3 Divisional Secretary 1930-33 and Secretary 1933-47, remembers that there used to be a roneoed publication of a few pages put out by Cedric Searl, late VK3ARK. Bob said this publication was done in a humourous style and in his opinion it could not really be called a forerunner of AR. "When it stopped being produced it gave a glimmer of the idea that a magazine was desirable. A magazine was talked about at meetings a number of times." He said those on the VK3 Divisional Council gave it much thought and a lot of hard work was carried out by Harry Kinnear, Vaughan Marshall, Bill Gronow and himself.

Bob said: "The financial aspect gave us a worry. Various ideas and thoughts were pooled and we worked out that it could be done.

"The main theme in the back of our minds was that the ARRl was centred around QST, the ARRL journal. It was felt we should do the same thing in Australia."

He said a magazine was seen as desirable for its Public Relations value. "We thought it would help keep the Institute together and get publicity for the Institute.

"Over the years, prior to 1933, it was felt that amateur radio in Australia could do with Public Relations. There were some stories in the daily papers, but the hobby was not generally taken seriously.

"There was a weekly column in Listener In about amateur radio. But it was thought a magazine would do more for the hobby and bring other amateurs into the Institute."

COMMITTEE MEETS TO DESIGN THE COVER

The first cover design was decided at a meeting in the home of Bill Sones who was involved in WIA activities and was a Vice-President on the Victorian Divisional Council. Those who attended this historic meeting in 1933 were Bill Gronow VK3WG and Vaughan Marshall VK3UK.

Bill Gronow, VK3 Divisional President 1935-41, Federal President 1939, 1947-50 and 1954, recently recalled: "Bill Sones was not an amateur, he used to write a page on shortwave listening matters for Listener In."

"He was interested in the setting up of the magazine and had quite a bit to do with the Council discussions on it, but I don't think he took any actual part in its preparation because of his connections with Listener In."

The magazine committee for the first edition was editor Harry Kinnear, sub-editors Bill Gronow, and Vaughan Marshall. When Bill Sones stepped out of AR affairs Jim Marsland, late VK3NY, joined as committee secretary.

Bill Gronow said: "Harry and I did most of the advertising selling — but it got too big for us and we couldn't cope.

"When printing of the magazine was transferred from Wilke & Co to Elsom Printing Company, in 1934, Elsom took over the advertising selling."

Bill Gronow became editor in 1936, a position he held until January 1941. Enlistment in the RAAF of most of the magazine committee and with the Victorian Division unable to continue publication the February 1941 issue did not appear.

A new committee was formed and AR was resuscitated with a war-time hand duplicated issue until September 1945.

The war-time committee included Tom Hogan as editor, Jim Marsland and Herb Stevens VK3JO, VK3 Divisional President 1941-45.

It was the job of Herb to have the names and addresses written on the AR wrappers and bundle them up for the divisions to distribute.

Reaching back into his memory he recollects: "The first issue during the war-time was the worst, none of us had been completely familiar with a duplicator."

"We had to sort out the good copies from the spoilt ones — believe me there were plenty of spoils."

"It was quite a time-consuming problem. Some of the committee had a conference with the representative of the duplicator firm to see if things were being done right."

Anyone who has used the type of duplicator used by the committee knows all too well that spoils are a fact of life.

Herb said everyone involved with the wartime AR felt it was important to keep the magazine going.

He said: "The magazine was particularly important during war-time when membership dwindled, people were away at war, and we saw it as a way of keeping in touch."

"We couldn't communicate by radio. A nucleus kept it going with the feeling that at the end of the war there would be renewed interest and with a magazine helping to get things going after the war."

"It let those overseas know that the WIA continued during the war. Those in the services who received it appreciated notes about fellow amateurs in the services and what they were doing."

"One had to be careful because of censorship, and not say exactly whereabouts overseas they were."

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I wish to enlist in the Royal Australian Air Force as a Wireless Operator. My age is ; I hold the A.O.P.C. and can send and receive at w.p.m.: I am available for immediate war service. Signed. Address

Date

Page 12 — AMATEUR RADIO, October 1983
The magazine kept the spirit of the hobby alive, despite the officially imposed radio silence, and united amateurs in a determination to get back on air at the end of the war. Just try and imagine printing about 600 copies of AR, wrapping, addressing and posting them, all by hand.

The war-time issues had up to sixteen pages and to fill the pages must have been no easy task — remember that there were no active radio amateurs because their equipment was compulsorily put into sealed boxes.

The widow of Jim Marsland, Mrs Elva Marsland remembers vividly the production of the war-time AR on a hand-operated duplicator at her home in Camberwell.

She said her late husband and the others took two consecutive Saturdays a month over the following years, but every issue had something for everyone.

Up until February 1972 the Victorian Division of the WIA produced the magazine and for reasons including the financial burden it imposed, AR was handed over to the Federal Office.

The person who would have had the longest direct association with AR is Ron Higginbotham VK3RN.

He helped with the war-time issues before joining the army. After the war he renewed his association by doing the linotyping for the magazine from 1947-49, being a line operator at the printing firm — The Richmond Chronicle.

In mid-1949 The Richmond Chronicle took the printing of the magazine with Ron doing the work.

He was a member of the WIA publications committee 1947-64 and The Richmond Chronicle continued printing AR up until March 1973.

Ron said the war-time AR ensured that the magazine returned to normal printing after the war and that was what those involved with the war issues were hoping.

He is in a unique position due to his long association with AR to be able to comment with authority on its troubles and development over the years.

Ron said it is an essential item to have a house journal, particularly these days because there are so many facets of the hobby.

He said: “Finance was one difficulty and the Federal Convention wouldn’t give more money to help with AR production.

“There were many requests over the years from members to improve the paper quality from the newsprint it was printed on.”

“Advertising revenue increased allowing the quality of paper to progressively be improved to an art quality.”

First came the war surplus disposals gear which was extremely useful to radio amateurs and of a quality and price that could only have been dreamed of before the war.

There were transmitters, receivers, transceivers, ATU’s, and a wide range of bits and pieces easily adapted for amateur purposes.

Then later there were commercially made items aimed at radio amateurs such as the Geloso VFO’s, Geloso receivers and transmitters.

The real “black-box” age started with the Swan and Galaxy transceivers that appeared in various models. Eddystone receivers, Johnson Matchbox ATU’s, Johnson transceivers and then came the now familar Yaesu transceivers.

Not only AR revenue from advertising was helped by not only AR revenue from advertising was helped by the “black-boxes” according to Ron, but those amateurs off the air had their interest in the hobby “re-kindled” after reading about the commercial gear.

However the “black-boxes” had an adverse effect on AR with a downturn in technical articles because amateurs were just not building things.

Ron is a WIA Life Member, and on his retirement from the Publications Committee in 1964 the committee decided, in recognition of his long service, to rename the Editor’s Award for the best technical article — The Ron Higginbotham Award.

The scope of this award has changed since to reflect a downturn in the number of technical articles being supplied to the magazine.

THE MAGAZINE IN THE 1980s

Since 1972 the magazine has been under the full control of the WIA Federal Body. Those who have kept a close watch on our...
When advertisers have placed advertisements for CB radio and have written to the editor with their complaints.

Obviously those who put their complaints in writing feel that AR magazine is only for the hobby of amateur radio.

The letters to the editor help the editor keep in touch with readers’ views and their worthy ideas are reflected in the magazine.

Bruce said the magazine’s most popular section is the Hamads with many WIA members reading them before looking at other pages.

The VHF Notes, How’s DX column, and other regular pages also have their following, but as is usual with publications the editorial comment would be the last or least read.

The magazine has an important role that must WIA members are not aware of — getting the message into the hands of non-members.

AR is sent on a reciprocal basis to the radio societies and bodies in about forty countries, including NZART, RSGB and ARRL.

It also, within Australia, reaches into government departments and private enterprises in the communications field. Libraries and technical schools also subscribe to the Institute’s journal.

THE FATHER OF AMATEUR RADIO MAGAZINE

On researching this article it was the consensus among those involved in the past history of the magazine that one person could rightly be described as the father of the Institute’s journal.

Harry Kinnear, VK4AVJ, VK3 President 1934-36, 1943-47, Federal Vice-President 1953, was AR editor for 1933-36.

This month he is given the highest recognition available from the WIA — HONOURARY LIFE MEMBERSHIP.
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Advertising 1960 style.

AWA were regulars — and very generous with their donations of equipment, particularly hi-voltage triodes. These were of course prizes in the various competitions we ran.

One hardware firm, Thos Warburton, at our request stocked and advertised hard-drawn "stretchless" copper antenna wire, and next door to them was Warburton Franki, Bill Gronow was in charge of their Weston Meter sales. His company Zephyr Products was later to be a very good advertiser.

I had the honour of ultimately being President of VK3 Division. We had our meetings in the large lecture room at Melbourne Tech, with full houses quite frequently and plenty of heckling from the back benches.

How I would like to be back on the air again for a matter on old times. But to go on the air in these modern times and get involved in technical discussions, as we used to, would be a real hassle.

I wish you every success with the AR fifty years story.

Harry Kinnear

ACKNOWLEDGEMENTS: The following people have helped the author with this article — Bob Anderson, Bruce Bathols, Peter Dodd, Gavin Douglas, Bill Gronow, Ron Higginbotham, Max Mull, Harry Kinnear, Vaughan Marshall, Mrs Elva Marsland, Ken McLachlan, Herb Stevens, Barry Willton.
For some years I have used a panoramic adaptor and a 'home-brew' cathode-ray-oscilloscope originally with a FT200 and currently with a FT101Z. A panoramic adaptor converts a standard cathode-ray-oscilloscope to a basic spectrum analyser to sweep a given frequency range above and below that to which the receiver is tuned. Each signal within the sweep range will produce a pip on the screen and if correctly adjusted, will enable the operator to determine quite accurately (within a few kHz) the areas of high activity or perhaps a clear frequency to which it may be desirable to QSY. The height of the pip will also give an indication of the strength of the signal.

The basic requirements for the oscilloscope is a low frequency response (DC coupled) and a slow time-base. Oscilloscopes currently selling for under $200 are quite acceptable for use with the panoramic adaptor.

The circuit is not original and was first published by ZL3SW some years ago in Break-in. No claim was made by ZL3SW for originality and due credit was given to ZL3AA, ZL2AMJ and Electronics Australia for help and circuitry.

Circuit

Two MPF102 field effect transistors are connected as a source coupled oscillator. A BA102 diode capacitor and a 100 k potential-meter forms a horizontal shift facility to allow centring of the display. A second BA102 receives a sweep voltage from the time-base output of the oscilloscope thus varying the oscillator frequency at the sweep rate. Variation of sweep width (frequency width scanned) can be obtained by adjustment of the 10 k cermet trim-pot.

Output from the oscillator is fed to the source of another MPF102 and is mixed with the IF output from the receiver to obtain a 455 kHz IF signal. This 455 kHz signal is passed through a filter using Murata SFD455D dual ceramic resonators which are top coupled with 47 pF capacitors.

The output from the IF filter is amplified by the CA3028A, detected and the resultant DC output fed into the vertical amplifier of the cathode-ray-oscilloscope. Since the oscillator frequency is a function of the sweep voltage, the horizontal axis of the oscilloscope may be calibrated in frequency as shown in Figure 2.

Components

All components are readily available with perhaps the exception of the IF transformer. A suitable transformer may be obtained from an old transistorised radio. The printed circuit board allows for a transformer in the TCF series which were very popular some years ago and a hunt through the junk box may be worthwhile. These transformers were num-
bered 307A (yellow slug) 307B (white slug) and 307C (black slug) all of which are quite satisfactory. Note that the TCF 308 (red slug) is an oscillator coil.

The input and oscillator coils of the panoramic adaptor are wound on small ferrite toroids. The original used 9.5 mm Philips (magenta coloured) toroids and some manipulation of turns and shunt capacity may be required depending on the toroids used and the IF frequency of the receiver.

For an IF frequency of 9 MHz, the oscillator coil requires about eleven turns of 0.455 mm (25 B & S) with no extra padding. The input coil requires about twenty turns of 0.36 mm (27 B & S) and a 22 pF capacitor across it. The primary winding consists of two turns of hook-up wire. The wire size is not critical, but the windings should be spread out evenly around the toroid.

Printed Circuit

The reproduction of the printed circuit board should be well within the capability of most constructors and an excellent finish can be obtained by using rub-on dots and a resist pen. Figure 3 shows the full size layout.

For those readers attempting the manufacture of a printed circuit board for the first time, the following hints may be found useful.

1. Cut the copper laminate to size.
2. Smooth the edges with emery tape and polish the copper with steel wool.
3. Attach a photo-copy of the PCB pattern to the copper side of the board.
4. Carefully centre punch the board (an automatic centre punch is ideal) and drill the holes using a number 72 drill. Before removing the paper from the board, check that all the holes have been drilled by holding the board up to the light.
5. De-burr the holes using a slightly larger drill. Be careful not to take off too much copper.
6. Thoroughly clean the copper to remove greasy finger marks and tape copper side up to a solid surface such as a drawing board or table top. Make sure that the tape does not interfere with the pattern.
7. Rub on and burnish the dots. Rub-on lettering may also be used to add a touch of individuality such as your callsign.
8. Using a small steel rule and with only one corner touching the board, carefully complete the pattern with a resist pen. Make sure that the pen is held vertically if fine lines are to be obtained.
9. Check for errors. Unwanted lines may be removed with the aid of a sharp knife and a ball-point pen eraser.
10 Allow a few minutes to dry the resist before etching in Ferric Chloride.

11 Finally remove the resist with white spirit, give the board a final polish with steel wool and then spray with one of the available PCB lacquers.

Initial Adjustment

Some patience is needed to initially set up the panoramic adaptor, but the following procedure should be followed.

Connect the unit to the receiver, oscilloscope and a 12 volt supply. Set the gain of the oscilloscope vertical amplifier to about half, the sweep rate until the trace just starts to flicker like a 1920 movie and the AC/DC switch to the DC position.

Tune the receiver to a strong signal on a band where there is not too much activity. This makes identification of the signals on the panoramic display much easier. With the 10 k sweep potentiometer and the centring control set to mid range, adjust the oscillator frequency until the signal being received is at mid scale on the oscilloscope. Adjust the slug of the IF transformer to give maximum pip height.

Once the pips have been obtained, each control may be carefully adjusted to obtain the required frequency coverage and pip height. Some adjustment to the resistor values in the sweep control circuit may be necessary depending on the sweep voltage obtained from the oscilloscope and the scan width required.

Component List

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<tr>
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<th>Notes</th>
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SEMI-CONDUCTORS

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</tr>
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</tr>
<tr>
<td>470k</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100k</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
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<td>1 250uH RFC</td>
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<tr>
<td>455kHz IF*</td>
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INDUCTORS

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</thead>
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</tr>
<tr>
<td>1 455kHz IF*</td>
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</table>

FILTERS

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</thead>
<tbody>
<tr>
<td>3 SFD455D</td>
<td></td>
</tr>
</tbody>
</table>

FINALE

Since the oscillator in the panoramic adaptor is self excited, some drift will be noticeable. My unit requires about ten minutes to settle down after switch on with a total drift of about 50 kHz. Most of this drift occurs within the first minute or so of switching on.

If the unit is connected to a receiver not having provision for a monitor, two things will have to be considered. Firstly the output from the receiver must be obtained before the IF filter. Secondly, some anti-AGC circuitry must be used so that the signals don't disappear as they are tuned in. It would appear that at least the FT101Z has such a circuit and no doubt other transceivers also.

After using the panoramic adaptor for a time, one is able to identify signals within the sweep range as unmodulated carriers, CW, SSB, RTTY or even that friend who may frequent the band regularly — and all without tuning.

Once one becomes accustomed to using a panoramic display, one feels somewhat at a loss without it — a little like losing the digital readout. So give yourself a treat and build a panoramic adaptor this weekend.

Notes

1 Notes on a Panoramic Monitor — W. Whitehead ZL3SW — Break-in (date unknown).

2 A range of resist dots are available from Ellstronics — Melbourne.

MODIFICATION OF “SIMPLE FREQUENCY SELECTION FOR THE ICOM IC22S”* to allow for LED Display of Channel Switches Operated

Keith Heitsch, VK4AHK
67 Oleander Avenue, Scarness, Qld

This LED readout is in use by the author and has proved to work very well. The LEDs have no detrimental effect on normal of the 22S as they are in opposition to the channel diodes.

Also, as suggested in AR*, March 1983, page 15 R141, 15 ohms in the 22S be replaced with a half watt, or even a one watt type resistor if it can be fitted in the space, to give more current reserve to carry the LED’s extra load on the regulator.

The LEDs are mounted above the switches on the original panel of VK2AKY’s.

References:

A preprogrammed keyer was required for two six metre DX operations. These were the stations on Macquarie Island, VK0AP, and Heard Island, VK0HI, which were set up to activate these rare countries on six metres. The VK0HI keyer has been sent to VK9ZS Willis Island along with the FT680 courtesy of the VK6 DX Chasers Club.

The circuit given is a simple use of a memory device known as an EPROM. EPROM stands for Electrically Programmable Read Only Memory. These devices may be programmed electrically. Later on the type used may be erased by exposure to intense ultraviolet light.

The EPROM used is relatively cheap and is available from many sources. Some of the devices used in the development of this project were obtained from MacGraths in Melbourne.

During the development of the circuit a CMOS equivalent of the EPROM became available. This equivalent was obtained from National Semiconductor and had the type number NMC27C16Q. These CMOS equivalents have a much reduced current drain.

A standard 2716 memory can easily sop up 100 milliamps at 5 volts. For those readers unfamiliar with the labelling used by integrated circuit manufacturers the figures 2716 are not the whole type number. For example the same device was labelled by one manufacturer as MK2716 and by another as MB2716.

The CMOS memory used in the same circuit dropped consumption to around 10 milliamps from the previous 50 to 100 milliamps.

Another possible benefit of a CMOS memory is the ability to have either TTL output or CMOS output. This would have enabled the transistor Q3 used as a buffer to be dispensed with.
Memory in the EPROM is arranged as 2048 words of 8 bits each. The address of each word is a binary number applied to the address lines A0 through A10. Each word is used as a basic unit in the message stored. It may represent key up or key down for the time of one dit or one space. A dah or a longer space is obtained by using a number of these basic units. Due to the size of the memory quite a long message can be stored.

If switching were employed a number of messages or a much longer message could be accommodated.

An auxiliary output was provided which was used to activate a 10 metre receiver on Heard Island. This could be used to operate the PTT line.

The rigs used in both operations were FT680s which are keyed into transmit and hold between characters. Additionally on Heard Island a TS660 was available and this was memory switched to monitor 28.885 MHz during the keying cycle.

The circuit works as follows. The switch turns the keyer on by placing +5 volts on one gate of ICIA, which sets the clock oscillator in operation, and also on both inputs of ICIB which invert this to zero or ground which is applied to the enabling pins of the EPROM.

The EPROM program is the heart of the keyer. The information contained in the EPROM consists of a series of words of 8 bits. Five of these bits are not used. Three bits are used and these contain Keying Information, PTT or Auxiliary Information, and the Reset bit. These may be programmed manually, as binary information, but if you use any sort of programmer then Hexadecimal will be needed particularly for address information. Most of the manual programmers use Hex for the addressing.

<table>
<thead>
<tr>
<th>Output Function</th>
<th>Memory Words — Binary</th>
<th>Memory Word</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receive</td>
<td>0 0 1 0 0 0 0 0 0 0</td>
<td>4</td>
</tr>
<tr>
<td>Tx Key Up</td>
<td>0 1 1 0 0 0 0 0 0 0</td>
<td>6</td>
</tr>
<tr>
<td>Tx Key Down</td>
<td>1 1 1 0 0 0 0 0 0 0</td>
<td>7</td>
</tr>
<tr>
<td>Reset</td>
<td>0 0 0 0 0 0 0 0 0 0</td>
<td>0</td>
</tr>
</tbody>
</table>

Output O0 is the Key. Output O1 is the PTT or Auxiliary Output. Output O2 is the Reset.

The clock oscillator starts IC2 counting. IC2 is a divider. IC2 has been held reset during the off period by the +5 volts applied to its Reset. When the EPROM is enabled the output turns Q3 on and holds Q3 on for the duration of the message. A reset at the end of the message is achieved by programming an O or low output into the appropriate bit of the end of message word.

IC2 is a rather large divider as it has the capacity to divide by 2 to the power of 14. The divide output is brought out in binary form and is used to address the EPROM sequentially. Unfortunately not all the outputs are brought out in the sequence but by choosing outputs a suitable address sequence can be obtained. Outputs corresponding to divisions of 2 to the power of 4 to 2 to the power of 14 were used. The clock oscillator runs at sixteen times the dit speed.

The clock oscillator uses a Schmitt NAND gate. One gate is used for control and the second is used for the oscillator.

The keyer was constructed on double sided printed circuit board. One side was used as an earth plane. Each IC was bypassed and ferrite beads were used on each transistor base lead. These measures were taken to avoid EMC problems when operating close to a transmitter.

The EPROM needs to be programmed and this can be a real problem. You can build a variety of programmers and you could buy a programmer. However for just one IC this is not very practical.

If you have access to a programmer then you will have no trouble. However for those who must have the EPROM programmed arrangements have been made to have this done. GFS have agreed to arrange EPROM programming. This must of necessity be on a quotation basis. GFS may be contacted at PO Box 97, Mitcham, Vic 3132 or by phone on (03) 873 3939.

The author wishes to thank VK3GJ, VK3NM and VK3AUQ for their assistance in developing and producing these keyers for VK0AP, VK0HI and VK9ZS.

---

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**CQ, CQ — de VK2BVS Pedestrian Mobile.**

by VK2EBM

Page 20 — AMATEUR RADIO, October 1983
A 70 CM BASE STATION ANTENNA

The late Nev Fenton VK2ZBQ

With 70 cm now well established as a reliable and TVI proof band, mobile and net operations are becoming increasingly popular. The growing number of base stations separated by kilometres calls for the antenna system to have some gain, gain usually means dollars.

The 70 cm base station antenna has the following features: low cost ($20) less the Co-Ax; bolts securely to an existing mast, tower or the fence; good wind resistance (has withstood 60 km gusts at this QTH); construction and tuning, a piece of cake, (if the dimensions given are carefully followed, should perform with maximum efficiency); light weight (less than 3 kg); easy to handle (has been roped to the car roof-rack for portable operation at razor back and hilltop and then bolted to a fence).

Sid VK2NQ did all the construction and tuning. Field testing was carried out from this QTH and other locations.

MATERIAL REQUIRED
Brass Rod. 4370 mm x 3 mm diameter or six brazing rods.
Copper or Brass Tube 229 mm x 6 mm diameter.
Pine Stand Off. 1.5 m x 13 mm diameter.
Support Mast. 4.2 m x 38 mm x 38 mm. Pine or any light straight grained timber.

TECHNICAL DESCRIPTION
Type, omni-directional, co-linear, gain, around the 6 dB mark.
Radiators. 6 x 5/8 wavelength.
Phasing Sections. 3 x ¼ wavelength.
Phasing Sections. 2 x ½ wavelength.
Matching Section. ¼ wavelength.
Feed Point "Z" = 200 ohm, 4:1 Balun, 50 ohm line.
URM 67 or better, preferred.
SWR at 433.025 MHz = 1:2; at 438.025 MHz = 1:1; at 439.00 MHz = 1:25.
DIGITAL INSIDE/OUTSIDE THERMOMETER — A Weekend Project No. 2

This project is based on the versatile RS3-1270 Digital Thermometer/Controller integrated circuit. When used in conjunction with a thermistor and either a LED or LCD display, the RS3-1270 forms a complete unit suitable for temperature measurement and control applications.

As well as the digital display, two control outputs are provided. One output operates when the temperature reading is higher than the set-point and the other when the reading is lower than the set-point. The set-point and the hysteresis above and below the set-point can be programmed by a diode matrix and it is suggested that the data sheet be consulted if it is intended to use this function.

A power failure detector is incorporated on the integrated circuit. If power to the chip is removed for longer than a specified time, the initial reading at restoration of the power will be retained and the display will flash at about 1 Hz. To use this function, link 'A' on the printed circuit board should be replaced with a re-set button. Greater delay times may be obtained by increasing the value of the capacitor on pin 10.

The measurement and control range provided, is from -399 to +399 with the option of the decimal point in any position. In this application, the maximum temperature limit is +39.9 degrees Celsius above which, over-range occurs. This condition also causes the display to flash at about 1 Hz. The numeral which flashes on over-range must be added to the 39.9° (40°) to obtain the actual temperature. Used as an inside/outside thermometer, the flashing over-range indication simply says "Oh brother — ain't it hot".

**Circuit**

Depending on stability requirements, the clock oscillator may be operated with a RC network, a LC network, or by injecting an appropriate signal into the IC. A RC network was chosen to obtain a clock frequency of about 560 kHz.

The chip provides output for a three digit LED or LCD display. In this application, I have opted to use a two digit LED display with the 'tenths' digit mounted on the main PCB — this digit only being required for initial setting up. Temperatures below 0°C will be indicated by the decimal point being illuminated via pin 40. The diode connected between pins 2 and 9 inhibits the LCD backplate waveform when the LED display is used.

Separate 'set zero' and 'set full scale' trim-pots are used and switched together with the respective thermistor by a 3 pole 2 position switch to obtain inside/outside measurements. 'On card' voltage stabilisation is also used to improve the accuracy of the temperature reading.

**Components**

All components are readily available. Resistors are ¼ watt and the trim-pots horizontal mounting cermet types. It is recommended that a 40 pin dual-in-line socket be used for the integrated circuit. A socket may also be used for the 'tenths' digit if so desired.

The two printed circuit boards may be constructed using the rub-on dot and resist pen method. Full size PCB patterns are given in Figure 3. The inter-connection between the two boards may be done using a short length of rainbow cable.

**Component List**

<table>
<thead>
<tr>
<th>Resistor Types</th>
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<tr>
<td>0.001u greencap</td>
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<td>1u tantalum</td>
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<td>10u 16V single-ended electrolytic</td>
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<td>47u 16V single-ended electrolytic</td>
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<td>RS 3-1270</td>
<td>Thermometer IC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Battery</th>
<th>Type</th>
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<tbody>
<tr>
<td>Z-4117</td>
<td>Common anode LED displays</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Miscellaneous</th>
<th>Type</th>
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<tbody>
<tr>
<td>3 pole 2 position switch</td>
<td></td>
</tr>
<tr>
<td>20 pin DIL socket</td>
<td></td>
</tr>
</tbody>
</table>

* See note 1

**Construction**

Construction should present few problems. The thermistors are very small and care should be used when handling and in particular when soldering to the leads. Twin shielded leads should be used for connecting the thermistors and a neat enclosure can be made by setting them in epoxy resin inside.
short lengths of thin walled copper or brass tubing and then covering with heat-shrink tubing. See Figure 4.

Calibration is best done against a good industrial type thermometer, but quite satisfactory results will be achieved with a cheap household type.

Order the components now and build yourself an inside/outside thermometer one weekend.

Notes
1 The RS3-1270 integrated circuit is obtainable from Radiospares Components — Rosebery, NSW and West Leederville, WA. Stock number is 309-486.
2 Data sheet 4074 July 82 is available from RS Components.
Chas was appointed as Junior Operator, Queensland Radio Service in 1925, of the first broadcasting station in Queensland, 4QG, and as a radio amateur doubtless was more advanced technically than other members of the staff.

Shortly after the Commonwealth took over the station, Chas moved to Sydney where he became involved in building and installing cinema sound equipment throughout NSW and Fiji in 1932.

In 1930 Chas won first prize for a transmitter/receiver in a “Wireless Weekly” show in the Sydney Town Hall, which was his last amateur activity until he obtained his VK2BWQ callsign in 1979.

Automobiles were another involvement, throughout NSW, from which Chas retired some twelve years ago. He featured in a Channel 2 “Your Career” programme, on autos, some years ago.

While in Bourke for some years Chas built a boat propelled by an electric motor, 18 V 12 amp, and capable of 7 mph.

One of Chas's adventures was, at very short notice, giving progress reports by CW on the Forster Cup, run on Moreton Bay in 1928, with 2HC in Quirindi monitoring, while Chas held on to the open top of the “Doomba’s” bridge by “the skin of his teeth”. Harold, now living in Sydney, is out of amateur radio but Chas is still active on HF. Listen for him.

Steve first saw light in 1910. He claims this was well timed to enter the workforce during the big “Depression”, when his job finished with his apprenticeship as a mechanic. As a schoolboy Steve got the radio “bug” and read all that he could lay hands upon relating to radio. Enthused, by a visit from an ex-local amateur, OA4AT, Alf Bauer, he settled to intense study and obtained his licence VK4JO in 1929. For many years he was the only amateur in the Gympie area and needing income published a small advertisement, “Radio Repair and Set Building Service”, which service developed into a sizeable business recently disposed of by Steve.

Amateur licences in the 1920/30s approved operations down to 1200 Kilocycles and Steve became a Sunday morning broadcaster of records, using low battery power only. However this was the first loud and clear reception the locals had heard, the nearest station until then being 100 miles away, and the hundreds of appreciative letters and reports from five other states and New Zealand encouraged Steve to apply for a commercial licence.

A local company was formed but World War 2 intervened, causing serious delays in equipment supply and installation, and 4GY did not commence operating until 1941.

Steve did not expect to renew his amateur licence after the war but overseas friends “twisted his arm” and he obtained VK4YF in 1970, to maintain those overseas contacts.

A onetime foundation member of Rotary, Steve's main interest, apart from amateur radio, is to apply for a commercial licence.

Circulating...

Wireless Institute of Australia (Queensland Division)

HEADQUARTERS:
"Covina" Buildings, Queen Street, Brisbane

The Annual GENERAL MEETING of the above Institute will be held in the rooms, "Covina" Buildings, Queen Street, Brisbane, on Friday, 4th day of June, at 7.45 p.m.

As the General Business is very important, you are particularly requested to attend.

AGENDA:

Correspondence
Report and Balance Sheet for year 1929-30
General Business.

C. W. STEPHENSON, Acting Hon. Secretary

Subscriptions—
A copy of the constitution and entry is available from the Hon. Secretary. Subscriptions are due in the year of issue and must be paid at once.
radio, is the Far East Broadcasting Company, which operates 29 powerful missionary broadcasting stations throughout the world. Steve is a foundation member of the Company.

DENNIS HARKIN. A-3YN 1924. VK4ADJ
By the time that you read this Dennis will be eighty years old. He completed the Marconi School first class PMG certificate in 1923 and from 1924 to 1926 was active on the 30 metre band using a Marconi V24, 6 V¾ amp, and "lugging" the accumulator to the nearest electrician for charging, to keep his receiver going.

The transmitter was a self excited oscillator using a Marconi UV-202, 10 W input, and a lot of DX on CW was worked, mainly due to the antenna which was a four wire tapered cage, twelve inches to three inches, suspended from a sixty four foot wooden mast above a counterpoise covering the backyard.

Dennis joined the RAAF in 1926 and was posted to Bowen on the Barrier Reef Survey while holding the callsign A-4YN. Back to Victoria as A-3YN and then to Pearce WA, as A-6YN until the outbreak of WW2, whence to Darwin for a couple of years and finally New Guinea, mostly at Madang.

Dennis retired from the RAAF as a commissioned officer after twenty one years service and later retired from the PMG in 1963. His VK3ADJ callsign became VK4ADJ in 1975.

Dennis tells that his longest QSO was 4½ hours on 30 metres with A-3LP using a self excited rig and ordinary telephone mike, coupled to the antenna. This QSO ended because the mike, passed from one hand to the other, became too hot to handle.

About that time Trevor, A-2NS, founded the Rag Chewers Club, with A-3LP and A-3YN as foundation members of the twelve members.

After a recent setback Dennis enjoys good health and will be pleased to have a QSO with you principally on 20 metres or perhaps via a satellite.

Mac using his equipment on the "Coffee Break Session".

Well known old timer Jock "Mac" McConnell VK3RV has reconstructed his original station which he first used in 1936. Most components are original — the three gang capacitor being part of a Pi output stage as a TVI precaution.

The transmitter is a crystal oscillator 2A5 to 210 class C plate modulated final running 15 watts.

The modulator uses three 57 valves to a pair of 250s running class A and using the original 1936 home brew transformers for coupling and modulator. The microphone is a popular D 104 crystal type.

The equipment can often be heard on the "Coffee Break Session" 0100 UTC weekdays on 1.820 MHz.

The receiver uses a 58 pentode RF stage into 57 regenerative detector and a 2A5 output which is amazingly good on SSB, but it does take some practice.

Is this the "oldest" serviceable rig in operation in Australia?

Photographs by Peter Wolfendon VK3KAU

AMATEUR RADIO, October 1983 — Page 25
FRANKSTON AND MORNINGTON PENINSULA ARC

The club will be operating portable from the Information Centre, Elizabeth Street, Mornington during the weekend 29th October through to Tuesday 1st November.

The call sign VK3BHU/P will be used.

The event the club will be celebrating is the Mornington Annual Ti-Tree Festival in conjunction with promoting amateur radio and WCY '83.

The club is hoping to get a sponsor to provide a special certificate or card to mark the occasion. In this event contacts on air will be advised of where and how to apply.

The club would like fellow amateurs to support them on this weekend by listening for the call sign, VK3BHU/P, and giving them a chance to make contacts throughout Australia and beyond.

During the period it is hoped to be working on 15 through to 80 metres depending on propagation.

LAKE GOLDSMITH STEAM RALLY

On April 30th and May 1st 1983, VK3BWZ the Western Zone WIA Victorian Division station was operated from the Lake Goldsmith Steam Rally. The operation was very successful, 366 contacts being made on all bands and modes. The weather was not very kind for us but in spite of this a good time was had by all.

The steam engine used was a Marshall portable, 6 HP and was built in the UK in 1914, the generator was a Crompton 230 V, this was built in 1920 and was used at the Sydney Gasworks.

There were SSTV and video displays, a VHF and UHF station, RTTY, antique radio and QSL card display.

Operators involved were: VK3s, AEU, VEJ, DLO, ASS, XEX, KGL, KJH, AGD, AUK, GN, PAL, VL, DFI, NQQ, BRZ, AEX, VX, NH, VIA, KLZ, PAF, PEC, BOY, PFF, DLO, DQQ, NBV and BWW, also VK5OA.

Maurie VK3XEX operating the VHF/UHF station

A special award was designed and produced by Henry VK3DXC for the Rally.

Of the 366 contacts, 200 applications for the award have been issued to date. These came from all VK States, ZL, DL, W, VU, JA, DL and UA0.

It is expected that we will be at Lake Goldsmith again in May 1984, the date and other information will be notified in "AR" and the Sunday morning broadcasts from each VK Division at a later date.

Maurie Batt, VK3XEX
PUBLICITY OFFICER WESTERN ZONE

SPACE AGE TECHNOLOGY

An insight into the space age technology employed at the Loy Yang electricity generating station.

Seventeen members of the Victorian WIA Eastern Zone had the honour of being amongst the first people to look over the fascinating computer controlled and instrumented coal winning section of the Victorian State Electricity Commission's newest power station in Gippsland.

L to R: Geoff Roberts, operator, Roger Noble, Technical Officer, Michael VK3ZQV, Sue and Geoffrey, family of VK3KDK, Stewart VK3BSM and Charlie VK3CMA

Mr Geoff Roberts at the instrument console, keeps a watchful eye on the video screens and other trouble indication devices as some of the guests look over his shoulder.

Photograph by Fred Hobson, VK3OH

EXPO '83

On Saturday 3rd September the Eastern and Mountain District Radio Club staged a combination hamfest and communications exhibition as part of WCY.

Despite inclement weather the day was a huge success.

Tony VK3QQ, Federal EMC Co-ordinator inspects SWL antennas at the Expo.

Peter VK3BFG demonstrated Amateur Television.

Trade Displays.
MEMORIAL TO VERN KERR (VK4LK) AND THE ROYAL FLYING DOCTOR SERVICE

Peter Renton, VK4PV
PUBLICITY OFFICER
Townsville Amateur Radio Club

The historic golf mining town of Charters Towers in North Queensland was the setting recently for the dedication of a display honouring the memory of the late Vern Kerr VK4LK.

In the presence of the Mayor and other distinguished guests, the display was officially handed over to the Charters Towers branch of the National Trust by Bill Sebbens VK4XZ.

As a young man, Vern Kerr was the first radio operator to be associated with the Royal Flying Doctor Service when it opened in Cloncurry in 1934, having already gained his amateur radio licence two years earlier. During the forty-three years of his professional career he saw the radio equipment change from the original crude typewriter morse machines, through the famous “pedal” radios to modern solid state transceivers.

On his passing away in 1979, he left a few unfinished projects among which was the construction of a replica of the first receiver used at Cloncurry. This labour of love was taken over by Ron Tulloch VK4BF.

Problems were many, not the least of which were the absence of the exact circuit and not knowing the physical size of the receiver. However as the result of research into old photos and records the project was completed. Others who assisted Ron were Ted Gabriel VK4YG, Alan Stephenson VK4PS, Jenny Colby (XYL of Ron VK4ZOH) and Merle Howie of Charters Towers.

Professor Ward of James Cook University donated the original control console from the Charters Towers base, and this now forms the centre section of the display.

Ian Sutton (VK4ZT) and John Stevens (VK4AFS) assisted Ron Tulloch to put the display together.

It was pleasing to see many members of the Townsville Amateur Radio Club journey to Charters Towers for the occasion, particularly as Mrs Kerr was present to see this recognition of her late husband’s work.

On behalf of the National Trust, the President of the Charters Towers branch, Miss Anne Rollinson said she was delighted to accept the display. Having known Vern during his twenty-one years in Charters Towers, she was confident that the display was a fitting memorial to “the Man and his Work”.

Members of the public were then asked to inspect the display, and the assemblage was then invited to join members at afternoon tea which was held in the old historic Stock Exchange building.

Amateurs, XYLs and children that attended the dedication of a memorial for the late Vern Kerr, VK4LK. Standing L to R: Noel VK4KNW, Charlie VK4BQ, Ray VK4LU, Bob VK4WJ, Vince VK4NBS, Max VK4VDF, John VK4AFS, Ron VK4BF, John VK4NIE, Ian VK4ZT and Bill VK4XZ. Seated second from left Evelyn VK4EQ and Mrs Kerr surrounded by XYLs and harmonics.
Sixtieth Anniversary of World-Wide Communication

Walter Francis Maxwell Howden

Permit 19 — Permit V140 — 3BQ — A3BQ — OA3BQ — VK3BQ

1983 — being the Year of Communications — is an appropriate occasion to recall that it is 60 years in October since amateur radio, particularly in Australia, demonstrated that world-wide communication was possible.

This historic October issue of “AMATEUR RADIO” magazine, celebrating as it does, the magazine’s 50th Anniversary, is an even more timely reason for recalling some of the epic history of Australian amateur radio experimentation which gave to wireless communication that first ‘glimpse’ of the usefulness of the frequencies to which amateur experimenters had been relegated.

This short article deals specifically with the contribution of one of the most learned and colourful characters in the history of amateur communicators and experimenters — Walter Francis Maxwell Howden — VK3BQ.

Walter Francis Maxwell Howden was born on the 18th April, 1899, and was educated at the Brighton Grammar School, founded in 1882 as a private school by the late Dr G H Crowther. The school badge, with the wings of ambition following the guidance of the finger of education pointing to the star of achievement, was intended to be a symbolic representation of the motto — “Meliora Sequamur” — which means — “Let Us Follow Better Things”. Max was equal ‘dux’ of the school in 1916 at the age of seventeen.

There is no doubt that Max Howden lived up to his school motto for he certainly reached the star of achievement in the field of wireless, being one of those dedicated experimenters who literally became a public idol as he gained so many firsts in the mysterious form of communication first made practical by Senator Guglielmo Marconi.

From Brighton Grammar School he attended the Working Men’s College, later to become the Melbourne Technical College and more latterly the Royal Melbourne Institute of Technology, where he studied electrical engineering, the basis from which stemmed wireless studies in the early days.

Following the cessation of hostilities of World War I in 1918 wireless communications was in control of the Royal Australian Navy under Commander F G Cresswell, AMIEE. Experimental stations had been closed down in 1914 and all equipment impounded. The war saw great strides in the development of communication, introducing wireless telephony and the triode and tetrode valves. However, the Navy was loth to issue licences to transmit but it did issue permits for receiving purposes only and Max Howden was issued with Permit No 19 in 1918, this being replaced by Permit V104 in 1919.

In November of that year the Victorian Section of the Wireless Institute of Australia conferred with Commander Creswell seeking approval for experimental stations to transmit using a power of 250 watts but the Navy was obstinate. By November, 1919, the American and Canadian Governments had ‘lifted’ the war-time bans on transmitting. Australian experimenters had banded together and the Wireless Institute in Victoria, Queensland, South Australia and New South Wales had again commenced activity and were taking steps to approach the Federal Government for permission to transmit as well as receive. In July of 1920 controls under the Wireless Telegraphy Act were transferred back to the Postmaster-General’s Department under the jurisdiction of Mr Jim Malone who was to become a good friend of the Wireless Institute of Australia and amateur radio in general.

The introduction of experimental transmitting licences following this change was the commencement of the most exciting era in the history of communications. The wonders of ‘wireless’ was on the lips of the populace at the centre of the stage.

To hear another station from interstate was indeed an achievement, the area of experimentation being from 3500 metres down to 200 metres. The Navy had done some experimenting with telephony during the war and climaxed this with the first telephony transmission in October, 1920, between its office in Lonsdale Street, Melbourne, and the local Exhibition Building. Fantastic! In the same month the Wireless Institute in Victoria conducted wireless telephony communication for — HENLEY ON THE YARRA. Mr L A Hooker — manager of Amalgamated Wireless (Australasia) Limited — broadcast a programme from his home to a meeting of both Houses of Federal Parliament in Queen’s Hall, Melbourne. Broadcasting had really taken off and the amateur experimenters were right in the middle of it. The shorter wave bands had yet to be ‘discovered’.

1921 saw the Victorian Division of the WIA transmitting news bulletins nightly on 200 metres. The Institute had adopted a publication — “SEA, LAND & AIR” — (first published in 1918) as its official organ. The Western Australian Division of the WIA was incorporated. Valves were released on the market making Types UV202, UV203 and UV204 available to experimenters and these were rushed despite the high price. News from overseas magazines and periodicals advised of ‘long distance’ communication using shorter wave lengths (two-way communication hadn’t been established) between the USA and the United Kingdom across the Atlantic Ocean. This exciting information triggered off a fervor of activity in Australia. By March of 1922 the first two-way third party ‘DX contact had been made between 2CM on 1350 metres from the roof of the Wentworth Hotel, Sydney, and 2JR on 2200 metres from the PMG Radio Service Station from the top of Collins House, Melbourne.

Because Australian experimenters had been limited to permits for ‘Receiving Purposes Only’ a great deal of time had been spent

Page 28 — AMATEUR RADIO, October 1983
developing sensitive receivers. Max Howden was one of the most dedicated experimenters in this field being appointed as technical designer to — CORBETT, DERAHM & CO PTY LTD — receiver manufacturers of the then famous TUNAFONE range, and agents for other wireless components with offices in Melbourne, Sydney and Adelaide.

Max, along with the late H. W. Kregslsey Love, 3BM, President of the Victorian Division of the WIA after having heard transmission from high powered American commercial stations, conceived the idea of organising TRANS-PACIFIC TESTS because he was convinced that amateur stations on the Pacific coast of the USA might be audible. The Victorian Division supported his idea and appointed the late Mr. H. W. Kregslsey Love, 3BM, to be Manager of the tests. The arrangements had of course to be made with the USA by correspondence. Letters to several Pacific coast amateur associations brought only one reply — from Long Beach Radio Association in California, who welcomed the proposal “with typical American fervor” and replied “that the matter would be taken up all over America”. But nothing further was heard until a communication was received from a commercial publisher — “RADIO JOURNAL” — advising that the organisation of the proposed tests was beyond an amateur experimental association and stating that the publication had taken over control in the USA and had already enlisted 500 participants. The enthusiasm of the Americans was high. The tests would be conducted on a wavelength of 200 metres. To authenticate the reception of the American signals a suitable grid card was to be sent along with the reports of the contacts, and logs had been checked the winner was — Max Howden — for his perfect log. His log was reported in the press as “a master-piece of consistency”. He had logged twenty contacts in the course of one night and on July 16, 1923, he recorded the signal “MOTT” on the 5th day. The drought conditions proved disastrous at this stage of radio frequency and audiofrequency development. Amplification could be bypassed or ‘shorted out’. Many receivers were of the ‘regenerative’ type requiring precise tuning to avoid oscillation which could re-radiate from the antenna system and cause untold interference to other experimenters. The ‘heterodyne’ and ‘super-heterodyne’ receivers had not yet arrived on the scene but were just around the corner.

In those days receiving was considered the difficult part of experimenting and receivers were home constructed in such a manner that stages of radio frequency and audio frequency amplification could be bypassed or ‘shorted out’. Many receivers were of the ‘regenerative’ design requiring precise tuning to avoid oscillation which could re-radiate from the antenna system and cause interference to other experimenters. The ‘heterodyne’ and ‘super-heterodyne’ receivers had not yet arrived on the scene but were just around the corner.

The overall scene of wireless was in something of a mess and regulations were on the way, causing amateur experimenters considerable anxiety. The Commonwealth Control Section on Wireless, speaking at Max Howden’s social evening stated — “the experimenters should not, and would not, be hampered. Their endeavours should be encouraged in every possible way. Such performances as that of Mr Howden substantiated this contention. The experimenters put forward in this had yielded a result of considerable commercial interest (!), and one felt like labelling Mr Howden’s receiving set as the ‘Australia station’.” The late Mr. B. W. Greenwood, MLA, for Box Hill and Councillor W Young, President of Nunawading Shire, endorsed these remarks.

Further TRANS-PACIFIC TESTS were planned for October 1923 but this time the Australian experimenter was seeking to establish two-way communication. The transmitting station was X2AKB. Max Howden was the recipient of congratulations from the whole radio fraternity. The Commonwealth Controller of Wireless, speaking at Max Howden’s social evening stated — “the experimenters should not, and would not, be hampered. Their endeavours should be encouraged in every possible way. Such performances as that of Mr Howden substantiated this contention. The experimenters put forward in this had yielded a result of considerable commercial interest (!), and one felt like labelling Mr Howden’s receiving set as the ‘Australia station’.” The late Mr. B. W. Greenwood, MLA, for Box Hill and Councillor W Young, President of Nunawading Shire, endorsed these remarks.

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To Mr. Max Howden — President of the Canterbury Wireless Club — affiliated section of the Victorian Division of the Wireless Institute of Australia — This token of congratulations, which is presented in commemoration of his wonderful achievement on February 1st, 1925 when he transmitted his voice on a wavelength of 83 metres from Box Hill, Victoria, to Gerard's Cross, Bucks, England, being there heard by Mr. G. F. Simmonds, and thereby attaining the unique position of being the first of Australian amateurs to speak across the world... Thus also he opened up a new era in Wireless Transmission for all amateurs, as well as deepening the great regard and admiration felt for him, not only by his club, but also by the World-Wide Brotherhood of True Experimenters. A.J. Stokes — Vice-President. C.J. Falconer — Secretary.

Max Howden had certainly opened up a new era. Audio became a new area for experimentation and the next five years was not only to see great developments in wireless telephony on short waves but also transmission of musical programmes by selected amateurs operating on the 200 metre bands—transmissions which were often stated in the press as being superior in quality to many of the commercial transmissions of the day. The WIA later formed a “PHONE SECTION” as part of its activities.

Following the introduction of new regulations covering all forms of ‘broadcasting’, which came into force in December, 1922, under which favourable conditions were made available to amateur experimenters, the Wireless Institute in Australia grew rapidly and became the catalyst for introducing radio to the people. In 1924 the Victorian Division convened and organised the first — “WIRELESS & ELECTRICAL EXHIBITION & CONVENTION” — which was held from the 14th to the 19th May in the Melbourne Town Hall. Max Howden was a Vice-President of the Institute and was involved in the organisation of the Exhibition which attracted thousands of people and was supported by a large number of Trade Houses dealing in wireless receivers and components for the experimenter. The convention part of the event brought the Divisions of the Wireless Institute of Australia together for the first time, resulting in its Federal organisation developing.

The second Federal Convention was held in Perth in August, 1925. Thereafter the Institute was involved in the organisation of exhibitions for the next twelve months. Max Howden's TUNAFONE receivers were incorporating some of these advances. 1926 saw yet another Exhibition on the same site, this time bringing to the notice of the public how amateur experimenters had “...delved deeply into short-wave bands and had uncovered some of the secrets of science and the ether”. Thousands of miles had been spanned by amateurs using less power than was required to operate an electric iron! Great possibilities were being forecast for the wavelengths, and the years from 1926 to the outbreak of World War II was to substantiate this. Amateur wireless experimenting experienced great growth over this period with the introduction of ‘crystal control’ bringing about highly stable transmission.

Max Howden — now OA3BQ — was an early experimenter with crystals and went on to form his own crystal grinding business supplying crystals to industry and the amateur fraternity. As in every other field of experimentation with wireless he became an expert with crystal control of transmitters, delivering lectures and writing articles on their use including articles in the American amateur publication — “QST”.

For some years he was the writer of a weekly page on amateur radio in the Melbourne newspaper “LISTENER IN” — at the same time being the ‘Technical Director’ of the Victorian Division of the WIA. Despite all the time devoted to reading, writing and lecturing he found time to continue experimenting with the shorter wavelengths and in September, 1928, was the first to establish two-way 10 metre communication across Australia between his home (then in Ringwood, Victoria) and the home of Mr. H. Austin in Victoria Park, Perth, Western Australia. As far as was known at the time, it was also a world record.

Every activity of the Wireless Institute of Australia involved Max Howden and others of course who’s history might well be written. In 1929 Mr. H. Kingsley Love, President of the WIA, himself an ex-war pilot and then a Flight Lieutenant in the Citizen Airforce, formulated a scheme which interested the Defence Department of the day; this was an organisation of skilled operators to form a Wireless Reserve within the WIA to be of service when and where required. It arose from the desire of the WIA to prove to the Government that the Australian wireless amateur was more than an enthusiast who delighted in experimenting. It was an immediate success attracting hundreds of members who also became members of the Royal Australian Airforce.

Its first ‘trial’ was to provide communication for the Sydney to Perth Air Race held by the RAAF in 1929. The scheme called for transmitting and receiving equipment at the site of all aerodromes along the route and this was set up by the Wireless Reserve personnel working with auxiliary ‘guard stations’ in each State. Max Howden was the operator of the ‘guard station’ for Victoria.

He also designed and installed a portable transmitter and receiver in the plane which preceded the aircraft competing in the race. The story is an article in itself and occupied over two pages of the 16th October edition of the Melbourne “LISTENER IN”. Sufficient to say that the event was highly successful and ensured the continuation of the WIA Wireless Reserve Scheme, many of its operators rising up commissioned rank in the communication sections of the armed forces at the outbreak of World War II.

Space and time does not permit of expounding further on Max Howden’s contributions to the science of ‘RADIO’ as we know it today for in detail it would fill a book. Perhaps the nostalgia of this short article, whilst being still within the memory of some Old Timers, may assist the modern day amateur to understand a little more of how difficult a task was faced by the pioneers of radio who were dedicated to exploring the unknown and largely constructed all their own equipment and learned more and more about the science as they did so. Max Howden was one of many.

Perhaps Mr. C.R. Brandish who wrote the article for the Melbourne Herald weekly publication “TABLE TALK” in the “Prominent Personalities” column in 1925, and for which the illustrator L. F. Reynolds drew the accompanying living likeness cartoon of Max Howden in his prime, got close to describing the temperament of the man...

“A curious man, with a face paled by long vigils and with eyes lighted by the fanaticism of one who has dedicated a life to a passion. The technics of wireless slip off his tongue as glibly as the prayers of a Buddhist monk, and I doubt if he has, in recent years, ever mentioned any other subject with animation. He was a man of steely concentration on one thing which marks men of high talent.”

Vale Max Howden, VK3BQ, 18th May, 1980

JOIN A NEW MEMBER
Many people, engaged in a variety of pursuits, benefited in a number of ways from the huge quantity of high quality disposals equipment available as a result of WWII. None did better than the amateur radio operator; the list of surplus electronic gear to be obtained for a minimum outlay in dollars ran to pages upon pages. Most of it required modifications for optimum performance on the amateur bands but these were usually so minor they presented no real problems. The BC 348 was one of the more popular makes on the market, mainly because it could be put to use almost as was — however, most amateurs preferred to carry out their own particular alterations, depending upon need or fancy.

ORIGIN
This receiver, widely used in most American and many British aircraft from 1942 onwards, was mass produced in the United States by numerous sub-contractors. Their identity may be ascertained from the suffix to the type-number on the front panel; eg BC348J comes from Wells-Gardner. Several detail differences occur in models from the various ‘stables’, viz. Some versions incorporate an aerial alignment trimmer, while others do not. Basically, however, almost all versions conform with the details given below:

BASIC CIRCUIT
Two RF amplifiers, both 6K7
First detector 6L7
Separate local oscillator 6C5
First IF amplifier 6K7
Second IF amplifier and beat frequency oscillator 6L7
Third IF amplifier and second detector 6B8
Output valve 6K6
Voltage regulator to oscillator valve RCA991

COMMENT: This valve line-up is a representative one, although numerous permutations occur among different models. In one version, the CW oscillator is combined with the second detector and there are two IF stages. In another, the luxury of three IF stages is achieved by putting the CW oscillator on to the second IF, while the second detector and third IF are combined in one valve. The importance of securing the correct circuit diagram for the particular model purchased is self-evident. The claimed sensitivity for the three IF version is as good as 3 to 7 microvolts overall on all bands, this for 10 milliwatts output into a 4000 ohm load.

Having 200-500 kHz available makes the set ideal for use with an RF band switched converter. The band spread is such (1 dial turn = 2 kHz) that it is ideal for SSB reception (provided a suitable product detector is included). Also, the stability on this band is rock-like. If used for this form of reception, with an external converter, this latter unit must have an independently tuned RF + 1st converter so as to peak and track with the tuning in the 200-500 kHz band.

WAVERANGES COVERED
Band No 1 200-500 kHz
Band No 2 1.5-3.5 MHz
Band No 3 3.5-6.0 MHz
Band No 4 6.0-9.5 MHz
Band No 5 9.5-13.5 MHz
Band No 6 13.5-18.0 MHz
**POWER REQUIREMENTS**

In its original condition the BC348 comes with a 28 volt dynamotor that is likely to be of little or no value to the average enthusiast. A slightly larger mains power supply unit can be installed if a reserve is required for external converters or a crystal calibrator.

**CONTROLS**

In the centre is the bandchange knob. The range in use is registered in the dial window above it. Below is the reduction-drive tuning knob acting a four-gang capacitor: to the left, gain control and CW oscillator pitch control. Above them: the crystal gate switch and the CW oscillator on/off switch. Extreme left: manual or automatic gain control lever switch. Top right: dimmer for dial lights. Far right: aerial alignment control (when fitted).

**COMMENT:** The BC348 earns high marks for intelligent placement of controls. While the right hand rotates the tuning knob, either directly or with the little handle fitted to it, the left hand has all other needful user-controls within short reach. No cross-hands performance is called for.

Being a general coverage receiver the BC348 does not offer electrical bandspreading of the type required for use on the crowded amateur bands. Those bands occupy on the tuning scale 1 inch (1.8 MHz), 2 inches (3.5 MHz), ½ inch (7 MHz), and ½ inches (14 MHz). However, the order of tuning knob rotation called for, to cover each of these bands is:

<table>
<thead>
<tr>
<th>Band</th>
<th>Revolutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8 MHz</td>
<td>10</td>
</tr>
<tr>
<td>3.5 MHz</td>
<td>16½</td>
</tr>
<tr>
<td>7.0 MHz</td>
<td>4½</td>
</tr>
<tr>
<td>14.0 MHz</td>
<td>8</td>
</tr>
</tbody>
</table>

It might be added, that when the receiver is used as a 4-6 MHz IF strip for a 144-146 MHz converter, this span of 2 MHz is covered in no less than 86 revolutions.

**RECOMMENDED BASIC MODIFICATIONS**

**HEATERS:** In the original model with 28 volt dynamotor, the valve heaters are wired in a very complex series-parallel arrangement to allow 6.3 volt valves to operate from 28 volt aircraft batteries. It is recommended that the existing heater wiring (generally pins 2 and 7 on IO valve holders) be removed and a complete return run made to parallel all heaters for 6.3 volt operation from a mains power unit.

**AERIAL INPUT:** Because most receivers will be fed from an aerial tuning unit via low impedance cable, it is recommended that the existing aerial terminal be removed and replaced by a Belling-Lee co-axial socket.

**USE WITH EXTERNAL CONVERTER:** The provision of a coaxial input circuit is especially essential when the BC348 is fed from a converter, to minimize IF breakthrough.

**SEPARATING THE GAIN CONTROLS:** To facilitate reception of SSB signals it is desirable to fit separate AF and RF gain controls. In the original, there are two ganged potentiometers of 20,000 ohms (front) and 350,000 ohms (rear) operated simultaneously by the front panel gain control knob. It is no difficult matter to disconnect the 20,000 ohm potentiometer — it controls the second RF stage and reposition it in place of the dial light dimmer, not generally required.

**GAIN EQUALIZER:** In some models a variable resistor rotates with the gang-capacitor shaft. Its purpose is to equalize the gain over the entire tuning range. It may be removed with profit.

**CAPACITORS — A WARNING:** Most BC348 receivers purchased today will be at least 40 years old and some deterioration in the condition of the fixed capacitors may have occurred. This will sometimes be self-evident, either through failure of a stage or stages to function, instability or more dramatically by short-circuits on the HT line. To disconnect and test every one of the dozens of capacitors in this model is a tedious business but probably worthwhile in the long run.

**SELECTIVITY:** The IF strip is aligned at 915 kHz. While this particular frequency is OK for SSB reception and helps eliminate or reduce unwanted images, some may deem this as unsuitable for CW reception, even though the crystal filter, when in circuit, produces a single signal only. For these CW 'buffs', the addition of an external audio filter will provide all the selectivity the most critical ear would need.

**"S" METER:** Another modification that can be carried out to advantage is the inclusion of an "S" meter. This can be separately housed in a small metal box set on top of the BC348 and fed from a cable via the front or rear panels — or mounted on the front panel. If the latter, it will be necessary to cut or drill out a hole to suit the meter. This is not a difficult job, as aluminium is a soft metal. When drilling, place a clean rag inside the set behind the panel to catch any small metal fragments. Space does not permit a detailed explanation of the circuit modification but it is commonplace and shown in many journals and handbooks.

**AUDIO OUTPUT:** The 6K6 output tube delivers enough audio to drive a small speaker, as well as the phones; however, most replace this valve with a power pentode, or add it to the 6K6 for full 3 watts output. The audio quality is exceptionally good. The slightly wider than average 915 kHz IF no doubt contributes to this.

The BC348 and its close cousins BC312 etc were, for the period (1942), outstanding communications receivers in all departments of design, construction and performance and fully deserve the title CLASSIC.

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**WHAT IS THE HISTORICAL SOCIETY OF AUSTRALIA?**

Historical Radio Society of Australia
49 Sharon Rd, Springvale 3172. Phone (03) 546 5558

The Historical Radio Society of Australia was formed on 17th April, 1982, to cater for the needs of those interested in preserving the equipment and recorded of past times in radio, especially in this country. It is a non-profit society with members in every state of Australia.

A quarterly newsletter is distributed to members, and members in other areas are encouraged to hold their own meetings. The Society has also participated in the Bendigo National Swap Meet, and intends to make this a regular activity, for as long as members are anxious to participate.

Meetings are held in Melbourne about four times a year, and members in other areas are encouraged to hold their own meetings. The Society has also participated in the Bendigo National Swap Meet, and intends to make this a regular activity, for as long as members are anxious to participate.

The annual membership fee, at present is $7.50 a yr, covers the twelve month period from July to June, and members who join during the year will receive copies of all newsletters issued during that year.

Membership of HRS A now stands at over one hundred and is steadily increasing. This is an excellent beginning and means that the Society is here to stay — as Australia’s first formed such group.

There is no need to own a collection of one sort or another to be eligible for membership — just as long as your interest in early wireless is bona fide, you are invited to join. Write in the first instance for a membership form to the Secretary whose address is given above.

Alan Shawsmith, VK4SS

AMATEUR RADIO, October 1983 — Page 33
My interest in wireless dates back to 1921, when at the age of fourteen and a half I made my first crystal set. Later of course I had a ball with valve sets, to use a modern expression.

Late in 1922, I came to Australia and went to work on Eyre Peninsula in the farming business. Before I left England the officials in Australia House had assured me that there would be plenty of tractors for me to be interested in and work on when I arrived in Australia, but sad to say, where I worked on the Eyre Peninsula, at Woodna, I don’t think there was a tractor within 300 miles. Furthermore, my employers hadn’t even heard of wireless and when I tried to tell them about the wonderful happenings in England, and Australia, but sad to say, where I worked on the Eyre Peninsula, at Woodna, I don’t think there was a tractor within 300 miles. Furthermore, my employers hadn’t even heard of wireless and when I tried to tell them about the wonderful happenings in England, and

After three years on Eyre Peninsula, I travelled to Adelaide and gained employment with a firm which is now extinct. It was located in Rundle Street, precisely where Myer’s are today, and that firm had a wireless department. The Manager was Jack Chesterfield, a well-known operator for AWA in those days, and he had been at Willis Island. I believe, for some time. I stayed in that department for several months, and also used to frequent the studios and the transmitting room of the original 5CL — Central Broadcasters Ltd, which was located in the Grosvenor Hotel, in North Terrace, Adelaide. The Chief Engineer was Ern Gunner, and the Manager/Announcer was Mr Bill Smallwickham.

In October, 1927, I left Adelaide and went to Sydney for greener fields, and in March, 1928 I went back to England on an extended holiday through Europe, United States, New Zealand, and back to Australia, where once again I entered into the world of wireless, or, as it was gradually beginning to be called — radio.

On the 26th September, 1932, I met with an unfortunate accident. An explosion at my home of an ammonia-type refrigeration unit, sent me totally blind. This happened three days before my twenty sixth birthday. I was in hospital for eight weeks or so and felt that I would never be able to work with wireless again, and was wondering what I was going to be able to do with my life. However, fortunately, a customer, whom I'd made a set for, lived only a couple of blocks away from where I was living, and they had a break-down in their set, only a few days after I'd come home from the hospital. After being persuaded by the lady to come and take a look at their set. (which I was quite sure I wasn’t going to be able to do anything about) — I was lucky. The problem was only a broken lead off the end of a battery, which of course, I was able to clean up, poke in the right place, and away it went, and so did it! They took me back home and I

went straight up the yard to the wireless shack, that I thought I'd never be able to operate in again, and got busy.

In 1933, the PMG’s Department granted me a special experimental radio licence to operate, with some special conditions.

The Zero Beat Radio Club, of which I was the foundation Vice-President, undertook to put glass doors over the front of the cabinet, where my breadboard rig was to be located, with a safety switch to cut the power off if the doors were open — to make sure that I didn’t get any nasty bites! The callsign allotted to me was VK2ZO.

Twenty three years later, I decided to get back into amateur radio... on applying for the ticket and callsign, it was refused. Eventually I was successful again, having passed a special examination satisfactorily, and accordingly I asked for a callsign as close to the old one as possible. VK2ZI was available and here we are. I'm well and truly retired now and on the way towards seventy seven, but still having a ball with amateur radio and especially on the satellites.

Frank Bridgewater, VK2ZI
31 Williams Street, Broken Hill, NSW 2880

Frank's station in 1933 when he was VK2ZO.

There are several members of the old Zero Beat Radio Club still alive, one that I recall having worked this year, is Geoff VK2UA. Some six or eight months after getting the station established and operating on 80, 40 and 20 m we received a permit to operate on the broadcast band after the commercial stations had closed down.

Alan VK2WR, Morris VK2FV of Tuross Heads, Geoff VK2CAS and Bill VK2HZ, VK2 Division Secretary at the time, were some amateurs involved in operating on the Broadcast Band.

During this time I operated a public address business, however, by 1948 Sydney was becoming too much of a rat race, everything closed down, the public address business was sold, and I migrated to Broken Hill, where I had no opportunity of using amateur radio because of being involved in an entirely different type of business which demanded very long working hours. Furthermore, there wasn’t enough room for the radio.

Well, there you have a brief resume of sixty two years involvement in wireless/radio and this year is the celebration of my fiftieth anniversary of my first callsign and I believe I was the first totally blind operator in VK2.

Reminiscing Sixty Two Years of Wireless
Announcing —

SKYTRIM
Today's premier free standing crank up tower line

A range of telescopic towers for amateur and commercial applications, from 6.5m to 20m, with tilt-over facility enabling antennae installation and adjustment to be done at ground level.

What other tower can offer you these features?

* Rugged, all welded, diamond web construction.
* Hot Dip Galvanized inside and out, after fabrication.
* Easily erected on a limited area site.
* Only heavy-duty marine fittings used.
* Rotator mounts inside tower.
* Thrust bearing fitted.
* Engineering drawings supplied (including foundation detail).

SKYTRIM — A Tower of Strength
Further details available from —
Bruce P. Pinkerton,
P.O. Box 428, Parramatta. N.S.W. 2150
Australia. Tel. 635 3555, 635 8777

With good weather approaching many will be working on their antenna arrays. Here is a timely tale from the Sterling-Rock Falls Newsletter by an unknown author and contributed by Soupy W5NW.

The scene opens upon an amateur sitting at his desk contemplating how he should answer a letter from his insurance company. Eventually this is his reply . . .

I am writing in response to your request for additional information in block number three of the accident reporting form. I put "poor planning" as the cause of my accident. You said in your letter that I should explain more fully, and I trust that the following details will be sufficient.

I am an amateur radio operator. On the day of the accident I was working alone on the top section of my new 80 foot tower. When I had completed my work, I discovered that I had, over the course of several trips up the tower, brought up about 300 pounds of tools and spare hardware. Rather than carry the now unneeded tools and material down by hand, I decided to lower the items down in a small barrel by using a pulley, which fortunately was attached to the gin pole at the top of the tower.

Securing the rope at ground level, I went to the top of the tower and loaded the tools and material into the barrel. Then I went back to the ground level and untied the rope, holding tightly to insure a slow descent of the 300 pounds of tools. You will note in block number eleven of the accident reporting form that I weigh only 155 lbs.

Due to my surprise at being jerked off the ground so suddenly, I lost my presence of mind and forgot to let go of the rope. Needless to say I proceeded at a rather rapid rate of speed up the side of the tower. In the vicinity of the 40 foot level I met the barrel coming down. This explains my fractured skull and broken collarbone. Slowed only slightly, I continued my rapid ascent, not stopping until the fingers of my right hand were two knuckles deep into the pulley.

Fortunately by this time, I had regained my presence of mind and was able to hold onto the rope in spite of my pain. At approximately the same time, however, the barrel of tools hit the ground and the bottom fell out of the barrel. Devoid of the weight of the tools, the barrel now weighed approximately 20 pounds. I refer you again to my weight in block number eleven. As you might imagine I began a rapid descent down the side of the tower. In the vicinity of the 40 foot level I met the barrel coming up. This accounts for the two fractured ankles and lacerations of my legs and lower body.

The encounter with the barrel slowed me enough to lessen my injuries when I fell onto the pile of tools and, fortunately, only three vertebrae were cracked. I am sorry to report, however, that as I lay there on the tools in pain, unable to stand, and watching the empty barrel 80 feet above me . . . I again lost my presence of mind. I let go of the rope.
ITU CONFERENCE

World Administrative Radio Conference for the planning of the HF Bands allocated to the Broadcasting Service.

The first session of this conference will be held in Geneva for five weeks, beginning in January 1984.

The Administrative Council of the ITU has resolved that the planning be based on DSB emissions and that consideration shall also be given to the manner in which an SSB system could be introduced progressively without impairing the DSB emissions, taking into account the economic and other aspects associated with the introduction of an SSB system.

The agenda of the first session covers the establishment of the technical parameters to be used for planning and the principles governing the use of the HF bands allocated to the Broadcasting Service.

And also the establishment for use by the second session, which is set down for October/November 1986 of planning principles, method of planning and approaches to implementation. Also a programme for progressive introduction of SSB transmissions; and the action necessary to eliminate harmful interference, and the theoretical capacity of any given high frequency broadcasting band.

The Administrative Council of the ITU considers that the revision of the table of frequency allocations is not within the mandate of the Conference except those footnotes relating to the high frequency bands allocated exclusively to the Broadcasting Service.

CONGRATULATION TO TOM CLARKSON, ZL2AZ

Tom was awarded the MBE in the New Zealand section of the Queen's Birthday Honours List published on 11 June, 1983. He is well-known as a former Director of IARU Region 3 and was a member of the WARC 1979 IARU team. The award is for "services to amateur radio".

ACTIVITY IN SYRIA

The Syrian Radio Amateurs shall be using a new prefix to celebrate the World Telecommunication Year.

Four stations will be operating in all bands with the callsigns of 6C1AA, 6C1AM, 6C1AN and 6C1AO. Operation will be during the period of 00.00 UTC Saturday, October 15, 1983 until 24.00 UTC Friday, October 21, 1983. During this period no stations in Syria will be using the VK prefix.

NEWS FROM BOTSWANA

The first Botswana novice amateur transmitters licences were issued at the end of January, 1983.

As a result of correspondence with the IARU, Botswana are expecting to receive a Heath SB-104A SSB HF transceiver, for use in the BARS hut. It is understood that the transceiver was donated to the IARU for use "in a country where there is not much amateur activity".

Also of the way from the IARU are 10 "Project Goodwill" 20 m transceiver kits, which will be constructed as part of the Novice classes at the BARS hut, and additional teaching materials.

COMMENEMORATION TIME FOR BELGIUM

KNOKKE, Canada-City 1" in Belgium, will spend a week in the sign of the Maple Leaf, national emblem of Canada: the Canada that thirty nine years ago sent out its sons to this region.

Organisation of the Canadian Liberation March is in the hands of the local lore "CNOC IS IER" with the co-operation of the Canadian Embassies of Den Haag and Brussels, the Red Cross, the National Patriotic Organisations, the Town Councils of Terneuzen, Oostburg, Sluis and Knokke-Heist, the brass band "De Zeegalm, Feestkring Oud-Knokke-Heist", the brass band "De Zeegalm, Feestkring Oud-Knokke", Willemsfonds Knokke and the radio amateurs from the East Coast.

Every year an attempt is made to have veterans flown in from Canada, and a platoon of Canadian Engineers become the guests of Liberation Week.

Gerard Adrianssens, Gaspar Warnier and Danny Lannoy, representatives of the organising team, stand in the breach to give the Canadian soldiers and veterans a pleasant stay. As 1983 is the YEAR OF COMMUNICATION the local radio amateur Club Station ON6HC will be stationed in the Townhall of Knokke during the period of the 28th October until the 2nd of November, 1983. The Minister of PTT has been asked to grant a special callsign during this week.

A splendid multi-coloured award will be issued to confirm each QSO or SWL report. Applicants must send their own QSL cards.

NORTHERN CALIFORNIA DX FOUNDATION TWENTY METRE BEACONS

Monitor 14.100 MHz any time, day or night, for 10 minutes and see how many of the eight worldwide power-attenuating beacon net stations you can hear as they transmit the programming components. The engineer, production and packaging was done by Cam Pierce, K6RU.

TRANSMITTED BY EACH BEACON

Power Level: CW Message

100 W 9-second dash
10 W 9-second dash
1 W 9-second dash
0.1 W 9-second dash
100 W SK (W6WX/B)

Transmission time: ± 58 seconds
Speed: 20 WPM
Power attenuated in 10 dB steps.

The beacon net was organised and financed by the Northern California DX Foundation (NCDXF). The overall beacon transmitter concept and RF power-level switching was designed by Dave Leesen, W6QHS. Jack Curtis, K6KU, of Curtio Electric Devices, designed the clock, the microprocessor and the programming components. The engineering, production and packaging was done by Cam Pierce, K6RU.

TIARA FOREIGN AMATEUR REPEATER IN TOKYO

In April 83, the Tokyo International Amateur Radio Association (TIARA) held a party to celebrate the approval, thanks to support from the JARL, of its application for a foreign amateur repeater in Tokyo. Shown in the photo from left to right are: Makoto Miyazaki, JN1WLE (Okura Hotel Amateur Radio Club); Keichi Ogo, JG1SIY (President Okura Hotel Amateur Radio Club); Yasuo Hashimoto, JJ1TUY (Okura Hotel Amateur Radio Club); Yutaka Kasahara, JA1CLN (JARL Manager External Affairs); Joe Speroni, AH0A (President TIARA); Richard L Baldwin, W1RU (President IARU); Shozo Hara, JA1AN (President JARL); Edward Johnson, WZ2ZA (Vice-President TIARA); John Donald GA7FM (TIARA); Andrew Clark, WA4PRF (TIARA); Rossella Strom, I1RYS (TIARA); Kjell Strom, SM6CPI (Secretary TIARA).

The repeater operates on 434.78 (in)/439.78 (out) and is located on the new wing of the Okura Hotel in Akasaka Tokyo, about 75 metres above ground. An 85.5 Hz sub-audible tone is required for access. The location is central to the business area and convenient for the foreign community living in or just visiting Tokyo. The Okura Hotel is also the meeting place for TIARA.

0001 6W6X/B Transvaal, South Africa
0002 KH60/B Honolulu Community College, Hawaii
0003 JA21GY/B JARL, Mt Asama, Japan
0004 4X6TU/B Tel Aviv University, Israel
0005 OH2B Helsinki Technical University, Finland
0006 CT3B ARRJ, Madeira Island
0007 ZS6DN/B Transvaal, South Africa
**THE SOUTH EAST RADIO AMATEUR NETWORK**

SEAnet is an informal group of radio amateurs which meets every day at 1200 hours UTC on a frequency of 14.320 MHz. The purpose of the net is to provide for the comradeship obtained in talking to one another “on the air”. More than a hundred amateurs from South East Asia, Japan and Africa check in.

In 1971, about twenty five of these amateurs met in Penang, Malaysia for the first time. They decided that an annual SEAnet convention should be arranged by the South East Asia region every year for the amateurs to meet one another. Since then, conventions have been held in Bangkok three times, Manila twice, Kuala Lumpur, having been held in Singapore twice, and Jakarta once.

The convention normally has an informal programme covering matters of interest to the science of amateur radio, discussions on the operation of SEAnet, commercial exhibits, and Africa check in.

**LIST OF FOUNDING DATES OF MEMBERS TO IARU**

<table>
<thead>
<tr>
<th>DATE</th>
<th>SOCIETY COUNTRY</th>
<th>YEAR OF JOINING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1910</td>
<td>WIA</td>
<td>Australia</td>
</tr>
<tr>
<td>1913</td>
<td>RGB</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>1920</td>
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**PROVINCIAL PROGRAMME**

**Friday 18 November**

**Afternoon: Registration**

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TIARA is a group of eighty foreign amateurs from fourteen countries living in Japan. First organised in 1970 it has grown steadily and over the years assisted many foreign amateurs in getting on the air in Japan. Visitors are welcomed at meetings which are usually held on the last Friday of the month. TIARA’s mailing address is — TIARA, PO Box 119, Akasaka, Minato-ku, Tokyo 107 Japan.

Tokyo International Amateur Radio Association

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**VE3CJ ELECTED AS PRESIDENT EMERITUS**

The International Amateur Radio Union now has a President Emeritus: Noel B Eaton, VK3CJ. Seventy three member societies cast affirmative votes on the Proposal No 173, which the Headquarters made in the light of a recommendation adopted by the Manila Conference of the IARU Region 3 Association.

---

**THREE NEW BANDS AT 10, 18 AND 24 MHz**

The IARU Member societies of the following countries have notified the Headquarters of the availability of new bands for their use.

10, 100-1,050 MHz: Algeria, Australia (less 10.1375-10.1455), Austria, Bermuda, Botswana, Canada, Cayman Islands, Colombia, Costa Rica, Denmark, Djibouti, Commonwealth of Dominica, Faroe Islands, France, Fed Rep of Germany, Honduras, Indonesia, Israel, Japan, Luxembourg, Malaysia, Morocco, Netherlands, Netherlands Antilles, New Zealand (10.100-10.125 and 10.135-10.150), Nicaragua, Nigeria, Norway, Panama, Papua New Guinea, San Marino, Solomon Islands, South Africa, Spain (10.1075-10.135), Suriname, Switzerland, Syria, Tonga, Trinidad & Tobago, United Kingdom, USA (10.100-10.109 and 10.115-10.150), Western Samoa, and Yugoslavia.


24, 690-24, 990 MHz: Algeria, Argentina, Australia (less 24.896-24.904), Austria, Botswana, Cayman Islands, Colombia, Costa Rica, Denmark, Djibouti, Faroe Islands, France, Fed Rep of Germany, Honduras, Monaco, Netherlands, Nicaragua, Nigeria, Oman, Panama, San Marino, South Africa, Switzerland, Syria, Tonga, Trinidad & Tobago, United Kingdom, and Yugoslavia.
Still More Usable Antenna For Your Money...

Plus 30 Metres!

Butternut's new model HF6V* offers more active radiator on more bands than any other vertical of comparable height. DIFFERENTIAL REACTANCE TUNING™ circuitry lets the 26' antenna work on 80/75, 40, 30, 20 and 10 metres and a loss-free linear decoupler gives full quarter wave unloaded performance on 15 metres. It can also be modified for remaining WARC bands.

- Completely automatic bandswitching 80 through 10 metres including 30 metres (10.1-10.15 MHz): 160 through 10 metres with optional TBR-160 unit.
- Retrofit capability for 18 and 24 MHz bands.
- No noisy traps to rob you of power. The HF6V's three resonator circuits use rugged HV ceramic capacitors and large-diameter self-supporting inductors for unmatched circuit Q and efficiency.
- Eye-level adjustment for precise resonance in any segment of 80/75 metres, incl. MARS and CAP ranges. No need to lower antenna to QSY between phone and CW bands.
- For ground, rooftop, tower installations — no guys required.

Suggested amateur net prices:
- Model HF6V (automatic bandswitching 80-10 meters) .... $282
- Model TBR-160 (160 metre base resonator) .... $66

For complete information concerning the HF6V and other Butternut products, amateur and commercial contact the sole Australian distributor - TRAEGER DISTRIBUTORS (NSW) PTY LTD PO Box 348, Moree, NSW, 2400.

* Patented device
NOTICE TO ALL HAMS

To comply with the new Government regulations the TS-430S will be known as the 43-X and the TS-930S Mark II will be known as the 93-X Mark II. These are not new world models and are for Australian sales only.

The performance and features are identical to the present model numbers and the only difference is that the out-of-Amateur band transmissions are no longer possible. However the Receiving section is totally unchanged.

All equipment capable of transmitting outside of the Amateur Bands rate a 30% duty and this equipment is not in the spirit of Amateur Radio.

PROFESSIONAL ROTATOR

Microprocessor controlled.
10 Memories.
Scanning.
Stepping.
Search.
Azimuth centered on East Coast of Australia.

ALL PRICES & SPECIAL OFFERS WILL ONLY BE MAINTAINED FOR A PERIOD OF ONE MONTH

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BRIAN STARES -- 11 MALMSBURY STREET, BALLARAT (053) 39 2808
SUMMER ELECTRONICS -- 78 KING STREET, BENDIGO (054) 43 1977

TAS: HOBBS ELECTRONICS -- 477 NELSON ROAD, MT. NILSON (002) 23 6751
GELSTON ELECTRONICS -- SUMMER HILL (003) 27 2256
ADVANCED ELECTRONICS -- 5A THE QUADRANT, LAUNCESTON (003) 31 7075
V.K. ELECTRONICS -- 214 MOUNT ST. BURNEE (004) 31 7303

S.A.: INTERNATIONAL COMMUNICATIONS SYSTEMS PTY LTD. -- 8 NILE ST. PORT ADELAIDE (08) 47 3688
W.A.: ARENA COMMUNICATIONS SERVICES -- 642 ALBANY HWY., EAST VICTORIA PARK (09) 361 5422

TRSALES -- Cnr. Newcastle & Charles Streets, Perth (09) 326 4160
WILLIS ELECTRONICS -- 445 MURRAY STREET, PERTH (09) 251 7307
BAY RADIO -- 18 BANKSIA STREET, BUNBURY (097) 21 2236
R.O.D. -- 115 BAYON ROAD, SOUTH HEADLAND (091) 72 1112
SELECT TRONIX -- TQ PRICE (091) 89 1564
FORD ELECTRONICS -- 209 HANCOCK STREET, DOUBLE VIEW (09) 446 4705

NEW SOUTH WALES

TRIO-KENWOOD (AUS) PTY. LTD. -- 4E WOODCOCK PLACE, LANE COVE, SYDNEY, N.S.W. 2065.
P.O. (02) 428 1455.

UNIQUE ELECTRONICS -- 418 OLD PROSPECT ROAD 5TH, WENTWORTHVILLE (02) 631 6666
WASIL ELECTRICAL -- 71 SUMMER STREET, ORANGE (063) 62 6249
STOCKMAN & HIGGINS -- BYRON STREET, NARELLA (02) 22 1300
ELECTRON 2000 -- 3 ELIZABETH STREET, TIGHESS HILL, NEWCASTLE (049) 69 6399
MACLEAN PTY. LTD. -- 96 KENNY STREET, WALLONGONG (02) 29 1455
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DK ENGINEERING -- 5 JASMINE STREET, PORT MACQUARIE (067) 83 2175
LAND LINK -- MULLALLEY ROAD, CUNDAWAGAN (067) 42 2628
LAND LINK -- 61 BARNES STREET, TAMWORTH (067) 65 4622
FRANK BOUNCY -- LISMORE (066) 86 2145

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TR-9500
NOW AVAILABLE!
START WORKING THE AMATEUR SATELLITE NOW.
MFJ-410 “Professor Morse” lets you... COPY CW FASTER AND UPGRADE QUICKER

New MFJ Random Code Generator/Keyer sends unlimited random code in random groups for practice. Never repeats same sequence. Tailor level to your ability. Vary speed 5 to 50 WPM. Vary spacing between characters. Speed Meter. Full Feature Keyer.

$233 + $7 P & P
Sends unlimited random code. Never repeats same sequence. Tailor level to your ability. Vary speed 5-50 WPM.

HEAR COMMERCIAL VHF HIGH BAND AND VHF MARINE SIGNALS on 2 Metre Handhelds with this MFJ VHF Converter.

$88.00 + $5 P & P
New MFJ VHF converter turns your synthesized scanning 2 metre handheld into a hot VHF HIGH band scanner. 144-148 MHz handhelds receive marine on 154-158 MHz with direct frequency readout. Hear VHF commercial stations plus more on 160-164 MHz.

Mounts between handheld and rubber ducky. Feedthru allows simultaneous scanning of both 2 metres and commercial bands. No missed calls. Highpass input filter and 2.5 GHz transistor gives excellent uniform sensitivity over both bands. Crystal controlled. Bypass/OFF switch allows transmitting. Won’t burn out if you transmit (up to 5 watts) with converter on. Low insertion SWR. Uses AAA battery. 2½ x 1⅞ x 1⅜ in. BNC connectors. Enjoy scanning, memory, digital readout, etc. as provided by your handheld on 154-158 and 160-164 MHz bands.

STANDARD C-58E 2 METRE MULTIMODE PORTABLE NOW IN STOCK AGAIN.

Write for a brochure and full specifications. $377 + $10 P & P

CPB58E MATCHING 25 WATT LINEAR $188 + $10 P & P

NEW C-8900E 2m MOBILE IN STOCK.

* ULTRA SLIM LINE 31H X 178D X 138W cms
* Ga As FET front end. 0.15 uV @ 12 dB SINAD
Write for a brochure and full specifications.

Price $413 + $10 P & P
MFJ ENTERPRISES, INCORPORATED

ANTENNA TUNERS TO SUIT ALL REQUIREMENTS UP TO 3 kW

MFJ-941C 300 Watt Versa Tuner II

Has SWR/Wattmeter, Antenna Switch, Balun. Matches everything 1.8-30 MHz: dipoles, vees, random wires, verticals, mobile whips, balanced lines, coax lines.

$201
+ $7 P&P

MFJ-949B VERSA TUNER II

MFJ-949B
$265
+ $7 P&P

MFJ's best 300 watt Versa Tuner II. Matches everything from 1.8-30 MHz, coaxes, randoms, balanced lines, up to 300W output, solid-state or tubes. Tunes out SWR on dipoles, vees, long wires, verticals, whips, beams, quads. Built-in 4:1 balun. 300 W, 50-ohm dummy load. SWR meter and 2-range wattmeter (300W and 30W). 6 position antenna switch on front panel, 12 position air-wound inductor, coax connectors, binding posts, black and beige case 10x3x4x75.

MFJ-989 VERSA TUNER V

MFJ-989
$562
+ $15 P&P

New smaller size matches new smaller rigs – only 10-3/4 W x 4-1/2 H x 14-7/8 D.

3 kW PEP, 250 pt-blk caps. Matches coax, balanced lines, random wires 1.8-30 MHz.

Roller Inductor, 3-digit turns counter plus spinner knob for precise inductance control to get that SWR down.

Built-in 300 watt, 50 ohm dummy load.

Built-in 4:1 ferrite balun.

Built-in lighted 2% meter reads SWR plus forward/reflected power. 2 ranges (200 & 2000W).

6 position ant. switch. Al. cabinet. Tilt bail.

$58.00
+ $8 P&P

MFJ DUMMY LOADS

Tune up fast into 50 ohm resistive load. Extend life of finals.

Includes high quality transformer oil.

MFJ-900 VERSA TUNER

MFJ-900
$125
+ $7 P&P

Matches coax, random wires 1.8-30 MHz. Handles up to 200 watts output; efficient air-wound inductor gives more watts out. 5x2x6.

Tunes any transceiver, solid state or tube.

Operate all bands with one antenna. 2 OTHER 200W MODELS:

MFJ-901, $138 (+ $7), like 900 but includes 4:1 balun for use with balanced lines.

MFJ-962 VERSA TUNER III

MFJ-962
$326
+ $15 P&P

Run up to 1.5 kW PEP, match any feed line from 1.8-30 MHz.

Built-in SWR/Wattmeter has 2000 and 200 watt ranges, forward and reflected.

6 position antenna switch handles 2 coax lines (direct or through tuner), wire and balanced lines.


BY-1 PADDLE $78 + $7 P&P

OPTIONAL BENCHER IAMBIC PADDLE FOR ALL MEMORY KEYERS. Dot and dash paddles have fully adjustable tension and spacing for the exact "feel" you like. Heavy base with non-slip rubber feet eliminates "walking."

$100.00
+ $8 P&P

MFJ-262
MFJ-262 (1 kW)

Air cooled, non-inductive 50 ohm resistor in perforated metal housing with SO-239 connectors. Full load for 30 seconds, derating curves to 5 minutes. SWR 1.3:1 for 30 MHz, 3x3x13 inches.

$326
+ $15 P&P

Run up to 1.5 kW PEP, match any feed line from 1.8-30 MHz.

Built-in SWR/Wattmeter has 2000 and 200 watt ranges, forward and reflected.

6 position antenna switch handles 2 coax lines (direct or through tuner), wire and balanced lines.


AMATEUR RADIO, October 1983 — Page 41
Postage increases of 11% plus effective this month, surely is sad news for the DXer and this will create a greater strain on the never tiring WIA QSL Bureau managers and their assistants. It is, more than ever, beneficial to have access to your divisional bureau so that you may despatch those cards expeditiously with a minimum of cost.

When one tots up the cost of despatching a card by post to an exotic overseas country, it becomes astronomical. A self addressed envelope, 2 IRC’s at a minimum, an envelope to place it all in, time in addressing the envelope and that STAMP. It all adds up to a very tidy sum. With the bureau at ones disposal, the charges are minimal.

When one is placing a card through the bureau, it would be considerate to take a little care so that you may participate in the assistance of the sorting of thousands of cards in a year by adhering to the basics that are common to all bureaus. The basics include accurate alphanumeric sorting of all cards that you intend to send and the callsign in 10mm high legible lettering of the designated station on the top right hand reverse side of the card.

Each VK QSL bureau has certain limitations and they have rules that vary from division to division. It is up to you, as a member, to inquire of the rules that are pertinent to your division and abide by them, so that the volunteer labour will not be overtaxed beyond the limits. A number of QSL Bureaus in overseas countries employ paid staff. One such country is JA, where some 25 people are employed in the inwards and outwards departments.

Whilst on the subject of QSLing, it was mentioned last year that, in conjunction with Jan and Jay’s publication of the QSL Managers List, all bad QSLers would be printed. Unfortunately, very few VK’s sent in any reports. Of those that did, no concrete evidence as to a non QSLing station was obtained and apparently the same happened in overseas countries employ paid staff. One such country is JA, where some 25 people are employed in the inwards and outwards departments.

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This amateur notes in his letter that he always sends a self addressed envelope and two IRC’s. The list shows that some operators are very prompt, others tardy and very inconsiderate of their fellow amateur. It is known that one VK operator who jumped in to become a QSL manager, still owes cards to at least one VK3.

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**TURKEY**

Still need TA on CW? Unal TA1UA, has been active on both fifteen and twenty metres.

Generally to be found 25 to 30 kHz inside the band edge. If you are successful QSL direct to Unal Akbal, PO Box 787, Istanbul, Turkey and please no reference to the hobby on either envelope.

**RARE ONES**

Ed W4MGN, was at it again and operated from C5, 6W and 9U during one of his whirlwind trips to Africa. Ed has intimated that DX operations have come to a standstill in Gambia, due to all of the DXers having left the country. The remaining operators have only one interest and that is working back into the UK.

Burundi is changing too, in so much that Jean 9U5JM is expected to return home to France in the near future. His place may be taken by Jim N4HX. Jimmy has been appointed the American ambassador and hopes to obtain operating privileges in the near future.

**PRINCE WILLIAM**

The unusual callsign GB1BOY was used on 21 June to celebrate Prince William’s first birthday. This is another indication that the licensing authorities have taken a special view on their attitude towards special event stations. Let’s hope that it will not become like VE, and we will have to learn to cope with learning new prefixes every couple of weeks.

**UNUSUAL PREFIXES**

The USSR authorities have really let their hair down and issued some very unusual prefixes in commemoration of World Communications Year.

Such prefixes as EM6, UU, 4J4 and 4K1 have been heard with poor band conditions, but at extremely good strength at this QTH on twenty metres. Some signals from these regions were subject to very strong flutter at times.

Not to be outdone, the Canadian stations, who operate under many prefixes with the least excuse have been using such exotics as CK4 and XJ3 around the bands.

**MALPELO ISLAND**

Latest information is that the DX group will make it and they will commence around the 12th of this month. Like others I will be queuing up to work this one as it has escaped me over the years. Good luck to all those that need it for a new one. To those that have it confirmed and claimed on the DXCC score, please stand aside and let the stations that need it for a new country work it first.

**NO LICENCE**

A recent application by an amateur for permission to operate in A51 was turned down by the authorities with the explanation that there is no legislation to permit amateur radio operations by non nationals.

Pradhan A51PN looks like the only hope to those wanting this country, and the chances of him appearing in the near future are very slim.

**KNIGHTS OF MALTA**

Don’t overlook the operation from this rarely activated area scheduled for this month. Mario 10MGM, the station’s QSL Manager, should have 1A0KM on the air from all accounts.

Ken McLachlan, VK3AH
Box 39, Mooroolbark, Vic 3138

ASSIGNMENT OF US CALLSIGNS

Ever wondered what that strange callsign was that was emanating from the United States. I have, and Bob W6KKE, Editor of QST DX has kindly put me right, and sent me a full list which has been reprinted for your benefit.

PUBLIC NOTICE ISSUED ON AMATEUR RADIO CALLSIGN ASSIGNMENT SYSTEM

The FCC has issued a bulletin pointing out that even though they mentioned in April 1978 that they would not be reissuing unassigned callsigns for five years, no plans are being considered “to establish a schedule in the foreseeable future for reassignment of any callsign.” The FCC did say, however, that they were “extending the period in which secondary callsigns may be assigned to primary stations.” Also, any callsign can now be renewed within two years after expiration. The new prefix block “KP5” has been set aside for Deseecho Island.

CALLSIGN ASSIGNMENT ORDER...
CONTINENTAL UNITED STATES
KA#A-KZ#Z; NA#A-NZ#Z; WA#A-WZ#ZZ
(Except: KP, KN, NL, NP, WH, WL, WP.)

KH#A-KZ#ZZ; WA#A-WZ#ZZ (In 1-lands: 1st block=KA1AA-KZ1ZZ - Same Exceptions)
N#AAA-NZ#ZZ; WI#AAA-WZ#ZZ (No Exclusions)
KA#AAA-KZ#ZZZ; WA#AAA-WZ#ZZZ (Except: KH, KL, KP, WC, WH, WK, WL, WM, WP, WT).

NON-CONTIGUOUS U.S.A.

NUMERICAL DESIGNATORS FOR NON-CONTIGUOUS U.S.A.
DIGIT LOCATION
1 Baker, Howland Island
2 Guam
3 Johnston Island
4 Midway Island
5 Palmyra Island
5KKingman Reef (K Suffix)
6 State of Hawaii
7 Kure Island
8 American Samoa
9 Wake, Wilkes, Peale Islands
10 Commonwealth of Northern Mariana Islands
11 State of Alaska
12 Name this one
13 Virgin Islands
14 Commonwealth of Puerto Rico
15 Deschecheo Island

Note: Designator: "3" has been discontinued. Previously assigned to Roncador Cay, Quisua Sueno Bank and Serrana Bank.

So we hope that it is now a little clearer than it was before and thanks Bob.

IDENTIFICATION
On browsing through the Royal Omani Amateur Radio Societies newsletter (ROARS) column, a new membership requirement. This requirement is an identification card for each member. To be an amateur or SWL in Oman you must be a member of the society.

This move has brought about by the number of pirate operations emanating or purported to emanate from Oman. Another measure is the identification of equipment to the society, with such details as the exact location of the equipment, the make, model and serial number of all equipment held by the member.

It is an offence to sell transmitting equipment within Oman without the prior knowledge and consent of the society.

PETER 1st ISLAND
A new DXCC listing and it did cause quite a stir on the bands. Many questions were asked by many DX operators. Questions embracing where is it, who has operated there and the most searching of them all, when will it be operated and by whom?

All good questions, most answerable. This island is located some 400 kilometres off the Antarctic mainland and spans an area 22 kilometres by 11 kilometres, co-ordinates being 69° 0 S and 91° 0 W. It has a peak of 1220 metres at its highest point.

It was founded in 1832 by a Russian explorer and not claimed until 1931, when the Norwegians occupied it to assist in the policing of their whaling rights in the surrounding waters. This island has been described by one journalist as "... bleak, dangerous and uninviting."

One other amateur, who has sailed near it, has described it similarly but remarks that there might be only a few days of the year when a landing would be possible as the surface is covered with ice rather than snow.

It is apparent that any expedition who were venturesome would have to convince the Norwegian government of their intentions and be able to take out a 3Y call. This exercise could prove to make Heard Island look like a piece of "cake" in comparison.

The Norwegian claim is not recognised by many countries, only those who are signatory to the Antarctic Treaty. Australia is a signatory to this agreement whereas the USA and USSR are not.

Problems aside, who will be the first to activate this desolate area, will it become a non starter because of the difficulties and if eventually some amateurs are willing to risk life and limb will it be universally recognised. I feel that it will seeing this that the ARRL have listed it as current country number three hundred and sixteen when it is operated by a valid and legitimate expedition.

Any takers to activate this one? The authorities will not be killed in the rush for licence issues that is for sure.

CLIPPERTON
The propagation is still falling and the enthusiasts are still making plans for an expedition in early 1984. Stay tuned for any updates between now and February 1984.

ANGOLA
The near future may allow OK3TAB/D2A to be heard on the bands. This station was last heard in 1979, so if it comes to pass it could prove to be on the much wanted list of newer licencesses.

RODRIGUEZ ISLAND
This island will be activated by 3B9FK until approximately mid December. QSL's to PO Box 1080, Port Louis, Mauritius.

ST PAUL ISLAND
This rarely activated area should be active the first week of this month. Stations participating in the venture of putting VE1SPI to air include VE1ASJ, CEG, CER, TT, JH1VRQ, W1GNC and WB4OSN.

They promised to be active on all bands with CW, SSB and RTTY.

BLANK QSL CARDS
This column has not been quite complete to "open" QSL cards in the past and again they are appearing, this time to an expedition QSL Manager.

Neil, VK6NE has received cards to fill in for "yourself or your friends" in the hope of receiving a confirmation for the much wanted QSL from Heard Island. Some readers will scoff at the thought of this practice but it is 100 percent truthful. I have seen the evidence at this QTH, before the cards were returned to their South American owner.

One wonders how many other legitimate QSL Managers come across such violations of the ethics of the hobby and the temptations placed upon them. No matter who, all cards should be checked against the log, a practice that is not always adhered to unfortunately, I am afraid.

These cards have been cancelled and suitably endorsed, leaving no doubt to the station licencess, no matter if there is a language barrier, as to the integrity of the VK0HI and CW cards authenticity, and the practice is not appreciated in this country by at least one QSL Manager.

Congratulations Neil on the stand that you and your helpers took with such "freeloaders".

DEMOCRATIC KAMPUCHEA
A note from Mike JH1KRC, the Executive for Overseas Relations with the DX Family Foundation, to one of the main contributors to this column, explains that XU1SS was licenced by Mr Son Sann, the Prime Minister of the Coalition Government of Democratic Kampuchea for operation of amateur radio by his own people.

Mike, along with the other JA operators (nine in all) will act as instructors and hoped to be allowed to operate. This was the case as I had the pleasure of working XU1SS and personally speaking to Mike, who gave the VK's an excellent chance of working them.

Whether the DXCC committees and awards managers will accept this as a legitimate country will have to be seen over the coming months. The first step is to receive the QSL card, if you worked them of course, and the only route is a direct QSL to JA1HQQ, with of course adequate return postage and SAE. It is unfortunate and quite apparent that no bureau cards will be solicited for obvious reasons.

This group has established and is constructing "Tokyo Village" which will incorporate a refugee camp. Equipment such as two FT77's, one FL2100, one FT101, electronic keyers and the antennae department includes a triband beam, rotator and a vertical. Power supplies have not been forgotten as two engine generators have been also donated by the amateur fraternity and amateur dealers in JA.

GOLDEN ANNIVERSARY
A number of special calls are active from Columbia at the present. These calls include 5J1LM to 5J0LM and 5K1LM to 5K0LM.

These calls are being used to celebrate the fiftieth anniversary of the Columbian society and will be current until the end of the year.

PROFILE OF ZS2OM
Andrew XS2OM, a "white cane operator" for some twenty years, is known far and wide, but particularly in VK and ZL for his amiable QSLs and the work OTH. Andrew enjoys frequenting the ten, fifteen and twenty metre bands when conditions permit.

Born around 1925 in South Africa of Scottish parents, Andrew became interested.
in amateur radio just after the second World War, when he and his brother ZS2OW (also a white “cane operator”) purchased some disposal receiving equipment and listened into contacts from all over the world. Andrew and Willy’s interest was further kindled when a school teacher, who was also an amateur, came to their town. This gentleman assistance held them gain the licence.

Apart from radio, and his countless friends overseas, Andrew has few hobbies. He has had in excess of two thousand QSO’s with one of his regular friends, Bill ZL4AW since 1969. Another interest is Lions International, helded them gain the licence. kindled when a school teacher, who was also an amateur, came to their town. This gentle

Andrew and Willy’s interest was further kindled when a school teacher, who was also an amateur, came to their town. This gentle

It could be said that Andrew is a man of habit, being very particular about leaving for his work QTH at a particular time each day. He holds a responsible position in a company that deals in agricultural requirements for the farming community around the town of Konga where he resides, a position he has held for in excess of twenty five years, even though he has been with the company for a considerably longer period.

Jan notes that there are three stations active from the UAE and they are all acceptable for DXCC credits. The three stations are A6XJA, A6XJC and A6XTH. The note also gives the only QSL info, which is “Callsign”, PO Box 5708, Dubai, United Arab Emirates. Please enclose a self addressed envelope with a US “green stamp” as IRC’s are sometimes a non event, four IRC’s are required for an airmail stamp at some Post Offices.

These stations are QRV on 21.180 MHz daily at 1600 UTC and on other bands. Modes for these gentlemen are SSB with A6XTH running RTTY and soon SSTV. Jan is also building RTTY equipment.

SILENT KEY

It is sad to record that Nara 9M2LN, became a “silent key” on the 21st July this year due to a heart attack. Nara will be remembered by many VK’s for the assistance he gave them in CW tutorials and he has helped many to upgrade.

His work is being carried on by his friend Hock 9M2FR. (Refer article in AR, page 17, November 82.)

TASMANIAN DEVIL AWARD

To maintain interest in this well presented award, the VK7s hold a net on 3.590 MHz at 1000 UTC each Tuesday.

It would be appreciated if some VK7s could join the Pacific DX Net on Tuesdays and Fridays at 0600 UTC on 14.265 MHz, as they are in demand by many overseas operators for this award.

THE DXING TUCKERS

The Tuckers are a family of six licensed amateurs spread over 350 km of Northern California. The family consists of mother, father, two sons and their XYL’s and it is hoped in the not too distant future that the grandchildren will stretch the family into the third generation of Tucker amateurs.

Vic, K6SEA and Fran, K6SBL live in a small community, Franklin, situated about 25 km south of Sacramento. Their main interest is working their local 2 m repeater and among their equipment is a Heathkit 2 m transceiver which Fran built. They have both been licensed since 1958 and some of their achievements include providing radio communications for the 1960 World Olympics held in Squaw Valley, providing emergency communications during an Alaskan earthquake and tidal wave and communications during floods in 1964. They have been heavily involved in search and rescue work and handling traffic to overseas servicemen.

Son Ken, WB6AGM attained his licence in 1965 whilst in high school after he became involved in an electronics programme. His XYL, Centella, WB6WEM was licensed in 1977. They live in the small community of Greenville and run a grocery store. Their main activity is also 2 m and are not as active as they would like to be on the DX bands.

Other son Dave, KA6BIM and his XYL Dottie, KA6BIL have been licensed since 1978. They live in Manteca about 100 km east of San Francisco and 100 km south of Sacramento, where Dave is a fireman and Dottie is fully employed in raising their small son Daniel. Dave is the real DX Hound of the family and has worked over 140 countries. He is very active on 15 and 20 m with a little operating on 10 m. Dave and Dottie are very eager for young Daniel to take up the amateur bug as soon as he is old enough and make a third generation of Tuckers on air.

NEW DX CLUB

A note from Chris VK3FY informs of a group of DX oriented amateurs that have formed themselves into a group with the name of the Down Under DXers Contest Club.

Their first venture will be a trip to Lord Howe Island between the 23rd October and the 3rd November, taking in the CQWW Phone Contest and they will be operating on all current contest bands during their stay.

Members of the group and this year comprise Marv WA2BFW, Les VK2WU, Peter VK2DAV, Chris VK2NYA, Sue VK2PS, Stu VK2ADE, Martin VK4DU and Chris VK3FY.

Good luck to the group in their efforts and it is refreshing to see the novice and full calls getting together in a joint venture.

UNITED ARAB EMIRATES

Fred VK1MM, received a note from Jan A6XJA with some interesting information concerning operations from that country.

When asked in a recent QSO as to how many DX countries he has on his tally, the answer was “I had about 250 about ten years ago, but since then I have lost count.”

Anyone wishing to have a QSO with Andrew may join the ANZA Net around 0500 UTC at 21.204 MHz and QSY to an adjoining fre-
SAN MARINO
Since the change of prefix, a number of the operators have been quite busy on twenty metres.

Relaxing after working the multitudes. (L to R), Giovanni T77D, Franz DJ9ZB, Pergio T77V and Antonio T77C.

Picture courtesy QRZ DX and DJ9ZB.

FM7WD PO Box 879, Fort de France.
H4AP PO Box 581, Banjara.
J20WC BP 1076, Djibouti.
KX60O PO Box 444, APO SF 96555, USA.
J87BS 3 Chesterfield Hill, London W1.
JY5DT PO Box 2353, Amman.
PZ1DV PO Box 9006, Paramaibo.
S79ARB PO Box 178, Winslow, NJ 08095.
S79WWH PO Box 491, Scheyelles.
TRBCR PO Box 4356, Libreville.
TRBDC PO Box 484, Libreville.
TRBKG PO Box 740, Libreville.
VPRANT PO Box 146, Cambridge.
VU2USE CI- American Embassy, New Delhi.
WA4VDE Route 5, Box 107, Canton GA 30144.
Y5CAK PO Box 132, Padang.
Z1KGC PO Box 618, Raratonga, Cook Islands.

SWLING WITH ERC LI30042
28 MHz
HL5TX, KA(3), VK3(5), VK6(1).

1 MHz
AH2G, BY1PK (0800 z), BY8AA (0200 z), DJ5WCY, OU1TV, EA20B, F8KX, F8JKM, HLO, HLOV, N6CGU/HRK.
JE1FF, K6HSG, P29ML, PAILOU, PY2FFT, SM4GC, UK8AAI, VE2HQ, VE3BDO, KOKES, YB1DER, YUIK1, ZK4B, ZS5KI.

18 MHz
VK3SB, VK3ABR, VK5GZ.

14 MHz
DF2QS, WA3UHK/DU2, G6ZY/EA6, F08JM, G3UOF, HK6AA, KL7RS, 06GW, OK1AAW, PY2BW, SM4GK, SP2YAC, UA100R, USK4CUI/U1IN, UY9YAN, UG2CFA, UL7PBA, UY2RQ, XE10E, YB4FN, YQ3RF, 4K1QG, 9WM2.

10 MHz
OS3BL, F6GQ, GFTT, F7GFB, FK8KA, G3UOF, GM3DLP, HBNL, J6HWJ, KP2J, O22RH, PA3BTH, VE3OH, W (call areas), Y3U9O, ZM2AGY, 4X4WF.

7 MHz
C02LM, DJ4ML, EA1IV, F6KSY, FK8BK, FO8BLI, HG5A, H4CWA, HL4XM, IV3DVN, K07P/KH2, K4AAA, K6GRT.
KP2J, KP4L, IS6LKL, L2ZFP, OH1AA/OHAM, OH5AO, PAILOU, OK3EY, USW3G, UK2GB, UC5SK2, UB2PAG, K4DELF, ZL1UB, XI3ARV, Y03CD, YU2RA, YV5DRN, YX1X, 4K1B, 86PAU.

3.5 MHz
P3WJ, LA6CE, LD1KDP, SM6CPY, SM7WI, UA0JN, UA4CC, UA4PWW, UB5GB, UB5FJ, UB5LE, UB8I, UKELAZ, UQ2GCN, Y02BV, Y08BPK, YU2CFM, 3D6AK.

1.8 MHz
VE3ID, VK3(3), VK3(2), VK4NN, VK5(6), VK7(2), VK9NS, N7ELI, W4H5R, ZL1HY.

3.5 MHz
UA4CCC, UA4PPW, UK2GB, UB5FJ, UB5LE, UB8I, UKELAZ, UQ2GCN, Y02BV, Y08BPK, YU2CFM, 3D6AK.

QSLs RECEIVED BY ERC LI30042

* Denotes 10 MHz confirmations.

HEARD AND WORKED ON THE EAST COAST
14 MHz
GS0DR.

14 MHz
OH2OM/K0MFO.

21 MHz
EL2AE, F89ZQ, GJ4PA3BFM, H6V2P, PYOFE, TR6DR, TR8JBL, T280C.

28 MHz
GJ4PA0ERA, GJ4/PA3BFM, HZ1AB, TR8DR.

3.5 MHz
FB9WI, T280C.

7 MHz
A4XJP, FB8WI, GJ4/PA0ERA, H29VP, T280C, T280D*, UK2FAA

* Denotes SSB operation.

INTERESTING QSLs RECEIVED
15SKC (for 14 & 21 MHz). AP2P, BY1PK, CX4BW, FO8BJE, HK6FAO, JY3ZH (from manager DJ9ZB), KAG6L, KGGDJX, LX1KE, 0DSAS, OH1BO, TG9YUT, TR8BJ, UA1CY, UQ2GCW, VK0CV, VK0DX, VP8JWR, WL7AQC, Y2650, Y41ZM, YB19B3.

Gero YU4TU, confined to a wheel chair due to being a sufferer of muscular dystrophy, enjoys DXing.

THANKS
This column is never complete without a word of thanks to the many readers that make it possible with their news and reports. Some items are long, some short, but all are equally appreciated and acknowledged in this segment of the column.

Information gained from such magazines as KH6BZF REPORTS, RADCOM, QSL MANAGERS LIST, WORLD RADIO, QRZ DX, VERON, DXEXPRESS, QRZ DX, DX NEWS SHEET were used together with reports from VKs 1MM, WB, 2PS, EBX, 3BY, FR, FY, UX, YJ, YL, 6FS, HD, NE and SWL 30042. Amateurs from overseas countries who have contributed include G3NBJC, J1H1KRC, I8SAT, W5KNE, and ZL1AMN. Thanks to one and all.

AMATEUR RADIO, October 1983 — Page 45
Especially for those sitting for the November Novice Examination and those anticipating to sit in the near future Brenda has supplied a trial examination paper. This paper is typical of the type of questions asked so read the questions well and go to it. Don't sneak a look until all the questions are answered, but the answers appear in this issue after the Hamads.

Good Luck — Ed

NAOCP TRIAL EXAM

Instructions to Candidates:
Select the correct or most appropriate alternative and indicate it on the answer sheet as instructed.

Hints to Candidates:
1 Read the questions carefully and thoroughly;
2 Take care when transferring selections to the Answer Sheet;
3 Do not waste time on a question that has completely baffled you. Come back to it when you have finished the rest;
4 When you have your results, go back to the paper and check up on all the questions where you were not sure of the answer. See that you know why the particular answer was correct;
5 Use this test as a guide to the areas where your knowledge is weakest.

Best wishes and 73 to all
B M and J W Edmonds

NOTE:
These papers have been prepared to conform as closely as possible to the DOG plan for question allocation to the various sections of the syllabus.

All questions were written without reference to pre-existing questions — ie they are not reprints. Therefore they will not appear word for word in the November Novice Exam.

However, DOC has approved it, and has a copy.

1 A primary cell is one that —
a cannot be recharged
b has a steady EMF of one volt
c contains a liquid electrolyte
d can be recharged with a steady current of one ampere

2 A sine wave has a frequency of 1 Megahertz. This means that each cycle occupies —
a one second
b one millisecond
c one hundred microseconds
d one microsecond

3 Bipolar transistors are frequently associated with 'heat sinks'. This is because
a any heat generated can then be used to heat other components
b they function best if kept warm
c some internal connections are made of silver which has a low melting point
d temperature rises may cause increased current flow which causes further temperature rise

4 A capacitor is labelled 0.0047 microfarad. This is the same as —
a 47 millifarads
b 47 picofarads
c 4.7 millifarads
d 4700 picofarads

5 Two 600 ohm resistors are connected in parallel. If an EMF of 12 volts is applied across them, the current through one of the resistors would be —
a 20 amperes
b 200 milliamperes
c 50 milliamperes
d 20 milliamperes

6 The reactance of an inductor —
a falls as the frequency increases
b depends on the dimension of the coil
c is a measure of its ability to dissipate power
d is measured in henries

7 The output from this bridge rectifier —
a would be taken from terminals 2 and 4
b would be steady direct current
c would be an amplified version of the input
d would be present on positive input half cycles only

8 An amateur operator in Melbourne can hear a New Zealand station and a Brisbane station both in contact with a Sydney station. This suggests that —
a the signals from Sydney are not being refracted by the ionosphere
b Melbourne is in the skip zone for the Sydney station
c the Melbourne operator's antenna is not functioning properly
d the New Zealand and Brisbane operators are using illegal power

9 In this block diagram of an amplitude modulation transmitter transmitting on 7 MHz —
a Block 3 would be a tripler and Block 6 a modulator
b Block 3 would be a doubler and Block 5 a power amplifier

c Block 5 would be a doubler and Block 6 a modulator
d Block 6 would be a Radio Frequency Oscillator and Block 5 a linear amplifier

10 A mains powered soldering iron transformer has a 3 volt output. If the input current is 300 millamps, the maximum current that can be drawn from the secondary is slightly less than —
a 240 amps
b 24 amps
c 2.4 amps
d 240 millamps

11 A linear amplifier stage
a is used only where high output power is desired
b increases both amplitude and frequency of the input
c is always operated in Class C
d increases the amplitude of the input without altering the frequency

12 To find the voltage drop across R3, you could use a meter at —

13 The crystal microphone
a is a cheap sturdy instrument suitable for mobile use
b relies for its operation on the piezo electric effect
c has its diaphragm connected to a coil in a magnetic field
d is the most appropriate microphone to use in noisy conditions because of its good high frequency response

14 A superheterodyne receiver has a single IF stage tuned to 455 kHz. To receive a signal on 3.575 MHz, the Local Oscillator should be set to —
a 458.525 kHz
b 3779.55 kHz
c 2665 kHz
d 4030 kHz

15 A radio frequency carrier wave displayed on a cathode ray oscilloscope screen appears as —
17 This section of a circuit contains, among other components —

16 A resistor having the value of 4700 ohms ± 10% would be colour coded —

a yellow blue orange silver
b yellow violet orange gold
c yellow violet red silver
d orange blue brown gold

17 This section of a circuit contains, among other components —

a PNP transistor, a cell, and a diode
b an NPN transistor, an inductor and a diode
c a field effect transistor, a resistor and a capacitor
d a PNP transistor, a zener diode and a choke

18 The detector most commonly used for SSB reception is —

a a diode
b a product detector
c a regenerative detector
d a balanced modulator

19 Television reception is interfered with by a novice transmitter operating on low power and on various bands. The TVI is probably due to —

a harmonic radiation
b overmodulation
c key clicks
d TV front end overload

20 In a series resonant circuit at resonance —

a impedance is maximum
b $X_L = X_C$
c resistance to direct current flow is minimum
d $X_L = \frac{1}{X_C}$

21 The function of a fuse in a circuit is to —

a supply a minimum current drain when no load is applied
b provide a safe earth path in the event of an overload
c regulate the current flow to a steady level
d break the circuit if excess current is drawn

22 The power supply for a novice transmitter capable of 30 watts PEP output should —

a be well regulated and capable of 30 watts output from the filament system
b have poor regulation to allow for the fluctuating power requirements of SSB
c be capable of supplying the peak power requirements of the transmitter although this rates the power supply at more than 30 watts
d be solid state and not vacuum tube rectified

23 Care must be taken in keying many modern transmitters because —

a the microphone is left in circuit
b a dangerous bias voltage appears across the key
c dirty contacts can cause chirping
d dirty contacts can cause key clicks

24 TV or radio receiver overload caused by novice operation may be reduced by —

a increasing transmitter power
b the appropriate low pass filter at the transmitter
c reduced transmitter power
d increasing the height of the receiver antenna

25 80 metre signals may be useful up to several hundred kilometres during daylight hours if —

a they are refracted from the F layer
b the ground is flat
c they are not absorbed in the D layer
d thunderstorms are providing highly ionized paths

26 When testing a transmitter, use is made of an artificial antenna or 'dummy load'. This is done to —

a ensure maximum radiated power for test purposes
b allow accurate measurement of the SWR of the antenna
c reduce output of harmonics with the signal
d dissipate the transmitter output instead of radiating it

27 The output from one stage of a sideband transmitter is double sideband suppressed carrier. This stage is —

a the carrier oscillator
b the balanced modulator
c the sideband filter
d the linear amplifier

28 An amateur SSB signal is reported by one distant station as of excellent quality but neighbouring amateurs complain of excessive bandwidth and 'splat'. The amateur is probably —

a radiating unwanted subharmonics
b radiating the third harmonic only
c using a speech processor
d overmodulating

29 A disadvantage of vertical antennas is that —

a they usually produce a higher background noise in the receiver
b they are more readily distorted by rain or dew
c they radiate at a higher angle, especially if they are resonant
d they are not able to be protected from lightning

30 A transmitter stage is self-oscillating when power is applied. It needs to —

a have some parasitic suppressed
b have an antenna tuning unit to prevent harmonic radiation
c have the voltage to the final amplifier reduced
d be neutralised

31 Selectivity of a receiver is —

a the ability to receive weak signals
b the ability to remain on the frequency selected
c determined by the speaker transformer characteristics
d the ability to reject signals on adjacent frequencies

32 The best way to obtain a clean CW signal is to —

a use a high pass filter and seek reports
b reduce power to prevent over modulation
c use an oscilloscope to improve the wave shape
d use an unregulated power supply to the oscillator

33 For efficient energy transfer the transmission line must be matched —

a to the transmitter output impedance or to the antenna impedance
b to the antenna tuning unit which will tune the antenna
c by cutting it to $\frac{1}{2}$ or multiples of $\frac{1}{4}$ in length
d to both transmitter output and antenna input impedances

34 Single band antennae may be preferable to a multi-band antenna when —

a the transmitter is prone to parasitic oscillations
b the amateur operator does not use an antenna tuning unit
c the amateur station is in a remote country area away from TV reception
d portable operation in emergencies is required

35 A disadvantage of double conversion super-heterodyne receivers may be —

a poor image response
b spurious signals due to unwanted mixing products
c poor sensitivity
d poor selectivity

36 A receiver has two IF stages, a BFO and a simple diode detector. It may be —

a an AM receiver only
b an SSB receiver
c an AM and CW receiver with some SSB reception capability
d a CW receiver only

37 The basic difference between coaxial line and twin feeder line is that —

a coaxial line has a lower reactance than twin feeder
twin feeders must be air-spaced
c coaxial line is unbalanced, twin feed line is balanced
d coaxial line is unsuitable for use on 3.5 MHz

38 An RFI complaint is that a 3.5 MHz signal is being heard on a nearby 2.6 MHz emergency service base station. The most likely cause is —

a overmodulation
b cross modulation
c a 455 kHz IF in the emergency service base station
d parasitic transmission at 2.5 MHz

39 The edge of an amateur band may be easily checked by using —

a a grid dip meter
b a broadcast receiver
c a wavemeter
d a marker crystal

40 The capacitance of a variable capacitor diode can be varied by —

a varying the spacing of the plates
b varying the voltage applied
c increasing the ceramic spacing
d putting a capacitor in series

41 A diode is rated at 10 amps maximum forward current and 50 volts peak inverse voltage. It would best be used as —

a an RF amplifier in a receiver
b an AM detector
c a linear amplifier in a low power transmitter
d a rectifier in a 12 volt power supply

42 For good amateur communication quality on SSB the bandwidth of the signal should not be —

a more than 3 kHz
b less than 3 kHz
c more than 5 kHz
d more than 4.5 kHz

43 A Yagi antenna for use on 28 MHz will have —

a a driven element approximately 5 metres long
b a reflector element slightly over 10 metres long
c one or more directors between the reflector and the driven element
d at least one director slightly longer than the reflector

44 The power ratio of two signals is 3 dB. This means that one must be —

a 3 times the power of the other
b one third the power of the other
c twice the power of the other
d at least 3 watts output

45 The grid in a triode vacuum tube —

a controls the flow of electrons to the cathode
b prevents secondary emission
c is usually earthed in RF amplifiers
d is between the cathode and the anode

46 A novice AM transmitter uses 250 volts on the
ILP TOROIDALS — UNBEATABLE VALUE

ILP toroidal transformers meet modern day requirements for a smaller size, low magnetic interference field transformer. Featuring a nearly ideal physical construction, one can expect excellent performance. Small size and weight (approximately 50% of conventional transformers), extremely low noise and low magnetic interference field make the toroidal transformer ideal for compact power supplies.

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<th>TYPE</th>
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Telephone (02) 533 4896

BANKCARD ACCEPTED
The prewar years in Sydney were times when every suburb seemed to have its own wireless wizard who could be heard on the high frequency end of the broadcast band every Sunday morning between 6 and 7.30 am, grating out odd 78s and sending birthday wishes to anyone who said they would be listening to him. Viewed in retrospect, what an excellent piece of PR work this was for the radio amateur, because in this way anybody with an ordinary domestic receiver could hear him. Living at Campsie as I was then one of our nearest radio amateurs, was a chap at Lakemba, who even used to invite a local pastor to his “studio” to deliver a Sunday morning sermon to the unseen audience.

Another, whose callsign or name I cannot remember was located at “14 Watkin Street, Canterbury” an address that I remember clearly because he gave it out so often. I would like to have been able to record here for posterity the callsigns of these two amateurs who thus unknowingly helped introduce me to our fine hobby, but the years have erased their callsigns from my memory.

About the time I was ready to enter the work force from college, hostilities were beginning in Europe, and I was a bit uncertain whether to keep on at college or not. I had been earning a bit of pocket money by keeping my ears and eyes open while cycling around Sydney and ringing up the newspapers when I observed something that I thought might be news-worthy. To assist in this worthy cause, although I knew that the newspapers monitored the police radio, I knew the times that they were not monitoring and filled them in on whatever stories they missed out on later. I didn’t know anything about Wireless Telegraph Regulations then of course.

Anyway, a lot of the news tips that I phoned them about concerned actual observations that I had made. For example, on Black Friday 13th January, 1939, I spotted smoke in the general direction of Parramatta and on cycling there saw scores of people bundling their worldly belongings into all sorts of vehicles as the terrible bushfires converged in around that area. Another news tip off came my way as I watched two teams of “girls” playing hockey in a sports oval. Closer observation revealed that some of the “girls” were he-men, who had been rigged out in female attire to make up the numbers.

A phone call to the Sydney Daily Telegraph brought reporter Des Foster and a photographer to take a look, and the result was a humorous story in the next day’s paper about the “girls with hairy legs”. After this Des Foster became my regular contact at the Telegraph, which later entered into a “contract” with me to pay me 16/- PER MONTH for newstips. Later, I plucked up courage to ask Consolidated Press if I could get a “regular” job and landed the job of copyboy, with a recommendation I am sure from my friend Des Foster.

Now the job of copyboy, I will have you all know, is mainly that of being a general dogsboby or rouseabout who is supposed to do anything he is told or get kicked out of the job — and no back lip, if you please.

As the Telegraph was a morning paper, the copyboy’s job took him from just before tea time until long after the paper was “put to bed” — as the “journos say” — approximately 4 am. The copyboys were in the tender care of Mr Davis and Mr Colless, whose duty it was to see to it that when some sub-editor pressed the buzzer and bellowed out “B-O-Y” with a voice like a bull, some hapless lad would have come at the double, to the sub’s office. He’d then be asked perhaps to take some copy down to the Chief Censor’s Office in Pitt St (remember, it was wartime and newspapers couldn’t print just anything they liked). And if the Chief Censor’s decision was that the copy was “NOT TO BE PUBLISHED” an official stamp bearing those words was spread across the copy.

Other duties of the copyboys included collecting and signing for incoming Press cables from PMG Telegramboys and Beam Wireless messengers.

Copyboys had also to attend to the teleprinter, when the printer had to have its paper roll changed. There was no end of the sorts of jobs which copyboys might be obliged to do, and if one survived being a copyboy for long enough, with luck he might eventually be selected to become a cadet journalist, and looking back on those now far off days, came many a well known journalist of today.

Now you might ask what has all of this got to do with radio? Hold your horses and I’ll tell you for it is what I have been leading up to. It so happens that the Daily Telegraph had two radio rooms—there was the main one—a receiving station in the front room of a private house at 3 Alan Street, Cammeray a Sydney suburb, and this was connected by PMG cables to the other one in the newspaper office. It being wartime, overseas news was of major importance, and news gathered by radio was used to supplement information arriving by cable. In many cases when cables were held up because of wartime activity, there was always the BBC, San Francisco Radio and others. My job as copyboy took me many times into the room where reporters wearing headphones were transcribing incoming transmissions into shorthand so I knew that room very well. Cammeray covered about 45 or 50 newsbroadcasts per night, some in languages other than English, and for these there was interpreter, Dr Emery Barcs. At times when Churchill was due to deliver a major speech (which usually came through about midnight), the presses would be held and copyboys would be racing from the city radio room to the sub desk with page after page of copy as fast as their legs would take them. Remember, that there were no tape recorders at this time.

In due course, I was assigned to work at the Cammeray receiving station, which had only one other employee, Roy Phillips. We had five receivers there and a multiplicity of antennae in the backyard. The only receiver I can remember at this distance of time is a Skyraider. The outputs of all receivers could be fed via a switching panel to any one of the three special PMG lines which took the traffic to the Castlereagh Street office. Sometimes all three lines would be in use at once, with broadcasts from different parts of the world. I learned how to operate the switching panel, and although I don’t speak German. I learned how to identify Berlin Radio, when we were due to take that one at 11 pm, by its identifying gong and the announcement “Deutchecuslnder Berlin” (excuse my spelling, if it’s wrong) — “This is Berlin Calling” I think it means.

On finishing the night shift at Cammeray, which was usually around 4 am. I would switch everything off, let myself out the front door and catch an early morning tram over the Bridge, to Wynyard, and from there walk all the way up George Street to the Ultimo tram depot from where I would get the newspaper tram to Ryde where we lived. During wartime the trams, like the rest of the city, were in semi-darkness, or the “brownout” as it was called and there was a general air of gloom and foreboding over all. Also all sorts of undesirable characters were wandering the city at that time.

On this particular morning I was somewhere near the Haymarket when I heard footsteps approaching from across the road. “Maybe it’s undesirables wanting a smoke” I thought. It was not long before I found out. “Hey you”, yelled one of the pair, “What’s your name?”. I looked back at the two figures approaching me from out of the gloom. “Who wants to know?” I replied (shaking in my boots). They said they were detectives who had had me under surveillance for some time, and what’s a young fellow like you doing out at this time of morning” and always walking by myself up George Street. I tried to explain to them that I was an employee of Consolidated Press and invited them to contact my boss if they wanted to know if I was telling the truth. But they declined and told me to get lost, or something like that.

Another morning, I was challenged by military police who saw me wearing an overcoat and thought I was an AWOL soldier, but after shining a searchlight in my face, decided that I wasn’t the catch they were after. Yet another time I was detained by four tall specimens driving an old sedan car, just...
after I left the Cammeray address. The four
looked like real cloak and dagger types, and
they called me over to their car. One who
seemed like their leader said, "What's that
looking thing over there? -- The
place with all those aerials in the backyard." I
tried to explain that this was the Daily
Telegraph's receiving station, but it was clear
that he did not believe me. Neither did he
believe me when I told him my name, although
I was unable to produce the identity
card which people were supposed to carry at
that time. "You think we had to have a look
over this joint?" he said as they marched me
back up the steps and in the front door of the
station.

Back inside the door of the room where the
receivers were, their leader — who had very
successfully scared the living daylights out of
youthful me — sat me on a chair and started
asking questions while the other three
rummaged all over the room, at the back of
the sets and under the benches. I produced
the receiving station log as evidence that what
I was saying was true, but even that didn't
convince them for they were looking for a non
existent transmitter as I later found out. When
they couldn't find the transmitter they took it.

Bear in mind that the time I write of was
wartime, when anyone who even dared to put
up a clothesline in his yard might find a
suspicious neighbour on the phone to the
authorities, and no doubt it was the unusual
antenna array in the backyard that had set this
witch hunt off.

Later, I reported the incident to D L
Thompson, then Chief of Staff of the Daily
Telegraph, who instructed me to prepare a
written report on the happenings and hand it
to him personally. "Why did you let them
inside the premises?" he asked, and I replied
that it was because they said they were
detectives and they had really frightened me.

"Did you ask them to show any identifica-
tion?" was his next query, "and why not?,
because they LOOKED LIKE detectives" I
said in all innocence. "But I'll bet they asked
you for your identity card" he said, and they,
being professionals of course had done just
that.

More later, but in the meanwhile, thanks to
the many who have expressed condolences
to me on the death of my brother Frank on
13th of June (age 61) and a special thanks to
members of the Cocktail Net for their floral
tribute. It was much appreciated fellers. 73s
for now but more of my wartime reminiscences
later.

Joe, VK2BJX

INTRUDER WATCH

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH
CO-ORDINATOR
33 Somerville Road, Hornsby Heights,
NSW, 2077.

With the forthcoming WARC '84 (Broad-
casting) nearly upon us, it seems timely to
mention a few aspects of intruders in the 40
metre band, and what the future holds for the
amateur operator who uses this band. Recent
correspondence from the DOC gives us the
following information:

Broadcast transmissions emanating from
the People's Republic of China, within bands
allocated to the Amateur Service, have been
evident for a number of years. The Department
(DOC) is well aware of the situation and
recognises that the presence of these stations,
in some respects, restricts the ability of
amateurs as a whole to pursue their hobby. It
is pointed out that the People's Republic of
China is a relatively new member of the
international Telecommunications Union
(ITU). Consequently, the international regu-
lations relating to the registration of frequency
assignments, which have been in force for
many years and tend to favour the status quo,
are seen to place China at some disadvantage.

These regulations combined with the present
congestion within the HF broadcasting bands
have in fact prevented China from obtaining
the registrations necessary to transfer many
of its existing services to the appropriate
bands. At the signing of the Final Acts to
WARC '79, the Chinese delegation had a
statement incorporated into the Final Protocol
relating to the use of frequencies for
broadcasting." This statement, along with
eighty two others, was 'taken note of' by
Australian and all other Administrations. The
statement, No 20, is as follows:

For the People's Republic of China:

At the time of signing the final acts of the
World Administrative Radio Conference,
Geneva, 1979, the delegation of the People's
Republic of China, on behalf of the Chinese
Government, states the following: 'The
Chinese delegation takes note of the decision
taken by the present Conference on the
convening of a World Administrative Radio
Conference for the planning of the HF bands
allocated to the broadcasting service and
believes that it is an effective measure to solve
the problem of congestion in the HF broad-
casting bands and out-of-band transmissions.
However, owing to historical reasons, the
Chinese Administration reserves the right to
continue to use those frequencies which it
uses for broadcasting at present in the band
5.060-27.500 MHz until the establishment and
implementation of the proposed HF broad-
casting plan.'

Even allowing for this, the DOC has
continued to approach the Chinese Adminis-
tration expressing its concern at the operation
of broadcasting stations within the interna-
tionally recognised amateur bands.

In January, 1984, there will be a WARC held
at Geneva for the broadcasting services. The
NZART is to ask the New Zealand Adminis-
tration to instruct their delegation to the
conference to ensure that Resolution 641 of
WARC '79 is drawn to the attention of the
conference, and given firm support for its
implementation. Resolution 641 of WARC '79
states: "the band 7.000-7.100 MHz is pro-
hibited for use by broadcast stations, and
those already in it were to get out of it."

Intruder Watch Observers world-wide have
been asked to pay special attention to broadcast
intruders in this segment of the 40
metre band, and, hopefully, a comprehensive
record will be able to be put together to
support the claims for the implementation of
Resolution 641 at WARC '84. If this occurs,
amateurs world-wide will see the disappear-
ance of many broadcast stations from the
amateur segment of the 40 metre band, with
more satisfying conditions being made
available to amateur operators. If WARC '84 is
not successful in this, who knows? Let us
wish the conference every success in their
endeavours, and keep our fingers crossed.

Perhaps the problems of the 40 metre band
may soon be a thing of the past. Finally, don't
forget all are welcome on the Intruder Watch
net on 3.540 MHz on Thursday evenings, at
1030 UTC.
The 1983/84 callbook is exactly the same size and has an identical number of pages (176) as last year’s edition — but has new reference material inside, and of course an updated callsign listing.

The first thing that strikes you about the callbook is its full-colour cover. Credit for the cover design featuring the Gray-Line Radio Globe surrounded by twelve covers of AR magazine goes to Ken McLachlan VK3AH — it’s a very eye-catching layout.

The main purpose of the callbook is to list the callsigns of radio amateurs in Australia and Papua New Guinea, and Australian Short Wave Listeners WIA member numbers. In all there’s about 15,000 entries drawn from the WIA computer records and supplied by the Department of Communications.

The callsign entries are in a different typesetting format than the previous callbook to accommodate more callsigns without increasing the number of pages — but the typeface is clear and easy to read.

The WIA Publications Committee has done a fine job in updating the listings, remembering that new callsigns are being issued each day, and people are upgrading from Novice, Limited or Combined, to Full Call.

In response to the great number of changed listings the callbook has sufficient room at the end of each callsign prefix area for operators to jot down for their personal record new callsigns.

But this publication is more than just a list of calls, it contains valuable and interesting reference material of use to the active radio amateur and SWL.

New segments include WIA band plans for MF, HF, VHF and UHF, and there’s a section on Amateur Fast Scan TV.

The Australian DXCC Countries’ List is fully updated, and details of Australian Radio Amateur Awards have been revised.

Callbook editor Gil Sones VK3AUI in his editorial says “...the material has been selected by the Publications Committee to allow the reader to gain more knowledge and enjoyment from their chosen hobby.”

There’s little one can add to that statement, except perhaps state the obvious that the callbook is a vital piece of reference material for every shack.

The recommended price is $5.75 — good value.

SEVENTY YEARS OF RADIO TUBES AND VALVES

Ron Fisher, VK3OM

TECHNICAL EDITOR

Being something of a collector of old radio sets and bits and pieces, I guess it was only natural that I got to review this fascinating book.

70 Years of Radio Tubes and Valves, the last word being used to describe the products of Europe, Australia and New Zealand, was written by a New Zealander, John W Stokes, but produced and printed in the United States by the Vestal Press Ltd, of Vestal New York. The production is excellent with hundreds of black and white photos, the only colour used is on the cover sleeve with the same photo reproduced opposite the title page.

The 247 pages and 27 chapters trace the entire history of vacuum tubes from the original Edison lamp right through to the miniature tube of the fifties and sixties. One can only wonder where the solid state device will be after it has had as many years development as the tube.

Chapters include, The Grid, Some Early American Independents, Another Grid, Developments in Tetrodes, Metal Envelopes, Octal Based and All Glass Tubes, Transmitting Tubes, Canadian and Australian Tube Manufacture, The British Electrical Companies and many others.

The contents are not in chronological order apart from the first couple of chapters. Indeed each chapter is a complete story in itself. Unfortunately transmitting tubes only rate six pages and the most famous of them all, the 807 does not get a mention.

The book was written more as an historical rather than a technical treatise with the only technical data being the reproduction of a few old specification sheets and some advertising pages.

However, there is plenty of information for the collector trying to date his latest find. I was delighted to find a description of the AWA Expanse ‘B’ valve which was used by many of the original amateur operators including Max Howden 3BQ in the receiver used to pick up signals from the USA in the early twenties.

All in all, a most readable book that you will find hard to put down. With the valve fast disappearing from general use in a few years time the only trace left will be in museums and books like this.

**HELP**

**INTRUDER WATCH**

Please help INTRUDER WATCH by reporting all intruders.

AR
AWARDS

Have you ever thought of applying for a single, 5 band or 6 band, worked all continents award? These certificates are issued by the IARU and can be endorsed for any recognised mode. To apply, send the QSLs to me, with return postage, and I will do the rest. Do not forget to send in your address label from an issue of AR as these awards are only available to members of the Institute. These awards are not available for operations on any of the new WARC bands.

Further to a note on the "Ballarat Gold Rush" Award in August AR, the cost of this award has been reduced and not $2.00 as printed. All other information is correct, that is, one needs to contact ten Ballarat stations and applications should be sent to VK3XEX. Incidentally this award is unusual in that it comes with suggestions on how to mount the award as the award has been printed on self adhesive material. Yes, it is printed on a gold background!

PARAGUAY AWARDS

The following are some of the awards issued by the "Radio Club of Paraguay". Each award costs 5 IRCs and contacts need to have been made after 15 May 1952. A certified list should be sent for each award to Radio Club Paraguayo, Alberto Tauber, ZP5PX, PO Box 512, Asuncion, Paraguay.

The All Mediterranean Countries Award is given for confirmed contacts with Mediterranean countries (inland) as follows:

Class A: 41 countries
Class B: 30 countries
Class C: 20 countries
A ZP contact is obligatory in all classes.

Countries: A2, A5, AC3, C31, CP, HA, HB, HV5, JT, LX, OE, TL, TT, TZ, OK, UC2, UD6, UG6, UH8, UI8, UJ8, UL7, UM8, UO5, XT, XW8, YA, YE, ZP, 3D6, 4U1, 5U7, 5X5, 7P8, 7Q7, M1, 9J2, 9N1, 9U5, 9X5.

The Tropics of Cancer and Capricorn Award is given for confirmed contacts with countries touched by the Tropics of Cancer and Capricorn as follows:

Class A: 28 countries
Class B: 20 countries
Class C: 12 countries
A ZP contact is obligatory in all classes.

Countries valid for this award:
- Tropic of Cancer: S2/3, BV, BY, EA9, (Sahara) KH6, A4, A6, SU, TZ, C6, VU, XE, XZ2, 5A, 5S5, 5U7, 7X, TZ.

All Zone 11 Prefixes is given for confirmed contacts with prefixes in CQ: WAZ Zone 11 as follows:

Class A: 30 prefixes
Class B: 19 prefixes
Class C: 12 prefixes
Prefixes List: ZP1 to ZP9, PY1 to PY0 and the special prefixes issued for WPX contests.

The Diploma Sud-America is given for confirmed contacts with countries located in ITU zones 12, 13, 14, 15, 16 and 73 as follows:

Class A: 33 countries and 6 ITU zones
Class B: 25 countries and 6 ITU zones
Class C: 18 countries and 5 ITU zones
Countries:
Zone 12 — FY, HC, HC8, HK, HK0 (Malpeilo I), OA, PZ, BR, YV, GP1/8/9.
Zone 13 — PY6/7/8, PY0 (Fernando do Noronha), PY0 (ST Peter and St Paul)
Zone 15 — PY1/2/3/4/5/9, PY0 (Trindade Is).
Zone 16 — CE6/7/8, VP8 (Falkland), LU-V/W/X.
Zone 73 — KC4U5P (Palmer Station), LU-Z CE9AA/AM, VP8 (Graham Land), VP8 (South Georgia), VP8 (South Orkney), VP8 (South Sandwich), VP8 (South Shetland).

CAGOU AWARD

The Amateur Radio Association of New Caledonia offers the "CAGOU" Award. The rules, which are quite simple, are as follows:

1) Six different contacts with FK stations are required.
2) All contacts after 1 Jan 1980 count.
3) Any band or mode may be used.
4) Log information only required.

Send your application, with 12 IRCs to ARANC, Awards Manager, PO Box 3956, Noumea, New Caledonia.

SWL AWARDS

VK6NHD has kindly forwarded to me details of awards issued by the ISWL. These details are reproduced below.

Each award is a separate coloured certificate, available to all amateurs and SWLs. GCR list of QSLs together with fee of $3 Australian or 10 IRCs for each award to: ISWL Awards Manager, Mr Clifford A Tooke, 6 Cheimer Avenue, Rayleigh, Essex, England SS6 7TB.

Century Club
For verified contact/reception of 100 different countries and 6 ITU zones which have at least a part on each of the six continents: a total of sixty QSLs are required which need not be from separate countries.

Continental Award
For verified contact/reception of ten stations in each of the six continents: a total of sixty QSLs are required which need not be from separate countries.

States Award
For verified contact/reception of the forty eight states of continental USA, plus Hawaii (KH6) and Alaska (KL7), a total of fifty QSLs are required.

Commonwealth Award
For verified contact/reception of fifty different countries within the British Commonwealth of Nations. (SW BC Listeners need reception of thirty countries only.)

European Award
For verified contact/reception of fifty different countries within the continent of Europe. (SW BC Listeners need reception of thirty five countries only.)

Pacific Ocean Award
For verified contact/reception of forty five different countries which have at least a part of their coastline on or in the Pacific Ocean, as in VE, W, VK, ZL, KH6, etc. (SW BC Listeners need reception of thirty countries only.)

Zone Award
For verified contact/reception of twenty five ITU Zones, as defined in ISWL Country List and Zone map, (available from ISWL HQ) and ISWL Awards Manager price 35p or 3 IRCs). Stickers available for 50 and 75 Zones hrd/wkd, price 20p or 1 IRC.

Five Band DXCC Award
For verified contact/reception of 100 different countries on each of the five separate bands. Total 500 QSLs in all, and need not be the same countries on each band.

Well that's about the lot for this month. Happy hunting, 73 es DX de Mike, VK6HD.

MALTA AWARD

To commemorate the 50th Anniversary of the foundation of the MARL Amateur Radio League, this league has decided to issue a special award to be known as: THE MARL GOLDEN JUBILEE

Period: From 1st September 1983 until 31st September 1984. This award is available to all amateurs and SWL's (on heard basis).

To apply for this award one must work 9500DC the special station. This can only be worked once, and any other four 9H stations on any band and in any mode.

Each station can be worked more than once on the same band but this must not be on the same day.

No QSL cards are required, only a copy of the log certified by the awards manager of the National Society or by two licenced radio amateurs.

The fee for this award is US$3 or 15 IRCs. All applications should be addressed to: The President MARL, PO Box 575, Valetta, Malta.

PREMIER TOWN AWARD

The Midland Zone of the WIA Victorian Division has launched the first ever award for the central Victorian city of Bendigo.

The award certificate is a full color photograph of the Central Deborah Mine and popular tourist attraction the "Talking Tram".

Bendigo's Tourist Trust is sponsoring the award which marks Bendigo being given the prestigious state government "Premier Town Award" title for the next three years.

To qualify for the award contacts are...
BENDIGO PREMIER TOWN AWARD

The Midland Zone station VK3ATO will count as three contacts. To apply for the award send a log extract together with a QSL card and $1.00 to the Award Manager, Joan Sutherland VK3NLO, 25 Casey Street, Bendigo, Vic 3550.

The award will be forwarded by the Bendigo Tourist Trust. The Midland Zone hopes the award will help publicise the tourist aspects of Bendigo to both Australian and overseas radio amateurs.

Award chasers are welcome to join in the Midland Zone's two weekly nets — Tuesdays at 1000 UTC on 14.200 MHz, and Thursdays 1000 UTC on 3.600 MHz.

THE HEY-DAY OF HOME BREWING

"There has never been anything comparable in any other period of history to the impact of radio on the ordinary-individual in the 1920's. It was the product of some of the most imaginative developments that have ever occurred in physics and it was as near magic as anyone could conceive, in that with a few mainly home made components simply connected together one could conjure speech and music out of the air. The construction of radio receivers was just within the competence of the average man, who could always make modifications that might improve his aerial or his receiver and give him something to boast about to his friends. I acquired much of my manipulative skill through building and handling receivers; when at last I could afford a thermionic valve in 1928, I built a receiver that picked up transmissions from Melbourne, which that station acknowledged by sending me a postcard carrying the signatures of the English Test Team."

From chapter 1, Part 1 of "Most Secret War" by RV Jones, who devised and directed counter-measures against German radio and radar target-finding transmissions during World War II, and in 1946, at the age of 34 was appointed to the Chair of Natural Philosophy at the University of Aberdeen thus becoming a Professor of Physics.

Published in 1978 by Hamish Hamilton Ltd and later in paperback it is probably available from or through your municipal library. The author includes some entertaining accounts of his brushes with high level Air Force personnel who considered that no "outsider" (especially a civilian) could possibly know as much as they did. In many cases, Jones knew a good deal more.

Submitted by Dick Goslin VK3SV.

URGENT!

Please let us know of clubs and schools etc. starting theory classes. Where, when, how much and whom to contact.

Contact Brenda VK3KT.
VHF UHF - an expanding world

Eric Jamieson, VK5LP
1 Quinns Road, Forreston, SA 5233

All times are Universal Co-ordinated Time, indicated as UTC

AMATEUR BAND BEACONS

FREQ CALLSIGN LOCATION
50.005 H44HIR Honiara
50.008 JA2IGY Mie
50.020 GB3SIX Anglesey
50.060 KH8EQI Pearl Harbour
50.075 VS6SIX Hong Kong
50.945 ZS1SIX South Africa
51.020 ZL1UHF Auckland
52.013 P29SIX New Guinea
52.100 VK0AP Macquarie Island
52.200 VK8VF Darwin
52.250 ZL2VHP Palmerston North
52.300 VK6RTV Perth
52.320 VK6RTT Carnarvon
52.350 VK6RTU Kalgoorlie
52.370 VK7RS Hobart
52.420 VK2RSY Sydney
52.425 VK2RGB Gunnedah
52.435 VK3RMV Hamilton
52.440 VK4RTL Townsville
52.470 VK7RTN Launceston
52.510 ZL2MH Mount Climie
144.400 VK4RTT Mount Mowbullian
144.420 VK2RSY Sydney
144.465 VK6RTW Albany
144.475 VK1RTA Canberra
144.480 VK8BF Darwin
144.550 VK5RSE Mount Gambier
144.600 VK6RTT Carnarvon
145.000 VK6RTV Perth
147.400 VK2RCW Sydney
432.410 VK6RTT Carnarvon
432.420 VK2RSY Sydney
432.425 VK3RMB Mount Bunningony*
432.440 VK4RBB Brisbane

* This indicates a correction to the frequency of VK3RMB, with thanks to Murray, VK3AAI, President of the Ballarat Amateur Radio Group for the advice of same.

It seems sensible to use 50.110 as the calling frequency which should be largely in line with overseas ideas and it would seem equally sensible for the time being at any rate to use the new segment for what we originally wanted it for, DX particularly overseas stations. If we suddenly left 52 MHz during the Es season and did our interim working on 50 MHz. Sufficient to consider this type of operation if we ever are fortunate enough to have unrestricted use of the 50 MHz end, but for the time being let’s keep 50 MHz for specialised working, and 52 MHz for general working. One way for this arrangement to be kept so would be for the Ross Hull Memorial Contest to be conducted on 52 MHz and above — perhaps the Federal Contest Manager should seriously consider this matter.

So far, there have been some contacts amongst VK stations on 50 MHz, mainly to try out the band and equipment. Most will have found some shortcomings, particularly in the antenna department. It seems to have been cut for 52 MHz, but the change is on the favourable side, as going lower in frequency does not seem to worry an antenna as much as going up in frequency. Anyway, an SWR of 1.5 or so won’t be much of a problem; with the transmitters most tranceivers already tune 4 MHz so they are not a problem, perhaps the homebrew linear might be a bit touchy, but if you have progressed to the stage of building your own own transceiver I then am sure you will be quite capable of making it work on both sections of the band!

SIX METRE COUNTRIES LISTINGS

A letter has come from David VK2BA enclosing a list of the 6 metre countries he has worked, in fact, an updating from his former list. He asked for a VK list to be published. I did promise this a couple of years ago but for various reasons it wasn’t done. However, I will definitely take the matter up with the Editor of “AR” and see when space can be made available and start the ball rolling. With the publication of the first list there should be some incentive for those, not already advising, to do so.

As a reminder, if you are sending a list, and I urge you to do so, I require the following information for each contact: Date, Time in UTC, Callsign, Country, Mode, Report sent and received and advice of whether a QSL card or other confirmation has been received. If you are still awaiting confirmation, add that country but indicate no QSL so far, this will be acknowledged in the listing separately. What about it chaps?

LOCATOR AWARD

Steve VK5AIM has indicated he would like to see a move start in VK to make use of the latitude/longitude locator squares system for hopefully, an increase in VHF activity. The filling of squares as a result of VHF contacts is a great sport in the UK and Europe. Steve has offered to pay for some certificates so we will look into the matter and see what can be done. If readers have any thoughts on the matter we would be interested to hear from you.

OSCAR 10

It seems Oscar 10 has been causing quite a lot of interest around the world. Certainly being from far the least active has been Bob VK5ZRO who has been having a ball!!

Starting in Orbit 133 at 1450 UTC on 7/8/83 Bob had his first contact with DK2ZF in Germany, who is VHF Editor of the German “CQ DL” magazine. From that time onwards Bob has been having daily contacts around the globe and at 21/8/83 had contacted more than 150 different stations in 26 countries.

Over the weekend of 21/8 he contacted more than 70 stations in the US, plus VE3, VE5 and VE7. So far Bob has worked about half the States in the US.

Countries worked so far include Germany, Northern Ireland, Ireland, England, Holland, Sweden, Switzerland, Belgium, Austria, France, Italy, Greece, Denmark, Finland, Luxembourg, Hungary, Israel, Hong Kong, Japan, Solomon Islands, Hawaii, New Zealand, USA, Canada, Alaska, Ecuador and Australia. (VK1, 2, 3, 4, 5, 7 and 8, but no VK6).

The contact with DK2ZF on 7/8/83 is claimed by the German to be the first ever Germany to Australia contact via a satellite — Bob is not sure so is making no claims!

Bob uses about 40 watts PEP to transmit on 70 cm to either a bay of four 70 cm yagis horizontally polarised, or a 15 element yagi vertically polarised. On 2 metres for reception he uses 11 elements horizontal or 11 elements vertical as dictated by conditions. The vertical antennas can be tilted to follow Oscar 10 and are about 6 m high. The system provides from 8 to 10 hours of daily access to Oscar 10, and some contacts have been maintained for over an hour. Two RTTY contacts have been made to Japan to JA1ANP and JA1MIN, signal reports 589 for an hour or more.

Bob says the actual polarisation is quite important, and you need to experiment between horizontal and vertical for best results, hence circular could be even better. He said some contacts might have been made earlier than 1450 UTC on 7/8 but for the fact that the low gain aerials on Oscar were in use for the early orbits, and signals improve significantly after the higher gain antennas were brought into use. Many VK stations went to bed early on 2 metres.

Stations in VK5 so far reported working through Oscar 10 or trying include VK5ZRO, ZK, AGR, ZDR, JM, ZTS, ZRG, QM, DK and ME.

Oscar 10 transmits on 145.975 to 145.825, and you transmit on 435.025 to 435.175.

Page 54 — AMATEUR RADIO, October 1983
ANOTHER TWO METRE DX-PEDITION!

Steve, VK4ZSH has been at it again! His latest DX-pedition chasing 2 metre TEP DX to Japan took place in April/May this year, and as usual, his letter makes interesting reading, so I have taken the following from it:

"The 1983 April/May 2 metre TEP DX-pedition did not go as planned, in fact, it became more of an endurance test with unseasonal widespread heavy rain that inundated most of Queensland for many weeks making it a very wet, cold, windy, muddy, boring and eventful trip! I started in Bouria but after twelve days sitting in the front seat of my car swatting flies there was still no sign of the improvement in geomagnetic conditions hoped for, so moved north 3 degrees.

"22nd April: Raining 30 km west of Camooseal in VK8. While telling Hide JA2DDN on 6 metres that 2 metres was closed, it opened and in 30 seconds the 146.760 MHz beacon had reached S5. My JA followers were caught by surprise and during the short opening I found no English speakers! Beacons 1000 to 1035 UTC. The distribution of JA paging transmitter beacons received indicated further south would be better for JAB.

"23rd April: After checking road conditions headed off for Urrandangie and only just made it because of more rain. As I arrived, stretching from one side of town to the other were four double decker bull cattle road trains being coupled to a D7 bulldozer for an attempt at crossing the Georgina River. I wisely resisted the temptation to hitch a ride to VK8 by chaining my car to the back of the 120 m long 180 wheeled monster road train! It took eight hours for the D7 to pull and push the road trains to drier roads on the other side of the river, in the process re-arranging the country-side and destroying what road there was.

"2 metres opened and at 1035 worked JA1RJU and at 1051 JA1VOK. Beacons 1023 to 1145.

"24th April: Urrandangie and more rain. On 2 metres JA1VOK, JA1DUP, 1025 JA7OXL. This latter is the third record contact with Toshinobu and breaks our VK record by 106 km. JA7OXL uses a TS770 to a 4CX350F 5.300 litres of fuel which is not cheap in the sunspot cycle a review of the three trips is in order: total distance 36,000 km (that's like crossing the Georgina River. I wisely resisted the temptation to hitch a ride to VK8 by chaining my car to the back of the 120 m long 180 wheeled monster road train! It took eight hours for the D7 to pull and push the road trains to drier roads on the other side of the river, in the process re-arranging the country-side and destroying what road there was.

"2 metres opened and at 1030 worked JA1RJU and at 1051 JA1VOK. Beacons 1023 to 1145.

"25th April: Half year of rain and at one stage even though the car was on some of the highest ground for miles water reached the wheel rims! Also assisted in the thrilling rescue of the four road train drivers who had been stuck for some time in a metre of water and mud 15 km out of town.

"With April still stuck in Urmandangie but rain has stopped. Beacons 1050 to 1120 and weak JA's.

"29th April: Finally got back to the bitumen and Bouria. 1010 to 1125 beacons and

Water laps the tyres during Queensland floods and the VK4ZSH DX-pedition.

swapped signal reports with JA1VOK. At about 23° S this is the greatest distance south a 2 metre TEP signal has been heard in VK.

"1st May: Bouria. Beacons 1034 to 1050 plus 1120 to 1145. As a sideline had arranged 2 metre TEP skeds with John VK6GU in Wyndham, WA. Because of the rotten tropo weather the skeds soon became meteor scatter skeds. Following a couple of failures due to our inexperience with the mode we went to 6 metres for some practice!

"2nd May: Now 12 km west of Camooseal and at 1130 completed the first VK4 to VK6 MS OSO with John VK6GU at Wyndham on 6 metres: later that UTC day at 2150 worked VK6GU on 2 metres MS exchanging 5 x 5 reports. John was using an IC251 with 150 Watt PA with pre-amp to 10 element yagi at 10 m. My gear was an IC251 with 70 W PA NE64535 preamp to 2 x 10 element yagi at 5 m. The QSO just happened to coincide with the peak of the Eta Aquid shower with the longest burst being eight seconds. The distance is certainly no record but this must surely be the first VK4 to VK6 2 metre QSO.

"3rd May: Cloncurry. Against all indications the area opened at 1050 JA1RJU, 1053 JM1JFC, 1057 JM1SOZ, 1058 J1L1CWS, 1059 J01FCO, 1102 J0IXX, 1103 JA1VAC, IC251 with 150 Watt PA with pre-amp to 10 element yagi at 10 m. My gear was an IC251 with 70 W PA NE64535 preamp to 2 x 10 element yagi at 5 m. The QSO just happened to coincide with the peak of the Eta Aquid shower with the longest burst being eight seconds. The distance is certainly no record but this must surely be the first VK4 to VK6 2 metre QSO.

"4th May: Cloncurry; against all indications and predications 2 metres opened, surprising the JA's again, but this time their warning system worked. At 1050 JA1RJU, 1053 JM1JFC, 1057 JM1SOZ, 1058 J1L1CWS, 1059 J01FCO, 1102 J0IXX, 1103 JA1VAC, J01GZT, 1106 JA1ACT, 1111 JM1ION. Beacons 1045 to 1255.

"5th May: Cloncurry, been OSO'd and at 1115. Even the trip home to Brisbane was difficult exploiting when they start again.

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WAGAN

"The table is interesting in that it appears to show that despite the downhill slide at the end of this sunspot cycle the only major effect is a drop in signal strength. The sun still seems to be able to produce the TEP ducts at about the same average rate of one opening per three days but lower energy levels mean the ducts leak and the resultant lower signal strengths make openings shorter and thus contacts fewer.

"I would be surprised if contacts did not continue right through the sunspot minima though with much reduced frequency unless there is a marked improvement in the generally poor grade of VK stations currently operating 2 metres TEP.

"I would like to thank Hide JA2DDN and Kazu JA1RJU for their considerable help once again, and Beth and Frank Austin at Urmandangie for their kind hospitality."

Thanks for writing Steve, we all hope your dedicated efforts will prove of value in trying to unlock the mysteries of VHF propagation, and we look forward to hearing of your exploits when they start again.

NEWS FROM NEW SOUTH WALES

Gordon VK2ZAB has written again from Berowra Heights in Sydney and says he has recently completed a new 2 metre linear using a pair of 4CX250B's and replacing the I122's which expired a while ago. The new unit also runs 400 W PEP and is coupled to four, 9 element yagis. 70 cm Gordon uses four, 11 elements and 10 W.

Gordon reports John VK2YEZ in Griffith can be worked most times. He also works into Melbourne but Griffiths is closer to Sydney than Sydney. John has a 4CX250B on 2 metres and the last contact was on 4/8 with signals 5x4 both ways. Trying 70 cm John was audible in Sydney, but Gordon's 10 W wasn't enough!

Doug VK3UM at Chirnside Park was 5x1 at 2033 on 30/7 and 5x3 at 2045 on 12/8 and gave VK2ZAB 5x4 on 2 metres. Doug is also getting fired up on 70 cm. He also worked VK1R, VK1KA and VK1VP on 12/8.

Doug VK2XDH has moved from Armidale where his 2 metre operations were restricted by a Channel 5A translator, to Urrala where things are better, and runs 25 W on 2 metres and worked VK2ZAB on 3/8, 4/8 and 12/8 and 14/8 signals from 5x1 to 5x3 and in return gives 5x5 to 5x9.

Barry VK2KAY at Gunnedah is changing his antennas but Jock VK2QQX still puts in an almost nightly appearance on 144.2 MHz, with signals to 5x6. Don VK2ADV at Tamworth worked on 4/8 but is a shift worker and contacts vary accordingly.

In Sydney, Y22HF is active on 144 and 432 MHz, and so is Ross VK2ZZU. Jack VK2AS has just put up a new 2 metre beam. Adrian VK2EBD is also on 2 metres SSB and contacts are being increased in range as time progresses.

AMATEUR RADIO, October 1983 — Page 55
All in all, it's good to know something is being done in and around Sydney as well as the country areas. I wonder what is being worked in Melbourne?

**VK2AMW EME PROJECT**

Lyle VK2ALU reported to the July 1983 meeting of the Illawarra Amateur Radio Society that so far this year more than 500 man hours had been spent on getting the 32 foot dish ready for use, and some 50 to 100 more such hours would be needed to get the project on the air on a "lash-up basis".

Lyle said the power amplifier is to be mounted in the dish with remote tuning facilities, and it is hoped to achieve 120 W output with a beam width of 2 degrees between half power points. Frequency will be 1296 MHz with circular polarisation. Because the path lost to the moon and back is ~272 dB, sensitivity of the returned signal will be only 1/2000 millivolt!

The VK2AMW EME Project on the air on a "lash-up basis".

**SPECIAL EDUCATION QSP**

Brenda VK3KT has available Trail Examination Papers:
- Theory, Novice, ACP, Regulations.
- Also past CW exams from DOC. There are:
  - 10 exams at 5WPM
  - 10 exams at 10WPM
- Ten exams fill a C60 cassette tape.

INTERESTED? Send a tape and state your requirements and Brenda will transcribe it onto your tape.

Have you any complaints or other comments about the amateur examinations?

Please make your grievances known to Brenda VK3KT, your Federal Education Officer. Brenda may be found each Thursday evening on the Education Net at 1130 UTC, 3.685 MHz ± or write QTHR.
In these days of sophisticated testing gear we have learned to expect so much of such equipment that at times we can't see the wood for the trees.

Many who use sophisticated gear to set their machines speed have overlooked many simple methods of achieving the same results. There are some quite simple but accurate methods of setting the speed (baud rate) of the Siemens 100 Teletype M15 etc. The following is mainly based on the Siemens 100 but the methods can be adapted to other machines as well.

Looking at my Siemens in operation I noted that there are some slow moving parts where the revs could easily be counted visually using the second hand of a watch or better still a stop watch. One such part in the Siemens is the slow moving hours of use counter at the front right hand side of the machine. I noted its speed is reduced by going through two sets of gears. I only needed to determine the ratio from the motor to the final cog attached to the counter, count the final cog RPM and multiply by the ratio to get the motor speed. Obviously accurate results could easily be obtained without a tachometer or other such gear.

I determined the ratio by first counting teeth on the cogs and then checked it by turning the motor by hand and counting the turns required to give one turn of the counter cog, I found the ratio is 223/1. The motor speed for 50 bauds is stated in the handbook as 3750 so at our speed of 45.45 this is reduced in proportion to 3409 RPM or 56.817 per second.

The speed of the counter cog would be 3409 divided by 223 = 15.29 RPM. For comparison the 50 baud speed is 16.8 RPM. For accurate counting I marked the cog with a dob of white liquid paper and fixed a wire pointer to give a definite indicating spot. Holding a watch close to the cog and quickly glancing from the cog to the second hand from time to time I found an accurate count could be made. When I had the speed nearly right I counted for three minutes to get greater accuracy. Having done this I checked with some sophisticated gear and found the speed was quite accurate. With this method the machine need not be printing anything so keep loop current flowing while testing and avoid the machine running open.

If you have a different make of machine without an hour counter all is not lost as you can count how many operations per minute it is working at and check the speed in this way. This method has an advantage in that it is not necessary to know motor speeds and you may not have this information anyhow. Adding up the milliseconds in one operation signal such as a letter, using the normal 1.5 times stop pulse it comes to 165 milliseconds per operation this means 364 operations per minute (364 OPM). Operations including such machine function signals as carriage return or space etc. So if your machine is at the correct 45.45 bauds speed it could for example print a string of 364 letter “A” in one minute. In practice as the line length is much shorter than this five lines would be required, this needing five carriage returns and five line feed signals so only 354 letters could be actually printed out of a total of 364 operations.

If your machine has paper tape playing facilities get a few feet of perforated tape with...
anything at all on it and starting about one inch from the start make a mark across the tape over a line of holes. Starting from this point play the tape for exactly one minute, stop the machine and mark the finishing spot of the tape (above the pins) then count the number of feed holes between the two marks. The count should be 364 if the machine is running at correct speed. The count is made easier if you use a pair of dividers set to say 50 holes to speed up the count.

If you have no tape playing facilities you can still use the OPM method by counting the revolutions of the ribbon spool as the machine is repeating a given character or function signal. As the ribbon travels from one spool to the other note which spool is winding the ribbon on and remove this spool from its housing by slackening the retaining screw. If you use a pair of dividers set to say 50 holes to space bar and then pressed the repeat key. If this is held pressed whatever the machine last needs to be printed for this test I used the OPM method by counting the revolutions of the shaft rotation. The Siemens has a stationary pattern on the 8 segment track is moving slowly clockwise in the direction of the shaft rotation at the correct speed. We could put two tracks on the strobe disc, one of 16 and one of 17 segments. In this case one pattern would turn slowly clockwise and one slowly anti clockwise, however the 17 pattern alone will be sufficiently accurate if it is slowly turning clockwise.

To print a string of dots for a dotted line printed or did will be repeated until you hold pressed whatever the machine last needs to be printed for this test I used the OPM method by counting the revolutions of the shaft rotation. The Siemens has a stationary pattern on the 8 segment track is moving slowly clockwise in the direction of the shaft rotation at the correct speed. We could put two tracks on the strobe disc, one of 16 and one of 17 segments. In this case one pattern would turn slowly clockwise and one slowly anti clockwise, however the 17 pattern alone will be sufficiently accurate if it is slowly turning clockwise.

For the Siemens machine, if you have no paper tape playing facilities fitted to the right hand front of the machine, there is a shaft running parallel to and near the front of the machine. The right hand end has a washer held on to it by a set screw and a metal screw. A small strobe disc could be fitted over this screw if some spacing washers are used to bring the disc out clear of surrounding stationary metal. This shaft turns at 363.6 RPM or 6.06 RPS so we divide the flashes by the speed to get the number of segments needed. 100 divided by 6.06 = 16.5 segments.

Now as we need a whole number of segments we will use 17 instead of 16.5. With the 17 segment strobe the pattern will turn slowly clockwise in the direction of the shaft rotation at the correct speed. We could put two tracks on the strobe disc, one of 16 and one of 17 segments. In this case one pattern would turn slowly clockwise and one slowly anti clockwise, however the 17 pattern alone will be sufficiently accurate if it is slowly turning clockwise.

Now those who do have tape facilities fitted can't use the shaft we have been describing so at the back of the machine near the terminal connecting block is the short end of a shaft driven from the motor pinion cog. This shaft turns at 778.2 RPM or 12.986 RPS but let's put it into round figures and say 13 RPS.

Unfortunately the speed of this shaft is such that the number of segments needed is between 7 and 8 actually 7.7 segments making 8 the closest number. All these figures are of course for 45.45 bauds. Well we got around this problem in the following way. We use a strobe disc with both 7 and 8 segment tracks knowing one pattern will appear to rotate clockwise and the other anti clockwise and that the 8 segment pattern will rotate the slowest. With the machine operating at 50 bauds we can use the pattern to set the machine speed. If the 8 segment pattern appears stationary the machine is set at 43.75 bauds. Now if the machine is correctly set at 45.45 bauds the 8 segment track is rotating anti clockwise at a fair speed and the seven track is rotating rather fast in a clockwise direction. The seven segment track will be moving so fast it will be just possible to see a blurred set of segments. Now as the shaft speed for a stationary pattern on the 8 segment track is 12.5 RPS and not the speed we require of 13 RPS, there is a difference of .5 rev per second or 30 per minute. Now it is possible to count this 30 per minute in the following way. Watching the 8 segment track pattern revolving follow it with a pen held close to it. Turn the pen at the same speed as the pattern rotation. After a bit of practice you can do this reasonably well and you will get 100 flashes per minute and they should be 30. Once you have obtained the correct speed in this way take a good look at the overall picture of the two revolving patterns and in future you will not need to do any counting just set the speed so the patterns look the same as they now do. Strobe discs can be made using white cardboard. Make the centre hole small so it will be tight on the shaft it is to be attached to, as this will be sufficient.
attachment. Two sample discs are shown to assist you. Much more could be said about this and the other methods mentioned but we will leave it at this point and conclude with a few final statements. How accurate does the speed need to be? I note with my Siemens set exactly to 45.45 bauds I can still copy more than half of a 50 baud transmission. If a machine were to be set between 45.45 and 50 bauds no doubt it could print both quite well however it would not be desirable to use this non standard speed for transmission. The Siemens has a control lever inside at the right front of the machine, there is a 0 to 120 scale for this range finder control. The control determines what part of the received signal pulses are sampled (usually the middle part is sampled) normally the control is set at about 50. Now if the incoming signals are not quite the same speed as your machine, different settings of the range finder can often be used to assist in getting a good print. In other words the range finder can be used like a speed control when receiving, it will however only cope with slight speed inaccuracies. Well I trust all this will help those with mechanical machines and especially those who have acquired one of the many ex Telecom Siemens machines recently released. 73 from Bruce VK5XI

SPECIAL INVITATION

Some years ago a group of ex RAAF personnel conceived the idea of a memorial lawn at Adelaide Airport. The Air Force Memorials Adelaide Airport Committee was formed to establish and administer this memorial and in the subsequent years many squadron and unit plaques have been dedicated. Recently, ex Signals and Radar personnel, who formed an association in the immediate post-war period, decided that they should also have a memorial plaque.

DEDICATION OF MEMORIAL PLAQUE

RAAF SIGNALS AND RADAR

An invitation is extended to all ex members of Signals and Radar Units of the RAAF to attend the dedication ceremony of a memorial plaque at the Adelaide Airport on Sunday 30th October 1983* at 11.00 AM. Family and friends welcome.

The Chief of Air Staff, Air Marshall S D Evans, AO, DSO, AFC, has been invited to represent the RAAF at the Dedication Ceremony.

Any member who may wish to contribute to the expense of this venture may do so by sending a donation to the Honorary Secretary, Reg Hart, 87 Port Wakefield Road, T wo Wells, 5501.

John Allan, VK5UL.
Ray Deane, VK5RK.
Committee Members.

* Note: Sunday 30th October 1983 is the first day of daylight saving in SA.

NOTICE

Copy for December magazine (columns, Hamads, etc) must arrive at Box 300, Caulfield South, 3162 no later than 25th October. Also please note the early deadline for January 1984 — 16th November.

QSP

RF ENERGY IN LIGHTING

RF energy will be used in two lighting devices now being developed in the USA. One is an RF light bulb designed for conventional household use. The other is an RF ballast that replaces the conventional ballast in fluorescent fixtures. The units will use RF energy between 20 and 100 kHz and have a potential for interfering with AM broadcast reception if not adequately controlled.

Adapted from "The ARRL Letter" Vol 2, No 16.

AMATEUR RADIO, October 1983 — Page 59
the lower powered stations. It is hoped that once the initial enthusiasm of DX operation through Oscar 10 has passed that a more responsible attitude will prevail and that ERP levels will be restrained to the minimum levels required for communicating.

Perhaps the following message from DJ4ZC Posted on Telemail tells all . . . "Telemetry of transponder — AGC shows values between -15 and -22 dB during most of the time — in other words: if most stations would reduce their power at least tenfold, nothing would change other than that weaker stations would get louder. Please spread the word . . . 73 Karl . . . "

**OSCAR 10 BANDPLAN**

The following bandplan has been published by AMSAT and all users of Oscar 10 are requested to adhere rigidly to the plan to ensure that the maximum benefit is gained by all users of the transponder.

**Uplink Downlink**

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**WHERE IS OSCAR 10?**

This question appears to be the most asked of any pertaining to the new spacecraft. To date the most successful method is to have a home computer able to run one of the many excellent programmes available to compute the relevant azimuth and elevation bearings that you require. However this is impractical for those who do not own a computer, nonetheless I am sure of at least one amateur in each capital city of Australia who does and as such does help out others with the info.

I am aware that an article is soon to appear in Analysis and preparations have been completed for magnetorquer attitude manoeuvres to reorient the spacecraft spin axis and introduce a slow Z-spin to improve the temperature gradients and improve the

**ACKNOWLEDGEMENTS**

Contributions this month were received from Bob VK3ZBB, Graham VK5AGR, Peter VK7PF and thanks are extended to AMSAT Telemail and UOSAT Bulletin Board for excerpts.

**OSCAR 10 (as at 18 August)**

Following the successful initial burn of the kick motor as reported last month the second burn of the motor was awaited with considerable anxiety by the AMSAT crew on the 26th July, as the telemetry had been indicating that the Helium Pressure on board the spacecraft was slowly decreasing. This was believed to be as a result of the collision that occurred at separation of the spacecraft from the launch vehicle. Their worst fears were realised when it became apparent that the motor failed to fire as there was insufficient Helium to open the valves in the motor. Consequently the spacecraft will now remain in its initial transfer orbit and as such will favour southern hemisphere operators more so than the intended orbit. Following a period of re-orientation the Mode B Transponder was switched on at 1430 UTC on the 8th August. Results on the first evening were most disappointing as only the "moon-bouncers" with their kilowatt ERP signals could access it. On the following day the gain antennae were initiated on both receive and transmit and the passband literally came alive with signals. Since then world-wide VHF communication has become a reality and numerous record breaking distance QSO’s have taken place via the satellite. Under ideal conditions ERP’s of 100 watts can be utilised to reliably communicate however the general rule is that ERP’s of the order of 500-1000 watts are being used much to the detriment of...
power budget. Preliminary manoeuvres were carried out on Tuesday this week, and will be continued next week.

**SATELLITE UPPS AND DOWNS**

**LAUNCHES TO 23 JUNE**

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<td>GER</td>
<td>22 Jun</td>
<td>90.5</td>
<td>300</td>
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<tr>
<td>1983-060A</td>
<td>NA</td>
<td>—</td>
<td>20 June</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>1983-060C</td>
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<td>—</td>
<td>20 June</td>
<td>—</td>
<td>—</td>
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</tr>
<tr>
<td>1983-061A</td>
<td>COSMOS 1470</td>
<td>USSR</td>
<td>23 June</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
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</tbody>
</table>

During the period the following satellites decayed or were recovered:

1983-039A COSMOS 1457 Jun 8
1983-045A COSMOS 1462 May 31
1983-052A COSMOS 1467 Jun 12
1983-055A COSMOS 1468 Jun 21

Transmitting frequencies (MHz):

<table>
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<th>Transmitting frequencies:</th>
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<th></th>
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</thead>
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<tr>
<td>ATS 1</td>
<td>136.459</td>
<td>137.349</td>
</tr>
<tr>
<td>ATS 3</td>
<td>136.470</td>
<td>137.350</td>
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</table>

A further 33 objects are also active during the period.

**LAUNCHES FROM 27 JUNE-20 JULY 1983**

1983-062A SOYUZ T9 | USSR | 27 Jun | 90 | 303 | 258 | 51.6 | M |
1983-063A | USSR | 27 Jun | — | — | — | — |
1983-064A | COSMOS 1471 | USSR | 28 Jun | 89.7 | 369 | 182 | 67.2 | TM SI |
1983-065A | GALAXY 1 | USA | 28 Jun | 642.4 | 36365 | 203 | 22.9 | SL |
1983-066A | HORIZON | USSR | 1 Jul | 1479 | 26600 | — | 1.3 | TV CS |
1983-067A | PROGNOZ 9 | USSR | 1 Jul | 267 days | 720000 | 380 | 65.5 | SI |
1983-068A | COSMOS 1474 | USSR | 5 Jul | 88.8 | 264 | 197 | 82.4 | TM SI |
1983-069A | COSMOS 1473 | USSR | 6 Jul | 069A to 069H |
1983-070A | COSMOS 1475 | USSR | 6 Jul | 115.1 | 1511 | 1148 | 74 | TM SI |
1983-071A | COSMOS 1476 | USSR | 6 Jul | — | — | — |
1983-072A | COSMOS 1477 | USSR | 6 Jul | — | — | — |
1983-073A | PROGNOZ 10 | USSR | 7 Jul | 70.2 | 30760 | 217 | 70 |
1983-074A | MOLNIYA 1 | USSR | 17 Jul | 700 | 39025 | 480 | 62.9 | TV CS |
1983-075A | COSMOS 1483 | USSR | 20 Jul | — | — | — |

The following satellites were recovered or decayed during the period:

1983-050A Cosmos 1466 6 July
1983-068A Cosmos 1472 19 July

Together with 11 other objects.
LEARNING THE MORSE CODE

If all goes according to plan, this should appear in Amateur Radio in early October, giving you a month to try some of the recommended techniques before the November examination. Surely by this time you have learned the code and it is just a matter of getting your speed up, but even if you haven't you should still have adequate time to prepare for the exam — if you are able and willing to practice. There are no magic recipes which will qualify you as a brass-pounder overnight. There are a number of tips and techniques which can make the job easier, but ultimately it's up to you.

When Mr Samuel Morse invented his code, he had no idea anyone would ever be trying to copy dits and dahs from wireless transmission. In the first place, the code was devised for use on the land-line telegraph. In the second place, the intention was for the signals to be transcribed on a paper tape by a swinging pen, and then read by sight. Once operators learned the code they quickly found that they could recognize incoming characters by the clicks the pen made, and it wasn’t long before they realised that it was actually easier, so the pen gave way to the sounder.

The Morse code consists of patterns of short sounds and long sounds, interspersed with spaces. Forget you ever heard of dots and dashes (at least till you’ve learned the code) and think of the short sounds as “dits” and the long sound as “dahs”. This gives you a useful way to represent the sound of the code any time you want — your own voice.

And here, already, is your first secret technique to help make the job easier — now that you know how to say a Morse code letter by using dits and dahs, forget you ever heard of dots and dashes! What you are really interested in is the sound of a letter. For example, when you hear the sound “di-di-dit” you should recognise the sound as representing the letter S. You should not count the dits. Take a more difficult one now, “di-di-dah-dit”. Say it over and over to yourself until you recognize the sound of an F without having to think of it in terms of a bunch of dits with a dah toward the end.

The sound of the dits is written without the (except for the last one) for a very good reason — they have to be said quickly, and you can’t manage that if you say “dit-dit-dah-dit”. Try it — “dit-dit-dah-dit... di-di-dah-dit.”

“di-di-dah-dit”. Say it over and over to yourself until you recognize the sound of an F without having to think of it in terms of a bunch of dits with a dah toward the end.

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You should now be ready to learn another secret technique, which is speed. You should learn the characters at a speed high enough that they sound like Morse characters, not individual dits and dahs. While you are learning the code, the character speed should be eight to ten words per minute (I’m not kidding) with extra space in between the characters to slow the message speed down to something you can handle. This is called proportional spacing.

An exercise which I use when introducing someone to the code for the first time is to send the letter S at a speed of fifty words per minute. Just once, all by itself. Most people can recognize it without difficulty. This proves that there is no problem in hearing code characters and remembering them — the problem is in converting them into letters!

You should by now be ready to start learning the code — you’ve had all the tools and techniques which could cost you a pass on the exam. Leave the numbers until you have mastered the letters, and you will find them a lot easier.

DO NOT GO ON TO THE NEXT GROUP UNTIL YOU HAVE MASTERED ALL OF THE LETTERS LEARNED SO FAR.

You can get a lot of practice in by writing the group you are studying on a bit of paper (writing dits and dahs, of course, not dots and dashes!) and glancing at it while on the bus, or at work, or whenever you have two minutes to yourself.

Once you have learned the first group you can start listening to practice tapes and the Slow Morse Broadcasts (VK2BWI, 0930 UTC, 3.550 MHz and VK5AWI, 1030 UTC, same frequency). Just worry about picking out the letters you recognise, and form a good habit now — if you miss a letter forget it and concentrate on the next one. If you strain too hard to remember a letter, you will miss the next several letters and that’s a circumstance which could cost you a pass on the exam.

Once you’ve learned the code, it’s just a matter of getting your speed up to the required level (or the level you desire, which should be higher than the required level). The only way to get your speed up is to practice, whether its listening to tapes or live code on air, having a friend send to you, or calling out license plates from passing cars. But next month we'll give you some more ideas for practice and getting you up as fast as you want to go.}

Till then, 73.
Well, October has arrived as 1983 rapidly draws to its conclusion. Hopefully, by now, propagational conditions will have improved a little as the daylight lengthens. I have already noticed a marginal improvement, however, judging from observation made in the Northern Hemisphere by SWL’s, signals on frequencies above 17 MHz and higher, have not been as reliable as past years over the Northern summer. The sunspot count is steadily decreasing and the presence of sudden ionospheric disturbances (SIDS) are frequently contributing to a somewhat unsettled HF spectrum.

During our local winter months, propagation of the lower frequency bands has been quite reasonable. However, you will find that the amount of atmospheric static from thunderstorms will render signals in these allocations virtually unintelligible, especially during the hours of darkness. It does not seem quite as noisy, particularly here in Launceston, on observations made just after sunrise, compared to those made in the evenings.

MERRY-GO-ROUND

While we are on sunspot counts, I noticed that “Shortwave Merry-Go-Round” from Swiss Radio International has re-introduced the monthly sunspot count, after an absence of eighteen months. Observations come from the Royal Belgian Observatory, which happens to be based in Switzerland. The programme is hosted by Bob Thomann and Bob Zanotti and mainly consists of replying to listener’s queries about radio and shortwave listening. I do believe that one of the cocompere’s is an active amateur. The best time to hear this in the eastern states is at 0705 hours UTC on either 9.535 or 9.560 MHz on Saturdays. Western Australians will hear it much better at 0905 on either 15.305 or 9.560 MHz. Incidentally, “Shortwave Merry-Go-Round” is only aired on the second and fourth Saturdays of the month.

IONOSPHERICS

If you want to know how the ionosphere is behaving on a daily basis, I suggest that you use the daily bulletins over the American Standard Frequency Station, WWV at 18 minutes past the hour to keep in touch with the latest state of propagation. The station is located at Fort Collins, Colorado and can be heard on either 2.5, 5, 10, 15 or 20 MHz.

UPGRADING

At present, the Voice of America — the US government external service — is currently trying to get Congressional approval for funding to upgrade their technical facilities worldwide. Many senders were manufactured during the Second World War, and maintenance of these is increasingly becoming a big headache, for spare tubes or parts are in short supply, as manufacture of these ceased many years ago.

Well, that is all for this month. Until November, the best of 73’s and good listening.

Robin, VK7RH

AMATEUR RADIO, October 1983 — Page 63
In the western world's most industrialised and technically advanced country, the United States, a power distribution system is classified as an Incidental Radiation Device. "A device that radiates electromagnetic energy during the course of its operation although the device is not intentionally designed to generate electromagnetic energy. An incidental radiation device shall be operated so that any electromagnetic energy that is emitted does not cause harmful interference. In the event that harmful interference is caused, the operator of the device shall promptly take steps to eliminate the harmful interference. Harmful interference is the emission, radiation and induction which endangers the functioning of a radio-navigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radiocommunications service." (FCC R & R part 15).

There is a very large amount of technical material available which covers in great detail, the causes, the effects, the location of, and the proposed cures for Power Line Interference. However, when we get right down to the "nuts and bolts" of the situation, it boils down to, economic excuses and apathy ... Interference from Power Distribution Systems can be eliminated at the source!

Most of the PLI which affects members of the community, members of the Amateur Radio Service, and various professional and business communications services is produced by lines and equipment operating at or below 66 kV. So for the moment we can exclude corona discharge which is, mainly, associated with lines and equipment above 66 kV.

When considering overhead power lines and associated distribution equipment we can, for the ease of understanding, make an analogy with radio transmitting antenna construction and operating procedures. Both overhead power distribution systems and antenna systems use, insulators, wire, and hardware; and both cases involve high voltages. In both systems insulators are intended to insulate, or separate, one potential from another. Wire is there to transport/interfere the energy. Hardware is required for physical support.

In designing and constructing radio communications antenna systems, communications engineers ensure that the insulators and other antenna equipment will withstand potentials well in excess of those which the transmitter power will produce. Great care is taken to ensure that all connections, joints, and hardware bonding is first class. This is not only necessary to ensure a good "clean" transmission but also to ensure that unwanted noise, which could play havoc with other nearby electronic equipment, is kept to an absolute minimum. Can we say the same about power lines?

Like insulators in antenna systems, insulators associated with overhead power lines and equipment are intended to separate differing potentials. The potential on either side of an insulator, in the main, remain constant and unaffected by the necessary support hardware. Failure to achieve this encourages any insulator leakage current, or any induced current, to flow in an uneven or intermittent manner. Intermittent current flow generates noise spikes which results in "illegal spark transmission" from "super elevated antenna systems".

In order to ensure a constant potential on either side of an insulator, and a constant and even leakage path, it is simply necessary to ensure that all mechanical couplings used in the support hardware have first class electrical bonding. And, rather like digital circuits, the "cold" end of an insulator should not be allowed to float or find its own potential — the "cold" ends of all equipment should have first class bonding to a first class ground.

The electromagnetic spectrum is not getting any bigger! Man's demand for more and more instant communications is placing ever increasing pressure on this limited resource. We cannot afford to waste this special and most valuable, natural occurrence by using devices which take up more space than necessary; or which generate unnecessary signals or noise within the finite electromagnetic spectrum. Radiocommunications authorities banned spark transmission many years ago ... why then are power distribution authorities allowed to continue to transmit this outdated mode in an area reserved for radiocommunications.

The Australian Department of Communications states that interference from overhead power distribution systems is common throughout Australia. The Department goes on to outline that most PLI could be eliminated by better engineering design prior to the line being installed.

Having established where good communications engineering practice would eliminate most PLI — perhaps we should examine, in a little more detail, the problems associated with the poor power line engineering practices for lines and equipment operating at 66 kV and below. Lines and equipment above 66 kV can be a source of interference but because of the better design and heavier construction they are not a major problem.

Interference is most apparent during hot, dry and windy weather conditions. Insulator leakage current which is increased by line airborn contaminates tries to flow to ground or other phases via the often dirty, loose and unbonded hardware. The spark/s which result, not only produces wide band interference, noise signals (unlicensed) within the electromagnetic spectrum but also increases the contaminates around the sparking area, thereby producing an even bigger spark. Many of the old style insulators are hopelessly inadequate. Under certain weather conditions you could light a cigar off the continuous base flash-over.

Slack spans at dead-ends and Tee-offs are one of the most common problems — again, with a full and efficient communications style bonding system these situations would no longer be a major problem.

Wooden poles should not be used as part of the insulator system. Leakage current can cause burning or charring of the wood under the hardware. Good bonding of all "cold" hardware to ground would ensure that the pole does not try to carry leakage currents. Old wooden poles and heavy leakage currents can cause pole fires.

The International Electrotechnical Commission through its Special Committee on Radio Interference lays down general procedures for establishing the limits of the radio-noise field from power lines and equipment together with typical values and methods of measurements in the frequency range 0.15 to 300 MHz. Site measurements and service experience have shown that levels of noise from power lines at frequencies above 300 MHz are so low that interference is unlikely to be caused to television reception.

The value limits are calculated to provide a reasonable degree of protection to the reception of broadcasting at the edges of the recognised service areas of the appropriate...
transmitters in the AM radio frequency bands, in the least favourable conditions likely to be generally encountered. The limits are intended to provide guidance at the planning stage of the line and standards against which the performance of the line may be checked after construction and during its useful life. Recommendations are made on the design, routing, construction and maintenance of lines and equipment to minimise interference. (CISPR 18-1-1982).

In Canada, the Department of Communications has proposed various amendments to the Radio Interference Regulations. Amendments outlined in DGTR-021-82 indicates the seriousness with which Canada regards the whole problem of interference from power distribution systems.

The proposed amendments state that a person who owns, is in possession of or controls a power system shall promptly locate and suppress any machinery, apparatus or equipment which, after investigations by a person appointed by the Minister, is shown to be the cause of radio noise within the power system. The maximum field intensity of radio noise that may be produced by a power system in fair weather varies from several hundred microvolts per metre in the 160 metre band to tens of microvolts in the 10 metre band for lines up to 220 kV. The measuring distance is 15 metres from the point immediately below the nearest line conductor or 15 metres from the property line of a substation. In the practical aspect Canada is conducting interference measurements in the vertical direction over power lines using EMI measurement instruments in helicopters.

Strong USA representation on the subcommittee preparing the CISPR manual on “Interference from overhead power lines and high voltage equipment” should result in the manual, particularly part 2, being accepted by the United States electric supply utilities AND by the FCC.

In conclusion, perhaps we should consider the early days of radio when the only limitations on its utilisation were imposed by the natural electromagnetic environment and the development of science and technology in the design and construction of radio equipment. A few working devices could be far apart in space and frequency and the problem of interference and spectrum protection in the contemporary meaning of the word did not exist. With technical progress the situation began to change, but nobody anticipated then, that a state would so quickly develop in which problems of sharing the limited resources of the electromagnetic spectrum by many users (with the resulting electromagnetic environment pollution and interference problems) would become the key to further development of telecommunications, and more broadly speaking to the development of any kind of information transmission using electromagnetic phenomena.

The electromagnetic spectrum is an indispensable resource in modern civilisation. Its intensive utilisation is a prerequisite for our existence and development, and a solution for EMC must be vigorously sought after.

The Australian Department of Communications is fighting a battle against incidental radiation from many sources with a shortage of staff, a lack of mandatory standards and regulations, and a lack of government legislation.

CONTESTS

Reg Dwyer, VK1BR
FEDERAL CONTEST MANAGER
Box 236, Jamison, ACT 2614

CONTEST CALENDAR

OCTOBER
1-2  VK/ZL Phone Contest
5-9  GARTG SSTV Test
8-9  VK/ZL CW
8-9  ARRL CW QSO Party
8-10 ARRl Phone QSO Party
9  RSGB 21/28 MHz Phone
16  RSGB 21/28 MHz CW
15-16 Jamboree on the Air
22-23 ARCI QRP QSO Party
22-23 YLRL Anniversary CW Party
22-23 CLARA AC/DC Test
29-30 CW WW DX Phone Test

NOVEMBER
5-6 YLRL Anniversary Phone Party
12-13 DARC WAE RTTY Contest
12  ALARA Contest
26-27 CW WW DX CW Test

A letter received from Anne Hood of the MID LANARK ARS, Scotland brings to our notice, the Special Events Station of GB2MOD to be included in the annual festival of poetry, national songs and the Gaelic language. This festival will be held during the week 8-14 October 1983. Details appear in September AR, page 37.

COMMENTS ON THE CHAMPION OF CONTESTS

I would appreciate some general comment on the Champion of Contests awards.

The results below are included as some sort of encouragement for those who generally enter contests but not really on a regular basis and to show these entrants that a score can be attained that is in the winning circle so that future interest can be derived for this award.

The results for the contest have previously been taken section by section. VK4XA’s result would, in that case, be something like forty six points and not the thirty six published. I must admit that the results taken as the high scorers of each section may better be compiled as the total points scored for the particular contest worked.

The results for VK3BQS were omitted from the list and should have read as follows: VK2BQS RD=9, JM=8, VKNOV=7, VK/ZL=14 TOTAL=38

This score is a reputable one and should not have been omitted from the results. My sincere apologies to Jim.

Please comment on the method of scoring the winners.
1. Does the method of taking each section individually seriously detract from the other contestants?
2. Does the current method of scoring correctly ascertain the true winners and consistent high scorers of our contests?

Your opinion please.

CONTEST CHAMPION 1982/83 CONTEST

Contests chosen for the VK Contest Champion were:
John Moyle, VK/ZL, RD, VK Novice.

The points awarded are as follows:
1st = 10 points
2nd = 9 points
3rd = 8 points
e tc thru to 10th position for 1 point.

An entrant must be included in three of the four contests. He/she may not score but must have entered.

To win the entrant must be a member of the WIA.

On the completion of all contests the highest points scorer wins the Contest Champion Trophy for one year.

The contests for the 1982 year have been completed and the available results are listed below. The results of the VK/ZL contest are not usually available until the June edition of AR. Therefore the trophy is awarded in the latter part of the year and held for the following year.

THE RESULTS FOR 1982

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<th>CALLSIGN</th>
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Economical all-band SSB-CW-RTTY-AM, Optional FM $60, HF 100 W transceiver with general coverage receiver section, 16 Ch memory, scanning. PBT etc. 12 month warranty
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KEN ROTATORS, KR-400RC , $159, KR-600RC , $229
KR-500 ................. $169, KS-050 ........... $25

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FORWARD BIAS

VK1 DIVISION

August was a very busy time in Australia's National Capital. VK1IT, the official callsign for International Technology House, was instigated and numerous amateurs took part in operating the fixed station. The equipment used was supplied by Kenwood and there were plenty of people wanting to get their hands on the latest equipment and experience some of the technological advances made in amateur gear.

IT House was viewed by the general public and it appears as though the venture was a great success. All the amateurs that helped in either manning the station or answering questions from the public, should give themselves a pat on the back for a job well done.

A full story on IT House will appear in November AR.

AOCP CLASSES

By now all those candidates who sat for the August Full Call exam should have their results and are probably using all the bands previously taboo to them. Congratulations to all the successful candidates. To those who didn't succeed this time, "Better luck next time".

There are a couple of people who deserve a mention for their efforts in helping others pass the exam. Firstly, the instructor, Gilbert Hughes. Gil with his faultless knowledge on the theory of radio and components was right on frequency whenever any problems arose. He soon solved the tricky ones and made the students job a lot easier. Thanks Gil.

Secondly, we had one of the best Morse code tutors, Finn Stevens. Finn gave two sessions of Morse every lecture night without fail for the entire course and was instrumental in giving everyone the confidence needed to sit the exam.

Thanks for a job well done.

Due to postal problems this next article was too late for the September issue, so we will put it in this one.

THE DISTRICT RADIO INSPECTOR AND HIS DUTIES

We have in Canberra, very good relations with the DRI. Therefore we invited Mr Alan Jordan, DRI, to attend our August meeting to tell us exactly what the DRI and his office do. Alan was very thorough in his description of his duties and answered many questions from the curious group. I am sure we all understand what the office does and that if you have any problems you can contact them for advice. Thanks Alan for an interesting talk.

MEETING AGENDA

24th October — Proposed Topic ATV

Well that's it for now. Next month IT House. See you soon! 73 John VK1NEN

PUBLICITY OFFICER AND EDITOR

Jeff Pages, VK2BYY
VK2 MINI BULLETIN EDITOR
P0 Box 1066, Parramatta, NSW 2150

COUNCIL REPORT

The August Council meeting was attended by Divisional Historian Jo Harris VK2KAA, who gave a report on her progress so far in assembling a history of the VK2 Division. Information is still required on early Divisional Presidents and Secretaries, and also on original and subsequent holders of two letter call signs in this state.

Council resolved that Bankcard will be accepted by the NSW Division for books, equipment, new membership, social functions, etc. as well as by the VK2 QSL Bureau, Correspondence course, WICEN and the Education Service. It should be stressed that Bankcard cannot be accepted for membership renewals or other Federal items, and at this stage the VK2 Division is the only one to accept Bankcard.

Beacon Officer John Marshall VK2EGI is investigating the feasibility of establishing a 20 metre beacon as part of the international beacon project. Beacons operate on a time-share basis on 14.100 MHz.

The lease for the downstairs room at Amateur Radio House is currently being prepared for our Honorary Solicitor, and Council resolved that Stephen Fall VK2PS be authorised to make all the necessary arrangements for the leasing.

Council resolved that the 10th Conference of Clubs be a two day conference held at Amateur Radio House, with nearby accommodation being provided for country delegates. The 9th Conference of Clubs, which is being hosted by the Central Coast Amateur Radio Club, will take place on the 8th November at Gosford, and any WIA member may attend as a spectator.

For a trial period of six months, the Divisional Office will be opened on the first Saturday of the month between 11 am and 2 pm. Members are reminded that the office is open each Wednesday night between 7 pm and 9 pm, as well as each weekday between 11 am and 2 pm.

Applications for the Hornsby and District Amateur Radio Club for a continuous 80 metre Morse transmission, and from the Wedden Mountain Amateur Radio Group for a 2 metre repeater were approved for submission to the Department of Communications. The Wagga Amateur Radio Club's application for an ATV repeater was also approved, and will translate from ATV channel 2 in the 70 cm band onto the 50 cm band.

Council gratefully accepted the donation from Rialto International of a Columbus Gray-Line Radio Globe. This globe will be prominently displayed at Amateur Radio House.

AFFILIATED CLUBS

PARKES AND DISTRICT AMATEUR RADIO CLUB
308 Clarinda St, Parkes, NSW 2870.
Meetings: 2nd Tuesday at The Red Cross rooms.
Committee: President — Harry Tuntler VK2DWT, Secretary — Tom Darcy VK2DDD, Vice-President — D Cooper VK2DHR and

TUMEK AND DISTRICT AMATEUR RADIO CLUB
93 Lockhart St, Adelong, NSW 2729.
Meetings: Each Wednesday at 7.30 pm at the Tumut High School.
Nets: Sunday mornings on approx 3.590 MHz from 8.15 to 9 am.
Classes: Slow Morse — Ross VK2PN, Theory — Vince VK2ALZ and Keith VK2DLZ.
President: R K Dodd VK2DLZ, Secretary: A C Dean VK2POD.
Other Committee: R K Weeden, V Nugent, W Minogue, J Hargreaves, T Reece VK2XAQ, Treasurer — B Cooper VK2DHR.

Information for inclusion in the December Mini Bulletin should reach the Divisional Officer by the 19th October.

Jeff VK2BYY

STOLEN EQUIPMENT

An Icom IC4E, UHF hand held unit — serial number 1810340 — was stolen from the Eastern Communication Centre's stand during the WCY Expo '83 at Nunawading Civic Centre on Saturday 3rd September.

Anyone with any information about this unit is requested to contact their nearest Police Station or Keith Haslam VK3ACE.
TELEVISION RADIO AND NEWSPAPERS

The month of September has seen our hobby getting publicity unprecedented in many years.

Your president and Kim Wilson VK3CYL had the ‘honour’ of being interviewed on ATV10’s “Good Morning Melbourne” programme.

The main reason for the interview was to publicise the Eastern and Mountain Districts Radio Club’s Communications Expo ‘83 and to generally explain what amateur radio is all about.

Time has not permitted the writing of an article about the TV appearance, but it’s hoped something will be published next month.

WCY Activity Week sparked off public events around amateur radio in various parts of the state and some of these too have had media publicity.

Congratulations to the club and zone officials who got behind the WCY theme and strived for a greater public awareness of our hobby.

A LOOK AT WICEN IN VICTORIA

A submission running about forty pages long has been made by this Division to the Victorian Government Bushfire Review Committee.

One matter in the wake of Ash Wednesday that the committee is examining concerns communications — and of course this was a golden opportunity to put a comprehensive case for WICEN.

Authors of the submission were the Immediate Past President Alan Noble VK3BHM and WICEN Co-ordinator Peter Mitchell VK3ANX.

With limited time available these two dedicated people worked extremely hard — the result is a dynamic document.

Alan and Peter are WICEN Ash Wednesday veterans which enabled them to draw heavily on the experience of last February — and put together a highly professional submission.

They made it clear to divisional council recently that should the submission be “picked-up” by authorities there will be a lot of on-going work needed.

The submission is recommended reading for those keenly interested in the future of WICEN.

Council has obtained permission on a permanent basis for the use of the callsign block VK3WIB-WIZ for WICEN exercises, disaster and emergency situations.

DOC has given council control over the issuing and use of the callsigns and certain guidelines have to be met.

They can only be used with permission of either the president, vice-president or secretary, and details of their use have to be included in council minutes.

The callsigns will help readily identify WICEN in Victoria on the air, and when used for the first time ever on a temporary basis during Ash Wednesday, improved net control considerably.

HISTORY MATTERS — CAN YOU HELP?

The Divisional Council recently decided to “actively pursue historical matter and artifacts” and we are very fortunate to have John Adcock VK3ACA as Historical Officer.

He’s a Life Member and former long-time member of council having only retired last term.

Our division, formed in 1911, has an interesting and colourful history that needs to be preserved for future generations.

If you have in possession of historical matter, let John know about it, or donate it to the Institute.

Your president is collecting photographs of all past presidents for an eventual display of portraits at the Divisional Headquarters.

I would like any leads on the 1911-13 president M A K Ryan and S F V Cole 1913-15.

Anyone who has a photograph of a past president, including past presidents themselves, please offer it for copying and possible use in the president’s display.

BUILDING OPTIONS REVIEW COMMITTEE

The Victorian Division’s AGM asked that the Divisional Council examine options open to it regarding members’ funds and the Divisional Headquarters at Brunswick Street, Fitzroy.

A sub-committee has been formed and aims to complete its work within the term of the current council.

Before any decisions are taken a recommendation would be put to the next AGM so that members will have the ultimate decision.

If you feel the Divisional Headquarters should be relocated and have some ideas or perhaps know of an ideal new home for the WIA, write to the Divisional Secretary.

VICTORIA TO CELEBRATE AR’S 50TH ANNIVERSARY

Unless this is the first page of the magazine you’re reading, the fact that AR magazine is fifty years old this month would not have escaped your attention.

This magazine was born in the Victorian Division and it’s fitting that a mini-reunion of those involved with it over the years be held this month.

The October general meeting of the Institute will see this division conferring Life Membership on AR’s first editor, Harry Kinnear.

Some invitations have been extended to
**GET THE CALLBOOK THROUGH YOUR DIVISION**

The 1983/84 Australian Radio Amateur Callbook (see review elsewhere in this month’s AR) is available through your division at a discount members’ price.

Council has decided to make the callbook members’ price this year $5 or $5.50 posted within Victoria.

This is a sizeable discount from the recommended retail price of $5.75 — but councillors considered the sale through the division of the callbook was a service to members.

Your division has many other books on sale at discount prices, if you’re looking for a publication why not make inquiries at the National Headquarters, the likelihood is that it’s being sold by the WIA cheaper than regular retail outlets.

**NOVICE THEORY WEEKEND AND CLASSES NEXT MONTH**

A special Novice theory revision weekend is being held on the weekend of 5 and 6 November at the Wireless Institute Centre.

The weekend is ideal for those who consider themselves already well prepared for the DOC exam next month.

Bookings for the revision weekend are required. The fee is $25 with ample handout material supplied and a trial exam held under exam conditions.

The next weekly Novice theory and Morse code classes start on Tuesday, 15 November. These will run for six months — how about you Associate members — make the move to get on air under your own call by joining the Institute’s highly successful classes.

For those already with their callsign, keep these classes in mind should you know someone interested in getting into amateur radio.

**SUNDAY BROADCAST REVIEW**

Chairman of the Broadcast Committee, David Johnson VK3YWZ is looking at all aspects of the weekly Sunday broadcast.

He says there are some long-term and short-term changes planned for the broadcast, including the provision of news, its presentation, and the broadcast format.

The addition of a “DX News” segment has proved very popular and David is examining the present content of the broadcast to see if there’s further room for improvement.

He says a major task will be updating the facilities of VK3BWI — including control equipment, recorders, and transmitters.

The Zones are being asked to comment on the propagation of the broadcast to their parts of the state to see if the frequencies and modes used presently are adequate.

The Divisional Council recognises that AR magazine and the broadcast are major sources of news for Institute members — and it intends to see that members are kept informed on its activities.

David Johnson, wearing his other hat of Council News-Co-ordinator, is also kept busy presenting regular reports on what the Council is doing to administer the Institute’s affairs and protect the interests of members.

**AWARDS — ONE BRAND NEW AND ONE NOT SO NEW**

The Keith Roget National Parks Award has been revived and updated to reflect the growth in numbers of National Parks in Victoria.

To qualify for the award you need to work into and/or out of sixteen of the national parks — there’s no time limit imposed.

If you previously qualified for the award a number of years ago, simply gain the necessary additional parks to make up sixteen.

Why not plan an activation of your nearest national park to help others qualify for the award — please publicise your intentions through the weekly VK3BWI broadcast.

Further details on the award can be obtained from the National Parks Award Manager, Gray Taylor VK3JQ QTHR.

While on the subject of awards, elsewhere in this magazine you’ll see details of Bendigo’s first ever award — called the Premier Town Award.

Midland Zone Committee members have put a lot of work into getting this award going, help them make it a huge success — particularly you who live in the prescribed Bendigo district.

**DISPOSALS EQUIPMENT POLICY**

Last year the division re-introduced a disposals equipment service and this has proved very successful.

The results to date are a credit to the disposals officer, Fred McConnell VK3BOU and those who have helped him collect, check and sell the various pieces of equipment.

One of the major items has been the model 100 Siemens teleprinters. The general practice has been to check these machines before selling them as “tested” and converted to the amateur speed of 45.45 Baud.

The teleprinters have proved very popular with metropolitan members, and any country member or zone committee wanting a good Siemens machine should contact the Wireless Institute Centre while stocks last.

Council has now adopted a policy to cover its disposals service which includes a limited form of guarantee on equipment sold as “modified and tested” or as “tested” — but found not to be working within one week of purchase.

This equipment can be returned to the rooms for checking, and if found faulty due to reasons other than mistreatment will be replaced or a refund given.

Any member interested can get a copy of the disposal equipment policy at the Wireless Institute Centre.

**SOME SERVICES PROVIDED THROUGH VK3 DIVISION**

* Free world-wide QSL bureau service.
* Monthly journal “AR” magazine.
* Disposals equipment suitable for hobby use.
* Melbourne office open five days a week manned by volunteers to handle book and disposals sales and membership inquiries.
* Library of reference books, magazines and publications.
* Photocopying facilities for published articles and circuit diagrams.
* Appropriate media cover for amateur radio.
* Weekly Sunday morning news broadcast of items interesting to amateurs and SWL’s.
* Advice on radio mast approval procedures.
* AMSAT — communications satellites.
* Assistance in dealing with interference problems.
* Monthly WIA Melbourne meeting and regular zone meetings.
* Theory, Morse, revision, and special technique classes.
* Trial Novice and AOCP exam papers.
* Awards, contests and trophies.
* Intruder Watch Service protecting the amateur bands.
* Most repeaters have their licence, insurance, power, and site costs paid by the WIA.
* Co-ordination and fostering of emergency communication activity during natural disasters.
* Assistance to members in legal problems arising out of the pursuit of their hobby.
* Representation for radio amateurs at a local, national and international level.

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**SPECIAL NOTE**

Unfortunately this special statement was omitted from the article “Practical Digital Control Unit for the ICOM 720A” page 14, September issue.

* NB: Use of this capability must obviously be restricted to holders of licences appropriate to the frequencies chosen. Tech Ed.
HELP HANDICAPPED ENTER LIFE PROJECT

A new radio club has been formed following the death of Toowoomba amateur, Anthony Burge, VK4BAC, who was a victim of muscular dystrophy. Tony was a very enthusiastic amateur and tried very hard to overcome his terrible handicap but his triumph over the disease was unfortunately short lived.

Now the Burge family have donated Tony's equipment to HHELP with the express wish of promoting the hobby of amateur radio among disabled persons. As a result, a club has been formed to be known as the VK4 Disabled Person's Radio Club with the callsign VK4BTB.

By the time these notes appear, dedication of the equipment and the official opening of VK4BTB will have taken place on Saturday, 27th of August at Toowoomba on the Darling Downs.

The Queensland Division of the Institute wish this new club every success and you may like to make a special effort to contact VK4BTB whenever you hear this station on the air.

SUNSHINE STATE JACK FILES MEMORIAL CONTEST, 1983

From the VK4 Contest Manager, Joe Ackermann, VK4AIK, here are the results of this year's contest. Included in the sixty two stations who participated, were nine VK2, seven VK3, one ZL and twenty eight novice callsigns. Some stations claimed points for contacts on the 30 metre band but these were disallowed.

DIVISION 1

Section (a) Tx all bands
VK4AJL 927 Points
VK4ABY 508 Points

Section (b) Tx HF only
VK4YX 712 Points
VK4VHU 544 Points
VK4NAS 346 Points
VK4KAG 241 Points
VK4AOE/P 226 Points
VK4XZ 166 Points

Section (c) VHF, UHF only
VK4XZ 36 Points

Section (d) Tx all bands — Club Stations
VK4WIR 763 Points

DIVISION 2

Section (a) Tx all bands
VK2BQS 339 Points

VK4ANU, check log only.

QUEENSLAND RAILWAYS INSTITUTE AMATEUR RADIO CLUB

This club now has its own station with the callsign, VK4BQR. Should you be an old railway man or even just interested in railways, you might like to talk "railways" on the ORI Club net each Wednesday evening at 0900 UTC on 3.580 MHz or thereabouts.

VK4 DIVISIONAL BROADCAST

If you are a Queenslander living in exile in some other (lesser?) state, you may like to keep up with happenings at home. Like all the other divisions, we have a Sunday morning broadcast which goes on the air at 2300 UTC (0900 EAST). This broadcast is heard on a number of frequencies in the HF bands: 3.580, 7.120, 14.342, 21.175 and 28.400 MHz. So that distant stations may find the best frequency, we transmit a tuning signal from 2255 UTC on each frequency. This is a voice announcement giving the callsign, VK4WIA and the list of frequencies.

You may not be interested in Queensland affairs but because the Federal news is always up at the beginning, you may like to have the opportunity of listening to that before you go off somewhere for the rest of the day.

We are pretty pleased with the way our news is presented and we do have a lot of listeners, judging by the number of stations calling back on the various frequencies at the end of the broadcast. The average is a total of about 100 stations each Sunday. Give us a call, the operators will be delighted to hear from you.

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

held on the 6th December and that would have meant three Tuesdays in a row. Last year we felt that this accounted for the drop in numbers at the Christmas meeting. This year we have a very special guest speaker. Wally Watkins VK2DEW is returning to Adelaide for the first time in many years, and has timed his visit to coincide with our Christmas meeting. He will be telling us about his recent trip to China, complete with videos. Knowing Wally, I feel fairly certain that this will be a most entertaining evening.

GRATEFUL THANKS BUT MORE HELP NEEDED!!

Alan Shawsmith, VK4SS wishes to thank all those who have responded to his request for historical information. So far, over fifty letters have been received. This is most gratifying and he would be happy to receive another fifty. Photographs of amateurs, old or recent, and events are badly needed.
RR IS HERE

RR being a Radio Rally to be held at the Parkerville Childrens Home, Parkerville on Sunday the 20th November.

The Parkerville Childrens Home is no longer used as a home and has been booked specifically for the Rally. It has extensive grounds, bush walks, play facilities, BBQ area and unrestricted parking available, a large hall with 240V power and toilets.

Parkerville is an hours drive from Perth along the Great Eastern Highway and is convenient for metropolitan members and country members within a wide radius. There are shopping facilities for BBQ packs etc and a tavern is nearby.

The Rally will run from 10 AM to 4 PM with activities throughout the day. Overnight accommodation is available in rooms at the home and bookings must be made ASAP. Camping is permitted and it is intended that the Saturday evening foxhunt will terminate at Parkerville thus allowing a BBQ and overnight happening.

Talk-in stations will be manned from the site on VHF and HF — listen to the news for details.

The Rally is intended to be a family event and YL's and harmonics are particularly welcomed. We are trying to arrange visits by Mr Whippy and refreshment vans and the local store will be notified. Other possibilities being checked are pony rides, foxhunts, etc.

It is intended that the news broadcast will be made from the Rally and stations will be manned throughout the day. Other events will include a swap meet which will commence at 10.30 AM and all visitors are welcome to bring their junk etc for sale or swap.

The main hall will be used for the rally stations and displays including items from the Wireless Hill Museum. Normal WIA facilities will be available including membership queries and booksales.

Commercial houses have been invited and the feedback to date is that there will be a large display of retailers covering the field from radio to computers.

This is your Rally sponsored by your Institute and is a first in recent times. Depending on the support received is the future of further rallies which are planned to take place further afield. Therefore mark the date in your diary, brief your family and participate in the biggest rally held in WA. Country members are particularly welcomed and basic family accommodation can be arranged at the site.
Remember the ‘good old days’ of amateur radio? When an amateur built his own gear - and was so proud of it! Sadly, those days passed! With incredible advances in technology, it became economically and technically impossible to compete with commercially built equipment. Now home brewing is here again!

And what’s more, with the all-new Dick Smith UHF Explorer, you’ll end up with a transceiver less than the cost of a commercial unit - and not just as good, it’s better!

YES! A completely up-to-the-minute design featuring phase-locked-loop frequency synthesis.

It’s ready to go simplex as soon as you’ve finished it - or with the addition of our low-cost upgrade kit, you’re able to use repeaters too! Designed in Australia — for Australian conditions, using readily available components - so you’ll never have any worries about spares! And just in case you have any problems building it, we’ll even help you out with our ‘Sorry Dick, it doesn’t work’ repair service. You can’t lose!

SPECIAL INTRODUCTORY OFFER

For radio clubs, etc - order five or more sets and get a $30 discount on each! That’s right - until October 31, five or more sets will cost just $169.00 (you can pass the saving on to your members or keep it for the club coffers - a great way to raise money for your club!)

SPECIAL OFFER MUST END OCTOBER 31— if stock runs out all orders received before that date will qualify.

**SPECFICATIONS**

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<td>Mode of Operation</td>
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<td>Supply</td>
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<tr>
<td>Spurious Emissions</td>
<td>Better than -60 dB</td>
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**GREAT VALUE!**

**DICK SMITH EXPLORER UHF TRANSCEIVER**

Cat K-6300  **$169* from only**

*for five or more until October 31

Single price $199

**OPTIONS AVAILABLE:**

- Upgrade Kit (Cat K-6302) (Repeater kit, 5 meter & kit, additional xtal filter & new front panel) **ONLY $24.50**
- Antenna Kit (Cat D-4014) 1/4 wave stainless steel whip, co-axial fed UHF antenna base, PL-259 plug. 3.5m low loss UHF co-ax, gutter grip mount and cutting instructions **ONLY $24.50**

DICK SMITH Electronics

There’s a store near you. (Stocks may be limited in some stores).
CENTENARY COMMUNICATIONS HOOK UP

The official Western Australian Boys' Brigade call sign is VK6ABB (Australian Boys' Brigade).

We would like to invite all members to join with us in the communications hook-up, both local, inter-state and international.

Information for the long weekend camp, 1, 2 and 3 October, is as follows:-

There will be approximately 350 boys attending (No 1 Group 8–12 years) and (No 2 Group 14–18 years) at the Sorrento Youth Camp located on the coast 20 kilometres north of Perth.

The main BB Amateur Radio Station will be set up at the camp for early morning and late afternoon transmissions. There will also be a mobile station operating from the Hale School Sports Grounds located 11 kilometres down the coast from Sorrento. This station will be available for the boys to visit as we link up with other local and Eastern States companies, hoping for DX contact.

Yours sincerely

MALCOLM K JOHNSON VK6MJ
Communications Officer,
The Boys' Brigade,
Box K 842,
Perth. 6001.

MAKING CW EASIER

About sixty five years ago, I began a long time job — in all nearly fifty years — with the old PMG Department.

Among other things, I got an early introduction into telegraphy; being taught in a Departmental class by experienced operators of the "old school" and some very competent men they were. This was a factor to us who had to stop between the front contacts was not large (mine, at an elevation of about 4500 feet will be one of the side of Cradle Mountain in the Tasmanian highlands of 20 venturers, jamboree camp in a scout hut on the last years very successful camp with the Hellyer Venturer Scouts of Burnie, Tasmania. For the group this aspect of our hobby.

I hope this might help somebody who is wondering why he is not making as much headway as he first expected. Don't get upset about it and remember that all the operators had to go through the stage where you are finding difficulty.

If I can be of any help, I will be only too pleased to do so.

Tom Liddler, VK5TL
16 Albion Avenue, Gladstone 5037

JAMBOREE ON THE MOUNTAIN

The 1983 Jamboree of the Air is almost with us again and preparations have begun for a repeat of last years very successful camp with the Hellyer Venturer Scouts of Burnie, Tasmania. For the group of 20 venturers, jamboree camp in a scout hut on the mountain in the Tasmanian highlands at an elevation of about 4500 feet will be one of the coldest and most unusually located of any Australian station.

The station was assembled and antennas erected and checked.

The station consisted of a Yaesu FT 707 system running into a two element beam on 15 m and dipoles on both 40 and 80 metres. A Yaesu FT 209R and 4th whip was used on 2 metres and provided our brief liaison with local stations through repeater 8 at Launceston.

For the following 24 hour period the worth of the exercise was well proven and contacts were made with such stations as W67VIW maritime mobile on the Pacific Princess, well known on TV as the "Love Boat". VK6ZLA maritime mobile on the Oriana and VK9ZA on Willis Island etc.

Jamboree 1983 will undoubtedly present its own special challenges, a large venturer group will be in attendance, the antenna system shall be upgraded concentrating on the 20 m band, special QSL cards have been printed and last years operator call has been replaced with a personalised scout call VK7SCM (Scouts Cradle Mountain).

The station will again be manned for the 24 hour period using the 2, 15, 20, 40 and 80 metre bands so if you hear VK7SCM operating please give a call and join in the Jamboree experience.

G Greene, VK7SG
58 Bird Street, Burnie 7320

SEANET CONVENTION TRAVEL GROUP

A group tour is being organised to Singapore for Australian Amateurs to attend the SEANet Convention to be held from the 18th to 20th November at the Hotel Equatorial. The tour package will include air fares, the convention programme, additional tours, sightseeing, and shopping. The tour will only get off the ground if sufficient interest is shown by enough VKs, so come on and join the group and save money.

For further details contact John, VK6JL
18 Albion Avenue, Gladstone 5037
Tel (03) 531 8601 or 583 8355.

Yours faithfully

John Sweeney, VK3JHN, VS66G, HS1AML
99 Warrigal Road, Mentone, Vic

WHO AM I??

I wish to draw attention to a situation which is slightly embarrassing to me and possibly one hundred or so other women.

I am the mother of a lad, VK2EFM, and he is fifteen years old. "So what?" you are thinking. Now let me ask a question. What does that make me?
from being his long-suffering mother, I'm not his XYL, or YL.

I am constant demand in the shack, responding to calls of "Hey Mum, this guy is a —-(call sign), can you find out what country that is, quick! It's in the book." or "Where's his VK on the map?" or "What's this letter on the QSL card?"

The only problem I couldn't solve was the Arabic or Russian letter on the QSL card. That makes me a bit embarrassed when I enter the competitions that I set up with days, etc. and I enjoy doing it. But it is very discouraging to be told I am only a "pirate" as I work "CW" and I don't know what I am (amateur wise). The number of mothers in my position is increasing. The situation which may not be uncommon.

The purpose of my note is to tell, firstly, how helpful, courteous and effective the officers from the Department of Communication were, on their several visits, both with me and to investigate the complaints with the neighbouring amateurs. The problems have been solved, the situation is stable and the yagi is just fine.

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I have discussed the proposition with many on-air acquaintances that Novice operators who have not been awarded a call sign at AOCP level should be granted the privilege of working on that portion of the 7 MHz band which is allocated to American Novices. Such operation could be restricted to CW only and should give a boost to those Novices who are well ahead in their expertise.

I submit there are quite valid grounds for such a development.

1. The 7 MHz band has been extended.
2. Many Novice operators are VERY competent CW operators.
3. There is quite a clear distinction between communicators and technicians.
4. Australian Novices would be in a better position to make overseas contacts with American Novices if their allocations were overlapped.
5. A 7 MHz allocation to Novices would stimulate interest in Morse code as a method of transmitting mode.
6. There would be no need to issue new call signs.
7. The addition of an oblique stroke and the letter "C" should be adequate.
8. Novices have proved to be a very worthwhile addition to the Amateur Service. The Novice movement has shown responsibility and has established itself in a very favourable light. It is REASONABLE to expect concessions for our responsible Novice colleagues.

 yours faithfully

Rex Black VK2YA
562 Kooringal Road, Wagga Wagga, 2650

Editors Note: This letter has been shortened.

WHO IS THE REAL VK2EP?

Although a newcomer to Amateur Radio, I first sent "CW" more than fifty years ago.

I sent live and a half years during World War Two as a Wireless Telegraphist, RAAF. In 1978 I obtained my Novice studying at the WIA in Melbourne. It was very difficult for me but I made it with the help of good instructors. In 1980 I made the full call with much more "sweat and tears".

Now, to my horror, I am receiving stacks of QSL cards from all over Europe including the usual requests from USSR listeners for QSL cards. Giving times, dates, etc of SSB! Contacts with most of Europe the signal strength is nearly always RST 5 9 + 20 dB.

I note that the VK2EP never has a name or QTH. I know immediately he is a "pirate" as I work "CW" only.

I also have worked the world but only with "CW", QRP with a G5RV antenna. I make an appeal to anyone hearing VK2EP on phone to try to find his QTH, name etc.

You're sincerely

Leslie Arnold. VK4AAJ
114 Frederick Street, Launceston, 7250
Predictions courtesy Department of Science and Environment IPS Sydney. All times in UTC.

Less than 50% of the month

PATHS — Unless otherwise indicated (ie LP = Long Path) all paths are Short Path.
OBITUARIES

VIC BROWN VK4BJ

Vic Brown VK4BJ became a silent key, on the 27th July 1983 at the age of 75 years. He obtained his ticket during 1927, and up to a few years ago, he remained active.

I first met Vic, in 1928, at ARAMAC in Central Queensland, where he was employed as a wardsman at the local hospital.

Sometime in 1929, he gave that job away, and with his brother, started a bakery business. At that time, Don Bradman was in his hey-day, and Vic, being a very enthusiastic radio amateur, and also owning a "warm" backhouse, was very popular with the local cricket lans, during the last series.

He was a very cheerful chap, and was always there with a helping hand when needed. He pioneered 6 metres in Bundaberg during the late '40s.

To his wife Ethel, two sons, his sister Gladys and all his many friends, we offer our sympathies and condolences. Vic will truly be remembered.

Claud Singleton, VK4UX

ANDREW HAROLD GRAY VK2APV

The sudden death of Harold Gray on 14th June came as a great shock to his many and close friends. Harold would be best known as Senior Instructor, Marconi School of Wireless from 1949 to his retirement in 1968.

In his early life he was a cabinet maker by trade, and was attracted to "Radio" and the Marconi School, and on qualifying joined the AWA Marine Service in the early 1920's. During the depression years he saw service in New Guinea, subsequently joining the Marconi School in 1930.

For many years his QTH was Strathfield, operating purely on CW. In later years he moved to Umina and on qualifying joined Ihe AWA Marine Service in

WILLIAM SHANNON OTTY VK2ZL

It was with great sorrow that we learned on Monday evening, 5th August, 1983 of the death of Mr. Otty at his home in Cooranbong.

John was born in New Zealand and after spending five years in the United States completed his Chiropractic degree, came to Brisbane in the early 30's. He enlisted in the RAAF at the outbreak of World War 2 and spent five years in the radio section. On demobilisation, he started a very successful Chiropractic practice in Brisbane. He obtained his amateur call in the late 40s and was very active in WIA affairs being the Honorary Secretary and also President in the early 50s. He was one of the group instrumental in the birth of the Queensland Divisional monthly newsletter, QTC, cutting the stencils and printing it in the big shack at the Clayfield QTH, which was the meeting place of many convivial gatherings over the years.

Bill was a very active amateur and experimenter and he loved his shack, and his trains and his billiard table.

Old timers got to know Bill well in the late 50s when he really became interested in amateur radio again after a lapse of many years during which time he was fully engaged with his brother Norman in running the family business, making, among other things the "WILNOR" brand radio receivers. In his early days, business came first and his only opportunity to get on the air came when he broadcast on the 240 metre band every Sunday morning to the children watching the late night movies in the Clayfield QTH.

His loss will be mourned by many, and to his XYL Valerie we offer our sincerest sympathy.

JOHN FERGUSON PICKLES VK4FP

The many friends of John will be saddened to learn of his sudden passing on Saturday the 9th of July.

John, was born in New Zealand and after spending five years in the United States completed his Chiropractic degree, came to Brisbane in the early 30s. He enlisted in the RAAF at the outbreak of World War 2 and spent five years in the radio section. On demobilisation, he started a very successful Chiropractic practice in Brisbane. He obtained his amateur call in the late 40s and was very active in WIA affairs being the Honorary Secretary and also President in the early 50s. He was one of the group instrumental in the birth of the Queensland Divisional monthly newsletter, QTC, cutting the stencils and printing it in the big shack at the Clayfield QTH, which was the meeting place of many convivial gatherings over the years.

Contestants in the monthly Friday night 2 metre transmitter hunts would usually find his low flying Jaguar at the site when they got there with John smoking his pipe waiting for them.

He became interested in SSB very early on and after spending five years in the radio section, became a very successful Correspondence Course for the AOCF and LAOCP Examinations.

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For further details write to: THE COURSE SUPERVISOR, W.I.A.

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WANTED — VIC

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CIRCUIT & any info on Philips TA-101 signal generator. Ken VK3ZFI QTHR or Ph: (03) 580 3347.


WANTED — QLD

FLYING DOCTOR PEDAL RADIO equipment. Any condition for restoration. Would appreciate any information at all that could help me in the right direction to locate equipment. VK3/KCDX. 8 Bristow Drive, Forest Hill. 3131. Ph: (03) 877 1135.

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WANTED — WA

YAESS FT7 HF mobile txcvr or similar mobile unit. Bill VK6LT QTHR or Ph: (09) 457 1080.

AMATEUR RADIO, October 1983 — Page 79
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AMATEUR RADIO

VOL. 51, No. 11, NOVEMBER 1983
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DEPARTMENTS
A word from your Editor ........................................ 7
Advertisers Index ................................................ 72
ALARA — full list of members ................................. 56
AMSAT Australia .................................................. 54
AR Showcase — Code Rx, Oscilloscope, All Mode Txvr, Card Holder & 2.3 GHz Kit ... 64
Booths — OSJET, Malta and Moorabbin & District rules .............................................. 30
Club Corner — EXPO. ANARTS, TARC & Western Suburbs ........................................ 62
Commercial Chatter ............................................. 32
Contests — VK CW ORP, Ross Hull rules .............. 58

ARTICLES
Commonwealth Contest 1983 Results ..................... 44
Competition Winner ............................................. 55
DXing to Q land by Jim Swann VK2BOS ................. 29

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drafting

Education Notes ................................................... 43
Equipment Review — KB R-X Noise Bridge ............. 15
Five-Eighth Wave ................................................ 67
Hamads ............................................................ 71
Here's RTTYI ..................................................... 52
How's DX .......................................................... 26
International News — Space Shuttle STS9 & RSG 1984 Convention ................................... 31
Intruder Watch ................................................... 53
Ionospheric Predictions ........................................ 68
Letters to the Editor ............................................ 70
Listening Around .............................................. 60
Magazine Review ............................................... 49
Main QSP .......................................................... 50
National EMC Advisory Service — Audio Frequency Interference ............................................... 40
Pounding Brass ................................................... 61
QSP ................................................................. 63 
Silent Keys — VK4GD & VK2MT ................................ 71
Spotlight on SWLing ........................................... 51
Thumbnail Sketches — Ben Grimes and Ock Alder ......................................................... 28
Try This — V o x i n a B o x ...................................... 16
VHF. UHF — an expanding world including locator map details ....................................... 46
VK2 Mini Bulletin ............................................... 65
VK3 WIA Notes .................................................. 66
VK4 WIA Notes .................................................. 67
WIA News .......................................................... 71

ARTICLES
Commonwealth Contest 1983 Results ..................... 44
Competition Winner ............................................. 55
DXing to Q land by Jim Swann VK2BOS ................. 29

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| AM...More than 60 dB at —10 kHz |
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| 8-1/4 (W) x 3-1/4 (H) x 9-1/8 (D) In. |
| Weight: 2.8 Kgs. |
| Clock Error: Within 10 sec/month |
| Memory Channel: 16 Channels |
| Scan Rate: Fast...8 Channels/sec. |
| Slow...4 Channels/sec. |
| Seek Rate: Fast...10 Channels/sec. |
| Slow...5 Channels/sec. |
| Scan Delay: 0, 3 or 4 seconds |
| Audio Output: 2 Watts |
| Ant Impedance: 50-75 ohms |
| LO/DX Control (20 dB ATT.) |
| Freq. Stability: 26-180 MHz...Within 300 Hz |
| 380-514 MHz...Within 1 kHz |

ACCESSORIES

Service Manual $12 + $2 P&P |
Scan-X Base Antennas $52 + $10 P&P

The JIL SX-200 represents the latest STATE-OF-THE-ART technology in the development of Scanning Monitor Receivers. It has many features that previous have not been available on receivers of its type.

For example the tremendous frequency coverage, which encompasses all of the following bands — HF & UHF CB, 27 & 155MHz MARINE, Australian LOW BAND, AIRCRAFT band, VHF SATELLITE band, 10Mx, 6Mx, 2Mx and 70CMx AMATEUR, VHF HIGH BAND and UHF TWO-WAY band — as well as many others. Other features include detection of AM or FM on all bands. Squelch Circuitry that can be used to LOCK OUT carrier only signals. Fine Tuning control for off channel stations. 240 VAC plus 12VDC operation. Squelch Operated Output that may be used to trigger a tape recorder or channel occupancy counter and accurate Quartz Clock.

$599

plus $10 P&P
JIL SX-200
A BETTER SCANNING MONITOR RECEIVER

HIGH QUALITY AND PERFORMANCE
JIL have designed the SX-200 as a high quality, high performance programmable scanning receiver at a realistic price, design criteria which are not born in many other receivers of its type.

MECHANICALLY RUGGED
The JIL SX-200 is ruggedly built using EPOXY-GLASS printed circuit board and double sided through hole plating techniques. Easy access and serviceability is maintained throughout its design.

4 BIT MICROPROCESSOR WITH ONBOARD ROM AND RAM
A powerful 4 Bit PMOS Microprocessor, the uPD553, is used as a controller in the SX-200. Its features include 2000 x 8 ROM and 96 x 4 RAM onboard as well as up to 80 instructions with a 3 level subroutine stack.

EXTREMELY LOW SPURIOUS COUNT
Even though the SX-200 covers over 33,000 Channels JIL, through careful design, have been able to reduce the number of internally generated spurious signals to an extremely low level. Not the case in most other scanning receivers.

FULLY TRACKED RF AMPLIFIERS
The SX-200 makes use of 3 separate RF Amplifier Stages. They are divided into 6 bands, each band having its own electronically switched coils which are fully tracked with the receiver frequency using Varicap Diodes. Maximum performance is thus gained over the entire operating range of the set.

NEW ACCESSORIES
- EXP-32 KIT
  Increase the memories of your SX-200 to 32 with this memory expander kit.
  $53 + $2 P & P
- A4-AM KIT
  Provides automatic AM operation on the 27 MHz CB MARINE and AIRCRAFT bands.
  $32 + $2 P & P
- CVR-1B CONVERTER
  allows your SX-200 to cover 180 to 380 MHz (Incl. SPACE SHUTTLE frequencies).
  $199 + $5 P & P
- CVR-2 CONVERTER
  allows your SX-200 to cover the SHORT WAVE bands, 0.55 to 30 MHz.
  $189 + $5 P & P
- MFJ-332 VLF CONVERTER
  allows your SX-200 to cover 5 KHz to 1600 KHz
  $144 + $5 P & P

AVAILABLE FROM
W.A.: Letco Trading Co. (09) 387 4966, N.S.W.: Emtronics (02) 211 0531, QLD: CW Electronics (07) 397 0808, S.A.: Jensen Intersound (08) 269 4744, Plus many other regional outlets, contact GFS for your nearest stockist.

GFS Electronic Imports
17 McKean Road, Mitcham, Victoria, 3132
PO Box 97, Mitcham, Victoria, 3132 Phone: (03) 673 3930, 673 2652
Telex: GFS-VX 0092 Cable: "GFSVXX" Melbourne
When it comes to Trans
ICOM has

IC-271A 25 Watts of FM, SSB, CW for 2 Metres.
- Output power: 25 Watts of power from either 12 Volt DC or from 240 Volt AC with an optional internal power supply.
- Memories: 32 full function memories for frequency, offset, offset direction.
- PLL locked to 10Hz
- Display: 7 digit frequency fluorescent display plus mode, offset, VFO, memory channel and RIT offset.
- Memory Scanning: IC-271A scans programmable memories, programmable band sections or modes.
- Dual VFOs: Allowing transfer from memory to VFO. Memory to memory transfer with no frequency change.
- New Size: Only 11½" W x 4½" H x 10½" D.

Revolutionary New Communications System

IC-120 Mobile 1.2GHz FM
- Memories: Six memory channels plus two VFOs. Storing frequency, offset direction and offset frequency.
- Scanning: Scan memory, all 40MHz or just a segment.
- Duplex: Work more than repeater offset with IC-120s programmable offset system.
- Tuning Rates: 3 different rates: 10KHz, 20KHz, or 1MHz.
- RIT: On FM allows ± 5KHz tuning of signals offset from yours.
- Display: Four digit green LED for day-night visibility.
- Size: A tiny 2" H x 5½" W x 8¼" D.
- Repeater capability: Team the IC-120 mobile with an IC-RP1210 repeater for a complete system. (More details on IC-RP1210 repeater next page.)

IC-471A 430-450MHz Base Transceiver.
- Memories: 32 memory capacity. Storing frequency, mode, offset direction and offset frequency for easy return to any frequency.
- Phase Lock Loop: Low noise, good signal to noise ratio. PLL allows lock to 10Hz for accuracy.
- New Display: Easy-to-read two colour fluorescent display shows frequency, mode, offset direction, VFO in use, memory channel and RIT offset.
- Scanning: IC-471A scans memory, programmable band and mode.
- New Size: Only 11½" W x 4½" H x 10½" D.
- Repeater Compatibility: Team the IC-471-A with the IC-RP3010 25 Watt FM Repeater. (More details on IC-RP3010 on next page.)

IC-751 100KHz to 30MHz Competition Grade.
- Receiver: Has a 105dB dynamic range. The IC-751 has a deep IF notch filter, adjustable AGC and noise blanker audio tone control plus RIT with separate readout.
- Transmitter: 12 Volt DC design. Quiet relay selection of transmitter LPFs transmit audio tone control, monitor circuit, XIT, and a high performance speech processor enhance the IC-751 operation.
- Dual VFOs: Controlled by large tuning knob.
- Memories: 32 tunable memories to store mode, VFO and frequency. Scanning capability of frequencies and memories.
- Display: High visibility, multi-colour fluorescent display, with frequency in white, other functions in white or red.
sceivers and Repeaters

the range

IC-RP3010 FM Repeater.

Complete your system with the NEW 440 MHz Repeater. A 10 Watt 400MHz FM repeater. The IC-RP3010 features high stability crystal controlled channels CTCSS system, ID'er, remote control through a DTMF decoder and microprocessor controlled circuitry. Repeater soon to become operative in Melbourne, end of 1983.

COMING SOON

IC-RP1210 Repeater

An all NEW 1.2GHz Repeater for the avid enthusiast. PLL frequency selection (198 channels, 10KHz steps, DIP switch). High stability PLL (0.5 PPM/ -30°C to +60°C). Repeater accessed via CTCSS DTMF control functions. Selectable hang time. ID'er.

ICOM AUSTRALIA PTY. LTD.
7 Duke Street, Windsor, Victoria 3181, Australia. Phone (03) 51 2284
Telex AA35521 ICOMAS

WARNING: When purchasing an ICOM unit, please confirm that you are dealing with an Authorised ICOM Dealer as the ICOM Warranty applies only to units supplied by ICOM Australia Pty Ltd. to Authorised ICOM Dealers.

Discover a new deal with ICOM Australia.
Remember the 'good old days' of amateur radio? When an amateur built his own gear - and was so proud of it!

Sadly, those days passed! With incredible advances in technology, it became economically and technically impossible to compete with commercially built equipment. Now home brewing is here again!

And what's more, with the all-new Dick Smith UHF Explorer, you'll end up with a transceiver less than the cost of a commercial unit - and not just as good, it's better!

YES! A completely up-to-the-minute design featuring phase-locked-loop frequency synthesis.

We apologise...

Hundreds of amateurs have wanted this outstanding new kit... far more than we could supply! Now for the good news:

We've made up some more kits for distribution to our stores and mail order centre. Be warned - some parts are still pretty scarce so we haven't been able to make all the kits we wanted to. To avoid further disappointment, order your kit NOW!

And for those waiting for the upgrade kit...

It's now available! Yes, you can give your transceiver full 438-439MHz repeater capability with standard 5MHz offset, PLUS 'S' meter, and a brand new front panel to suit. Once again, supplies of this kit will initially be limited so hurry in and get yours now!

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Frequency Coverage</td>
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<tr>
<td>No. of Channels</td>
<td>40</td>
</tr>
<tr>
<td>Mode of Operation</td>
<td>FM</td>
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<tr>
<td>Supply</td>
<td>13.8v DC. Receiver 340mA with full audio output and all options Transmitter 2A more (5 watt output)</td>
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<tr>
<td>Receiver</td>
<td>Dual Conversion Superhet</td>
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<tr>
<td>Sensitivity</td>
<td>0.4uF for 20dB quieting</td>
</tr>
<tr>
<td>Selectivity</td>
<td>+/-7.5kHz - 60dB</td>
</tr>
<tr>
<td>Adj. Chan. Reject</td>
<td>Better than 80dB</td>
</tr>
<tr>
<td>Transmitter</td>
<td>Power Output</td>
</tr>
<tr>
<td>Deviation</td>
<td>5W (typical)</td>
</tr>
<tr>
<td>Spurious Emissions</td>
<td>Better than -60dB</td>
</tr>
</tbody>
</table>

DICK SMITH EXPLORER UHF TRANSCEIVER

ONLY $199

Cat K-6300

OPTIONS AVAILABLE:

- Upgrade Kit (Cat K-6302) (Repeater, S meter, additional xtal filter & new front panel) ONLY $24.50
- Antenna Kit (Cat D-4014) ¼ wave stainless steel whip, co-axial fed UHF antenna base, PL-259 plug. 3.5m low loss UHF co-ax, gutter grip mount and cutting instructions ONLY $24.50

DICK SMITH Electronics

There's a store near you. (Stocks may be limited in some stores).
During this year Oscar 10 has gone aloft and is providing new horizons for satellite operation. Many have made interesting contacts over great distances aided by the satellite borne repeater.

As this issue arrives an amateur will actually be operating from the Space Shuttle Columbia. Dr Owen Garriot, W5LFL will give many a unique, if brief, contact as he passes over in the space shuttle.

With new satellites, an amateur operating from space and new operating privileges the Amateur Radio Service is forging ahead.

Don’t forget Amateur Radio Magazine. With all the new frontiers in amateur radio help others enjoy them by writing an article. Good articles are always needed particularly on the new frontiers. However don’t forget the newcomer who also needs articles on more basic subjects.

Amateur Radio Magazine is for all and needs a broad spectrum of material. New techniques, general interest, and basics are all equally welcome.

FESTIVAL

The Fourth International Festival of Telecommunication and Electronic Films is being held in Geneva between the 26th October and the 1st November 1983. Known as the “Golden Antenna” film festival, it is organised by the ITU as part of the Telecom ’83 World Telecommunication Exhibition.

The Institute has entered a 16mm film called “Amateur Radio — A National Resource” printed from a video tape made for the WIA video library. The film will be shown in the General Category and is suitable viewing for the general public as it gives an insight into our hobby and many of its aspects.

There are eighty entries from twenty-six countries and three international organisations, our film appears to be the only entry from Australia.

An international jury consisting of experts in either film production, telecommunications and electronics will assess the entries, judging being based on content/purpose achieved, promotion of telecommunications at National and International level.

INSURANCE

An Insurance brochure is being circulated bearing the Institute’s Business name.

WHAT DO I GET OUT OF THE INSTITUTE?

Shortly all members will be receiving their subscription notice. You may wonder is it worth renewing again this year, “What do I get out of the Institute”. Read on . . .

Why should I pay my annual subscription? I live in the country, so I can’t get to a WIA meeting in the city. I don’t work DX, so I don’t need the QSL bureau. I am not much of a reader, so I don’t need the cheap technical books from the bookshop.

I live in a provincial centre and my arguments are the same. I belong to the local radio club, and it is affiliated with the Institute. Maybe on the surface, a lot of people don’t get a lot from being a member, except a very good magazine once a month. That is if you don’t count your amateur licence, or being in an organisation that represents you on a State level with the local office of the DOC and on a national level with the Federal Government.

If you don’t count the good deal that we got out of WARC ’79 or the work done on your behalf regarding the detailed submission on the new radio-communications bill. If you forget the representation on your behalf at the Region 3 Association meetings which influences the IARU, the World Amateur Radio body.

If none of this gives you the message, how about the fact that you belong to the oldest amateur radio society in the world and that old one about ... UNITED WE STAND . . .

by Bud Ponssett, VK4QY
in OTC, August 1983

HELP PREVENT PIRATES

Keep bands for licensed amateurs.

DO NOT sell transmitting equipment to unlicensed operators.
Announcing —

SKYTRIM

Today’s premier free standing crank up tower line

A range of telescopic towers for amateur and commercial applications, from 6.5m to 20m, with tilt-over facility enabling antennae installation and adjustment to be done at ground level.

What other tower can offer you these features?

* Rugged, all welded, diamond web construction.
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* Easily erected on a limited area site.
* Only heavy-duty marine fittings used.
* Rotator mounts inside tower.
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FIFTY MEGACYCLES REVISITED??

The insert to August Amateur Radio and the following month’s QSP by the Federal President Bruce Bathols, have caused the sparkle to be returned to the eye of many a hardened six metre operator — especially those old hands who can well remember the “good old days” before Channel 0!!

It is a pity that so many years and so many good opportunities for rare DX have been missed, while the bureaucratic wheels have been turning ever so slowly over the return of this band to amateurs. However the good news of 50-50.150 MHz is certainly a positive first step in the right direction.

All is not over yet! While some Australian six metre operators have little to worry them, as their nearest Channel 0 station is hundreds perhaps thousands of miles away, the vast majority of us have many a potential problem right ‘next door’, together with restraints imposed by DOC.

A review of the 50-50.150 MHz allocation is to be made in about twelve months. It is obvious that in this case the ‘review’ is to answer one fundamental question — “can the Amateur Service and Broadcast Service co-exist in this part of the spectrum??”

This should not be confused with any sort of “right” question as this is a separate issue.

It would seem logical that any self respecting broadcaster will be trying to “prove” that such co-existence is undesirable because of “observed interference problems”!!

ANY INTERFERENCE to Channel 0 is likely to be labelled ‘Amateur’, unless we can prove otherwise when the time comes.

So for the next twelve months, ALL six metre operators have a very special responsibility, to themselves and all future amateurs. They have to help to prevent this sort of broad sweeping interference statement becoming THE reason for our loss once again of this valuable band.

READ ON!

Interference to the broadcasting service in this part of the spectrum is problematical at any time. Interference from an amateur transmitter is only one possible source.

Many viewers have improperly installed receivers and aerials, which experience shows is frequently the case in areas where Channel 0 has been in operation for a relatively short period. Interference from powerlines, especially in these weak signal cases, is a major problem.

In this part of the VHF spectrum, other forms of electrical interference, including motor vehicle ‘ignition noise’, can severely disrupt viewing.

Yet another source of interference during the DX season is mutual interference between Channel 0 stations.

So that reasoned debate can take place at the time of review, it is imperative that ALL users of the six metre band — irrespective of which state they are located, and irrespective of whether a Channel 0 station is nearby, keep accurate and detailed logs for the next twelve months.

Not only should logs reflect the amateur radio operations but also any television interference observed together with a statement of its possible cause or source. This is most important in the case of suspected, mutual or co-channel interference from another television station.

At this time, we are not asking for copies of your logs — we are simply trying to implement an insurance policy for the future — for your future use of the 50 MHz band, and like insurance, your logs may not be needed. However, it could well be too late after the event!!

Let’s ensure that we are not just re-visiting 50 MHz, but are here to stay with the ultimate aim of recovering the remainder of the 50-52 MHz allocation.

It is all up to you now — the six metre operators.

Peter Wolfenden VK3KAU
Immediate Past President

AMATEUR RADIO, November 1983 — Page 9
I have long supported the concept of a station microphone mounted on a flexible goose-neck cleor of the operating area. The graphic equaliser described in this article resulted from the need to improve the on-air 'sound' of an electret microphone used in this manner. I must admit that an electret was chosen more for its looks than its suitability as a station microphone.

As most will be aware, the human ear is somewhat insensitive to changes in volume but extremely sensitive to changes in pitch. That is to say, sounds of equal intensity but differing in pitch will give the impression of dissimilar intensity. Thus if those frequencies most essential to good speech communication are accentuated and at the same time non-essential frequencies attenuated, an overall improvement in the clarity of the transmission will result.

The use of a graphic equaliser allows the output from a microphone to be tailored to suit the characteristics of the human ear, the speech amplifier in the transmitter and the voice of the operator.

Figure 1 compares the frequency response of the electret microphone with that of a Shure 444D communications microphone which is well respected in amateur circles. The 'woolliness' associated with some signals heard on the air, may be attributed to some extent to the flat frequency response of the microphone or at least to a lack of high frequencies. High quality studio type microphones make poor communication microphones for these reasons. For effective communication, frequencies below about 300 Hz should be attenuated since they contribute nothing to the intelligibility. The mid range and high range frequencies should be accentuated.

### Circuit

A three-filter equaliser was chosen to give about 12 dB of boost or cut at approximately 400 Hz, 1.5 kHz and 2.7 kHz. Depending on the microphone used, some alteration to the value of input capacitor may be required to obtain a smooth roll-off at the low frequency end. Values as low as 0.01 uF can be tried in this position.

The three filter circuits are identical except for the values of the capacitors which determine the centre frequency of the respective filter. Different frequencies to those given may be obtained by using other combinations of capacitors. The resonant frequency (in Hz) for other combinations of capacitors (in uF) may be determined from the formula:

\[ f_0 = \frac{15.9}{C_1 C_2} \]

The on-board gain control has a range of approximately -10 dB to +13 dB allowing for different levels of microphone output. The input impedance is 47 k and the output impedance around 500 ohms which should suit most combinations of microphone and transceiver.

The ferrite beads provide some RF filtering, but additional filtering may be required depending on the installation.

### Components

All components are readily available. Resistors are 1/4 watt and the trim-pot a horizontal mounting cermet type. All polarised capacitors are tantalum, although ordinary electrolytic types should prove satisfactory.

The frequency determining capacitors should be of good quality and close tolerance if no facility for checking the centre frequency of the filters is available.

Components associated with the microphone bias supply may be omitted if a microphone other than an electret is used.

Construction of the printed circuit board should present little problem and a full-size pattern is given in Figure 3.

### Construction

The unit should be enclosed in a metal box to reduce the possibility of RF feedback. Leads to the potentiometers should be as short as possible and if batteries are used to power the equaliser, they should be located inside the box.

If an AC power supply is used, care must be taken to prevent hum loops and the entry of RF. I use a completely floating supply and extensive RF filtering with good results.

If the problem with RF feedback persists, extra filtering of the audio input and output leads may have to be employed. Feed-through capacitors of about 0.001 uF may be all that is necessary.

### Adjustment

Although no audio signal generator and an oscilloscope would be useful for checking the operation of the equaliser, it is not absolutely essential. If close tolerance capacitors have been used in the filters, the centre frequencies should be very near the calculated values.

The easiest way to get the feel of the equaliser is to connect it to the input of a tape recorder and adjust the boost/cut controls to various positions until the desired effect is obtained. Use these final settings for the initial on-air tests.

Connect the equaliser to the transmitter and adjust the on-board gain control to give the same output as is obtained from the microphone without the equaliser. A few minutes with the co-operation of a reliable
friend is all that is necessary for final adjustments to be made.

With my electret microphone, I use about 6 dB cut at the low range, 3 dB boost at mid range and 6 dB boost at the high-range.

**Component List**

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<tr>
<th>Type</th>
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<td>DPDT switch</td>
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</tbody>
</table>

**Finale**

This completes the trilogy of weekend projects. In the fourth and final article, I intend to present some ideas on how the three projects in the series may be combined in a station control centre.

**Notes**

2. Graphic Equaliser — Electronics Today International (June 1977)
3. Linear Handbook — National Semiconductors

---

**1983 RD CONTEST**

Remembrance Day Contest 1983. Log keeper Peter Cameron, Operator Mike O’Brien VK3WW.

Photographer Mrs L Beck, Burracopin, WA
The 3 cm amateur band (10,000-10,500 MHz) which apparently boasts thousands of QSO's per year in Europe, particularly in the UK and Germany, has received little attention from the amateur fraternity in this country.

As G3BAK, I was amongst the first to operate this band in the UK, having a QSO with G3LZ in January 1950 over a range of several miles. Ever since then the fascination of 3 cm has remained, even though the annual QSO rate has ranged from zero, to about ten in a particularly 'active' year. Equipment has been updated and practically all the possible arrangements have been investigated and tried out at some time. Sources of information on equipment for, and operation in this band are:

- The RSGB 'VHF/UHF Manual'.
- 'Microwaves' — a monthly column in the RSGB's 'Radio Communication'.
- The German quarterly 'VHF Communication' — available from WIA or direct.
- A series by the writer in 'Electronics Australia' — May-October 1972.

A few years ago, with the introduction of the 'Gunnplexer', a state of the art commercial local oscillator/mixer assembly employing a circulator, all seemed set for an increase in activity in Australia, as this unit provided all the bits that were normally too expensive to purchase new, or so difficult to acquire on the surplus market that all, but the most enthusiastic, tended to give the band away. However, this was relatively short lived as the price of these units has now soared to their true commercial value, around $400, due to the manufacturer (Microwave Associates) altering their marketing policy on this particular item.

For some time I have been considering what could be done to fill the equipment gap, and finally got around to doing something about it over the Christmas break, following a visit from Frank Sleep VK4CAU who told of lots of interest in the Brisbane area, and, in particular, a desire to use the well known Philips Intruder Alarm Module, which has been sold in quantity for a number of years, and which is probably lying dormant in many a shack.

These modules contain a 10 mW Gunn diode and a high sensitivity video mixer in separate cavities, and normally operates on 10,525 MHz but easily tune down into the top end (10,350-10,500 MHz) of the amateur band.

A few rapid experiments prior to a second visit by Frank, a couple of days later, led to the production of a prototype on which a number of measurements were still required, but which appeared to be the best compromise for getting people on the band with minimum outlay, microwave knowledge or fancy test gear.

The idea adopted was to utilise both halves of the Philips cavity, as opposed to the use of only one half of two units operating as a separate transmitter and receiver, or the use of the Gunn diode section as a self oscillating mixer. It is not feasible to use the cavity in its normal configuration for anything but the most local of contacts.

![Diagram of 3 dB Coupler for use with Philips Cavity CL8963.](image)
It was also decided at the outset to replace the Schottky mixer crystal by the standard X band IN23WE, as it was assumed, from bitter experience, that most of the original crystals in the units still around would be unserviceable anyway. The IN23WE is a better choice for the job of a high IF mixer (30 MHz or the FM broadcast frequencies are the standard), and is available at a reasonable price off the shelf.

Now the Philips cavity does not use standard X band waveguide (WG16), but is a diecasting with two outputs whose size closely resemble WG17, some of which I had obtained recently for experiments with the forthcoming Australian Satellite Programme. The use of this particular size of waveguide provided the answer to the problem of how to use the Philips cavity for serious amateur work.

When two pieces of WG17 were placed side by side they were only marginally larger than the Philips cavity flange, so why not separate the Gunn diode and mixer sections by means of a continuation of the Philips cavity in two pieces of WG17, and introduce the well known 3 dB coupler system as the means of providing duplex system operation with its inherent 6 dB system loss? (3 dB of the transmitted signal is lost in the dummy load in the mixer arm, and 3 dB of the incoming signal is lost in the Gunn oscillator).

The mating of the Philips cavity to the 3 dB coupler made from WG17 was made more accurately by removing one wall of one of the waveguides. This is normal practice when making 3 dB couplers of the type used and, therefore was most convenient.

The piece with the wall removed was used for the mixer section, thus allowing the unmodified waveguide to be used for connection to the antenna, either directly or as in the prototype — by means of a WG17 square flange.

The 3 dB coupling is produced by removing 0.66 λg (29.2 mm) of the joining wall of the main waveguide, and the unused arm in the mixer section is terminated in a dummy load, in front of which is placed a mismatching screw tuner which is used to set the mixer current to about 0.4 mA-0.7 mA. A flange to mate with the Philips cavity flange was designed and fabricated and joins the two units together.

The antenna used for the prototype was a 22 dB gain horn made from cheap PC board. It was fitted with a home made flange to match the WG17 flange on the output of the 3 dB coupler unit.

In order to make sure the prototype was functioning correctly it was necessary to make up an adaptor from WG17 to WG16, which is the size of all the 3 cm test equipment at VK5ZO. Also, an adaptor from WG16 to one half of the Philips cavity was required and produced so that each of these halves could also be introduced into the WG16 test equipment. Some dummy loads of reasonably good performance were also essential, and in fact the fabrication of these bits and pieces and the test of the prototype took 20-30 hours, after the prototype itself was completed.

The results were as predicted, and showed the unit was perfectly compatible with the Philips cavity and was suitable for use from 10,300-10,500 MHz. In all probability it will be compatible with some klystron equipment on 10,100 MHz still in use at VK5ZO.

The two graphs, Figs 2 and 3, show the insertion loss and VSWR of the prototype coupler, and the drawing, Fig 1, gives enough information for the 3 dB coupling element to be reproduced. The insertion loss in these measurements was made under ideal conditions, with the two unused arms terminated. In practice both the antenna and crystal ports are not perfect matches, and the three screw tuner, of necessity deteriorates the other port. However, measurements made with the IN23WE in place showed that, as the crystal current was increased to the normal operating range the insertion loss of the coupler was very near to 3 dB (with the three screw tuner out of circuit the current was about 100 µA and the insertion loss had increased to 4 dB).

Obviously this is a point to be borne in mind when adding an IF preamplifier at the crystal as a little forward bias may well serve to optimise the system by providing a useful variable.

In view of the difficulty of obtaining materials such as waveguides and flanges I have, through my own organisation 'Microwave Developments', imported a sufficient
quantity of WG17 and flanges to make about 20 sets of equipment, and have added the equipment to my product list. A complete set comprising a Philips Cavity, suitably modified and tuned to the amateur band, the 3 dB coupler assembly (described in the notes), and a 22 dB horn is listed at $125 inc. 20% Sales Tax.

I am also prepared to supply 300 mm length of WG17 plus a square WG17 flange for $27.50 (including P&P & 20% ST) to those amateurs who would like to make up their own coupler to use with their own Philips cavities, horn or parabola.

To further assist those with no access to a frequency meter I will gladly, for the cost of the return postage, retune anyone’s Philips cavity to either 10,350, 10,380 or 10,450 MHz (allows for both 30 & 100 MHz IF systems) and replace, at my standard list prices, any un serviceable Gunn or mixer diodes I find.

**JAPANESE DX?? ON HEDLAND 2 METRE REPEATER**

It’s not often that you hear Japanese spoken on 2 metres in Australia but that’s the kind of thing you can expect in the North West of Western Australia.

The story started in July 1983, when Dave VK6YA first met Eisuke Yamamoto JA5FJD, a ship’s radio operator on the “Shinryu Maru”, at Wickham. This and other ore carriers often berth at the North West ports to load iron ore for the Japanese market. From that meeting approaches were made to Glen VK6KY, one of the local DOC representatives, to find out if Eisuke, a first class ships operator, was eligible to obtain a VK callsign. After much work on the part of the people concerned the application was made and approved.

On 23rd August, 1983 the “Shinryu Maru” berthed at Port Hedland where Brian VK6AIH and Dennis VK6CZ collected Eisuke and escorted him to the DOC office where the final papers were waiting to be signed to give him a full AOCP licence.

The callsign issued was VK6EY, which apart from being a two letter callsign, (not common in Japan) was also his initials. The excitement of the occasion was contagious and with typical Japanese politeness Eisuke shook hands with everyone and with the biggest smile seen in a long time he trooped everyone outside to take photographs.

Later, on board ship with a borrowed 2 metre rig, a converted STC 151, Eisuke fired up with such enthusiasm that for a while he mixed his two callsigns.

The Japanese language lessons started with lots of fun and learning all round. Fortunately the Wickham repeater was “in” so Dave, who did all the organising, was able to congratulate the “new” amateur.

**DENNIS, VK6CZ**

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EQUIPMENT REVIEW

THE KB R-X NOISE BRIDGE

Ron Cook, VK3AFW
TECHNICAL EDITOR
6 Dallas Avenue, Oakleigh, Vic 3166

WHAT IS IT?
A bridge is a circuit used for measurement of, for example, resistance or impedance. It is provided with appropriate terminals for an energising signal, the unknown resistance (impedance etc) and a null detector. When everything is connected up and switched on the bridge’s measuring dials are adjusted until the null detector indicates a minimum reading or null. The value of the component is then read from the dials.

An R-X bridge measures R (resistance) and X (Reactance). It is therefore an AC or RF bridge and needs a null detector such as a wide-band voltmeter or a general coverage communications receiver.

If tests are made on a number of different frequencies quite a lot of time is spent setting up a modulated signal generator and the receiver on each frequency.

A noise generator can be used instead as it generates signals from DC to 1000 MHz or more. An amplifier is required to obtain a sufficiently strong signal. Remember that noise consists of signals of an almost infinite number of frequencies with both AM and FM modulation of random amplitude and frequency.

Thus an R-X Noise Bridge contains a noise generator, a wide band amplifier, a measuring bridge circuit and terminals for connection to the unknown impedance and a external sensitive receiver. Fig. 1 shows the circuit of the KB R-X Noise Bridge.

WHAT DOES IT DO?
The major applications for a noise bridge in the amateur radio sphere are:
1. Measuring components at radio frequencies.
3. Measuring the velocity factor of a transmission line.
4. Measuring 1/4 and 1/8 wavelengths of transmission line.
5. Measuring the VSWR of dummy loads.
6. Measuring resonant frequencies of antennas, tuned circuits etc.
7. Adjusting an ATU for a match without radiating a signal.

MORE ABOUT THE KB BRIDGE
The KB R-X Noise Bridge is a small instrument suitable for use in the HF region for all the above applications. See Table 1 for the specification. Referring to Fig. 1, you can see that the noise generator is a Zener diode and that a three stage R-C amplifier is used to boost the signal.

A toroidal transformer is used to couple the noise into the bridge and also forms two equal arms of the bridge.

A variable resistor and capacitor in parallel form the measuring network. A fixed capacitor across the unknown impedance terminal ensures that the bridge can measure both positive and negative capacitive excursions. Negative capacitance corresponds to inductance.

The resistance dial is marked in ten steps of 10 ohms and the capacitor has zero marked at mid scale. XC to the left and XL to the right.

The resistance measurement range is 0-100 ohms although readings at the low end of the scale (10 ohms or less) would not be particularly accurate. The reactance range is ± 100 pF, negative capacitance being equivalent to an inductance of the same reactance.

That this is so becomes obvious when it is realised that increasing the capacitance of the X dial to give a null is resonating the inductance of Z and reducing the capacitance of X is withdrawing a similar amount as is in Z to retain a balance.

As an example if we find a reading of -50 pF at 28 MHz which is 113.7 ohms and then calculate the value of an inductance which has 113.7 ohms reactance at 28 MHz. This works out to only 0.646 µH.

The bridge is fitted with a standard 9 V battery and a length of coax fitted with a PL259 plug for the receiver. The unknown impedance can be connected to a PL259 plug which will mate with the SO239 socket on the bridge.

The instrument is very small and displays good workmanship in appearance and finish. The operator’s handbook has recently been revised and gives an adequate description of the bridge’s operation and use.

PERFORMANCE
The bridge was used to test some resistors, antennas and the tuning of an ATU. A Kenwood R1000 receiver was used as the detector. Although a receiver capable of operation without AGC action is recommended, no difficulties were encountered. The R1000 had a modified AGC circuit and was used in the AM mode.

The battery drain will cause the cheapest batteries to become flat quite rapidly. For tests where AC mains were available a regulated DC supply was used.

**Table 1 — SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Over 100 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>9 V Battery, eg Eveready 216</td>
</tr>
<tr>
<td></td>
<td>Drain 25 mA ± 10%</td>
</tr>
</tbody>
</table>

**Measurement Range:** Resistance 0-100 ohms Reactance 0-+/− 100 pF

The “set” capacitor is used to set the “X” capacitor at mid range when the unknown impedance “Z” is purely resistive. It is set by the manufacturer.

**Table 2 — NOISE OUTPUT VS FREQUENCY**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>R100 “S”-metre reading (dB over S9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>30</td>
</tr>
<tr>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>30</td>
<td>5</td>
</tr>
</tbody>
</table>

**“Z” socket open, controls mid range.**

**Figure 1 — Circuit of KB R-X Noise Bridge.**

**AMATEUR RADIO,** November 1983 — Page 15
Table 2 shows the noise output at various frequencies. No noise output was detected at 144 MHz. The noise output is quite adequate for most tests in the HF range.

Difficulty was experienced on 7 and 3.5 MHz when a trap vertical in a noisy location was measured. The power line noise was S9 and a good null was not possible. Very good nulls were obtained on 14, 21 and 28 MHz and calculations showed the resonant frequencies and impedances to be in good agreement with VSWR measurements.

The bridge was set to 50 ohms and zero reactance and an ATU used for adjusting an antenna to 50 ohms. The antenna was a G5RV and tests were made on 3.5, 7, 10, 14, 21, 28 MHz. The VSWR was then measured. It was close to 1.0:1 in all cases. The differences could be attributed to small errors in the VSWR indicator.

Further tests were carried out using a Wayne Kerr model B801 VHF Admittance Bridge for comparison. The results are given in Table 3. It must be borne in mind that the X values are estimated on the assumptions that the capacitance is proportional to knob angle and that the range is exactly +/- 100 pF. Differences of 10.15 pF are therefore not necessarily of significance.

Also, as the R dial is marked only every 10 ohms it is doubtful if the dial can be read to better than 1-2 ohms at best. Differences of 2 ohms in the readings should not be taken as significant. Variations at low resistance values are to be expected due to the effects of resistor non-linearity and series inductance effects.

The results for tests below 15 MHz were, in a word, excellent. The performance at 30 MHz was very good for low VSWR impedances but noticeable errors appeared for VSWR greater than 2:1.

IN CONCLUSION
This is not a precision laboratory instrument and performance is therefore less than state-of-the-art. The price is also very much less than state-of-the-art impedance measuring equipment. The measurements it will make are of a useful kind. It can be used instead of a VSWR meter and has the great advantage that you need not key up the rig. You can spend days tuning an antenna right alongside a DX net and no-one will be disturbed.

It is well worth considering as an addition to your test equipment.

The test unit was supplied by K. Bruce Smith, 110 Rosemead Road, Hornsby, NSW 2077.

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Table 3 — COMPARATIVE TEST FIGURES

Readings were generally within 10%. Best accuracy was obtained below 15 MHz; accuracy decreased from high VSWR and higher frequencies.

* Estimated readings — see text.

<table>
<thead>
<tr>
<th>Test Frequency (MHz)</th>
<th>KB Bridge</th>
<th>Wayne Kerr Bridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>R (ohm)</td>
<td>X* (pF)</td>
<td>R (ohm)</td>
</tr>
<tr>
<td>3</td>
<td>45</td>
<td>-56</td>
</tr>
<tr>
<td>7</td>
<td>46</td>
<td>-44</td>
</tr>
<tr>
<td>14</td>
<td>47</td>
<td>-33</td>
</tr>
<tr>
<td>21</td>
<td>49</td>
<td>-22</td>
</tr>
<tr>
<td>29</td>
<td>55</td>
<td>-10</td>
</tr>
<tr>
<td>10</td>
<td>35</td>
<td>-33</td>
</tr>
<tr>
<td>20</td>
<td>60</td>
<td>45</td>
</tr>
</tbody>
</table>

---

Did you ever think it would be neat to have a VOX, or voice operated switch, to connect between a headset mounted microphone and a rig to permit hands free operation; specially if it was self contained? Well, I did, and here it is. The ultimate goal was to have it packaged in a small box with self contained power supply that could be clipped on the belt. It could then be plugged into a talkie and hands free operation, at least for short range operation, would be possible on 2 m FM.

Unfortunately, the ultimate goal has not been met yet because I am still looking for a cute little box to put it in. The circuit design is complete enough to tell you, 'cause I couldn't wait.

Three sections of the LM 3900 are used to construct the VOX. Earlier attempts to do it with a mini-dip package containing two op-amps failed because there was insufficient gain available in one op-amp to get a workable switching voltage with the microphone used. Sections A and B, shown in Figure 1 are cascaded amplifiers with a total gain of over 400. The voltage from stage A is sufficient to drive the microphone circuit on nearly any transmitter. The 10 K pot allows for level setting. The output of section B is over 2 volts RMS when the microphone is whistled up. If output of stage A is insufficient to drive the transmitter, connect the 10 K pot and .33 uF capacitor to pin 5 of the op-amp.

The output of section B is rectified by CR1, a germanium diode, and C4 is sufficiently charged, during the first few voice sounds, to put the Darlington, Q1, into conduction. C5 is discharged to near ground potential by Q1 and this voltage is compared to a reference voltage by section C of the LM 3900. The current flowing in pin 8, the inverting input of the op-amp, is less than the amount of current flowing in pin 13, the output.
With the high amplification present, there are potentially serious problems with RF if the circuit is not well shielded or bypassed. Since my intention is to use it in a little box clipped to my belt, I added RFC 1, 2 and 3 and C1, C6, and C7 to keep RF out of the circuit. Since the circuit is battery powered, there is no special RF filtering in the power leads but if external power is to be used, BEWARE!

The microphone I am using has about 3000 ohms impedance. Most microphones should work OK with this circuit. If sensitivity is too high, R1 or R5 can be increased in value to get the desired sensitivity. R12, the hold time adjustment, was added because I was unsure how long I would want it to be, so I thought it best to leave an adjustment that can be diddled.

The connection to the rig depends on the microphone audio circuit used in the rig. In most cases, the connection is direct, as shown in Figure 1. RFC 2 is connected to microphone hot, RFC 3 is connected to the PTT line and the grounds are connected. The Icom IC-2A has PTT incorporated in the mike audio circuit so these functions had to be separated as shown in figure 2. Transistor Q2 and pot R4 from figure 1 are reproduced in figure 2 to show alterations that allow connection to the IC-2A. The 39 K resistor permits sufficient current to flow from the IC-2A to key the rig. The .1 µF capacitor couples the audio from the amplifier to the mike audio circuit.

In haste to start typing, I forgot to measure the current flow when powered by a 9 volt battery. On 10 volts it draws 5 mA in standby, rising to 6 mA when tripped, a bit of a current hog, I would say, but I guess it will do. Now to go find that box.

Reproduced by arrangement from "Collector & Emitter" June 1981

Figure 1. VOX circuit.

Figure 2. IC-2A interface.
An Erasable Programmable Read Only Memory (EPROM) is used to supply eight tracks of code. There are start, stop and reset functions together with volume, tone and speed adjustments. The code on each track is entered bit by bit, by column programming the EPROM. Each column is first written out on paper in the form of DOTS and DASHES and then entered into the EPROM by operating the programmer MARK or SPACE button. Each column takes less than forty five minutes to programme and can be stopped or started anywhere along the way.

EVENT COUNTER

To keep track of the column locations an event counter is used to count the marks and spaces as they are entered into the EPROM. Fig 1 shows how a calculator was modified to do this. First check if the calculator is suitable by operating keys + and 1 then operate the = key; once, twice, thrice, etc. Each time the display should read 1, 2, 3, ie increment by 1. If it does not, then try another calculator.

POWER SUPPLY

The 50 ohm resistor in the 5 V supply (fig 2) is there to reduce heating of the 7805 regulator. The 25 V section is only required during programming and would have been mounted in the programming unit had a 10 or more pin plug and socket been on hand when the unit was made. Both regulators are mounted on heat sinks.

EPROM COLUMN PROGRAMMER

See figure 3. S1 is a 4PDT toggle lever-action break-before-make switch. It is shown in the EPROM READ position. S2 and S3 were selected from a number of switch types. Some switches had contact bounce and mechanical defects and created spurious pulses. Those chosen were snap action micro-switches fixed to a PVC block mounted on top of the programmer.

Some experimentation may be required here. The mark switch was mounted on the left and the space on the right. Two test points were provided for connecting a piezo oscillator, enabling operation to be checked prior to use.

PROGRAMMER OPERATION

Operating S1 sets the EPROM to the DATA IN mode and the selected column will be the only one to be programmed. The EPROM DATA LINES all have an in built LOGIC ONE and during programming this is either left at ONE or burnt out to LOGIC ZERO. The selected column has LOGIC ZERO placed on its data line via Q8 (fig 4) and all unused data columns have LOGIC ONE placed on them via Q7. This is a must, otherwise all columns without it will receive the same programme.

Operating the space key will start IC5 generating a 50 ms pulse. This pulse does three things. First, it prepares IC6 for operation via Q12 & 13. Second, it goes to the EPROM CE pin, burning out the logic one state, third, at the end of the 50 ms period IC6 starts, also generating a 50 ms pulse. This pulse advances the EPROM address one location via the binary counter, advances the event counter, and pulses the piezo oscillator to give an audible indication. Thus a SPACE has been entered.

To enter a MARK, operate that button. Upon its release IC6 starts, advancing the EPROM address one location, the event counter and piezo oscillator operate, leaving the vacated data line at LOGIC ONE.

If any mistakes are made with the data entered, they must remain, either to be decoded to another character or the entire EPROM memory erased with suitable UV light and programmed again.

EPROM SECTION OPERATION

See figure 4. When power is turned on Q1 rests the binary counter IC1. Q4 switches on and all other transistors are in the off state. The EPROM IC2 is in the standby state with a HIGH at CE.
PROGRAMME MODE

Operating the programmer switch S1 places the EPROM in the PROGRAMME mode, i.e., VPP 25 V, CE to IC5 and OE 5 V which triggers the following actions, Q5 holds Q2 off, Q6 disables IC3, Q7 places a ONE on all data lines, Q8 disables IC4 and places a zero on the selected data column, Q9 prepares the clocking circuit and Q10 the piezo oscillator circuit.

MARK

Operating the mark button causes a clocking pulse to go via Q9 to shift the address and Q10 to give an audible signal. As CE remains at zero the EPROM internal ONE remains to form the MARK.

SPACE

Operating the space button produces the first 50 ms pulse which goes to CE and burns out the inbuilt ONE, producing a zero to form the space.

The clocking pulse from IC6 then shifts the address location and operates the event counter and audible signal. When the final address has been programmed the binary counter output Q11 goes to a ONE. Q2 is already held off, Q11 turns on and in so doing turns Q9 and 10 off. Clocking pulses are now prevented from passing to the binary counter and the lack of an audible signal tells you that

NOTE

ALL TRANSISTORS (11)
BC108 or equiv.

ALL UNLABELED RESISTORS (18)
NOM. 1/2 W
the column is full up. The event counter will still register, however this is of no further consequence.

**READ MODE**

With the programmer switch S1 as shown in figure 3 or No 2 octal plug in place, the EPROM is standing by and drawing low current. Operating the start button turns on Q3 placing a zero on CE. Q4 turns off and the clock IC3 starts, operating the binary counter. As the EPROM address is scanned the output of the selected column operates the audio oscillator IC4 thus producing the programmed Morse Code.

Operating the stop button during a read operation will change the state of Q3 and Q4: the clock stops and the EPROM is standing by. When the start button is again operated the code starts from where it was interrupted. After the final address has been reached the binary counter output Q11 goes to ONE, Q2 operates the reset circuit, IC1 resets, Q3 and Q4 change state and the EPROM goes to standby.

The reset button was provided to allow restarting during a read operation.

**COLUMN PROGRAMMING**

Each column of the 2716 EPROM has 2048 bits or memories where the dots and dashes of the Morse code are placed. A dit uses one bit, a dah three bits, character spacing one bit, letter spacing three bits and word spacing seven bits.

At first a chart of the alphabet and numerals was made on paper with horizontal and vertical lines, each square representing one bit. The vertical columns were numbered and the bits consumed by each dit-dah combination were recorded at the end of the line.

It was found that one column of the EPROM would hold the alphabet and numerals three times plus CT and AR using variable letter spacing of 9, 9, 8, repeated. This was considered suitable for learning purposes and was used on the first two columns.

The first column was made with each character repeated three times, first the alphabet then the numerals all in sequence. The second column was jumbled, alphabet then numerals. The third column mixed letters and figures with a spacing of three. After this mixed groups of five with normal letter spacing three bits and word spacing one bit.

The vertical columns were numbered and the bits consumed by each dit-dah combination were recorded at the end of the line.

As the EPROM address is scanned the output of the selected column operates the audio oscillator IC4 thus producing the programmed Morse Code.

**BILL GOES SHOOTING**

At about 2 o'clock on a somewhat wild and blustery night Bill Blitheringwit’s steel pole, supporting the remains of his now defunct Slim Jim, suddenly fell down, bringing with it most of his wife’s clothes hoist. Bill didn’t discover this until he ambled out into his yard the following morning to see if his antennas were still up. He found that at least one of them wasn’t.

Whilst staring generally skyswards he observed several fat and happy pigeons sitting upon the feed point of his corroded copper wire dipole. They were perched contentedly around the casings of his home-brew balun and quite obviously intending to spend the rest of the day there, occasionally dropping friendly messages upon the roof tiles.

Forgetting about the ruins of the clothes hoist for a moment, Bill hurried into his garage and threshed about looking for his air rifle and some ammunition. He found what he wanted and loaded up. He prided himself on being a good shot and aimed carefully in the direction of the innocent and unsuspecting birds.

He was in fact a good shot. Unfortunately, the weather degraded plastic casing of the balun flew into several pieces as the lead pellet struck it and the pigeons shuffled about, but stayed where they were. Bill fired off another couple of rounds, thus effectively destroying the balun but not even disturbing the feathers of the pigeons, who merely shifted their footing and cooed a bit.

Now he has no antenna at all. Slim Jim was a wreck, not to mention the clothes hoist. First things first. He decided to put up another dipole.

Two hours frantic searching amongst his defunct Slim Jim, suddenly fell down, like a bramble really — for purchase and started to walk the pole upright. The pole dug in and excavated the rose bush, which fell over. The pole continued on, rather like a plough, removing several other plants on the way and then neatly punctured the asbestos cement sheeting of his wife’s laundry extension. Bill continued pushing and the sharp end of the pole then severed the power cord of a recently acquired washing machine which was working at the time. There was a flash and a bang and then silence.

An altercation with his wife interrupted Bill’s destructive course at this stage but eventually he was able to get the pole upright, where the plumber’s pipe strapped over. The pole continued on, rather like a plough, removing several other plants on the way and then neatly punctured the asbestos cement sheeting of his wife’s laundry extension. Bill continued pushing and the sharp end of the pole then severed the power cord of a recently acquired washing machine which was working at the time. There was a flash and a bang and then silence.

An altercation with his wife interrupted Bill’s destructive course at this stage but eventually he was able to get the pole upright, where the plumber’s pipe strapped on end waved dangerously. He climbed into his shack and keyed up one of the repeaters, or so he thought.

His antenna didn’t work at all. He scratched his head and tried everything. Of course, he didn’t realise that you don’t use grey plumber’s pipe to make Slim Jims.

Instead he rang his mate and told him there was something wrong with all the repeaters. None of the rotten things were working!
A TRIBAND CUBICAL QUAD

Quad antennas are renowned amongst amateurs as effective DX antennas due to their low angle of radiation. The closed loops mean a quad is quieter than open-ended beams.

There are many ways to build a quad but the method described here is simple, effective, requires only one feedline and does not require tuning. I claim no originality for the design which is by W2AU and has been described in the ARRL Handbook. It has been in use at VK8PH, until recently, for about two years.

Spider hubs were obtained from Scalar Industries for about $30 per pair and the tuning coils are available from William Willis & Co for $2.60 each. Alternative materials for the hubs could be used but the Scalar units are recommended due to their strength and durability.

The spreaders were made from 1.5 m lengths of aluminium tube into which is inserted 4 m lengths of PVC water pipe. To give it strength and rigidity, identical lengths of dowel are inserted into the water pipe and fastened by suitable self-tapping screws through the aluminium tube. The construction is strong but flexible and has survived cyclone "Max" in March, 1981.

Wire for the elements is No 14 soft-drawn copper wire and is threaded through holes drilled through the spreaders at the distances shown in Figure 1. The reflector is pre-tuned by counting the number of turns and soldering to pigtailed as shown in Figure 2.

To prevent rain entering the open ends of the boom, it is advisable to seal the ends by means of a plug fashioned from a piece of 50 mm square timber or similar material.

A low SWR was obtained on all bands and expected forward gain is in the region of 7.3 dBi. At a total cost of around $65 for all new components, it must be one of the cheapest DX beams around.

MURPHY

Every amateur living, at one time or another, has toiled manfully against the wiles of MURPHY. Some never seem to be rid of him — and if you don’t believe it, read the book, "ARE YOU IRISH OR NORMAL" by Sean O’Grada. (Note the author’s lineage to a Mediterranean race.)
Operating Techniques and Hazards

First delivered at Redcliffe Radio Club, March 8, 1982.
Revised version at WIAQ General Meeting, Brisbane, March 19, 1982.

TECHNIQUES

Listen on and around the frequency you wish to use;
Start tuning up your transceiver, BUT DON'T TUNE UP "ON FREQUENCY";
If you insist tuning up your transceiver "live on air", try to find an "official" intruder near the frequency you wish to use;
But . . . you'll be a much better operator and not liable for prosecution due to causing harmful interference . . . if you tune your equipment without causing all this trouble.

HERE IS A SUGGESTED METHOD:
1. Tune your transceiver on the required frequency, USING A DUMMY LOAD (dummies are good for something).
2. If your antenna has an impedance of around 50 ohms and is tuned, you then connect the transceiver direct to the antenna and any fine tuning is done while you transmit. A pre-recorded tape containing your call followed by "TEST" would be ideal for a short fine tune up, especially if the tape is recorded at a speed of, say, 70 words a minute.
3. If you have to use an ATU, try to remember the settings you used on a previous occasion. For tuning, preferably use CW identification, at least you are doing a test, although the regulations state that you may use a continuous tone for not longer than 30 seconds. Some tune signals appear to last for hours on end.

By rights, an ATU should only be used if your antenna is not resonant for the frequency you wish to use, e.g., using an 80m dipole for 20m. Using an ATU with a beam is not exactly recommended and it only illustrates ONE POINT . . . you didn't resonate the beam on the centre frequency of your favourite section (S) of the band. And you'll be surprised to find out how many amateurs either inadvertently or on purpose keep the ATU in circuit if they switch from a non-resonant antenna to the beam.

AND HERE IS A SUPER HINT:
If you insist on using an ATU because you have only a piece of wet string and want to save yourself a lot of time and irate flack . . . proceed as follows—

On a quiet day, that is, if the band is dead or non-active, go through your frequencies, say, 3550, 3560, 3570, 3580, etc., tune up for each frequency and NOTE all the required settings on your set AND the ATU. Do the same for the other bands . . . and you will not be far out when you change bands in a hurry, any fine tuning to be done while you speak or play that super fast CW tape.

AND THIS IS THE SUPER DUPER HINT OF THEM ALL:—
Grab your March 1982 issue of "Amateur Radio" and read the article on tuning up for the visually handicapped amateur. It shows the proper way of tuning your system WITHOUT CAUSING INTERFERENCE TO OTHERS, AND YOU'LL BE SPOT ON. Try it and I promise you that you'll use it forever.

PROCEDURES

WARNING: The discussion on "PROCEDURES" and "HOW TO HANDLE A SITUATION" may cause discomfort to some amateurs. The recommended rating for these two sections is "M" (for mature).

If the equipment is tuned up to specifications, then:—
1. Listen first on the frequency for any other user.
2. If no one "APPEARS" to be using the frequency, ask: "IS THIS FREQUENCY IN USE?", followed by YOUR CALL SIGN. Now . . . here is a catch . . . if someone does come back and tells you: "Sorry OM, but this frequency is reserved for the Billabong net, starting at X hours", please ask him/her for the address to write to, so that you too can reserve a frequency. The answer may stagger you!!!!
3. If no one does answer your "Is this frequency in use?" call, go ahead and use the frequency, although a word of warning, it appears that some VK areas are very deaf and will suddenly come on your frequency during a QSO and conduct their own. No solution has been found yet for this deafness problem.
4. When calling "CQ", please identify yourself a number of times "PHONETICALLY" so that others may hear your call sign correctly through static or local interference.
5. During a QSO, make it a habit to use phonetics at least ONCE PER two or three overs. Others may wish to join you but, due to heavy static or interference, are not sure of your call sign, especially if the call is given "as she is spoken mate".
6. Regulations state that station identifications must be given at least every ten minutes, thus in a rag-chew conversation, over use of call signs between overs may seem somewhat superfluous. The word "over" to indicate that you hand the mike over is recommended practice.

7. AND HERE IS A VERY IMPORTANT PLEA: Make it a HABIT, before commencing your over, to listen very briefly — no longer than, say, two seconds — for any possible station wishing to break in . . . it could be an emergency call. This happened to me a few years ago when, during a local net, a Cairns station called in — rather weak — to check propagation at that time in the Brisbane area during an approaching cyclone — SES in Brisbane could not be raised at that time. So it is worthwhile to acquire the habit of listening briefly in between overs.
8. Do not swear or use obnoxious words and/or expressions during your transmission.
9. When participating in a net, or wishing to join one, listen very carefully how it is run. Some nets require a return to net control after each over, others require that you pass the net over to the next in line. Whatever the system, always jot down the call signs of the net in the order as given by net control. A good controller will give the updated order every so often.
10. When using the telephony mode, try to avoid using some of the following Morse code abbreviations:—
"Handle", use instead "My name is".
"QTH", use instead "My location is".
"QRN", use instead "Noise or static".
"HI", use instead "Use your own belly laughter.

This makes your conversation much more natural and enjoyable.

EXCEPTIONS TO THE ABOVE (without them we would be lost):—
When contacting an overseas station who conducts a QSO by reading from a sheet of paper, like I once did when speaking to an Italian station. Never again.
11. When contacting an English speaking overseas station, speak rather slowly and distinctly, especially when it is your first contact . . . and why should you do this???? First of all it is more than likely that they have severe interference from other local stations and, secondly, the Aussie language as she is spoken is world renowned for its slurr and pronounciation. You will get a lot more DX if those stations far away get to hear that VK4 such and such speaks understandable English.

And now over to "HOW TO HANDLE A SITUATION" rated "M" (mature audience only), but could also be rated "X" (extreme caution).
HOW TO HANDLE SITUATION

1. WHERE THE OTHER'S TRANSMISSION SOUNDS AWFUL:—
   Tell him outright that he's got a problem somewhere and stay on frequency if an attempt is made to try and rectify the problem. It is often amazing to find out how many listeners there are who suddenly pop up with all sorts of illuminating advice. You could learn a great deal yourself, too.

2. WHERE ANOTHER STATION CAUSES UNDUE SPLATTER:—
   Tell the station that his transmission appears to cause extreme splatter . . . and be ready to be abused . . . thank him for his remarks and try to find another splatter-free frequency.
   If at some other time you hear the same station with the same amount of splatter, check in and ask him what troubles he has with his transmitter, as there appears still to be a large amount of splatter. If he is still abusive, act as described in the following section.

3. WHERE A STATION USES OBSCENE AND/OR OBNOXIOUS LANGUAGE DURING A CONVERSATION WITH YOU:—
   (a) Listen (and tape record, if possible).
   (b) Ask him to repeat the message as you had extreme interference.
   (c) If he repeats his "typical language" don't come back.
   (d) If a particular station is known for his use of this type of language, try to organise a group of fellow amateurs to join "sequentially", that is, as soon as you "don't come back", number two takes up and tries to make a conversation.
   If the person still continues to use his own lingo, number two fails out and number three comes in. Only a person with an elephant's hide will persist.
   (e) If the person persists in using his lingo and all efforts have failed, each member of the group must write to the secretary of the Amateur Advisory Committee in your State, giving call sign, name (if available), time, frequency, type of language (preferably illustrated with tape recordings) and whoever else was on frequency as witness.

This is NOT DOBBING SOMEONE IN, it is part of self-policing your privileges. You could tell the person to stop using the language, but in nine out of ten times you'll get more abuse. I hate to say this, but in the past when CB was new some CB groups did some self-policing and for a while did clean up the frequency, at least in their own locality.

   (f) The Amateur Advisory Committee is a liaison committee between amateurs and the Department, consisting of some eight to ten persons, of which at least three shall be non-WIA members, thus representing the non-member amateurs. Meetings are held one month and observed or reported misdemeanors discussed. If a report warrants it, the offending station is cautioned by the committee (no further action is implied at this time). If the same station is reported for the second time, the person is informed that the matter has been referred to the Department for further action.
   This committee is often accused of "not doing anything". It can't be expected to patrol the frequencies 24 hours a day just listening for any offenses. If they hear one sure that will be discussed and action taken. But if a complaint is received from someone else, then at least the committee can monitor that particular frequency at the approximate time. If one does not know of an offence, how can one take action????

   (g) WHAT IS OBSCENE OR OBNOXIOUS?
   This is at times a personal matter, but normally swear words and specific four, five or six letter words are a big no, no. Bloody, damn or worse may be accepted in some sections of the community, but they are offensive to a much larger audience. If a person uses the word blooming or darn, at least he is trying to express himself "forcefully" without offending others.
   OBNOXIOUS: Liable to harm or evil or attack; offensive, objectionable, disliked.
   OBSCENE:
   (a) Repulsive, filthy, loathsome.
   (b) Grossly indecent, lewd.
   (c) Grossly indecent, lewd.

VOCABULARY
Adjective:
Terse: short and direct.

* * * *
TUNE-UP SUGGESTIONS
The simplest method without too much interference. Initial tune-up with dummy load, then fine tune while speaking or sending CW.

Initial tune-up with dummy load. When connected through ATU to non-resonant antenna, try to remember previous ATU setting and do fine tuning then, when speaking or sending CW.

This is the main Non-interference Method. Initial Tx setting with dummy load. Switch in antenna scope and set same for 50 ohms. Tune ATU for Minimum Audible (and visible) Dip. Fine tune Rx and retune ATU. You are now so close to proper tuning. It isn't funny. Remember: do not transmit while A/Scope is in circuit and prevent RF from coming into the scope at all. It takes some experience to get this set-up going, but once it goes, you'll never ever tune-up on air.

WHAT TO DO WITH PIRATES
UNDER NO CIRCUMSTANCES TAKE IT UPON YOURSELF TO TELL THEM TO GET OFF THE FREQUENCY BECAUSE:—
   (a) Are they really pirates?
   (b) Who gave you the authority?
   (c) You breach the regulations by interfering with another signal.

ACTIONS:—
   1. Take note of the frequency, name and tape record if possible.
   2. Do not answer a call from a suspected pirate.
   3. If it turns out that you work a pirate, TERMINATE QSO.
   4. Inform the Department immediately of the circumstances and include all details. They will answer you.
   5. Success rate is becoming more positive.
   6. Forget about overseas pirates, you have no way of knowing whether or not they are pirates, and if you know that they are pirates, ignore them and don't answer. However, you should report them to DOC, who will then take up the matter with the relevant administrations.

That concludes "Operation Techniques and Hazards". If you play the game, the game will treat you as a friend. If not, WATCH IT, MATE.

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SCROGGIE
From "Break-In" January-February 1982

Radio Classes are starting soon
So we'll start our study this afternoon.
Out came "Scroggie"—that veritable sage
And we struggled on through page after page.
First came "Ohms" and his drait law
With Es, Is and Rs till my brain's quite sore.
Then came PI — no, not one to eat,
The formula for power has near got me beat.

My RESISTANCE is low — my CAPACITY too,
I'll be INDUCED to learn, for his REACTION is true.
"You do know the answer. You must do —
You've read it!"
If that circuit's resonant, I've yet to get it.
With Farads and Henries, and ohms by the score
And Gigas and Megas and Kilos — For sure.
I'll not remember the millis and micros and puffs
That drop past my circuits while I swot the stuff.
If I ever make it — to elusive Grade three
Then comes CW — OH! WOE IS ME!!!

Anon., Branch 42
It is probable that most machines will be received without a line socket to match the connector on the rear of the machine. Because of this, some re-wiring is necessary.

A feature of these machines is an auto-start switch termed the TIME DELAY MOTOR SWITCH. If a steady mark signal is received for more than about forty seconds the motor and printer will shut down. Upon start switch termed the TIME DELAY start up again. When shut down the printer relay controlled by the Demodulator board. If an auto-start is available may be manually started by pressing the LETTERS key. If an auto-start is available on the demodulator circuit board, this time may be manually started by pressing the LETTERS key. If an auto-start is available receiving a space signal the printer will automatically start. If a steady mark signal is received for more than about forty seconds the printer will automatically stop. If a steady mark signal is received for more than about forty seconds the printer will automatically stop.

The three core flex is then terminated on these strips. Again remove the strap between terminals 2 and 3 and replace between terminals 3 and 4. Place another strap (insulated) between terminals 2 and 5. The ACTIVE of the power cords is connected to either terminals 2 or 5, the NEUTRAL to terminal 1 and the EARTH to the earth termination on the printer chassis.

If the time delay motor switch is to be replaced by a relay, the switch wires are terminated on terminals 4 and 5. These wires will have to be replaced with the relay contact wires. As can be seen on the circuit diagram, the original line connector socket also contained links to series up the printer receiver, keyboard and tape transmitter. These links will have to be wired in either the connector or across the terminal strips. Two series of connections are shown below, the A & B pin numbers denoting connector pins (and the terminal numbers denoting the terminal strips).

If an ohmmeter is placed across a11 and b13 (term 17 & 20) a reading of approx 310 ohms should be noted if the machine has a keyboard and tape transmitter fitted. If no tape transmitter is fitted a resistance of about 225 ohms will be measured.

I built the following loop supply, the bridge rectifier and the dropping resistor attached to a tag strip screwed to the top of the transformer, the capacitors attached to the printer frame next to the motor, and the preset pot and fuse fitted into the transformer cover. The positive lead was terminated on spare terminal 25 (or connector pin b5), the negative lead to terminal 20 (or connector pin b13). The loop cables from the demodulator are then terminated on terminals 25+ and 17- (connector pins b5 and a11-).

The preset pot allows setting the loop current to 40 mA. When the printer is connected to the terminal unit (demodulator/modulator), if the South East Queensland Teletype Group demodulator board is to be used, resistors R59 and R58 will have to be changed to 120 ohms and 150 ohms respectively on that board.

A local loop can be set up on the printer temporarily by connecting a 270 ohm 1 watt resistor between terminals 25 and 17 (connector pins b5 and a11).

The next step is to put the motor on speed for 45.45 baud. I was fortunate enough to have a model 14 TD on 45.45 baud and played a test tape through the TD connected to the Siemens teleprinter and adjusted the motor governor until I was printing perfect copy. Once the terminal unit is connected the same trial and error adjustment of the governor can be done while receiving signals from 2 metres FM.

Adjustment of the governor must be done carefully. Remove the governor drum from the motor by undoing two screws on the outer end of the drum. The adjustment screw can then be set at right angles to the shaft. (To line up with hole in side of drum.) The screw will be seen to pass through what is essentially a horse shoe shaped piece of metal being threaded in both legs. During assembly the two legs are squeezed together while the screw is screwed in. When released the legs tend to spring apart and tend to jam the threads thus stopping the screw from vibrating loose. The adjustment should be done with the drum in place being careful not to
Few know, and fewer will admit, that much early experimentation, discovery and suffering in the cause of radio, was undertaken by diminutive Ukrainian peasant boys. Sitting alone, late into the afternoon, working by a guttering yak-fat candle, careworn and frail from cruel labour in the galena extraction plants, thin slips of lads would make the most stupendous advances in the science of electromagnetic propagation, before toppling from their orange crates to sleep, shivering, on a frozen stone floor. In this article, we salute one of the bravest and coldest of these goose-pimpled pioneers, A C Veeyacheff.

Little Alexi Veeyacheff was born in 18— in the town of T—-—. His m---- and f---- were honest but poor, and tiny Alexi had to go out to work at the age of two.

The young Veeyacheff, however, was already rabid with the Raddlow Craze, winding his own coils of wolf-hair on a lonely road is Discovery! The empty chatter of the 80 metre nets slipped behind him, the viciously snapping curs in the branches. Sitting alone, late into the afternoon, working by a guttering yak-fat candle, careworn and frail from cruel labour in the galena extraction plants, thin slips of lads would make the most stupendous advances in the science of electromagnetic propagation, before toppling from their orange crates to sleep, shivering, on a frozen stone floor. In this article, we salute one of the bravest and coldest of these goose-pimpled pioneers, A C Veeyacheff.

Laurence Maxvel VK2ESG
Amateur Historian

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During the last month much correspondence on varying subjects has arrived in the mail box. A number mentioned QSLing, including the whys and wherefores which have been dealt with previously in this column.

Apparently a lot of VK amateurs are ignorant of the facts a QSL card should contain for the recipient so that it is acceptable for awards and DXCC in all countries.

A card for another amateur must confirm a TWO WAY QSO in whichever mode it is issued, otherwise the card is virtually useless for DXCC and other awards.

Until recently, the ARRL unwittingly or otherwise allowed cross mode QSOs (SSB and CW) but this practice has now been outlawed and a QSO is only valid for award purposes in the one mode (CW to CW or SSB to SSB etc) and it is the responsibility of all operators to ensure that their cards clearly indicates that the QSO was a TWO WAY by applicable mode.

Other information that is required is the date (day, month and year) and time in UTC, frequency in MHz and your report to them in RS(T) and the operator or QSL manager's signature or initials.

It is the duty of all amateurs to adhere to this policy, so that all cards are acceptable to any award manager. Let us in VK be beyond reproach in this regard with cards leaving our shores.

KURE ISLAND

A new amateur on the island for the next few months is N2EDQ/KH7 who will be active on SSB and CW. All QSLs to KH6JEB.

NO QSL BUREAU

According to Long Skip, the following countries have no QSL Bureau for distributing or collecting cards.

A5, A6, A7, BV, C5, C9, D6, HZ, J5, S9, ST, T2, T3, TJ, TL, TR, TT, VZ, VP2E, VP2K, VP5, VR6, XT, XU, XV, YJ, ZA, ZD9, ZK2, ZM7, 1S, 3C, 3V, 4W, 5H3, 5U7, 5X, 70, 9N.

Forty five countries, some not active, will have to be QSLed by the operators direction or direct, a costly experience since the increase of postage and a possible increase in IRCs in the near future. The method of “green stamps” is still the cheapest of the few avenues open to the average DXer.

BANGLADESH

The attempt by J1R1NZ to activate this much needed area was unsuccessful due to the military administration who will not allow amateur operations. This amateur is also a cardio-vascular surgeon in a Decca hospital, as was his predecessor JK1KSL who operated /S2. Another attempt will be made to obtain permission but hopes are not high.

REPUBLIC OF GUINEA

It is believed, that QSLs from 3X4EX dated the 6th June 1983 and after, will be accepted for DXCC. Contacts prior to this date will not count unfortunately with the ARRL.

SUNSPOT INDEX DATA

Lee KH6BZF, in his publication KH6BZF REPORTS notes the Sunspot Index Data Centre (SIDC) Observatoire de Belgique, Bruxelles, Belgium reports that the provisional sunspot number (mean) for June 1983 = 90.6 as compared to May which equalled 100.2. The SIDAC goes on to report predictions of smoothed monthly sunspot numbers as follows for this month and December as being 74 and 73.

These figures indicate that propagation is unfortunately not going to be good!

FRENCH POLYNESIA

A note from Ross WB6GJF/JF00FB who has just returned from French Polynesia gives the QSL status of some of the FO operators.

A new import to the island is Jose F0OJD who used to operate ST5JD and QSLs for either call may be had by an SAE to Jose Dumoulin, BP 85, Papeete, Tahiti, French Polynesia.

QSL information for other FO/TO calls please refer to the QSL lists.

Ross adds that anyone wishing to take out a F00 licence can expect in excess of six months waiting before being able to operate.

One wonders, with the above information how the two stations F08BI/P and F08JD/P could be genuine in their claim to be operational from Rapa Island, an island that would become a “new” country.

Rapa Island appears to be located near Tubuai Island, one of the southern areas of French Polynesia and it would not be acceptable to the DXCC scrutineers on current rules.

It succeeded in livening up the quiet DX bands for a while but it is something we could all do without, I am sure.

Jan and Jay O’Brien, who publish the W6GO/K6HHD QSL Manager List will be operational from Moorea as FO0JO and F00OJ in the last two weeks of this month and the first week of December.

There is a possibility that operations will also be on 160 and 30 metres, QSL for Jay F0OJO to W6GO and Jan F00OJ via K6HHD.

ST KITTS-NEVIS

The Caribbean territory of St Kitts-Nevis ended its sixteen year association with Great Britain on the 16th September. Prefix hunters will be happy as the prefix is likely to change to J9. This action will unfortunately not create a new DXCC country.

St Kitts was discovered by Christopher Columbus in 1493, he named it after his patron saint, but in 1623 the name was shortened to St Kitts by English settlers. The name Nevis was derived from Las Nieves (the snows). Columbus thought that cloud topped Nevis Peak resembled snow.

HIGH ACTIVITY

The small principality of Liechtenstein (61 square miles in area and located between Switzerland and Austria) was the scene of four DXpeditions during the months of September and October.

Those that operated included DL7NS/HB0 QSL to DL7NS, a French group comprising of F6EYS, E6G, HIX and GTC (QSL via F6EYS) Frank H98N, as HB0NL and Franz DJ9ZB hoped to fire up during the CQ Worldwide DX Contest.

MALDIVES

Due back soon after a holiday in G land is lain 8Q7BT. Iain will be active on 80 thru ten metres. QSL route is either direct to 8Q7BT, Cable and Wireless, Maie’, Republic of Maldives or to G4JMM via the bureau.

DX IN ASIA

Tom YU2DX, was QRV from Kathmandu and Beijing earlier this year. Tom was in Nepal with the Yugoslav mountaineering team who were attempting to climb Mt. Manaslu, and was in charge of the Kathmandu base station. YU2SOF was QRV from the group’s base camp some 4050 metres up the mountain.

The Yugoslavian government applied for a 9N licence for Tom, but were turned down on the curious grounds that amateur radio is not permitted in Nepal. Fortunately Father Moran, 9N1MM came forward to help and invited Tom to set up his equipment at the St Xavier School, 16 kilometres south of Kathmandu, where Tom was able to use Moran’s antennas.

The mountaineering expedition ended in tragedy when two of the mountain climbers were killed in an avalanche. Tom was kept busy for a considerable time co-ordinating the search and rescue attempts.

This was not the first time that Father Moran’s shack has been used as a communications centre. In 1963 an American Everest expedition, that en route to set up their base camp, encountered a horribly and near fatally burned Napeli lady in one of the villages. They were able to contact the US Embassy in Australia with their transmitter and from there, their call for a helicopter to be relayed back to Moran at Godavari. Thanks to the whirly bird, and the men at the microphones, the woman’s life was saved.

Instead of returning immediately to Yugoslavia, Tom, who had already received an invitation to operate BY1PK, was given financial support by the Northern California DX Foundation to fly to Beijing for a few days.

In total of the three hours operating, Tom made 1210 contacts including USA-238, JA-243, YU-245, UA-22, OK-27, I-21, F-33, SM-35, VE-19, UA9/0-58, DL-75, OH-48, G-6 and VK-0.

Tom, why didn’t you turn that antennae this way for the boys and girls down under?

W-100-N

Quite a strange heading but it is the title of...
World Radio's Worked 100 Nations award.

VKs have not missed out on obtaining this excellent award and some that have achieved it and have proudly displayed in their shack include VK6YL, VK6NE, VK2FD, VK3NSY, VK2DEJ, VK6A-JW and VK2HD.

Congratulations to one and all for their interest in an overseas award.

**FIRE PREVENTION WEEK**

The team of five operators will include Christmas Island, Republic of Kiribati on 3 November, 1983 and expect to land on Jarvis by 5 November, 1983. Operation will be on all bands, 10 through 160 metres, with equal attention to CW and SSB modes.

Three stations will operate 24 hours a day during the planned five day expedition. Linear amplifiers will probably not be used, but beams are being shipped via the chartered vessel.

The amateurs will be accompanied by a US government biologist, who will study the bird population and feral cat activity while radio operations is underway.

**Operating frequencies of AD1S/K8H**

- **CW** — 25 kHz up from band edge.
- **SSB** — 10 Metres — 28.600 MHz
- **40 Metres** — 7.200 MHz
- **80 Metres** — 3.795 MHz
- **160 Metres** — "window"

**LISTENING UP when conditions warrant. Listen to operator for correct frequency. Please do not "spread out" over the entire band**.

**Operators**: George, AD1S, Stuart, WA2MOE, Burton, W0RLX and Stuart, H44SH (G6VUO).

**Iceland**

A new station on the bands is Ted W3TB/TF from the US Naval Station at Keflavik. Ted will be active during his posting which is for two years and QSLs may be had from W3IVG, either direct or via the bureau.

**Iraq**

It is reported that Y11BGD now has five operators to man the station and they should be more active than they have been. The operators names are Majid, Kamal, Saad, Mohammed and Arshad.

The equipment they use, a Drake C-Line and L4B Linear, was donated by JY1 whilst operators names are Majid, Kamal, Saad, Mohammed and Arshad.

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**Albania**

According to numerous reports, Frank DL7FT, who has, during the last few months, been busy getting donations ready for an expedition to Albania, has found that it is not a proposition this year.

Frank, it is believed, has returned all money donated towards getting Albania on the air this year to all the contributors.

**FIRE PREVENTION WEEK**

The strange calls of ZV2ACZ and ZV2ADB emanated from Brazil and were for "Fire Prevention Week".

For QSL cards it might be worth trying PO Box 07-0004, Brasilia, DF, 70.000, Brazil.

**Albania**

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**Iceland**

A new station on the bands is Ted W3TB/TF from the US Naval Station at Keflavik. Ted will be active during his posting which is for two years and QSLs may be had from W3IVG, either direct or via the bureau.

**Iraq**

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INTERESTING QSLs RECEIVED

A3SJL, D44BC, F08F0, SM5A0Q, T2GSH, TR8JQ, VE6CBN, VE7CJX, VK0CW, VZ2AUS, XE2ADI, YC2ONT, ZL3HI/A, ZL4YI/C, ZS6AF.

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Originally, it was thought that an analysis of all successful DX contacts might provide some interesting patterns, however, the complexity of such a task is mind boggling so it was decided to deal only with contacts into the United Kingdom.

Contest contacts were not included in the survey, the majority recorded being SSB with a small number of RTTY. Most QSO’s were of the rag-chew variety, ranging from fairly brief to very extended duration. Operations were almost daily, usually from half hour to two hours depending on circumstances, as being retired, my non-radio activities are extensive but not to any set pattern.

The graph does not purport to be representative of ionospheric conditions alone, as many other factors must have some effect on results, such as changes to daylight saving time at each end, seasonal weather conditions, holiday periods in UK, individual habits, etc. Almost five hundred QSO’s over a five year period were included in the figures.

In the graph, the broad-hatched columns represent “G” contacts, the narrower solid extensions represent contacts with “GM, GW, GI, GD, GJ, GU”. Looking at the results, two variations appear which can be explained fairly easily:

1. The December peak is probably due to my habit of calling into well-known stations to exchange festive season greetings.
2. The August trough is probably caused by the UK holiday season when the country almost closes down.

What I cannot explain is the July peak. Logically this month should have been almost on a par with August. I am inclined to think that it may be that July is the month in which major equipment changes take place in my shack due to the cooler weather and that this increases total operating time. However, I have no proof of this!!!

If a plot is made of contacts only of other than “G” stations, a less significant result is obtained, probably due to the small sample and/or the geographical scatter of the “GM to GU” calls listed above.

Old timers will not gain anything from this exercise, they probably know the position instinctively, but for the newcomers, what it does suggest is that if you want to work “G-land” from VK, the best months are March/April/May and July?/September/October, ie VK autumn equinox plus a few weeks and spring equinox plus a few weeks, with some consideration also to the July funny.
Some months ago I wrote about the possibility of introducing a new DXCC Certificate with band/mode stickers. At the present time the decision on the format of the new certificate is with Federal Council. As soon as a decision has been reached I will go ahead with obtaining stickers and notifying members, through this column, of the application procedures.

Hopefully we can get this one on the road by the 1st January, 1984. Has anyone got any information on the “National Parks Award?” If you have I would appreciate details and, if possible, a sample copy of the certificate.

YUGOSLAVIA

The “OSIJEK” award commemorates thirty-five years of amateur radio in the city of Osijek. The award is open to SWL and licensed amateurs with the usual GCR list applying. The cost of the award is 5 IRCs or $2. Australian stations are required to contact five stations in Osijek and/or Cepin, Dalj, Laslovo and Josipovac. The award measures approximately 40 x 20 centimetres and is printed in red, blue, beige and black. Applications should be sent to: Kruno Feric, YU2OM, via B Kidrica, 102/12, 54000 Osijek, Yugoslavia.

AUSTRALIA

The rules for the Moorabbin and District Radio Club Award are as follows:
1. This open award is available to any licensed amateur who has submitted evidence of two-way contacts with MDRC Station VK3APC, and/or member stations, identifiable by call sign and number, and to any SWL who submits evidence of having heard contacts between amateurs and member stations.
2. Contacts may be made on any band and any mode.
3. The award is issued on a point scoring system. Club members — 20 points required; Non-club members — fifteen points; SWLs — eight points; Overseas stations — five points or one contact with the Club Station VK3APC.
4. Three points scored for working the Club Station VK3APC and one point for working a member station. Stations to be worked once only.
5. Contacts made as from the 1st June 1983 are valid for award points.
6. Proof of contact to be by log extract showing date, time in UTC, callsign of station worked, frequency, mode of emission, signal report, club identification number and points claimed. This extract must be certified by two other licensed amateurs.
7. Applications for the award to be sent to the Awards Manager, Box 88, East Bentleigh, Vic 3165, together with a fee of $3.00.
8. Special Endorsement — RTTY — five points; CW — ten points.
9. The MDRC holds a regular Club Net on 3.565 MHz each Monday night at 1000 UTC.

MALTA

Applicants for the following three Maltese awards need to forward details to the Awards Manager, MARL, PO Box 575, Valetta, Malta GC. The awards are also available to SWLs and the usual GCR applies. The cost of each award is US$3 or the equivalent in IRCs.

9H DIPLOMA

Five points required as under:
Each QSO with the Island of Malta counts as one point (9H1).
The Island of Gozo counts as two points (9H4).
The Club station 9H1MRL or 9H1DC count as two points.

DIP-MED

Applicants have to work a minimum of
“THE BORN LOSER GOES TO AIR” (VK2LID)

Bill Martin, VK2EBM
33 Sommerville Road, Hornsby Heights, NSW 2077

**HELP**

INTRUDER WATCH

Please help INTRUDER WATCH by reporting all intruders.

**WARNING!!**

Disposing of your old rig?? Please ensure it goes ONLY to someone licensed to use it on YOUR bands.

AMATEUR RADIO, November 1983 — Page 31
DICK SMITH OPENS IN HORNSBY

As a convenience to many customers who live in the Upper North Shore area of Sydney, the important retailing centre of Hornsby has become the host of the latest Dick Smith Electronics store.

Now Hornsby's electronics enthusiasts (and enthusiastic beginners as well) will have, at their doorstep, everything from components to kits, home computers, telephone products, Hi-Fi equipment, electronic games, etc.

Located at 4 Florence Street, the phone number is (02) 477 6633. Hornsby store manager, Mark Abicair (pictured here), and his specially trained staff are looking forward to serving you.

So, why not drop into Dicks new Hornsby store, have a look around and take advantage of the fantastic specials and direct import prices.

LARGEST AND MOST MODERN ELECTRONICS WAREHOUSE IN THE SOUTHERN HEMISPHERE

Late August will see the doors open on the new extensions to the Dick Smith Electronics headquarters at North Ryde, NSW. In excess of $2 million is being spent on both extending the previous 50 000 sq ft building to the new 85 000 sq ft and remodelling of the former structure.

This massive increase in facilities was necessitated by the unprecedented growth being experienced by Dick Smith Electronics in Australia and New Zealand.

The public stands to benefit greatly from the new and greatly expanded customer service, most of which are already operational.

The Service Department has nearly doubled in size, allowing for the installation of additional highly sophisticated testing equipment. Of invaluable assistance will be a new totally sound-proof testing and research laboratory. There is even a large, air conditioned service reception area.

Also nearly twice its former size is the Kits Department. This ensures a constant supply of top quality electronics kits as well as the development of new and exciting and innovative ones.

With the computerisation of the expanded Mail Orders Department, Dick Smith Electronics now has the most technologically advanced, automated Mail Order system in Australia. This means customers will enjoy the fastest possible mail and phone order service.

Double sized receiving and dispatch areas, along with the additional warehousing, will ensure that products are in ready supply and will speed their distribution. "Speed" is the operative word and 250 metres of new "airport style" conveyor belts, costing more than $250,000, will rush goods through the vast expanses and between floors.

Other features include a new staff recreation area overlooking the staff swimming pool, barbecue facilities and Dick's helipad.

RADIO AMATEUR OLD Timers Club

AUGUST QSO PARTY

A survey of the calls revealed in the thirty one logs received shows that about forty seven members of both VK and ZL clubs took part. That makes a percentage log entry of sixty six which is not too bad.

However if some of those members who check only into the monthly net could see the comments of appreciation in the log entries of those who do come to the party they would surely think it worth a try.

Please note that the next party will be on 20 metres, second Monday in March (12th) 0200-0500 UTC.

SCORES

<table>
<thead>
<tr>
<th>CALL</th>
<th>MODE</th>
<th>QSOs</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td>VK3XB</td>
<td>CW/SSB 28</td>
<td>10</td>
<td>1400</td>
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<tr>
<td>VK3KS</td>
<td>CW/SSB 27</td>
<td>9</td>
<td>1215</td>
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<td>VK3JA</td>
<td>SSB 24</td>
<td>10</td>
<td>1200</td>
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<td>VK4FM</td>
<td>SSB 24</td>
<td>9</td>
<td>1080</td>
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<tr>
<td>VK7AL</td>
<td>SSB 23</td>
<td>8</td>
<td>920</td>
</tr>
<tr>
<td>VK4AIK</td>
<td>CW/SSB 23</td>
<td>8</td>
<td>920</td>
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<td>VK4CJ</td>
<td>CW/SSB 22</td>
<td>8</td>
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<tr>
<td>VK4OX</td>
<td>SSB 24</td>
<td>7</td>
<td>840</td>
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<tr>
<td>VK7CH</td>
<td>CW 18</td>
<td>6</td>
<td>720</td>
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<td>VK2ADR</td>
<td>CW/SSB 18</td>
<td>5</td>
<td>750</td>
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<td>VK4BG</td>
<td>CW/SSB 18</td>
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<td>750</td>
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<tr>
<td>VK3FC</td>
<td>CW 16</td>
<td>6</td>
<td>560</td>
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<td>VK3ZG</td>
<td>CW 14</td>
<td>6</td>
<td>560</td>
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<tr>
<td>VK3LC</td>
<td>CW/SSB 17</td>
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<td>VK3NV</td>
<td>SSB 14</td>
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<td>VK9KV</td>
<td>SSB 16</td>
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<td>VK7RY</td>
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<td>CW/SSB 12</td>
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<td>VK7BP</td>
<td>SSB 10</td>
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<td>VK2HD</td>
<td>SSB 11</td>
<td>4</td>
<td>220</td>
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<td>VK7JJ</td>
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<td>CW 7</td>
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<tr>
<td>VK3YW</td>
<td>CW 5</td>
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<td>6</td>
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<td>5</td>
<td>200</td>
</tr>
<tr>
<td>ZL3JY</td>
<td>8</td>
<td>3</td>
<td>120</td>
</tr>
</tbody>
</table>

Next time, could logs be forwarded as soon as possible after the party preferably within a week, so that results can be published earlier.
With Daiwa rotators you have the advantage of control boxes with maps centred on Australia! The best way to get you going in the right direction.

Daiwa rotators offer you quality and innovation. And Daiwa rotators offer you all the choices you need!

**A CHOICE OF CONTROL BOXES**

There is a round controller (Type R) which is a great-circle map centred on Australia, with area prefixes and paddle-switch control.

Or you can choose the pre-set controller (Type X) which allows you to pre-set the control area you want to work.

**... AND A CHOICE OF MEDIUM OR HEAVY-DUTY ROTATORS**

You can choose a Medium Duty Rotator (Model 7500) or a Heavy Duty Rotator (Model 7600). The medium duty rotator will handle the average beam with ease. The heavy duty rotator is designed to handle larger amateur and commercial beams and arrays. Compare these specifications.

<table>
<thead>
<tr>
<th>Medium Duty (DR7500)</th>
<th>Heavy Duty (DR7600)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotation Time</td>
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<tr>
<td>Brake</td>
<td>Mechanical</td>
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<tr>
<td></td>
<td>and Electrical</td>
</tr>
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<td>Stationary Brake</td>
<td>2000kg/cm</td>
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<tr>
<td>Brake Torque</td>
<td>200kg</td>
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<tr>
<td>Vertical Load</td>
<td>38-63m</td>
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<tr>
<td>Permissible Weight</td>
<td>200kg</td>
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<tr>
<td>Mast Size</td>
<td>38-63m</td>
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<tr>
<td>Weight</td>
<td>5.5kg</td>
</tr>
<tr>
<td>Motor</td>
<td>24V</td>
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</tbody>
</table>

**THIS GIVES YOU A CHOICE OF FOUR DIFFERENT COMBINATIONS ... TO SUIT YOUR OPERATING STYLE**

DR7500R MEDIUM DUTY: PADDLE SWITCH CONTROL BOX.
DR7500X MEDIUM DUTY: PRE-SET CONTROL BOX.
DR7600R HEAVY DUTY: PADDLE SWITCH CONTROL BOX.
DR7600X HEAVY DUTY: PRE-SET CONTROL BOX.

Daiwa rotators are made by the innovators who brought you cross-needle meters. They offer long life and quality Daiwa construction, and are the result of a considerable amount of research.

**SO GET YOURSELF GOING IN THE RIGHT DIRECTION. CONTACT VICOM OR ASK YOUR LOCAL VICOM DEALER.**
KENWOOD
'83 SUMMER SIZZLER
SALE

$1100
usually $1150

TS-43X HF TRANSCEIVER
Complete with MB-430 and MC-42S
PS-430 POWER SUPPLY $210

AT-250 AUTOMATIC ANTENNA TUNER
Fully automatic, covers 1.8 to 30 MHz, inbuilt 4 position coaxial switch, SWR and Power Meter.
240V AC or 13.8V DC. Slaved by TS-43X or manually band selected for any HF Transceiver.

Accessories for TS-43X
YK-88C 500 Hz CW filter $60
YK-88SN 1.8 kHz SSB filter $60
YK-88A 6.0 kHz AM filter $60
YK-88CN 270 Hz CW filter $60
FM-430 $60
Buy four above accessories and get one FREE.

TS-93X MARK II
The ultimate in HF transceivers.
General coverage receiver.
Amateur band transmitter.

$1200
TS-830S
Valves are still in!!
(at least in the finals)
Complete with extra set of final valves
worth $35

$2099
MC-85 $120
BASE MICROPHONE
Has inbuilt amplifier

$75 WHEN PURCHASED WITH TS-93X

INTRODUCTORY OFFER
$425
usually $440

YK-88CN 270 Hz CW filter $60
TR-9500
70CM ALL-MODE TRANSCEIVER
The TR-9500 is a compact 70 cm USB/LSB/CW/FM transceiver providing increased versatility of operation on the UHF bands. It features dual digital VFO's, six memory channels, memory scan, automatic band scan, SSB/CW search, high performance receive and transmit, and a host of other features. It should be especially appealing to the OSCAR or 70 cm SSB/CW operator.

TR-9130
2M ALL-MODE TRANSCEIVER
The TR-9130 is a powerful, yet compact, 25 watt FM/USB/LSB/CW transceiver. Available with basic UP/DOWN microphone.

BONUS!
TWO B0-9 BASE STANDS
supplied for an additional $50 when both the TR-9500 and TR-9130 are purchased together.

TR-7950
2M FM TRANSCEIVER
Big Power — Big Features — Small Price!
50 Watts — 20 Memories.
Buy an SP-40 Mobile Speaker (usually worth $28) for an additional $5. The TR-7950 plus SP-40 only $532 SAVE $23
FM MICRO MOBILES

Micro Mini Mobiles for either 2 metres or 70 centimetres. 25 watts on 2 metres or 10 watts on 70 centimetres size — 141 mm wide x 158 mm deep x 39.5 mm High. 5 memories — Scan.

**Each**

**$450**

**BOTH UNITS COME WITH FREE SP-50 REMOTE SPEAKER**

FC-10

Remote frequency control & display for use on either model. Normally $70 but only $57 when purchased with either unit.

$57

MC-55

Mobile Microphone with time-out-timer. Electret condenser microphone

**$65**

MC-55

Mobile Microphone with time-out-timer. Electret condenser microphone

$65

TS-130SE

Economical mobile. All HF bands. 100 watts. VOX – Calibrator – IF shift – Speech processor – Noise blanker. Exceptional value at $840. Even better value at $800 complete with MC-30S mobile microphone.

**$800**

SAVE $73

R-2000

RECEIVER

Top of the line — 10 memories, scan, AM/FM/SSB/CW, coverage 2 MHz to 30 MHz. Used by Government Departments and other professional services.

VC-10

VHF ADAPTOR

NORMALLY $190 BUT WHEN SUPPLIED WITH R-2000 $110

INCLUDES FREE DC LEAD FOR 12 VOLT OPERATING. WORTH OVER $16.

**WAS $670**

**NOW $655**
SWR METERS

KENWOOD

TR-3500
70CM FM
HAND-HELD

TR-2500
2M FM
HAND-HELD

SW-200
Base model 0-200/2000 W
1.8-54 MHz

SW-2000
Base model 0-200 W
Model (A) 1.8-150 MHz
Model (B) 140-450 MHz

ACCESSORIES

SWC-1 Optional coupler
1.8-150 MHz
$38

SWC-2 Optional coupler
140-450 MHz
$38

SWC-3 Optional coupler
1.8-54 MHz
$38

NOTE
Models SW-200 and SW-2000 have provision for connecting three couplers with remote sensing. Ideal for novices — Inbuilt PEP reading meter.

MA-4000
Dual band mobile antenna for only $15 with every TW-4000A sold.

ST-2 BASE STAND
WAS $99
NOW $90

SW-100
Mobile model 0-150 W.
Model (A) 1.8-150 MHz
Model (B) 140-450 MHz

SW-200
Base model 0-200 W.
Model (A) 1.8-150 MHz
Model (B) 140-450 MHz

TW-4000A VHF
UHF DUAL BANDER
25W TRANSCEIVER
Mobile — 10 memories — scan

TRIO TEST EQUIPMENT

CO-1303D
5 MHz CRO
$300

CS-1352
Portable CRO
$900

CS-1560A MK2
15 MHz CRO
$600

CS-1566A
20 MHz CRO
$730

CS-1577A
35 MHz CRO
$1,130

CS-2070
70 MHz CRO
$2,040

CS-2100A
100 MHz CRO
$2,800

CS-2100A
100 MHz CRO
$2,800

Probes for oscilloscopes (NOT supplied with CRO’s) $30 (each)

AG-202A
Audio Oscillator
$220

AG-203
Audio Oscillator
$300

CG-912
Color Bar Generator
$860

SG-402
RF Sig. Generator
$156

Trio Test equipment above is only available direct from Trio-Kenwood (Aust.) and is not available from the Kenwood dealers listed in this advertisement.

DM 81 DIP METER
The DM-81 dip meter is intended for adjustment of radio equipment and antennas. It is self-excited oscillator designed for external coupling to the equipment being tested.

FEATURES
• Measurable frequency range of 700 kHz to 250 MHz in seven bands
• Capacitive probe for measurements without removing coil shields • Storage compartment for all seven dip meter coils, capacitive probe, earphone and ground clip lead • Convenient for both indoor and outdoor measurements, all solid state and built in battery.

$130 INCLUSIVE FREE BATTERIES

TR-2400 OWNERS

SMC-24
$30

BASE STAND

SC-3 SOFT CASE ONLY
$19

ST-1
AC-DC

AG-202A Audio Oscillator $220
CG-912 Color Bar Generator $860
SG-402 RF Sig. Generator $156
**KENWOOD**

**TK-50-600**

7 ELEMENT LOG PERIODIC

Frequency range 50 MHz to 600 MHz continuous. Use for 6 metres, 2 metres, 70 cm, 50 cm, TV, ATV, FM, Scanners etc. Boom 3 metres — Longest element 6.5 metres — Average gain 8dB — 300 watt balun included.

**TK-137** $395

**PLUS FREIGHT**

**ROTATORS**

**KR-400**

WITH BOTTOM CLAMP

$170

**KR-500**

SATELLITE TRACKING VERTICAL POSITIONING

WAS $220

$200

**KR-600RC**

WAS $300

$280

**NOTE**

All Kenwood Rotators supplied by Trio-Kenwood (Aust.) come complete with top and bottom brackets, 3 core flex, correct Aust. plug and correctly wired for Australian requirements.

**MANUAL ANTENNA TUNERS**

Don't fight with back yard home brew types!! Get the real thing — Commercially made, designed and resaleable with your Kenwood station.

**AT-230**

The AT-230 antenna tuner includes the three new bands and functional features such as a through-line wattmeter, SWR meter and antenna selector switch.

$215

**AT-130**

The AT-130 is a compact and lightweight antenna tuner designed for base or mobile use.

$140

**ACCESSORIES**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
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<td>AL-1</td>
<td>Lightning arresters SO-239 socket 100 W</td>
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<td>AL-2</td>
<td>Lightning arresters SO-239 socket 1 kW</td>
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<td>DC-25</td>
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<td>LF-30A</td>
<td>Low Pass Filter</td>
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<td>MC-60A</td>
<td>Base Mic. with Amplifier</td>
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<tr>
<td>MC-85</td>
<td>Base Mic. with Amplifier with provision to select up to three outputs</td>
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<td>Mic. adaptor Mic. 4 Pin Equipment 6 Pin</td>
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<td>MJ-48</td>
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<td>MJ-86</td>
<td>Mic. adaptor Mic. 8 Pin Equipment 6 Pin</td>
<td>$20</td>
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</table>

**Page 38 — AMATEUR RADIO, November 1983**
The SM-220 station monitor features, in combination with a built-in two-tone generator, a wide variety of waveform-observing capabilities.

HC-10 CLOCK
Highly advanced world clock with dual display which can memorize 10 major world cities and two additional regions.

The CT-1000 easily handles up to large HF beams and large VHF/UHF arrays. The good-looking Control Console incorporates an 8-bit CMOS Microcomputer Unit and features a digital azimuth readout accurate to ± 0.5° and a circular LED heading indicator. The microcomputer unit automatically releases the electromagnetic brake even in a strong wind. With a keyboard command, the microprocessor, controlling turning speed and brake mechanism, turns an antenna accurately to the direction instructed.

SCANNING. Scanning Range and Scanning Speed are programmable.

CONTINUOUS STEPPING. Turning Range, Stepping Angle and pause duration are programmable.

SINGLE STEPPING is available. The CT-1000 has provision for 10 channels in the battery backed-up memory. Antenna headings stored in the battery backed-up memory can be recalled with a keyboard instruction and are retained even when the external power source is removed.

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.

All items are available from stock at the time of preparing this advertisement. All items are only available from 1.11.83 to 31.1.84 or until stocks are sold. Naturally should a change in duty, sales tax or devaluation occur, these charges must be reflected in final pricing.

NEW SOUTH WALES
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UNITS
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Lane Cove N.S.W. 2066.

TK-701S
BASIC MODEL
$850
VHF 150-174 MHz

TK-801S
BASIC MODEL
$900
UHF 450-512 MHz

TK-701S
THE TK-701S is a synthesized FM Two-Way Radio, 32 channel capability at 20-50 watts on 150-174 MHz.

TK-801S
THE TK-801S is a synthesized FM Two-Way Radio, 32 channel capability at 15-40 watts on 450-512 MHz.

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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MARINE & COMMUNICATION — 19 CHARLES STREET, LAUNCESTON (03) 31 7717
V.K. ELECTRONICS — 214 MOUNT STREET, BURNIE (02) 34 7733
OLD: MELBOURNE RADIO CO — 5 ALBION ROAD, ALBION (07) 57 6830
S.A. & NT:
S.A.: MORRIS RADIO — 7 BONDI STREET, ADELAIDE (08) 32 6922
INTERSTATE COMMUNICATIONS LTD. — 56 ALBION ROAD, ADELAIDE (08) 32 6922
N.T.: TRICOMS SYSTEMS PTE. LTD. — 8 NILE STREET, PORT MELBOURNE (08) 47 3688
W.A.: ARENA COMMUNICATIONS SERVICES — 642 ALBANY HWY., EAST VICTORIA PARK (09) 361 5422
TRI-SALES — 104 NEWCASTLE STREET, PERTH (09) 351 4160
WALLIS ELECTRONICS — 44 MURRAY STREET, PERTH (08) 32 2002
RAY BAY RADIO — 18 BANKSIA STREET, BUNBURY (09) 21 3735
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SELECT TRONIX — 10 MURRAY STREET, PERTH (08) 32 1594
FORD ELECTRONICS — 209 HANDSHOKE STREET, DOUBLE VIEW (09) 446 4705
Audio frequency interference (AFI)

(Reprinted from Radio Communication, April 1973)
(Reprinted from Amateur Radio, September 1974)

THE PROBLEM
The current boom in hi-fi sales has led to an increase in the number of cases of interference caused by radio transmitters operating in close proximity to audio equipment. Almost all audio equipment now being produced for the domestic market is entirely solid state and this changeover from valves to transistors has coincided with a hi-fi boom, making it difficult to assess to what extent transistors are responsible for the increase in the number of cases of interference. Certainly transistorised equipment appears to be far more susceptible than the older valve equipment. Also of significance is the now widespread usage of magnetic cartridges which require amplifier sensitivities of the order of 3 or 4 mV. This usually necessitates one or two additional stages of amplification, whereas the older type of crystal and ceramic cartridges having far higher outputs require far less gain from the amplifier.

Unlike television interference, there is usually very little that can be done at the transmitter end to prevent the trouble. Apart from reducing power, moving aerials or switching off altogether, the cure must be at the complainant’s end. Like all kinds of interference this poses a social problem. The average cost of a stereo radiogram is around £80–£100, and for a hi-fi installation customs to the region of £150 to £200. Any person having spent this amount of money is not going to take kindly to hearing a burst of CW or required tuning or between the input and the speaker leads. The mains connection, because of the modern non-linear action and the resultant demodulated signal passed on through the following stages as an audio signal. With the modern hi-fi amplifier, having a high overall gain and an output rating of 10 to 15 W/channel or even more, RF breakthrough can be dramatic.

There are a number of paths the radio signal can take to reach the circuitry of the amplifier. In high RF fields even direct pickup by the circuit board is possible. Normally, however, the signal is led to the amplifier via the various connecting cables, which make very good “aerials”. Two of the most common sources of trouble seem to be the mains cable and the speaker leads. The mains connection, because of the modern ring mains circuits, results in the entire house power wiring being connected to the amplifier and acting as a long-wire “aerial”.

As for the speaker leads, stereo reproduction requires a pair of speakers to be separated from the amplifier and turntable unit in order to obtain the stereo effect. In practice this means that the speakers are very often positioned several yards away from the amplifier. The length of twin flex usually used for this purpose making a good “aerial”, possibly resonant on or near one of the HF amateur bands. This, of course, ignores the other connecting cables such as control cables, tape unit, VHF tuner etc. It is not surprising, therefore, that a substantial RF signal can find its way into an amplifier several hundred feet distant from the transmitter.

THE CAUSE
Before discussing the various ways in which this kind of interference can be prevented, it is necessary to understand how the RF signal reaches the amplifier, is rectified, and emerges at the speaker as an unwanted signal. Fig. 1 shows typical audio amplifier low signal stages. In the case of the transistor version notice the base/emitter junction. This forms a fairly effective junction diode and any RF signal that reaches this stage will be rectified and passed on as an audio signal to the following stages. Similar comments apply to the valve stage. RF energy reaching the grid of the valve is likely to be rectified by non-linear action and the resultant demodulated signal passed on through the following stages as an audio signal. With the modern hi-fi amplifier, a high overall gain and an output rating of 10 to 15 W/channel or even more, RF breakthrough can be dramatic.

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THE TREATMENT
There are two basic ways of tackling interference in audio equipment. Either the circuit can be modified to prevent the rectification occurring, or the RF signals can be prevented from reaching the amplifier circuitry by fitting filters to the various connecting leads.

Dealing firstly with the rectification problem, it has already been shown how, in a transistor amplifier, trouble usually arises when RF reaches the base/emitter junction of a transistor. Similarly, in a valve amplifier, too much RF results in the grid becoming a junction diode and any RF signal that reaches this stage will be rectified and passed on as an audio signal to the following stages. Similar comments apply to the valve stage. RF energy reaching the grid of the valve is likely to be rectified by non-linear action and the resultant demodulated signal passed on through the following stages as an audio signal. With the modern hi-fi amplifier, a high overall gain and an output rating of 10 to 15 W/channel or even more, RF breakthrough can be dramatic.

There are a number of paths the radio signal can take to reach the circuitry of an audio amplifier. In high RF fields even direct pickup by the circuit board is possible. Normally, however, the signal is led to the amplifier via the various connecting cables, which can form a fairly effective junction diode and any RF signal that reaches this stage will be rectified and passed on as an audio signal to the following stages. Similar comments apply to the valve stage. RF energy reaching the grid of the valve is likely to be rectified by non-linear action and the resultant demodulated signal passed on through the following stages as an audio signal. With the modern hi-fi amplifier, a high overall gain and an output rating of 10 to 15 W/channel or even more, RF breakthrough can be dramatic.

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Dealing firstly with the rectification problem, the most obvious solution that comes to mind is to fit a capacitor between input and earth of the amplifier of such a value that while it looks like a near short circuit at RF it does not affect the mandatory required tuning or between the input and the speaker leads. The mains connection, because of the modern ring mains circuits, results in the entire house power wiring being connected to the amplifier and acting as a long-wire “aerial”.

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can be fitted that will either block the path or short circuit the RF signal to earth, then the interference should cease.

The first step is to find out which lead or leads are acting as aerials. Very often this is likely to be a matter of trial and error, but there are two ways in which identification of the offending lead can be revealed. Firstly, with the AF gain advanced, the various signal-carrying leads into the amplifier should be disconnected. If interference stops or reduces, then the lead concerned is to some extent acting as an aerial and will require attention as detailed later. Obviously the speaker leads and mains lead cannot be disconnected. The second method adopted by the author, very often revealing which of the leads is causing the trouble, is to couple a grid dip oscillator lightly up against each lead and sweep the tuning dial back and forth. The AF gain control on the amplifier should be advanced so that the background noise of the amplifier can be heard from the speakers. If the lead being tested is conveying RF into the amplifier then an increase in background noise in the form of hum or hiss will very often result when the oscillator is brought into close proximity to the lead. For best results the grid dip oscillator should be modulated by a tone. As amplifiers are very often sensitive to certain bands of frequencies only, it is essential that tests be carried out with the grid dip oscillator tuned across the same frequency range as that from which the interference is being experienced.

Before dealing with the individual leads going to and from the amplifier, a few words regarding the earthing of amplifiers may be in order. Often an amplifier will have a separate earth terminal at the back of the casing. It is sometimes recommended that earth the amplifier to an earth separate from the mains earth by means of this terminal will help reduce RF breakthrough. Unfortunately the hi-fi installation is very often so situated that a fairly long earth lead is necessary to reach the amplifier. Instead of acting as an earth for RF signals it acts as an extra aerial and will sometimes actually increase the amount of breakthrough by increasing RF energy on the chassis. By all means try the effect of earthing the amplifier but similarly also try disconnecting the earth lead if one is already fitted.

Ferrite inductors are not the only devices for blocking out RF signals although they are probably the neatest and most compact. Often an amplifier will have a separate earth terminal at the back of the casing. It is sometimes recommended that earth the amplifier to an earth separate from the mains earth by means of this terminal will help reduce RF breakthrough. Unfortunately the hi-fi installation is very often so situated that a fairly long earth lead is necessary to reach the amplifier. Instead of acting as an earth for RF signals it acts as an extra aerial and will sometimes actually increase the amount of breakthrough by increasing RF energy on the chassis. By all means try the effect of earthing the amplifier but similarly also try disconnecting the earth lead if one is already fitted.

The number of separate cables going to an amplifier in a hi-fi installation can be considerable, the actual number varying with the amount of ancillary equipment in use. Fig 3 illustrates a typical layout.

![Fig 3](image)

It has already been mentioned that each cable can be regarded as being an aerial capable of picking up RF signals and feeding them into the amplifier. Clearly a device is needed that will present a high impedance to RF signals while appearing as a low impedance to audio signals. Inductors and capacitors either separately or together in the form of LC networks readily fulfill just this function. The problem with inductors or capacitors is that the former can be bulky items and both often necessitate cables having to be cut and connectors modified during installation.

In recent years ferrite has become a very popular material for use in combating TVI. In particular, it has been found most useful in preventing RF on the outer braiding of coaxial cable finding its way into the TV receiver. In addition to their efficiency, ferrite cores have the major advantage that the existing cable can be used to form the winding, preventing the need to break the cable. One of the most popular ferrite devices is the ferrite ring, on which a very compact winding can be wound. Because of its shape, the cable is self-securing and the complete filter takes only minutes to construct. As a rule of thumb, as many turns as possible should be wound on the core, with a minimum of 8 or 10 turns.

For combating RF pickup by connecting cables in hi-fi systems the ferrite ring filter is a very effective device. It can be used on speaker cables, leads from the ancillary equipment and main leads. Usually speaker leads and signal leads from record playing units are small diameter cables, and it is quite possible for a common ring to be used for each pair of leads in the case of stereo installations. The actual grade of material does not seem critical and either rod or ring cores can be used. In the author’s case a ferrite ring filter has been made of Mullard FX1588 rings. It is most important that the filter be installed at the amplifier end of the cable run and as near to the amplifier as possible.

Ferrite inductors are not the only devices for blocking out RF signals although they are probably the neatest and most compact. Often an amplifier will have a separate earth terminal at the back of the casing. It is sometimes recommended that earthing the amplifier to an earth separate from the mains earth by means of this terminal will help reduce RF breakthrough. Unfortunately the hi-fi installation is very often so situated that a fairly long earth lead is necessary to reach the amplifier. Instead of acting as an earth for RF signals it acts as an extra aerial and will sometimes actually increase the amount of breakthrough by increasing RF energy on the chassis. By all means try the effect of earthing the amplifier but similarly also try disconnecting the earth lead if one is already fitted.

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![Fig 4](image)

The normal output configuration of a transistor amplifier incorporates a feedback loop to the earlier stages. Thus any RF picked up by the speaker leads can be fed back to the input stages, where rectification and amplification may take place.

The use of coaxial cable will also prevent the possibility of RF energy being rectified in the transistor power output stage. This can
occur even with the amplifier switched off.
The author has had one such case and there have been similar cases of interference to transistorised TV receivers reported. Even the nostrurnal operator is not clear of this problem.
In cases where the RF pickup on the speaker leads is not too severe the use of 0.01 uF disc ceramic capacitors connected across the output terminals of the amplifier can be tried (see Fig 5). More effective suppression will be obtained if an inductor is also added as shown in Fig 6.

![Fig 5. To combat mild cases of RF pickup by the speaker leads, 0.01 uF disc ceramic capacitors, connected across the amplifier output terminals, can be tried.](image)

However, the use of capacitors or coaxial cable cannot prevent RF currents from reaching the amplifier chassis by means of the "negative" speaker lead. In such cases some form of inductance is needed to choke the RF, and the use of a ferrite ring will be found effectively to filter both conductors if twin flex is used for speaker leads.

RF energy picked up on the mains lead can be a problem whether dealing with TVI, BCI or AFI. The solution is the same for all three types of domestic equipment, and a number of different mains filter circuits have been published. Two circuits are shown in Fig 7. It is most important that capacitors have an adequate AC rating. The inductors can comprise 18 SWG enamelled wire on 1/4" in former (wood dowel) 2 in long. Ferrite rod material (such as an old medium wave ferrite aerial with the winding removed) can also be used and will probably be found more satisfactory for the more severe cases. Where a mains filter is used as suggested above, ideally it should be installed inside the amplifier casing, but with the modern tendency to squeeze as much circuitry into as small a space as possible there is very often no room for the inductors required. If this is so, then the filter will have to be installed externally to the amplifier casing and it is most important to make sure that the unit is completely and firmly enclosed so that there is no risk of shock. The advantage of the ferrite ring filter mentioned earlier becomes obvious!

Earlier, the popularity of the magnetic cartridge was mentioned. This in itself has brought about a new problem, although it is only likely to manifest itself in very high RF fields. Because a magnetic cartridge contains a small inductance, it is possible for RF signals to be induced in the coil and conveyed down the inner conductor of the screened cable to the amplifier. Unplugging the cartridge head from the arm will confirm whether or not this is the cause of the trouble. Ceramic or crystal cartridges will not suffer in this way. The solution is a small LC network installed either at the cartridge head or at the amplifier input, see Fig 8. Care should be taken to select as low a value of capacitor as practicable to avoid reducing the high frequency response. If the network is installed in the cartridge head, adjustment must be made to the arm counter-balance weight to maintain the correct tracking pressure (often less than 2 gm).

![Fig 7. Two circuits for suppression of RF pickup on mains leads. It is important that the capacitors have an adequate AC rating, and if the components are mounted externally from the cabinet they should be well-insulated to avoid any risk of electric shock.](image)

result in severe audio breakthrough while separating them a few inches completely clears the trouble. Never allow any excess cable to trail over the floor. It should either be shortened or coiled up and taped. The importance of this point cannot be over-emphasised.

**THE SOCIAL PROBLEM**

There is virtually nothing that the amateur radio operator can do at the station end to prevent causing audio breakthrough, apart from reducing power, unless he is prepared to change his mode of transmission. The latter option has been taken up by a number of VHF operators by switching from AM to FM. The A1 CW operator has the option to change to F1 but this is hardly likely to find much favour on the HF bands and is likely to confuse some operators who may tune to the space instead of the mark. The great difficulty in handling cases of interference is explaining to the sufferer that the fault is with his equipment and not the amateur's. No hard and fast rules can be given as each case is different. Personalities and attitudes vary widely. Basically a combination of diplomacy and firmness is required.

The question of whether or not the job of curing the interference is to be undertaken by the amateur concerned is a matter of personal discretion. The author does not favour the idea of carrying out work involving the opening up of amplifiers. This is fine if the amplifier is one's own, but be very careful before deciding to carry out any work on a neighbour's equipment. Really it is a job to be carried out by a paid service engineer, not necessarily because the amateur involved is not capable of doing the work but because anything that goes wrong subsequently is likely to be blamed upon the amateur. If a neighbour does ask an amateur if he would be prepared to carry out the work he should think very carefully before deciding, and if in doubt — refuse.

The question then arises as to who carries out the work. The listener is not likely to have the knowledge to carry out the work himself. He may also be unwilling to pay to have the work done for him if he considers the amateur at fault. Even if he does decide to employ the services of a paid engineer or dealer the time taken up in tracing the trouble is likely to be considerable and many dealers will just have
no idea where to start. A major portion of responsibility must be with the manufacturer who designed and made the equipment. In this respect the British Radio Corporation has been found to be particularly helpful. Unfortunately, many manufacturers seem surprisingly disinterested in the shortcomings of their equipment although some do provide a certain amount of help and advice in the way of technical correspondence, circuits and perhaps a few components. We therefore find ourselves caught in a vicious circle with an embarrassed amateur and an unfortunate and possibly irate sufferer.

It is hoped that this article will encourage rather than deter amateurs trying to solve their audio breakthrough problems. During the 'fifties and 'sixties TVI has been a big problem, but through the persistent work of the RSGB local groups and individuals the problem has been overcome by many. Audio breakthrough looks like being an even bigger problem to be faced in the 'seventies. The solution is mainly with the manufacturers but it is up to the amateur movement as a whole to make them aware of the problem with a view to persuading them to raise their standards.

Later this month a large number of potential amateurs will attempt the NAOCP exam, some for the first time, some after several previous attempts.

There is no shortage of advice on how to pass exams. There are two parts to each exam — knowing the answers, and being able to convince the examiner that you know the answers. It is only too easy in a multiple-choice exam to lose marks by carelessness or lack of adequate consideration.

Despite much comment and criticism, the DOC does not set out to get the candidates, or to limit the number of passes, and there are no deliberate trick questions.

But there are some fairly searching questions on each paper, and this is quite in order. These questions are probably the ones which some candidates remember as too hard or unfair. Questions on each paper cover a range of levels of difficulty. This is not always realised by examinees before they sit their first exam. This is fair, and it is also fair that the AOCP exam contains a higher proportion of the more difficult type than the Novice paper.

Consider these questions.

1. The unit of inductance is the:
   a. farad
   b. ohm
   c. henry
   d. volt

   This is a perfectly straightforward, easy to read, basic question from the earliest section of the course — a bit like asking a teenager how many hours in a day. You either know the answer or you do not.

   Try again.

2. The unit of capacitive reactance is the:
   a. farad
   b. ohm
   c. henry
   d. volt

   This should be almost as simple — still straight knowledge of fact — but it is easy to misread ‘capacitive reactance’ as capacitance and so lose two marks in a valid, non-trick question.

   Now consider.

3. The frequency of a variable frequency oscillator is determined by the:
   a. supply voltage
   b. inductance and capacitance of the tuned circuits
   c. type of transistor used
   d. circuit design especially the amount of feedback provided

   This question is ‘harder’ because it is more wordy, and all alternatives must be read even though the answer should be obvious once the complete question has been read.

   These three questions could be used at either NAOCP or AOCP level. The next applies to the AOCP syllabus only.

4. In an Intermediate Frequency Amplifier using coupled tuned circuits the bandwidth may be altered by:
   a. changing the coupling between the circuits
   b. varying the collector current
   c. bypassing the emitter resistor
   d. screening the amplifier with non-metallic non-conducting shields

   This question has a wordy stem and specific but unrelated alternatives all of which must be considered. Most examinees would require time to think this out rather than knowing the answer straight away, so would rate it as ‘hard’.

5. Because the position of the sun, controls the degree of ionisation of the D layer and ionisation, affects radio propagation at high frequencies:
   a. the 3.5 MHz band is only useful for short range communication during the day
   b. the 3.5 MHz band is useful for very long distances at night
   c. the D layer does not affect propagation at 7 MHz
   d. the 1.8 MHz band is a very good long range daylight band

   This is a fairly good example of a thoroughly bad question — too wordy, too many non specificities (‘short’, ‘long’, ‘good’) and open to varying opinions. It needs to be read at least twice to work out what is actually being asked. This type of question appears in some sets of sample questions, and may be useful for practice for those who tend to read questions carelessly or too quickly. However it is unlikely to appear on an official paper.

Next month we will look at some questions in which the problems are in working out the correct answer rather than in the quality (or faults) of the question wording.

To those sitting for the November exam, best of luck, and once again READ THE QUESTION! The latest sample paper is now available from me or from the Executive Office. Thanks to John VK3AFU for the above questions.

EDUCATION NOTES

Brenda Edmonds, VK3KT
FEDERAL EDUCATION OFFICER
56 Baden Powell Drive, Frankston, Vic 3199

a. changing the coupling between the circuits
b. varying the collector current
c. bypassing the emitter resistor
d. screening the amplifier with non-metallic non-conducting shields

October’s Best Photographs

The judges at AGFA-GEVAERT and Quadricolor Industries selected the cover photo. Waverley Offset Printing Group selected photo page 69.

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CONTACT US FOR QUOTES
Come on you chaps, we’re slipping! Fify four VK entries in 1982 and only fifty three this year!

However, considering the propagation conditions which we thought were terrible, but in the light of what we know, were apparently better in this hemisphere than in most other Commonwealth areas, it was really a pretty good show.

Russ Coleston VK4XA more than made up for the small deficiency in our numbers by taking out first place in the Commonwealth with a 55 point margin over ZL1AIZ, the first winner from Eastern Australia since VK2DI in 1949 when Russ, as VK3XX, was placed 14th, and a 13th in 1948 when top place was gained by VK2EO. Our congratulations to Russ on a fine all band performance greatly enhanced by his impeccable operating procedures.

Eric Trebilcock BCRS195 made it a clean sweep for Australia by winning the Receiving Section by 380 points, a not unusual feat for winner from Eastern Australia since VK2DI in 1949 when Russ, as VK3XX, was placed 14th, and a 13th in 1948 when top place was gained by VK2EO. Our congratulations to Russ on a fine all band performance greatly enhanced by his impeccable operating procedures.

The four man team event between VK areas again resulted in a win for Victoria. A table of results on this basis over the past three years is shown, with comparisons with other Commonwealth areas as defined in the rules from which four or more logs were received.

VK3 13062 15813 10073
VK2 10467 13450 9407
VK5 6822 7760 3250
VK6 6776 9746 —
VK7 5199 9865 7098
VK4 — — —
G 10872 — 20384 17593
VL1 8679 — —
VE7 — — 14187
V0 — — 6793

AUSTRALIAN AWARDS

The Gold Medallion for the leading VK entrant — Russ Coleston VK4XA.

The Silver Medallions for the leading State team — John Nakulski VK3BLN, Ivor Stafford VK3XB, Snow Campbell VK3MR, Andy Domjan VK3AEW.

The Bronze Medallion for the middle placed VK entrant — J T McMillan VK2BAT.

The four man team event between VK areas again resulted in a win for Victoria. A table of results on this basis over the past three years is shown, with comparisons with other Commonwealth areas as defined in the rules from which four or more logs were received.

14 MHz VK6FS Overseas leader, VK2IC VK4SF

The four man team event between VK areas again resulted in a win for Victoria. A table of results on this basis over the past three years is shown, with comparisons with other Commonwealth areas as defined in the rules from which four or more logs were received.

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VK6 6776 9746 —
VK7 5199 9865 7098
VK4 — — —
G 10872 — 20384 17593
VL1 8679 — —
VE7 — — 14187
V0 — — 6793

HOW THE LEADERS MADE THEIR SCORES

OSS/BONUS AREAS per band 80 to 10 (claimed)

35 7 14 21 28
VK4XA 30/20 74/29 139/46 49/34 30/24
ZL1AIZ 42/24 62/32 61/42 33/27 26/22
6Y5HN 9/8 45/25 166/52 47/31 16/9
VK3BLN 18/17 38/26 160/47 36/26 14/14
VK2NGW 28/19 56/26 35/38 34/25 11/11

RSGB REMARKS

Despite some of the worst HF conditions for many years, the contest committee was pleased to receive an entry on par with 1981, it somehow went on down the line, and in 1982, when record scores were achieved. Lower scores from the UK and VE were balanced by the comparatively high scores from VK.

As can be seen from the tables, the conditions during the contest were generally favourable. The best conditions were recorded on 10 and 15 metres and the worst conditions on 80 and 175 metres. The overall results were similar to those of previous years, with VK7GZ and VK3BLN in the lead at the top of the table.

TheConstruct Committee reported that it had been a very successful year for the Commonwealth Contest. They congratulated all the entrants on their achievements and hoped that they would continue to support the event in the future.

The Construct Committee also thanked the many volunteers and contributors who had made the contest possible. They expressed their appreciation for the hard work and dedication of all those involved.

The Construct Committee hoped that the Commonwealth Contest would continue to be a major event in the amateur radio calendar and that it would continue to attract a large number of participants.

The Construct Committee also wished to acknowledge the support of sponsors and advertisers whose contribution had helped to make the event possible.

The Construct Committee concluded by expressing their hope that the Commonwealth Contest would continue to be a source of enjoyment and stimulation for all those who participated.

The Construct Committee thanked the Construct Committee for their hard work and dedication and wished them every success for the future.

The Construct Committee also wished to acknowledge the support of sponsors and advertisers whose contribution had helped to make the event possible.

The Construct Committee concluded by expressing their hope that the Construct Committee would continue to be a source of enjoyment and stimulation for all those who participated.

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The Construct Committee concluded by expressing their hope that the Construct Committee would continue to be a source of enjoyment and stimulation for all those who participated.
Nearly all entrants expressed enjoyment of the event, despite the adverse propagation, including Don, VK2BDU. Let him have the last word: "And didn't I have fun too! The antenna blew down the week before. Couldn't get it up because of the heat of the tin roof until Friday night, which I spent scrambling round the roof with a torch like a b...y 'possum! Finished it Saturday morning, then all I got was a couple of poms — pardon — Q stations! Thanks for running the contest — all good fun." Thank you, Don, the spirit lives on.

G3XTJ

It is noted with deep regret that Ed Hodson G3XTJ, who was in charge of this year's contest, died on 30th August just before the results were published in Radio Communications.

BERU 1984

1200 UTC 10th March to 1200 UTC 11th March. Rules in February AR.

ULTIMATE MOBILE ANTENNA???

This photograph of an unusual mobile antenna was taken at the International Amateur Radio Gathering held in Frederichafen, Germany on 17-19 July 1983.

The antenna is built of aluminium and telescopes almost to roof level. From left to right are Mike ZS6BUX, Henry GM4FXX, Bob VK2GZ and seated in front is Detlef DL9DAQ. The Convention attracted approximately 10,000 amateurs.

Contributed by Bob, VK2GZ

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DESH CLIFT VK5ZO
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There are no changes to the beacon list this month, although I did hear on the grapevine that VK4RTL in Townsville had been destroyed by lightning. Perhaps someone nearer to that area than I might confirm or deny the report!

It appears also that VK2ECC at Yetman which used to be on 28.887 MHz during the month of August has been doing a lot of the work, dumped a chassis on me a few days ago with a request to build a suitable filter for the 6 metre beacon and we would like it to be on its usual site on Mount Lofty and we would like it to be on the new generation beacons may not be the same problem. Whatever the outcome it is not the intention of those doing the job to prevent anyone from enjoying their hobby, but surely we can in return expect to receive a fair hearing and an offer to come part of the way themselves by anyone affected by ensuring the equipment in use is fair and reasonable and using antennas devoid of dry joints and other problems likely to be responsible for any “diode” action! More later.

NEWS FROM NEW SOUTH WALES

VK2 seems to be featuring rather prominently lately judging by the degree of activity outlined in another letter from Gordon VK2ZMX in Cooma which is amongst all those interesting contacts in that State.

I write: “Two metre SSB activity monitored from this OTH (Berowra Heights) appeared to be a bit quiet during August. I made some sixty contacts without Sydney stations, which is about three-fifths the normal rate! Some comments:”

“Jock VK2ZQX at Gunnedah and Doug VK2MX at Uralla put consistent and regular signals into Sydney. Less frequently during August Barry VK2KAY at Gunnedah and Don VK2ADY at Tamworth were also worked. These northern stations may be heard almost any week night on 144.2 MHz at 1030 UTC. Doug VK2KAY was at Armidale where his operations were restricted due to the presence of a Ch 5A translator, his shift to Uralla has released him from this handicap.”

“On 31/8 I was pleased to work Dallas VK2ECC at Yeoman which is very close to the Queensland border and had not been heard for some months. Whilst on VK4 Bill VK4LC is back from a trip overseas and will resume from Eagle Heights shortly. Hopefully this will encourage VK4s in Brisbane to attempt to emulate Bill’s success at working into Sydney on 2 metres.

“Other VK2 stations to the north are quiet on 2 metres although Tom VK2DDG at Byron Bay is known to be active, closer to Sydney Barry VK2BBA at Newcastle and Ray VK2BVO at Toukley were heard from here during August.

The only station to the west heard during August was John VK2YEP at Griffith and is audible in Sydney any time he cares to transmit that way. His 70 cm signal was also heard on one occasion he tried it, although two way contact was not possible due to my 10 watts PEP. The 2 x 4CX250B linear under construction here will change that shortly and John’s 80 watts on 70 cm has enabled him to make several.

Jeff VK2EJJ at Wagga worked several times on 2 m. Sometimes Jeff has only 10 watts PEP and still makes it into Sydney.

“In VK1, Ralph VK1RK and Glen VK1KAA can be heard on 2 m SSB frequently. Eddie VK1VP puts a good 70 cm signal into Sydney as well as his normal S6 on 2 m. Ian VK1ZIF is not favourably located for Sydney contacts but nevertheless was worked again during August when conditions are generally thought to be less than ideal. John VK1JC doesn’t have to wait for good conditions, his signal reached S9 on occasions during the month.

“On 30/8 John VK2ZMX in Cooma was 5 x 4 here. John’s signal is always good in Sydney indicating the 2 m SSB path is not as ‘conditions’ restricted as some may think.

“Scheduled operations with Doug VK3UM on 2 metres continued throughout August. The time is now 2245 UTC on Saturday (local) and Sunday (local) mornings. Frequency 144.200. We made firm contacts on live occasions when signals were from 5x2 to 5x4 for periods ranging from two minutes to five minutes, down for several minutes then up again for a further five minutes. Signals are always detectable although on those occasions, when firm contact was not established, the norm is only occasional peaks, some words and syllables plus meteor pings. On 20/8 Brian VK2ZHT in Sydney also made contact with Doug again; VK1RK, VK1KAA and VK1VP also worked Doug on a few occasions.

“It seems to be that similar contacts should be possible between Sydney and Brisbane and I would like to hear from anyone there who may be interested in trying. Contacts between Sydney and Adelaide may be a bit to expect from the suspected propagation mode but nevertheless I would also like to try it on a regular basis with any VK4 who has the time and the equipment to try.

“Finally, country stations and VK1s often ask me what 2 m SSB activity there is in Sydney and the answer is that it varies. During August the following 2 m SSB stations...
located in or near Sydney appear in my log: VK2ELS, VK2AAS, VK2EB, VK2BL, VK2YIF, VK2KSG, VK2ZRG, VK2YFW, VK2ZQA, VK2YFF, VK2ZRU, VK2ZTH and VK2NT. Not all are equipped to work long distances but looking at the list I believed about half of those are so equipped and of course there are many other stations so equipped who do not appear in my log for that period."

Thanks for another interesting letter Gordon and I hope there will be some stations in other States able to take up your offer of providing the Sydney end of the connection. I would dearly like to be able to do so myself but my working hours make this difficult. Are they any takers?

THE VK2AMW MOONBOUNCE REPORT

Lyle VK2ALU in “The Propagator” for September gives a lengthy report on the activities associated with the near completion of the relocations and overhaul of the dish antenna, with one of the sought after achievements at the moment being to have an EME contact with Z2S5JJ in Zimbabwe before he dismantles his equipment for his move to South Africa later this year. The test was scheduled for 4th and 5th September — I have nothing concrete to report on results at the moment although I did hear from a source that an equipment breakdown had prevented contact being made. I hope I can report this to be wrong next month.

After the feedhorn had been installed, and the sighting telescope mounted on the dish structure, coincident with the true axis, the dish was used to track the Sun’s movement optically. This test revealed an error of 0.5 degree of runout in Hour Angle for each hour of dish movement in this plane, and correction will require the whole dish structure to be rotated slightly in an anti-clockwise direction.

Three low noise receiving preamplifiers using GasFETS are installed and with everything temporarily in place initial Sun noise checks were done. These show an initial 14 dB of Sun noise, to be improved later. Antenna radiation angle tests were also done, using the Sun, and it was found the dish had a half power beamwidth of just under 2 degrees! This is equivalent to 38 dbi dish gain!

Lyle says the transmitter is now delivering a measured output of 120 watts into a dummy load and is due to be installed in a waterproof mount at the dish site soon.

Best wishes to you Lyle VK2ALU and your team of helpers, we look forward to hearing more of your activities soon and to learn what contacts are being made.

SIX METRES COUNTRIES LIST

Last month I mentioned Steve VK5AIM had offered to underwrite an award or certificate for working stations located in the various locator squares assigned to this country. In an effort to make his offer work it seems desirable to outline in more detail what is involved and how you go about deciding where you live.

HISTORY: For a number of years correspondence has passed around the world to various VHF managers (including me) in an effort to arrive at a suitable means of providing an identification in simple terms which would show where anyone on this earth lives. The idea of a “QTH Locator” is not new, having been seen operating in West Germany some thirty years ago, and its use spread rapidly throughout Europe and North Africa. It was originally designed solely for European use where so many countries close together generally ensured its success. Contests of all kinds have been run based on locator squares, and a special listing appears periodically in European radio magazines showing the latest tally of locator squares worked by the highest scoring stations.

Much of the hard ground work must surely go to Folke Rasvall, SM5AGM, of Sweden, who is the DX Record Co-ordinator for Region 1, and who has finally seen the fruits as it will be shown in a separate column. Right, chaps, into it!

OSCAR 10

When one wonders where all the 2 metre activity has disappeared to it is only necessary to have a look up the band around 145.9 MHz and there it is! A number of operators now have worked more than forty countries and many hundreds of contacts, and their voices must surely be feeling the strain. It has been of interest to me to note that it is possible to get signals out of the machine with much lower than anticipated signals going in, so it speaks well for the design of the equipment and the way it is working. Congratulations to all.

LOCATOR

Last month I mentioned Steve VK5AIM had offered to underwrite an award or certificate for working stations located in the various locator squares assigned to this country. In an effort to make his offer work it seems desirable to outline in more detail what is involved and how you go about deciding where you live.

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Much of the hard ground work must surely go to Folke Rasvall, SM5AGM, of Sweden, who is the DX Record Co-ordinator for Region 1, and who has finally seen the fruits of his labours arrive at an apparent move to have a locator system adopted largely on a world wide basis. A letter was received from Folke in July, 1983 and this is the first chance I have had to incorporate its contents in this column. It reads:

“The IARU Region 2 Conference was held 6th-11th June, 1983 at Cali, Colombia. The VHF Committee was chaired by ARRL (USA) Communications Manager W1XX, John Lindholm, and the following text was unanimously adopted:

“This Conference adopts the parallel use of (a) longitude and latitude for transmitting station location; and (b) the use of the proposed Region 1 (Maidenhead) Locator System for awards and contest purposes."

“We should note that the Region 3 addition ‘when the time is appropriate’ is not included, which means that Region 2 is the first region to finally adopt the Maidenhead Locator. My warmest thanks to all that have contributed to this excellent result."

The system is based upon the use of $2^\circ \times 1^\circ$ blocks and it has been concluded that it is the only system likely to have any hope of world wide acceptance. It has evolved from an original proposal of SM5AGM and G4ANB and is often known as the Maidenhead System as it was at a place in England by that name where it was first tabled. The system has received guarded support by Region 3, mainly because of uncertainty on how the system works, and that the Region 3 areas are quite isolated by comparison with most other areas of the world. However, the system does provide for our inclusion.

The system starts off by basically dividing the whole world into a series of squares of the sizes mentioned above each bearing two letters, the first refers to the longitude and the second the latitude. The accompanying map shows how Australia and New Zealand are situated in the world system. From this map you should be able to rapidly determine in which square you live unless you are a borderline case when you may have to be more careful. The remaining figures and letters of the system are arrived at according to the systematic paralleling of the system as it was at a place in England by that name.

The Longitude/Latitude Locator System Map.

![Map of the Longitude/Latitude Locator System Map](image-url)
to the accompanying tables, which were originally published in "The Short Wave Magazine" from the UK and I have suitably modified them for use in Australia. I believe I am correct in what I am doing.

3rd Character: This will be a number determined by the number of degrees East Longitude you are, so consult the following chart:

<table>
<thead>
<tr>
<th>Degrees</th>
<th>Third Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-111</td>
<td>4</td>
</tr>
<tr>
<td>112-233</td>
<td>3</td>
</tr>
<tr>
<td>234-344</td>
<td>2</td>
</tr>
<tr>
<td>345-455</td>
<td>1</td>
</tr>
<tr>
<td>456-565</td>
<td>0</td>
</tr>
<tr>
<td>566-676</td>
<td>9</td>
</tr>
<tr>
<td>677-787</td>
<td>8</td>
</tr>
<tr>
<td>788-898</td>
<td>7</td>
</tr>
<tr>
<td>899-999</td>
<td>6</td>
</tr>
</tbody>
</table>

4th Character: This also is a number and is the same as the second digit of your latitude eg if your latitude is 33°N then your second figure is a 3.

These first four characters will be sufficient for the VUCC Awards and for most contests, and is probably as far as most stations need to go. If for some reason you have to be more specific then two further characters can be obtained in the following manner.

5th Character: This is a letter and is determined by the number of "minutes of east longitude" for your location. If your number of degrees (minutes) is an odd number, see Table A. If yours is an even number use Table B.

(a) Odd Longitude (b) Even Longitude

<table>
<thead>
<tr>
<th>Minutes of East Longitude</th>
<th>6th Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>L</td>
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<tr>
<td>1-5</td>
<td>J</td>
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<td>6-10</td>
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<td>11-15</td>
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<td>K</td>
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<td>242-245</td>
<td>L</td>
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</tbody>
</table>

5th Character: The time is required. If you need to go further you may be able to obtain the figures from good maps, especially the Lands Department maps, or you may be lucky enough to find on referring to the Department that your place is already listed in longitude and latitude.

SIX METRES OVERSEAS

From "The World Above 50 MHz" in QST with Bill Tynan W3XO, for September 1983, comes news of the first successful 50 MHz two-way crossing of the Atlantic Ocean via ES from the USA to Europe. This followed the wake of the first such contacts by Canadian stations (which I reported recently). On 1st July WA1OUB in New Hampshire began hearing TV buzz in the band starting as early as 1145 UTC. Bob said 10 metres was dead at the time. At 1840 he noticed European 10 metre beacons coming in and a CQ on 6 metres brought a crossband QSO with SM6PU at 1848. At 1850 G4GLT was worked via the same route. This was followed by GM4COK at 1900 and DF2AO at 1909. Repeat 6 to 10 contacts with SM6PU were made at 1920 and 2033. At 2220 and 2223 WA1OUB crossbanded with GM3DOD and G4GLT. The latter told Bob to listen for him in seven minutes on 50.096. Bob began calling at 2226 and stood by at exactly 2230. Unfortunately he did not hear GM3DOD but there was G4GLT calling him with 529 signals. WA1OUB received 559 and what is probably the first 50 MHz two-way ES contact between the US and the UK went into the VHF record books. Bob heard no other signals from across the pond, but a report from G5KW at Lands End, Cornwall, notes reception of WA1OUB on 17/7/83. Ken, G5KW, was disappointed not to have been heard in the US as this would have been country number 10, since receiving one of the forty-off-TV hours 6 metre permits in February. His other countries are G, GW, GM, GJ, GU, ZB2, and L.

The second such contact was between KA1PE and G152SC at 2235. The GBSBIX beacon on 50.035 was being monitored between 2100 and 2229 prior to this contact. Once again this shows the great advantage of having beacons in strategic places! So far the main contacts seem to be limited in the main to 10 to 6 crossband contacts, with CT2EE being included. It will be interesting to see what happens in the next summer ES season in that hemisphere.

An interesting note in "QST" that the DX-pedition by W6JKW to the Cocos Islands only netted forty six metre contacts, all from Florida to Maine and then only on 15th June. Rest of the time was spent on HF and 2 metre EME!

VHF PIONEER: W2AZL

From "QST" comes news of the passing of Carl Scheideler, W2AZL, who became famous through the 1950s and 1960s for his 2 metre converter design which for a long time was virtually a standard of comparison for such converters. Carl contributed much to the improvement to the state of the art at VHF. He was active on 50, 144, 432 MHz as well as 144 Mhz EME.

Carl passed away on 18th July after losing a battle to cancer. I am sure I speak for the VK VHF fraternity in offering condolences to his widow Agnes.

VK2AMW EME STATION AGAIN

In today's mail I received a note from Murray VK2MY, Secretary of the Illawarra Amateur Radio Society, and enclosing last minute news of the VK2AMW EME tests with ZS5JJ in Zimbabwe, and mentioned earlier in this month's column.

It reads: "After a construction period of over twelve months, following the relocation of the 2.4 meter dish of the University of Wollongong in mid 1982, a successful EME test was conducted by the Moobounce Group, headed by Lyle Paison VK2ALU, on Saturday 10th September, 1983. "The test was arranged between the IARS station VK2AMW and ZS5JJ, operated by Peter Carey in Harare, capital of Zimbabwe. It required a tight construction programme at VK2AMW as ZS5JJ was dismantling his dish starting on 11th September, prior to a move of QTH to South Africa. "Preliminary tests with ZS5JJ on the previous weekend, 4th and 5th September were prevented by transmitter power amplifier stability problems and a short in a coaxial relay in the receiving system, but the tests on the 10th September, which was carried out between 0700 and 0830 UTC resulted in a confirmed contact. "The project team worked under some difficulty during the day due to rainstorms, which required hasty covering up of outdoor equipment not yet made waterproof. By 1600 EAST our first echoes were being received at approx 3 db above noise level, with visual tracking of the moon. Initial contact with ZS5JJ was delayed for approx half an hour after the test was commenced due to frequency counter readout at VK2AMW being approx 15 kHz low at 1296 MHz."
“When all was peaked up signals were “O” copy both ways. Z25JJ reported via an HF link established via VK2CAG, that our EME signals were 6 above noise and good copy. Z25JJ’s signals also built up to 5-6 dB above noise which was very satisfactory in view of the equipment not yet all peaked up at this end — although the 10 metre diameter dish and 400 watts at the other end helped!”

“As far as is known this is the first 1296 MHz EME contact from NSW and the last hour or so of proceedings were put on to record by Mike VK2DFK with his video equipment.

“We anticipate the equipment will be completed as a permanent installation over the next 4 to 6 weeks, after which contacts are looked forward to with the small group of EME operators on 1296 MHz in various parts of the world. Experiments are also planned with antenna feed systems once a high power permit is obtained and some limited tropo-propagation experiments may also be possible using lower power levels.”

Congratulations to the Illawarra team for their efforts and the reward they received in meeting a Z25JJ deadline and having that very special contact with Peter.

And it did seem my spies were correct in saying contact had not been made on the weekend of 4th-5th September, but I am glad it was completed a week later!

BELGIUM TO LOSE UHF BANDS

From “The Shortwave Magazine” for August 1983, per kind favour Steve VK5A1M, comes news of a serious situation developing in Belgium when, at a meeting on 24/6, the amateur representatives “were shimmered to learn that it was proposed to withdraw all but the 434-438 MHz part of the 70 cm band, and to take away all amateur bands from 1.24 to 5.85 GHz.

“What has, understandably, incensed Belgian VHFers even more, is that it was proposed to bring these severe restrictions into law by 15th July, leaving no time for them to prepare a case for a light... This is a very serious matter since, if the Belgian authorities get away with it, then those in other western European and NATO countries might consider the same trick if faced with demands for more UHF allocations. Another blow is a power limit of 30 watts on the remaining part of the 70 cm band, and to power restrictions, thus rubbing further salt into the wounds.”

At the 1979 WARC Conference the band 430 to 440 MHz was allocated to Region 1 on a shared basis, equally, with amateurs and radiolocation systems. It seems no footnotes were added at the time by Belgium.

OF GENERAL INTEREST

By the time you read this we will be starting to get into the early Es openings on 6 metres. May I urge you all to continue to use 52 to 54 MHz for the Es openings we normally get through the summer months, and reserve the 50 to 50.15 MHz segment for true DX operating (outside TV hours for Channel O of course). I understand there is every likelihood the Ross Hull Contest will be conducted above 52 MHz which is a good thing. It is most vital during the next twelve months or so for us to do the right thing in regard to the new portion of the band if we ever hope to have an increased usage of that portion. Thoughtless use causing Ch 0 interference will be seen by the TV stations as being irresponsible and they will lobby all the harder to have the privilege removed once and for all. Therefore, please play the game according to the rules; remember, a lot of the former exotic stations from the USA and Pacific areas were heard on 50 MHz from about 2100 to 2400 and on to 0100 or thereabouts, and these times will be outside TV hours. If 50 MHz is not cluttered up with Es operating stations in VK there will be many people who will get their first chance to reply legally to the overseas stations. If you want to do all your operating on 50 MHz just think about it this way. If everyone did this, we would probably lose 52 to 54 MHz as no longer being needed. Then if the TV stations become snouted because we are causing interference we will also lose 50 MHz. Where do we go then? We may finish up without any spectrum for 6 metre operation, and that would be an even greater tragedy!

For the closing thought for the month I draw on a line I sent to me some time ago by Philip VK3YAZ. “He who thinks by the inch, and talks by the yard, should be kicked by the foot.” and “Even a short pencil is more reliable than the longest memory.” Good DXing this summer, and hope to hear you on the bands.

STRAYS

Basic human nature changes little it seems. Looking back through magazines published a half century ago, the same endemic gripes are well to the fore. Here are just a few: (1) Amateurs whose operating behaviour besmirches our image. (2) Those who won’t QSL. (3) Piracy. (4) The use of excess power — and so on.

The ‘Wireless’ Magazine TELERADIO, of May 25th 1935, in its pages devoted to amateurs has this comment under a title HAMS — MOCK AND REAL:

“There are decent amateurs on the air and others who are not... the operator who asks for reports and then does not reply with his QSL card is not playing the game.”

Under another heading of NZ HAMS is this query:

“Have any VK DXers had any experience with ZLs not replying or sending QSLs when NZ stamps or Imperial Reply Coupons have been enclosed?”

(I guess the Kiwis could say the same about some VKs of that period — Al, VK4SS)

On the subject of Piracy, many OOTs, now that age is upon them, confess that they ‘tested’ their gear on air before gaining their licence. The international ratchets went one better — they congregated outside the 20 m band, say 13.995 MHz, so they could be better heard. However, most OOTs were then striving to obtain a ticket. Today, we have Piracy for Piracy’s Sake, in lots of cases. A Shawsmith, VK4SS
LEARNING THE MORSE CODE?
Try the All New
BT-1 — Basic Trainer
For Morse Code

Advanced Electronic Applications in conjunction with ETS (Educational Technology and Services)*, has developed the BT-1 Code Trainer. ETS methodology, based upon research by a prominent mid-west university, has demonstrated that a typical student using this system and the BT-1, can learn Morse Code to speeds of 20 WPM in four weeks based upon two 20 minutes daily training sessions.

The pre-programmed BT-1 computerised trainer will allow you to achieve proficiency in Morse Code faster than any other known method.

No prior knowledge of Morse Code is required to use the BT-1. There are no tapes to purchase or wear out. The BT-1 operates from a 12 VDC source, the unit can also be used in mobile settings via the 12 VDC system.

* Education Technology & Services. See page 81 October 1981 issue of Ham Radio Magazine

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Advanced split-screen ASCII, BAUDOT, CW software for Commodore computers... $59

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Or one of our many approved distributors throughout Australia, New Zealand and the Islands.
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extremely sensitive area. Soviet air defence
"Voice" to increase the number of programme
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 electronic intelligence intercepts, the world
Americans divulged what happened to the
escalation in tension between the United
interceptor fighters scrambled to investigate
When the Jumbo failed to respond to
the craft had been observed on Soviet radar.
Thi
The plane had strayed off its planned
course, and had indeed veered into Soviet
territory, and had in fact strayed over an
extremely sensitive area. Soviet air defence
command on the ground assumed it was a spy
flight. American military reconnaissance air-
craft had been observed on Soviet radar.
When the Jumbo failed to respond to
interceptor fighters scrambled to investigate
the plane, the order was apparently given
to fire an air to air missile. The plane was
destroyed along with the 269 people on
board.

This tragic incident has caused a very sharp
escalation in tension between the United
States and the USSR, especially after the
Americans divulgled what happened to the
Korean flight, revealing the contents of their
electronic intelligence intercepts. The world
naturally was stunned. At once, a war of
words — accusations, denunciations and
statements — were spinning across the
frequency spectrum from all sides. The Voice
of America as well as their "clandestine"
sender Radio Free Europe/Radio Liberty
increased the programme output, particularly in
Russian. Only a few weeks earlier the two
organisations were fighting budget cutbacks with
Congressional committees. Funds were
very quickly appropriated allowing the
"Voice" to increase the number of programme
hours in Eastern bloc languages.

It wasn't too long either before the huge
array of jammers caught up with the extended
hours of the various stations, attempting to
drown out the programmes. Unfortunately, many
other international and domestic stations broadcasting on shortwave, not
directly beaming programmes to that area,
suffered interference to their signals from the
spillover from these jammers. Those listeners,
particularly in Europe, do find it extremely
difficult to pick out their desired programmes
among the buzzsaws or distorted audio from
narrow band FM signals. These jammers are
found on several points within the allocated
band.

This makes it very hard for the general
listener to shortwave, as the majority of
models would not have very good selectivity.
The presence of these jammers on several
points within a sub-band, would render it
useless to those types of models.

Naturally, broadcasters have started using
new channels outside those normally
allocated for international broadcasts, in an
effort to escape the jammers. Unfortunately
the jammers follow suit creating a vicious
circle. On the 4th September, for example,
when stations made various frequency
alterations to take account of propagational
vagaries, it should have been orderly.
But within days it became apparent that some
stations would have to hop about to escape
the electronic pollution.

One band of frequencies under threat,
are those allocated to the amateur service. I will
not be surprised to see quite a dramatic
increase in the amount or number of stations
intruding into our amateur allocations.
Recently, I received a note from Jim Davis,
VK7OW, Intruder Watch Co-Ordinator for this
State, pleading for reports from this region on
the ever-increasing amount of intruders.
Along with the note and logsheets was a
summary of the intruders logged for the
month of July.

I have commenced logging intruders and
do urge other amateurs and SWLs to do
likewise to help our IW co-ordinators to
reduce the amount of these interlopers on our bands.
You will find them
listed in the 1983 Callbook or elsewhere in
this magazine.

And talking of the Callbook, the 1983 issue
is now available from your local division. It is
perhaps the best VK callbook I have seen.
Special thanks are due to the WIA Publications
Committee for collating it so admirably. I
would, however, like to correct an address of
one of the Clubs in the SWL section. The
address of "DX Australia" to where you can
direct enquiries is: - "DX Australia", PO Box
285, Mt Waverley, Vic 3149. I believe that the
subscription is $15.00 per annum within
Australia and $25.00 elsewhere.

There have been changes of personnel at
two of the Clubs within Australia. Peter Bunn,
well-known DX columnist and broadcaster,
have taken over as Chairman of the Australian
Radio DX Club from Rob Wagner. Bob Padula
is still Executive Secretary while other new
Committee members have also been included.
The Southern Cross DX Club has also
regained Keith Barton as President.
Until fairly recently, Keith was secretary of
that Club. We wish them both well in their
respective positions.

One of the new sections in the "ADXN" —
the monthly newsletter of the Australian
Radio DX Club, is devoted to clandestine
broadcasts. This bi-monthly section contains
details of the ever increasing number of
clandestine stations. Some of these clan-
destine stations have been observed on, or
very close to, 7 MHz CW portion of the band.
Most of these are located in Central America
and/or the Caribbean region.

Two very interesting clandestine stations at
the particular moment are on the Korean
peninsula. Both of them are broadcasting
propaganda to each other. Neither are they
officially registered or broadcasting within
the portion specified for same. Radio "Echo of
Hope" is presumably in South Korea and has
been heard on 6.348 MHz at 1000 UTC,
naturally in Korean. While the other station
called the "Voice of the Revolutionary Re-
unification Party" claims to be in Seoul, South
Korea, it is located within North Korea. It is on
4.119 MHz variable and is pretty close to an
international marine distress communications
channel of 4.125 MHz. It is in Korean,
naturally, but also is heard in English at 1400
UTC. However, I find their diction very hard to
follow. I have heard recently another pre-
sumed clandestine on 5.968.9 MHz also in
Korean but it signs off at 1040 approximately.
All indications so far point to the station being
South Korean in origin.

Well, that is all for this month. Until next
time, the best of 73 and good listening!
Robin, VK7RH

OVERHEARD ON THE
BUNDABERG
REPEATER

A prominent amateur who has a TV service
business was heard on the Bundaberg
Repeater telling two friends about a
demonstration of a new stretcher he had seen
at the local Ambulance Brigade. He saw that
a similar product had all the possibilities of
being adapted to the carrying of TV sets from
the customer's home to the van and into the
workshop for service making his life easier. At
this point a fourth amateur broke in to cap the
story off by saying "I bet you are going to tell
us now that when the sets are returned to the
owners, they are well enough to get out of the
van and walk into the house on their own." Oh
well!!
Keith H Haverfield, VK4APQ
HERE'S RTTY!

Bruce Hannaford, VK5XI
57 Haydon Road, Elizabeth Grove, SA 5112

RTTY. Output Speed Morse 3-99 WPM. Baudot RTTY 60, 67, 75, 100 WPM. ASCII RTTY 110 Baud.

Keying Outputs: CW: Cathode Keyed (to 200 mA) grid block (to -300 volts) or solid state transmitters.

RTTY: Photo-illuminated contact closure, TTL level transistor switch, or two-tone AFSK 170 Hz shift (2125 Mark/2295 Space), 850 Hz shift (2125 Mark/2975 Space).

Inputs: Morse; from hand key, bug keyer, memory keyer, Morse keyboard. RTTY: Two tone ASCII or Baudot AFSK, Parallel (TTL compatible) or serial ASCII or serial Baudot.

Automatic CR/LF: (switchable) after first space following 64 characters or after 72 continuous characters.

USOS: Down shift on space (switchable).

Auto ID: Less than 50 Hz Morse shift from programmable ID memory. Can also be used for standard Morse, Baudot or ASCII message transmissions.

GENERAL

Power Requirements: 13 VDC ± 2 VDC at 1.2 amps.

Integrated Circuits: 43 IC's plus two custom AEA microcomputers with copywritten firmware.

Size: 8¼ W x 4½ H x 7 inches D.

Weight: Approximately 5 lbs.

Specifications subject to change without notice or obligation.

Obviously these are very interesting items and I wish to thank Hy-Tech Distributors for their assistance. Inquiries re these units can be sent to Hy-Tech Distributors, PO Box 136, Archerfield, Qld 4108.

After I have had time for considerable on air testing with these units I will give some further comments re operators convenience etc.

THE NEW CALL BOOK

The 1983/84 Call Book is an excellent addition and is of great interest to RTTY operators. For the first time RTTY is mentioned in the WIA Gentlemen's Agreement band plans. (Page 122)

The old term "CW Only" has now been replaced by "Narrow-band Modes", thus as RTTY and CW are now grouped together as narrow-band modes we now officially have the same privileges that CW operators always had. (However in some bands there is a "CW Telegraphy" segment for Novices that should be respected).

Narrow-band modes have an exclusive segment in the MF and all HF bands that phone etc must keep clear of. Additionally narrow-band modes can operate anywhere in any of these bands.

There have been many suggested RTTY frequencies mentioned in recent months however we should remember these are only suggestions and that the WIA have now clearly stated provisional RTTY frequencies these being stated on page 122 in the 1983/84 Call Book.

CODE READERS and CODE CONVERTERS

There are now a considerable number of these units available in Australia and these are interesting to RTTY and CW operators. At the date of writing, the price of a read only unit is about $300 and a Reader Converter unit about $630. The small size and weight of these units plus the fact that no bulky VDU is needed makes them attractive for many applications such as portable work.

CODE READERS

Briefly the display is similar to the LED readout of a digital frequency counter except that letters, figures and punctuation marks are displayed. The readout is a single line so in reception as a new character appears at the right side of the line a character on the left of the line disappears. In effect the display moves slowly from right to left giving plenty of time to read what is displayed. A good example of such a reader is the Advanced Electronic Applications (AEA) B nucleo-RO Reader. This unit features a thirty two character vacuum fluorescent display, large blue characters allow for minimum eye fatigue after long periods of viewing. This thirty two character display is a vast improvement over similar readers with only six to ten character displays.

Input signals can be from receiver audio, from TTL level switching or from a hand key or keyer. The unit will copy Morse, Baudot and ASCII Codes at all normal speeds. There is automatic CW speed following and the received WPM can be displayed if you so desire. There are filters for 800 Hz CW and for 170 or 425 shift RTTY. I quote the following specifications from the AEA Catalogue.

Display: Blue thirty two character vacuum fluorescent with 0.29 inch high 14 segment characters.

Modes: Morse code, Baudot RTTY, ASCII RTTY.

Speed: Automatically tracks Morse code from 3 to 80+ WPM. Baudot RTTY speeds 60, 67, 75, 100 WPM. ASCII RTTY 110 Baud.

Filtering: Four pole variable CW filter front panel tuned from 900 to 950 Hz. Can also be used for SPACE ONLY RTTY tuning. RTTY 170 Hz fixed (2125 Mark/2975 Space) Reverse/Normal switch. RTTY Variable 100 to 1000 Hz shift (2125 Mark/2295-3125 Space).

Input Impedance: Approximately 5K ohms, grid block (to -300 volts) or solid state transmitters.

Keying Outputs: Serial (current loop) Baudot such as teletype models 15,19,28 and EPSON and CENTRONICS.

Automatic CR/LF: (defeatable) after first space following 64 characters or after 72 continuous characters (word wrap around).

USOS: Automatic down shift on space (defeatable). Anti-Space: Mark-hold after continuous space tone.

TRANSMIT Modes: Morse code, Baudot RTTY, ASCII RTTY filters can be easily tuned for other desired shifts. Changing capacitors will allow for tuning higher frequency AFSK tones. Input Impedance: Will work with virtually any receiver or audio output amplifier impedance.

Specifications Subject to Change Without Notice or Obligation.

READER CONVERTER

These units not only read and display incoming signals as in the read only unit, but can additionally, at the same time, convert the incoming mode into a different outgoing mode. eg: A CW operator using such a unit could communicate using two way RTTY. The unit would display the received RTTY and the CW operator sending CW into the unit could switch it's output to Baudot RTTY and his CW would be sent out as RTTY. Or vice versa a RTTY operator could communicate in CW the reader displaying the CW coming in and his Baudot RTTY keyboard signals being converted into outgoing CW signals. A good example of such a unit is the MBA-RC Reader Code Converter by AEA.

I quote the MBA-RC specifications from the AEA Catalogue.

Receive

Display: Blue thirty two character vacuum fluorescent with 0.29 inch high 14 segment characters.

Modes: Morse code, Baudot RTTY, ASCII RTTY.

Speed: Automatically tracks Morse code from 3 to 80+ WPM. Baudot RTTY speeds 60, 67, 75, 100 WPM. ASCII RTTY 110 Baud.

Filtering: Four pole variable CW filter front panel tuned from 900 to 950 Hz. Can also be used for SPACE ONLY RTTY tuning. RTTY 170 Hz fixed (2125 Mark/2975 Space) Reverse/Normal switch. RTTY Variable 100 to 1000 Hz shift (2125 Mark/2295-3125 Space).

Input Impedance: Approximately 5K ohms, grid block (to -300 volts) or solid state transmitters.

Keying Outputs: Serial (current loop) Baudot such as teletype models 15,19,28 and serial ASCII or Baudot AFSK, Parallel (TTL compatible) or serial ASCII or serial Baudot.

Automatic CR/LF: (switchable) after first space following 64 characters or after 72 continuous characters.

USOS: Down shift on space (switchable).

Auto ID: Less than 50 Hz Morse shift from programmable ID memory. Can also be used for standard Morse, Baudot or ASCII message transmissions.
I strongly suggest that RTTY ops should normally stick to these provisional frequencies unless there is a very good reason for operating elsewhere in the band. If we constantly use these frequencies other mode ops will sooner or later accept them as RTTY frequencies but not so if we spend most of our time elsewhere in the bands. I suggest that the only excuses for not using these provisional frequencies would be to contact DX RTTY stations having different RTTY segments to us, or to work cross mode eg: RTTY to phone, or in the case of being QRM’d by other modes in our own frequencies we need to move elsewhere. RTTY ops have been screaming for a long time for the WIA to guide them as to what frequencies should be used for RTTY so now this has been done let’s stick to them as much as possible and make the system work to the benefit of all concerned.

For those who have not got the 1983/84 Call Book the following are the provisional RTTY frequencies in MHz listing the centre frequencies which are extended both ± 5 kHz making each segment 10 kHz wide. 3.520, 7.045, 10.145, 14.090, 18.105, 21.090, 24.925 and 28.090.

RTTY ops should particularly note the 3.520 frequency and give Novices a fair go, phone ops should especially note the 7.045 frequency and normally use some of those higher frequencies that now extend up to 7.300.

A HANDY LOOP SUPPLY RESISTOR

One day I was vaguely looking for a suitable high wattage resistor for a loop supply to use with a Siemens machine. It dawned on me that a suitable wattage 240V lamp would do the trick. With 110V AC rectified by a single diode followed by a 16 mF capacitor for filtering and this followed by a 15 watt 240V lamp an almost exact 40 mA flowed in the loop circuit. Small 15 W pilot lamps are probably best to use. I tried three of them and always got about 40 mA loop current. The dimly glowing lamp is also a good indication that normal loop current is flowing or that keying is taking place etc.

45.45 OR 50 BAUDS?

There is a move in ZL to standardise 50 Bauds for amateur RTTY. There are about 10 ZL Seical stations that I know of using 50 Bauds and many ZL simplex contacts are being made using 50 Bauds. I believe it is unfortunate that 45.45 was chosen in the first place and this was no doubt due to FCC Regulations, as presently the vast majority of commercial RTTY is at 50 Bauds. It would be nice if there was some painless way to change to 50 but at present I don’t see how this can be done especially so until the FCC change their ideas on this matter. It seems rather hopeless for ZL or VK to try and initiate a change unless the FCC in America permit the change to be made there.

WORLD PRESS SERVICES FREQUENCIES

The book by this name is just the thing for RTTY printing hounds. There are three listings in the book, 1. By order of time in UTC, 2. By order of frequency, 3. By country of origin and press service involved. Transmission speeds and shift are also listed making this a very handy, easy to use listing of English transmissions. I obtained my copy from Hy-Tech Distributors, address as above. Well that’s all for this month.

73 from Bruce VK5XI.

Bill Martin, VK2EBM
FEDERAL INTRUDER WATCH
CO-ORDINATOR
33 Somervile Road, Hornsby Heights, NSW 2077

With the current sunspot cycle on the way down, more and more amateurs are turning to the lower frequencies to look for DX. The 40 metre band has seen some interesting DX pop up from time to time, if one is prepared to listen. However, the most significant thing to be noticed, as one listens around this band is the domination of the band by broadcast intruders. The 40 metre band, segment 7.0 to 7.1 MHz is listed as ‘Primary to the Amateur Service’... very amusing... apparently the amateur population is well aware of this fact, but certainly, as the following information will show, the broadcasters of the world don’t seem to display the same expertise on their authorised band limitations.

A random check on ONE DAY showed up the following bad news:

The date was the 13th July, 1983, between 1900 and 2135 UTC. All intruders appearing between 7.0 and 7.1 MHz. THE SECTION of the band designated EXCLUSIVE TO AMATEURS.

Eleven (11) intruders present — all broadcasters.

Now, assuming 2.7 kHz each size of centre frequency gives 59.4 kHz occupation by unauthorised stations. However, as one of these stations is Radio Moscow on 7.1 MHz, with LSB only in the amateur section, we are left with a total of 56.7 kHz occupied by intruders.

Seven (7) of these intruders were suffering jamming signals, and as most jammers are at least 3.7 kHz wide (each side of centre frequency), we move our figure of un-useable band-space up to 70.7 kHz.

As the amateur segment is 100 kHz, this then represents 70.7% of the entire PRIMARY amateur designated band-space! Now, I ask: just who is the PRIMARY Service in this segment of 40 metres? It would appear to be the broadcast service. Certainly, in practice, it comes out this way. The person will be happy with this state of affairs, and will continue to complain, via the Intruder Watch, to the DOC and through other avenues. I know others feel the same way, and are in fact registering their complaints monthly.

To take all this a step further — not only do intruders arbitrarily use OUR frequencies, but now, it appears, they are attempting to push us aside altogether. Example: On 31st July, 1983, two amateur stations were having a QSO on 14.171 MHz, on SSB. The USSR Intruder ‘UMS’, a Russian Naval station, came up with RTTY traffic, as he is wont to do (also one A’W’). After about five minutes, a jamming signal commenced (carrier modulated by two audio tones), and set about jamming the amateur operators. This type of jammer is in common use by the USSR, incidentally. After about another five minutes, the two amateur stations were successfully jammed out, and disappeared, whereupon the intruder ‘UMS’ came back up with his RTTY traffic, and got his message through. Now, if this is not cause for complaint, what is? I repeat the advice I have given in previous columns — if you are QRM’d by intruders, stick to your frequency — let them suffer YOUR QRM. They are the ones that shouldn’t be there. This is on EXCLUSIVE amateur frequencies ONLY, of course.

I think that most amateurs would not be pushed off their frequency by another amateur, and most decidedly would have something to say to any station which attempted to push them off. Why, then, move aside for intruder stations, WHICH DON’T EVEN HAVE THE RIGHT TO BE ON THE FREQUENCY IN THE FIRST PLACE? Don’t QSY for intruders. I certainly hope that I will not have any more such reports of bullying to pass on, but will be very surprised if we see any change in current intruder habits if we meekly step aside and let them bluff us. Many thanks to Colin, VK4AXX, for his sterling work with the Intruder Watch, and especially for some of the information regarding the above reports.

Col is one of the many amateurs who wish to pursue his hobby quietly, without any fuss, and certainly without being hassled by illegal operations. We amateurs are bound, by Regulation, as well as our own moral attitudes, to operate on-air as responsible members of a world-wide fraternity of Amateur Radio Operators, and ask no more than to be treated with the same consideration that we show others. Intruders, in my book, are not worthy of any consideration, and should be reported for their behaviour. If they don’t know how to behave, let us tell them.

If you do manage to find a clear spot between the intruders, I wish you good DX, and see you next month.

BUYING, SELLING or WANTING?

Check HAMADS first.

Eight lines free to all WIA Members.
NATIONAL CO-ORDINATOR
Graham Ratcliffe VK5AGR

INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Checkin: 0945 UTC Sunday
Bulletin Commences: 1000 UTC
Winter: 3.680 MHz
Summer: 7.064 MHz

AMSAT PACIFIC
Control: JA1ANG
1100 UTC Sunday, 14.035 MHz

AMSAT SW PACIFIC
Control: W6CG
2200 UTC Saturday, 21.280 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 were received this month from Bob VK3ZBB and a subscription
is extended to AMSAT Telemail and the UOSAT Bulletin Board for excerpts included in this
column.

AMSAT-OSCAR-10
Oscar 10 continues to perform excellently.
In recent weeks the activity has increased significantly and contacts as far west as
Ireland and as far east as the USA East Coast, have been made by many Australian amateurs.

Due to the orbital parameters this area of
communication is not available at all times, as
the spacecraft drifts slowly eastwards on a
day by day basis. At this stage it would appear
that the drift is occurring at an approximate
twenty day cycle. An area of concern being
expressed by AMSAT is the continued use of
HIGH POWER by some operators. Although
these operators are in the minority the effect
on the majority of users in the passband is
very dramatic. Values of AGC at -19 dB have
been noted consistently, especially at week-
ends. Therefore in order to demonstrate the
effects of high signal levels on the transponder
AGC circuits, a QRP day has been incor-
porated in the OSCAR-10 schedule. This is on
Mondays, UTC, and a maximum EIRP level of
100 W will be allowed on these days, although
many successful contacts have been made
using EIRPs of only 1 or 2 W. The QRP day
was instigated from the 5th September.

MODE L TRANSPONDER — Oscar 10
Experimental operation of the mode L
(1269 to 436 MHz) transponder is scheduled
for commencement on 21st September. The
transponder will be activated on the
traditional AMSAT experimental day,
Wednesday, when OSCAR-10 is within ± 1
hour of apogee on each orbit that day. The
frequencies of the Mode L transponder are:

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<tr>
<td>1269.95</td>
<td>436.02 General Beacon</td>
</tr>
</tbody>
</table>

These frequencies are based on a translation frequency of 1706.00 MHz. (estimated).

OSCAR 9 OPERATIONS SCHEDULE
The following spacecraft operations schedule is now in use:
Saturday: (1200 bulletin. Atlemetry, digitalker. (2.4 GHz)
Sunday: — 1200 bulletin, telemetry, digitalker, (2.4 GHz)
Monday: — High speed, whole orbit radiation scan
Tuesday: — Check-summed telemetry data
Wednesday: — CCG imager data
Thursday: — Whole orbit telemetry data scan
Friday: — Load bulletin, digitalker, telemetry schedule.

The current spacecraft power budget requires the radiation counters and scientific
magnetometer loads to be shed in order to run the 2.4 GHz beacon.

NEW EXPERIMENTAL SPACECRAFT PROPOSAL — UoSAT-B
An unexpected launch opportunity has appeared due to the premature demise of the
LANDSAT-4 spacecraft resulting in the proposed early call-up of the replacement
mission (LANDSAT-D) — now currently scheduled for February 1984. A proposal has
been prepared by the UoSAT Team and submitted, via AMSAT-USA, to NASA for the
launch of a UoSAT-B experimental spacecraft to accompany the LANDSAT-D satellite.
In view of the extremely short timescale available to prepare a spacecraft for this launch, the
UoSAT-B spacecraft will be based on the UoSAT-1 system design philosophy, but will
however carry an exciting new digital communications transponder and include
more sophisticated experiments, navigation and attitude control systems. It must be
realised that to prepare a spacecraft for launch within six months is a very major
undertaking and it may prove necessary to alter the payload compliment or modify the
mission objectives as the project proceeds.

The objectives and payload description below describes the desired goal for which we aim.

GENERAL MISSION OBJECTIVES
Following the generally successful launch
and operation of the OSCAR-10 amateur
radio communications satellite, the mission

objects of UoSAT-B are intended to be
complementary to those of AO-10 and a
further development of the UoSAT-1
philosophy, as follows:

a) SPACE EDUCATION:
To stimulate a greater degree of interest and
level of knowledge in space science and
engineering amongst radio amateurs, amateur
scientists and home computer enthusiasts —
including students, colleges and universities —
by active participation in spacecraft
projects requiring only relatively simple, low
cost ground equipment. The mission will
exploit the foundations laid by the UoSAT-1
mission in this area whilst, in addition,
providing a simple-to-use digital communi-
cations transponder to encourage the
use of, and familiarity with, digital communica-
tion techniques.

b) SPACE SCIENCE:
To provide both amateur and professional
scientists with a low earth orbit source of
readily available real-time and stored data
concerning solar and geomagnetic activity to
support radiowave propagation studies. An
improved CCD camera will be included to
provide images of earth and, specifically, the
polar aurora.

c) COST-EFFECTIVE SPACECRAFT
ENGINEERING:
The mission will advance further the
developments in cost-effective spacecraft
engineering initiated by UoSAT-1 with a view
to establishing a low-cost spacecraft system
design for use in future amateur radio
STSG launches and other secondary payload
opportunities. The mission will investigate
specifically the performance of computer
hardware, software and memory devices;
navigation, attitude control and stabilisation
techniques and the development of low-cost
groundstations of particular relevance to a
flexible, simple-to-use store-and-forward
digital communications package for global
communications between amateur radio
stations to be evaluated in view of a planned
PACSAT — PACket radio SATellite.

MISSION PLAN
The UoSAT-B spacecraft will be prepared
for launch by the UoSAT Team at the
University of Surrey within the period
September 1983 to February 1984, as a
secondary payload by a DELTA 3924 vehicle
accompanying the LANDSAT-D earth re-
sources spacecraft.

EXPERIMENT DESCRIPTION
The UoSAT-B spacecraft will carry five
spacecraft experiments in addition to the
engineering systems experiments that will
be described separately.

1) PARTICLE-WAVE EXPERIMENT
Three Geiger counters; similar to those
flown on UoSAT-1, and a single, multi-
channel electron spectrometer will be
mounted on the spacecraft to serve as a near-
Specifically, the four detectors will monitor electron precipitation in the energy range 1-100 keV. Two of the Geiger counters will have threshold energies for electrons of 60 keV and be set at different angles in order to give a measure of the angular distribution of the precipitating electrons. The remaining Geiger counter will have a threshold energy of 100 keV. The electron spectrometer will yield both energy spectra and angular distribution of precipitated electrons of 1-25 keV so that a distribution function can be formed for these particles. The modulations imparted on particles, as a result of wave-particle interactions in the magnetosphere on auroral field lines, will be observed by a Particle Correlator Experiment.

2) EARTH IMAGING EXPERIMENT
The Imaging Experiment carried by UoSAT-1 generated a great deal of widespread interest and stimulated many varied studies concerned with low-cost data reception, demodulation, image processing and display. An improved version of the charge-coupled-device imaging experiment will be flown on UoSAT-B. Short time exposures of earth will be gathered by the imager, stored within an on-board memory and transmitted down to very low-cost groundstations using easily received and demodulated transmission formats. The data can be transmitted by the spacecraft either immediately, repeatedly or at a later time upon ground command. A specific application of the Earth Imaging Experiment will be to broaden the base of the near-earth magnetospheric studies by recording the luminosity of the aurora, and thereby a measure of electron precipitation, over a region extending for approx 800 km on both sides of the satellite ground track. The intensity and structure of aurora will be particularly valuable in assessing the state of magnetospheric activity and of interest to radio amateur propagation studies.

3) SYNTHESISED SPEECH EXPERIMENT
The ‘Digitalker’ synthesised speech telemetry experiment on UoSAT-1 has been extremely successful — not only with schools and radio amateurs, but also as a valuable operational facility. A second experiment with an expanded vocabulary more suited to spacecraft telemetry and news bulletins will be included on UoSAT-B to develop this unique experiment further.

4) PACKET COMMUNICATIONS EXPERIMENT
A store-and-forward digital communications experiment using packet transmission techniques will be included on UoSAT-B to demonstrate the feasibility of, and to study the characteristics of a global PACSAT communications network based on simple, low-cost radio amateur stations. The experiment will possess a 96 k-byte CMOS random-access memory on board the spacecraft under computer control which will retain data and communications relayed to the spacecraft from a large number of ground stations using packet communications techniques complete with a hierarchy of ‘addresses’. Each radio amateur station will be able to load data/messages into the experiment and collect any data/messages previously deposesited there for him using simple 300,1200 or 9600 BPS AF SKM or PSK techniques with low transmit power and relatively simple receiving facilities. The results from these experiments will be invaluable in the planning and design of a future mission aimed at providing a comprehensive packet communications spacecraft — eg PACSAT.

SPACECRAFT SYSTEMS EXPERIMENTS
The UoSAT-B spacecraft will carry a number of systems experiments alongside those described above. These system experiments are concerned with developing an improved, cost-effective spacecraft bus and experiment support facility for future amateur low-earth orbit missions — with special emphasis on low-cost Get-Away-Special (GAS) payloads on the Shuttle.
Well our main news for this month is of course our Contest No 3 on the 12th November. Rules for the contest are printed on page 50 of September AR and also on contest page in ARA issued September 1983. So please look them up and join us on the suggested frequencies; and YLs remember starting from this year a trophy is to be awarded to the highest score over a five year period. So we look forward to talking to all our regulars on the contest and also to meeting new friends. Look for us VK3DYF the club station.

Joan VK3NLO game me the following YLs she met at Nunawading in September. Gwen VK3DYL, Mavis VK3KS, Margaret VK3NMD, Kim VK3CYL, also there were Mavis VK3BIR and Jessie VK3VAN.

Joan is now Awards Manager for the Bendigo Premier Town Award and is busy with this.

LIST OF MEMBERS as at 9.9.1983

| JKING | Natelle | 13. 5.83 | (VK3DYL, VK3DYL) |
| VK3AHD | Margaret | 27. 9.80 | (VK3VU0, VK2KES) |
| VK2DJO | Joyce | 20. 8.75 | (VK3AGM/2) |
| VK2DLD | Elwyn | 24. 8.70 | (VK3AGM) |
| VK2DQG | Margaret | 20. 3.82 | (VK2VY) |
| VK2DVL | Beryl | 11. 8.79 | (VK2KVG) |
| VK2E2X | Joy | 25. 1.80 | (VK2KVG) |
| VK2H2D | Heather | 22. 1.76 | (VK2KVG) |
| VK2M1 | Joyce | 5. 1.76 | (VK2KVG) |
| VK2M2 | Verle | 4. 1.76 | (VK2KVG) |
| VK2NKN | Maree | 6. 1.76 | (VK2KVG) |
| VK2NQI | Geraldine | 14. 7.79 | (VK2KVG) |
| VK2NSQ | Dorothy | 17. 8.79 | (VK2KVG) |
| VK2VYL | Betty | 9. 8.79 | (VK2KVG) |
| VK2PAW | Kathleen | 10. 8.79 | (VK2KVG) |
| VK2PLG | Susan | 15. 8.79 | (VK2KVG) |
| VK2PSI | Suzanne | 20. 1.79 | (VK2KVG) |
| VK2SSU | Freda | 26. 7.80 | (VK2KVG) |
| VK2QDK | Wendy | 20. 3.82 | (VK2KVG) |
| Bobbie O'Hare | | 6. 10.77 | |
| VK3AGQ | Lorrie | 6. 5.79 | (VK3VU0) |
| VK3AYL | Rasie | 20. 4.76 | (VK3VU0) |
| VK3BBL | Irma | 9. 8.79 | (VK3VU0) |
| VK3BIR | Mavis | 23. 8.75 | (VK3VU0) |
| VK3BJS | Joan | 2. 8.76 | (VK3VU0) |
| VK3BR4 | Mona | 1. 9.76 | (VK3VU0) |
| VK3BTU | Janet | 1. 9.76 | (VK3VU0) |
| VK3DML | Margaret | 8. 8.77 | (VK3VU0) |
| VK3DNS | Marilyn | 24. 8.77 | (VK3VU0) |
| VK3DYL | Gwen | 20. 8.81 | (VK3VU0) |
| VK3DVT | Valda | 25. 8.71 | (VK3VU0) |
| VK3HDO | Marjorie | 3. 8.71 | (VK3VU0) |
| VK3KS | Mavis | 22. 8.75 | (VK3VU0) |
| VK3NLD | Joan | 10. 8.71 | (VK3VU0) |
| VK3NMM | Nita | 17. 7.76 | (VK3VU0) |
| VK3NDO | Bron | 6. 1.76 | (VK3VU0) |
| VK3NJO | Margaret | 25. 3.81 | (VK3VU0) |
| VK3P9 | Bonnie | 11. 5.83 | (VK3VU0) |
| VK3PEH | Dale | 26. 4.83 | (VK3VU0) |
| VK3JHE | Clarene | 29. 7.76 | (VK3VU0) |
| VK3XAN | Jessie | 15. 1.76 | (VK3VU0) |
| VK3VBK | Joyce | 17. 8.76 | (VK3VU0) |
| VK3YLY | Austine | 5. 8.76 | (VK3VU0) |
| Kate Duncan | | 11. 8.75 | |
| Rita YF/VK3NJB | | 26. 5.83 | |
| Raedi YF/VK3BHL | | 16. 11.76 | |
| Bronwyn YF/VK3BFP | | 2. 10.80 | |
| Muriel YF/VK3ZVY | | 9. 7.79 | |

NEW CALLSIGNS

Congratulations to Dulcie VK4BDH formerly VK4VAX and also good to meet you on the net last night for the first time. Congratulations also to Judy VK3ANQ formerly VK3VPG, isn't it a lovely feeling to know all that study is over and it was all worth while.

Poppy VK8YF passed on to us last night on the net to look for a new YL, Alison VK8VC who will be on air soon. Alison is from California and we do hope to meet you soon and welcome you to Australia.

Joy VK2EBX recently won a poetry competition, congratulations to you Joy.

Plans are being made to hold a get-together of ALARA members and OMs at Mildura next September and a number of girls are hoping to get to VK3 land for the weekend. Further details as they are available.

NEW MEMBER

Welcome to Cecily VK4QW, previous calls VK4VAC and 4KCG, it was good to hear you on the ALARA net last night.

LIST OF MEMBERS

JOINING DATE

| VK3AGM | 6. 5.79 |
| VK3AYL | 20. 4.76 |
| VK3BBL | 9. 8.79 |
| VK3BIR | 23. 8.75 |
| VK3BJS | 2. 8.76 |
| VK3BR4 | 1. 9.76 |
| VK3BTU | 1. 9.76 |
| VK3DML | 8. 8.77 |
| VK3DNS | 24. 8.77 |
| VK3DYL | 20. 8.71 |
| VK3DVT | 25. 8.71 |
| VK3HDO | 3. 8.71 |
| VK3KS | 22. 8.75 |
| VK3NLD | 10. 8.71 |
| VK3NMM | 17. 7.76 |
| VK3NDO | 6. 1.76 |
| VK3NJO | 25. 3.81 |
| VK3P9 | 11. 5.83 |
| VK3PEH | 26. 4.83 |
| VK3JHE | 29. 7.76 |
| VK3XAN | 15. 1.76 |
| VK3VBK | 17. 8.76 |
| VK3YLY | 5. 8.76 |
| Kate Duncan | 11. 8.75 |
| Rita YF/VK3NJB | 26. 5.83 |
| Raedi YF/VK3BHL | 16. 11.76 |
| Bronwyn YF/VK3BFP | 2. 10.80 |
| Muriel YF/VK3ZVY | 9. 7.79 |

OVERSEAS MEMBERS

| DK1LV | Christel | 11. 12.82 |
| DF2SL | Anny | 2. 10.76 |

SPONSORED BY

Margaret Loft, VK3DML
28 Lawrence Street, Castlemaine, Vic 3450
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VK2BRC  Ross  2.5.83
VK3NTR  Jack  6.11.82

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SEE YOU SOON
CONTESTS
Reg Dwyer, VK1BR
FEDERAL CONTEST MANAGER
P O Box 236, Jamison, ACT 2614.

NOVEMBER
5-6 YLRL Anniversary Phone Party
5-6 ARRL CW Sweepstakes
6 Czechoslovakian Contest
12-13 DARC WAE RTTY Contest
19-20 ALARA Contest
19-20 VK CW ORPp Versus the World CW Test
26-27 CQ WW DX CW Test

DECEMBER
3-7 ARRL 160 metre Contest
3 Ross Hull Memorial VHF Contest start
10-11 ARRL 10 Metre Phone Test

All tests marked with *** are not yet confirmed...

RULES FOR VK CW QRPp VERSUS
THE WORLD TEST
Note:
This is a reprint of the contest rules for 1982 as I have not received any new rules for the contest this year. I therefore assume that the contest for 1983 will largely be the same as the 1982 contest and now reprint these contest rules for your general assistance.

Sponsored by the VK CW ORPp CLUB (Member of the WORLD QRP FEDERATION) this contest is directed to all CW enthusiasts WORLD-WIDE who elect to tackle that extra challenge! Contestants may work DX or OWN COUNTRY for scoring!

QRO stations are invited to participate but must submit contest logs with ORP stations only to qualify for the ORP section of the contest. ORP stations must sign ... "QRP" ... for identification.

DATES - Saturday 19 November and Sunday 20 November 1983.
DURATION - Total of 48 hours (0000UTC 19 November to 2400UTC 20 November).
MODE - CW ONLY.
CONTEST CALL - "CQ ORP TEST".
BANDS - 160m-10m (WARC BANDS NOT ALLOWED).

FEDERAL CONTEST MANAGER
PO BOX 109 ... MT DRUITT, NSW 2770

All entries must be in the hands of the Contest Manager not later than end-January 1984. Results will be available by end-February 1984 and posted to non-member contestants for 1 IRC (DX stations) or a 30-cent postage stamp (VK stations).

GRAND TOTAL SCORE = Total points from all bands x Total multipliers from all bands (x Bonus Score).

All entries have a FRONT SUMMARY SHEET showing: Calculation of Grand Total Score; Name and Address; Callsign; Signature and Declaration ... "I certify that all entries in my contest log sheets are true and honest."

Entrants are requested to include a brief description of station equipment and any comments/suggestions. Field stations are requested to include a brief description of operations/location/conditions etc.

CERTIFICATES - To the ORP Single Operator and Multi-Operator in each Country with the highest Grand Total Score in each section. To the QRO operator in each country with the highest Grand Total Score in each section. To the highest scoring VK CW ORPp CLUB MEMBER in EACH SECTION.

CONTEST ENTRIES TO BE ADDRESSED TO:
CONTEST MANAGER ... VK CW ORPp CLUB
P O BOX 109 ... MT DRUITT, NSW 2770 AUSTRALIA.

All entries must be in the hands of the Contest Manager not later than end-January 1984. Results will be available by end-February 1984 and posted to non-member contestants for 1 IRC (DX stations) or a 30-cent postage stamp (VK stations).

RULES FOR ROSS HULL MEMORIAL
CONTEST
Note:
The recent approval of the LIMITED use of the 50 to 50:15 MHz band can and does pose some awkward problems for the amateur with the proviso for operation in this segment without interference with Channel O.

This point is clearly stated in a letter from Eric VK5LP to me where he makes the following points:

The use of the band for the next twelve months at least is on a conditional basis that amateurs cause no interference to Channel O. If contacts there are counted in the Contest there is every chance someone, somewhere will transmit during Channel O hours and cause interference, and thereby making it so much more difficult for us to widen the use of the band in due course. Es contacts are quite satisfactory on 52 MHz and we need to keep using that portion in the future in parallel with 50 MHz.

I see the major advantage of having 50 MHz is that it gives us a section of the band compatible with much of the outside world, and gives us a means to share in long distance DX contacts. If 50 MHz is cluttered up with hoards of VK stations during Es openings then there will be little opportunity for DX to be heard in many areas, particularly away from the eastern seaboard areas. The overseas calling frequency is 50.110 MHz and we want to keep it free from much of the QRM associated with Es contacts during a Contest.

Perhaps of less concern, but one which is mentioned is that VK6 can use 50 MHz at any time to the disadvantage of other States. They can also cause Channel O QRM at times of high Es activity, and it will be more desirable to have them up with the rest of VK than on 50 MHz and thus overcome too much fragmentation of the use of the six metre band.

With these very valid points in mind all six metre contest activity will be restricted to the 52-5MHz section of the band.

OBJECTS - Australian amateurs will endeavour to contact as many other amateurs as possible. Entrants must operate within the terms of their licences.

PERIOD - 0001 UTC 3 December 1983 to 2400 UTC 8 January 1984.
EXCHANGE - RS(T) plus a three figure serial number starting at 001 and increasing by one for each contact. When 999 is reached a start is made again from 001.

BANDS - All amateur bands above 30 MHz, however cross band contacts are not permitted. Operation via active repeaters and translators is not allowed.

OPERATOR - Single operator only. One transmission only at one time.

CONTACTS - Two contacts per UTC day per band with each station providing 10 hours have elapsed since the previous contact.

DURATION - (a) 7 UTC days - not necessarily consecutive, (b) 2 UTC days consecutive.

SECTIONS - (1) Phone (AM, FM, SSB, ATV and SSTV). (2) CW (CW and RTTY). (3) Receiving (any mode).

LOG SHEET - It is desirable that complete logs for the whole contest be submitted for checking purposes: photo copies are very acceptable. The following details must be shown: Time UTC, Band, Emission, S worked, Tx exchange, Rx exchange, Points. Bonus. Each page must be totalled at the bottom.

FRONT SHEET - A front sheet must be attached showing the following information in this order: Section, callsign, list of 7 best UTC contacts.
daily total plus 7. day total, list of best 2 UTC
days with daily score and day multiplier,
daily total plus 2 day total, name and postal
address.

SCORING TABLE — AUSTRALIA

SCORING TABLE — Overseas Stations: 52 MHz

MULTIPLIER — All stations shall multiply the

SPECIAL VK6 BONUS — Note: No bonus for VK6

stations.

MULTIPLIER — All stations shall multiply the

UTC day score, including the Bonus (a) and

by the number of bands used for scoring
during that day.

SCORING TABLE — Overseas Stations: 52 MHz

— fifty points; 144 MHz — 100 points; 432 MHz

— 200 points. For contacts with

Awards — A perpetual trophy is awarded

annually for competition between members

of the Wireless Institute of Australia. The

winner's name is inscribed on the trophy and

he receives a suitable certificate. The entrant

with the highest score in either the 7 day or
day division will be the winner and his

division will hold the trophy for one year.

Certificates will be awarded to the highest

score in both the 7 day and the 2 day
divisions. A winner of a 7 day certificate

cannot be awarded a 2 day one as well.

Overseas entrants will be awarded certi-

ficates on the same basis, one for each call

area.

SUBMISSION OF LOGS — Entries are to be sent to

the FCM, Box 236, Jamison, ACT, and

received no later than 20th February, 1984

and endorsed 'Ross Hull Memorial Contest'.

RECEIVING SECTION — Logs must show the

same information as a transmitting log

except for the second number exchanged.

If both stations are heard both can be claimed

but on separate lines of the log. Scoring will

be as for a transmitting log. Any scoring

contacts can be logged, there is no limit to

the number of times that one station can be

logged. The decision of the FCM is final and

correspondence will not be entered into.

SPECIAL NOTES

After a number of reports from the entrants

of the 1982/83 contest and the exerted effort

put in by the more interested of these

amateurs to expand the transmitting capa-

bilities of their stations together with the

concern shown by the majority of the

VHF/UHF enthusiasts to this non-event

contest, the following alterations have been

made to the rules of the contest to even the

battle and to reward the entrants for their

efforts in a way more fitting than the method

now used.

POINTS MADE

If a VK3 makes the initial contact with a VK6

then the VK6 gains twice the points that the

VK3 gains. The contest promotes additional effort

to use the more unused frequencies, however

the short hop contact at SHF although a

challenge on QRP power earns the VK6 twice

the points that all other states earn for the

same effort.

Very few 6 metre openings were found

during the last contest and contacts from

Adelaide and VK6's in Albany is a regular

event, again the VK6's scoring twice.

Some additional incentive for double hop

sporadic E's over 2500 kms.

State normalising factor for all states to

compete on an even footing.

Minimum of ten (10) hours should take

precedence over the change of UTC day.

Awards for the top scorer in each state.

With these points in mind, and many of

them made by the VK6's themselves, these

changes are made and your comments on

their effectiveness is sought.

1. To even the scoring, the double points for

VK6 stations will be deleted. Although this

seems to be a rather harsh overkill of the

situation, the results from the past two

years show that the wins by the current

trophy holder are in the region of twice the

scores of the other average contestants.

This may work against the VK6's in as much

as the lack of amateurs in the near regions

when compared to the eastern states

however the opportunity for the increased

range of bands still applies to all to amplify

their score.

2. To allow for the user of the 6 metre 52-54

MHz section of the band and to cover the

additional difficulty of 2nd hop sporadic

E's, the points score will be increased to

include a long distance inter Australia points

score. (See last line of scoring table.)

3. CONTACTS. The 10 hour rule will take

precedence over the change of the UTC

day. Example: contact # 23 time 2330

15-DEC...VK1AXX; contact # 24 time

0030 16-DEC...VK1AXX. NOT VALID.

TEN HOURS MUST ELAPSE BETWEEN

CONTACTS.

4. AWARDS. The awards of certificate to the

highest scorer in the seven and two day

divisions. A winner of a 7 day certificate

cannot be awarded a 2 day one as well.

Overseas entrants will be awarded certi-

ficates on the same basis, one for each call

area.

The existing certificate looks like the

sample below.

Have you any thoughts for the new certi-

ficate, if so, send the design to me for pricing

and suitability.

Congratulations to Ross and to all the other

state winners on your efforts.

NOVICE CONTEST CERTIFICATE DESIGN

The VK Novice Contest ex Westlakes Radio

Club Contest, needs new certificates to be

designed.

SAFETY BELTS

All the folderol and a considerable amount

of balderdash about using safety belts when

climbing the tower is a complete waste of

time. Anyone with an ounce of brain will tell

you that by the time you lace up the harness

and strap the belt on your body you can be

up the tower and back down! If anyone would

like further info on the folly of safety belts you

can drop me a line at this address: R F

Inshack, Memorial Hospital, 7388 Traction

Road, Brokentutu, Pennsyltucky. — Tamiami

ARC, Venice, Florida.

from QST, June 1983

AMATEUR RADIO, November 1983 — Page 59
In an earlier article, you may remember how I got a job with the Sydney Daily Telegraph about 1941, as a copyboy in the main Castlereagh Street Office, and at the receiving station at Cammeray which was raided when the authorities went hunting for a non-existent transmitter. I thought that before I pass on to other matters, you might like to know more about my experiences at that time.

I was in the main office on the night when news came through about the bombing of Pearl Harbor, and the beginning of America's entry into the war. At this time I was working mainly at the receiving station, yet doing part-time work as copyboy in Castlereagh Street. It was a Sunday night, as I remember, and Roy Philips was on duty at Cammeray. He was due to pick up San Francisco's KGEI at about 9 pm, according to the log book, but the transmitter had gone off the air. Roy was told to keep monitoring and put San Francisco through to Castlereagh Street as soon as he heard it. Some hours passed and when KGEI did come back on air it was to announce that Pearl Harbour had been bombed. This news threw the office into confusion, and instead of the normal three editions going to press, as I can remember seven editions were on the streets as the follow-up news came through.

I was also on duty in Castlereagh Street on the night Japanese submarines got into Sydney Harbour and did much damage. The office staff had been doing an extensive air raid drill and the employees on each floor knew where to assemble and not to use the telephones. In fact, we became pretty good at those air raid precautions, so we were not expecting an attack from beneath the Harbour. On this particular night, I had been summoned to the subs office and given some copy to take down to the printers. Normally I would have gone in the lift, but it wasn’t operating this night so I took the stairway. As I reached the landing midway between floors, I thought I could hear the scream of a distant air raid siren, so I paused near a window to listen. Suddenly a siren located on a floor above sprang to life and made me jump about six feet. I raced up the stairs and found the editorial floor in utter confusion.

Lights had been doused and people were racing for candles and torches — that is, when they weren’t stumbling over each other in the inky blackness. Many, including myself raced for the nearest available telephone — despite the fact that we had been so well rehearsed not to do so.

I phoned my mother at Ryde to find out what was doing in that suburb. “Your father has gone out with his Air Raid Warden’s gear to check that everybody has got their lights out” she said. (Dad was a Sydney tram conductor who took his Air Raid Warden’s job very seriously.) Mum then asked me what I was going to do. I said that I thought that I had better not leave the newspaper office as it might not be safe to do so in view of the air raid warning that was coming. I told her that I would sleep in the office — that is if I could manage to get to sleep amongst the general pandemonium.

As time passed and no bombs appeared to be exploding, it became clear that something else was happening and it was not long before we found out. Off duty reporters living in harbourside suburbs began ringing in with stories of damage that had been done by the torpedoed submarines. At the time of the first alert, the Newcastle edition which was normally the first off the presses was halted and Brian Penton, who was editor that night, said “This is not going to stop us printing — get those presses rolling again as soon as possible” (Brian Penton later achieved fame with a book called “Advance Australia Where?”)

The Cammeray radio receiving station was of vital importance to the Telegraph at that time. Yet officially, it was not supposed to exist, and I found that out one day when I sought permission to write an article about the station for the staff paper called “Telegus”. (“Telegus was the cable address of the Telegraph”) I was not permitted to write about the station for the staff paper called “Telegus”. If we had been forced to rely on radio for vital news, I sought permission to write an article about the station for the staff paper called “Telegus.”

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Lights had been doused and people were racing for candles and torches — that is, when they weren’t stumbling over each other in the inky blackness. Many, including myself raced for the nearest available telephone — despite the fact that we had been so well rehearsed not to do so.

I phoned my mother at Ryde to find out what was doing in that suburb. “Your father has gone out with his Air Raid Warden’s gear to check that everybody has got their lights out” she said. (Dad was a Sydney tram conductor who took his Air Raid Warden’s job very seriously.) Mum then asked me what I was going to do. I said that I thought that I had better not leave the newspaper office as it might not be safe to do so in view of the air raid warning that was coming. I told her that I would sleep in the office — that is if I could manage to get to sleep amongst the general pandemonium.

As time passed and no bombs appeared to be exploding, it became clear that something else was happening and it was not long before we found out. Off duty reporters living in harbourside suburbs began ringing in with stories of damage that had been done by the torpedoed submarines. At the time of the first alert, the Newcastle edition which was normally the first off the presses was halted and Brian Penton, who was editor that night, said “This is not going to stop us printing — get those presses rolling again as soon as possible” (Brian Penton later achieved fame with a book called “Advance Australia Where?”)

The Cammeray radio receiving station was of vital importance to the Telegraph at that time. Yet officially, it was not supposed to exist, and I found that out one day when I sought permission to write an article about the station for the staff paper called “Telegus”. (“Telegus was the cable address of the Telegraph”) I was not permitted to write about the station for the staff paper called “Telegus.”
COPY OFF AIR

The best way to learn is to do; the best way to increase your CW copying ability is to copy off air. The Wireless Institute of Australia sponsors slow CW broadcasts every night of the week on 3.550 MHz (NSW at 0930 UTC, SA at 1030 UTC) but I have no information about WA or Qld Divisional Morse Practice. Could someone from those divisions please advise? I would also be very grateful for any information about other services which provide useful practice. Possibilities would be W1AW from the USA, maritime coast stations, commercial and military. Times and frequencies and a description of material to the above address, please — don’t keep it to yourself!

INCREASING YOUR SPEED

Last month we talked about learning the Morse Code, so this month we will assume that you know the code and want to increase your speed — either to pass an examination or to improve your CW operating capabilities. Of the two, the latter motive is the better, because if you are trying to improve your copying ability you are at the same time preparing yourself for the exam; but if your only goal is to pass an examination, you have set too low a target.

There is something like a “sound barrier” in learning Morse Code. 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 8-10 WPM and are convinced they cannot go any further.

This is because there are two basic ways a person can copy code. 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 a list of coded meanings — once the meaning has been recognised, an order goes back to the person to person in the range of about 8 to 15 WPM. Once you reach this barrier you cannot improve your speed without going on to the other way of copying, which is character recognition.

With character recognition, there is no process of translating between the two hemispheres of the brain. Each sound is recognised for what it is, and the hand writes the character without any conscious thought process involved. This is very much the same procedure as with a foreign language. When you are first learning the language, you translate everything as you go, but as you improve your ability, you find 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 to foreign languages a step further, it has been known for years that if a person begins to learn early enough, by intensive exposure to a foreign language, the chances of his becoming fluent are much greater. This applies equally to learning the code, and if you learn by identifying sounds, rather than counting dots and dashes, the transition to higher speeds is much easier.

It is worth noting that some people cannot get over the hump, no matter how hard they try. Quite often these people suffer (unknowingly) from a mild form of “dyslexia”. Dyslexia is a reading dysfunction characterised by mental transposition of characters, and as you might imagine it can present severe problems in learning code. It can exist in varying degrees, and a person who has never suspected he is dyslexic can suddenly find an insurmountable obstacle when trying to copy code at 10 WPM.

Anybody can learn the code, and anybody can pass the 5 WPM exam (given enough practice). But some people simply cannot pass the 10 WPM exam because it is beyond the barrier. These people would be very rare, I’m sure, but asking them to pass the exam is a bit like asking a blind man to sort resistors by means of the colour code — a bit unfair.

The key to improving your speed is to practice with characters sent at a much higher speed than the speed at which you can copy 100%. If you can afford the AEA Morse Trainer BT1, which starts you off with a character speed of 18 WPM with three second pauses between characters, you are “home studying”. Follow the instructions and you will be a 20 WPM man in no time.

If the technology isn’t available, you will have to make do with what is available on the bands, and you will note that I have asked for more information which will be published as it comes to hand. The WIA broadcasts are excellent, but their primary objective is to get people through exams, so they mostly don’t go beyond about 12 WPM or so.

Listen to the real brass-pounders on 20 metres. They may be going way too fast for you, but if you concentrate on identifying the odd character, you soon find that you are starting to get more of it.

Practice with the Japanese stations on 15 metres. Call CQ a bit faster than you can copy, and ask for repeats when necessary. A lot is said off air about Japanese domination of HF, but we could do a lot worse. As a group, they are the most polite and helpful operators on the air.

Enter a CW contest. You will have to listen to calls and numbers several times at the beginning, but a few hours later you will be picking them up fine.

And one last hint — throw the microphone away. Well, not literally, but 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 I can sometimes go for a whole week without touching the microphone. To get your speed up you need practice, and to keep it up you need self-discipline. Keep at it, and you’ll get there — if you follow all these hints religiously you will be a top operator in next to no time.

33 till next month.

ZL2JAM

TENTH NEW ZEALAND SCOUT JAMBOREE AMATEUR RADIO STATION

The tenth New Zealand Scout Jamboree will be held at Fielding (about ninety miles north of Wellington) from the 2nd to the 10th of January 1984. About 10 000 Scouts and

leaders including many from Australia, the Pacific Islands and other countries will be camping together under canvas.

A wide range of radio, electronics and computer activities are planned for the Scouts. Not only will there be an amateur radio station (with, it is hoped, RTTY, SSTV, and OSCAR capability), but also a short wave receiving station for SWLs, a kitset radio construction project, fox hunting (radio orienteering), and even a computer system for the Scouts to gain hands-on computer learning experience. A triple screen audio-visual presentation will show how radio and electronics activities can be incorporated into the Scout programme.

There will also be a wide range of other activities offered to the Scouts for them to enjoy at this ‘Jamboree of Discovery’. They will discover new friends, new interests, and new concepts in Scouting.

Listen for ZL2JAM on the ‘international’ Scout frequencies of 3.740, 3.940, 7.090, 7.290, 14.250, 21.360 and 28.990 MHz plus minus to allow for QRM.

Jim Parnell ZL2APE

AMATEUR RADIO, November 1983 — Page 61
COMMUNICATIONS EXPO 83

It was promoted as the largest public WCY event in Victoria (and possibly Australia) and lived up to all expectations.

At the Nunawading Civic Centre on 3 September, it was organised by a special committee of the Eastern and Mountain District Radio Club headed by Jack O’Shannassy VK3SP which put six months hard work into planning and organising the event.

The committee with WCY in mind wanted more than just a Hamfest and made it attractive to the general public — the name Communications Expo 83 helped achieve this aim. There were traditional Hamfest activities — foxhunts, trade displays, valve and spoon races, guess the frequencies of helical whips, Morse code reading contest, home-brew competition, flea market, etc.

Five competitions were grouped into a pentathlon with the highest aggregate scorer being Daryl Hertg VK3AKC.

The much heralded Tug O War between radio amateurs and CB operators (Omega Club) saw the CBers win — but the amateurs and Omega Club members enjoyed the get together resulting in a closer relationship being cemented.

The Omega Club had also spread the word about Comexpo and their efforts meant CBers hearing talk on the CB bands coming along to see what it was all about.

Some CBers wanted to study for the Novice licence and were effectively given advice on how to go about becoming a radio amateur.

Comexpo drew a large number of amateurs from throughout Victoria with the trade displayers writing up to $10,000 worth of business.

Among the other commercial displays were Telecom, Hewlett Packard computers, and Tara Systems the phone-patch firm.

The State Emergency Service had a wide-eyed audience when it cut open a car in a simulated rescue — St John Ambulance Brigade displayed its communications bus — and the CFA and Forest Commission were well represented.

Like the CBers, emergency service personnel wandered around and learnt about the various aspects of amateur radio.

The general public had been attracted by newspaper, television and radio publicity.

Some people also had only arrived to visit the Nunawading Library — but got the bonus of a communications display.

They questioned those manning the various attractions — the special station VK3WCY and the RTTY exhibition run by the Victorian Radio Amateur Group were extremely popular.

The ATV show put on by Peter Cossens VK3BFG attracted considerable attention, and the DX Australia Shortwave Listener Group explained SWLing, and the Army display communications gear.

Eastern Suburban Scouts did a marvellous job providing refreshments for the crowd of more than 4000.

It’s not practical to mention all of the groups which went to make up Comexpo — but also a Public Relations Exercise for our hobby.

ANARTS

On Tuesday evening, 6th September, the Australian National Amateur Radio Teletype Society had the honour to be host to Mr R Butler, Secretary General to the International Telecommunications Union.

Mr Butler was in Sydney primarily to attend the IREX convention, but he also took the opportunity to meet the committee and guests of ANARTS at a dinner at the Sebel Town House, where he donated and presented the trophies for the ANARTS World Communications Year 1983 RTTY Contest. Mr Butler congratulated ANARTS on their achievements in the International World of Radio Teletype Transmissions, he also pointed out that ANARTS were now one of the leading societies in the world in the field of radio teletype. In his address at the dinner Mr Butler said “Today I am very proud to be invited to honour the winners of the International Radioteletype Contest organised by the Australian National Amateur Radio Teletype Society. Your operation and experience on the narrow and well used frequency bands allocated by ITU Administrative Radio Conferences have made it possible that the amateur service has managed to achieve an overall record of innovation, growth and development. You do not measure your services by volume of traffic, gross revenue, or audience — but simply how well you have served humanity. The amateur radio fraternity is unlike any other social group in the world. It constitutes an ideal example of how people and nations can live together. It makes no distinctions as to race, creed, or colour, political ideology, national origin, male or female, child or adult, healthy or handicapped, professional or unskilled, well-known politician or citizen, king or peasant, missionaries or agnostics.”

Other guests at the dinner were Merek Joachim OK1WI consulting engineer to the Ministry of Communications in Czechoslovakia, and Pierce Healy VK2APQ.

TOWNSVILLE AMATEUR RADIO CLUB

Aspiring amateur radio operators should find studying for their licence a little easier with the assistance of amateurs from Townsville and Charters Towers who recently took part in an education seminar. The Townsville Amateur Radio Club, in conjunction with the WIA(Q), arranged the two-day course for intending instructors.

Oakey High School science teacher Ron Smith VK4AGS was flown to Townsville especially for the course, and conveyed much valuable information on how best to pass on skills and knowledge to beginners. The photo shows Ron, left, instructing Bob Mann VK4WJ in the finer points of preparing overhead transparencies.

Peter Renton, VK4PV
PUBLICITY OFFICER

(A photo by courtesy of Townsville Daily Bulletin)

A DAY OF DISAPPOINTMENT

Whilst clubs with large numbers of members can, and do, organise large scale commemorative events for special occasions, one must remember the smaller clubs and appreciate their contributions to such celebrations. One such “small club” is the Western Suburbs Radio Club in Melbourne.

The Club was inaugurated on the 21st November, 1969, with the formation of a four-man committee. On the 20th February, 1970,
The mountain's name was inspired by the 50 km north east of Melbourne 'as the crow flies', but around 70 km north east by road east of Melbourne for the drive to Mount Disappointment, which stands 855.98 metres (2810 feet for OT's) above sea level, Mick VK3PFL operating 10 metres using his FT101E and a long wire.

in the small town of Whittlesea, 50 km north of Melbourne 'as the crow flies', but around 70 km north east by road. The mountain's name was inspired by the legendary explorers, Burke and Wills. Three days after leaving Melbourne with supplies, Burke and Wills camped at Mount Disappointment. It was their belief that on the north east side of the mountain lay a large inland lake, and it was their intention to find it. All efforts to find the lake failed, primarily because the lake did not exist. In frustration the mountain was named 'Disappointment'. Had radio been invented in those days Burke and Wills might have called the mountain 'Fantastic', as it is an ideal site for portable field operations, particularly on VHF and UHF.

By 10.30 AM with radio gear unpacked, antenna erected and seating arrangements finalised, (not to mention cold weather gear on!) the first CQ from VK3AWS/P was made. The club callsign could be heard on HF using an FT101E and FT707 with a 90 m long wire/ATU combination and 15/10 m dipoles, on VHF using an IC22A and FT290R with a five element beam and quarter wave whip, and on UHF with an I64E portable and ½ wave whip. Thirty seven contacts were made during four hours of operation, not a bad effort. The Club also gained the Bendigo Premier Town award during the day, and it is hoped the Western Suburbs Radio Club reciprocate in the near future by helping Bendigo amateurs attain our Club award.

the first general meeting took place. This meeting attracted a healthy thirty two prospective members. Although named the Western Suburbs Radio Club, amateurs from all parts of Melbourne’s suburbs became members. Today the same can be said, and although club numbers have ascended and descended over the years, the Western Suburbs Radio Club still boasts around the same number of members as that of the first meeting years ago.

With the growing awareness of World Communications Year, and the knowledge that radio clubs throughout Australia were planning commemorative events, the Western Suburbs Radio Club decided to hold a one day portable field day.

The Field Day took place amidst glorious sunshine on Sunday, 4th September. Seventeen members, family and friends assembled in the small town of Whittlesea, 50 km north east of Melbourne for the drive to Mount Disappointment.

Mount Disappointment stands 855.98 metres (2810 feet for OT's) above sea level, 50 km north east of Melbourne ‘as the crow flies’, but around 70 km north east by road. The mountain’s name was inspired by the

Mick VK3PFL operating 10 metres using his FT101E and a long wire.

The day’s operation closed at 3.30 PM just prior to a cool change in weather, with all adjoining to the Pi-warmer for hot coffee and munchies. By general consensus it was agreed the day had been a success, and plans for a return visit made for the near future.

The Western Suburbs Radio Club operated from Mount Disappointment for many years, until pipped at the post one year, and members were pleased to return to their old stamping ground.

Gordon VK3YOD swings the 2 metre beam — then again it could be the 2 metre beam swinging Gordon!!!

One thing for amateurs is sure, operating from a location such as this is never Disappointing!!!

Photographs Mark VK3PI
Mark Stephenson, VK3PI
PUBLICITY OFFICER

JOINING OPTICAL FIBRES

A team of British Telecom engineers has developed a device, said to be the equivalent of micro-surgery, capable of joining hair-thin optical fibres with high accuracy.

Optical fibres, known as lightlines, carry telecommunications by laser light replacing many old cable communications systems.

These fibres must be precisely aligned before they can be joined, which is very difficult, particularly when working underground. The new machine is completely portable and has an accuracy of one micron (one thousandth of a millimetre).

Fibre optic cables are a fraction of the size of normal coaxial cables and have a higher capacity and greater reliability with less maintenance. They also eliminate interference and cross talk on telephone lines and need less repeaters to boost signals.

Adapted from Information Technology from Britain, August 1983

CLOSED CIRCUIT TV EXAMINES DAM WALL

The Hunter District Water Board, NSW, recently constructed a 200 metre-long dam near Newcastle and it was decided the wall of the dam should be inspected internally each year. The authority has devised a method using closed circuit TV to examine pipes, boreholes and other narrow channels.

The camera in a 51 mm diameter stainless steel case is lowered into 300 mm diameter inspection holes drilled vertically into the sloping part of the dam wall at intervals of 10 m along the whole of its length. These holes are 80 m deep and pass through the concrete structure into the natural rock on which the dam is built.

Adapted from Information Technology from Britain, August 1983.
CODE RECEIVER
The Info-Tech M-600A is a unique code receiver/ converter that will accept multiple codes from your shortwave receiver and convert these codes to a display on a video monitor or a hard copy printout on your printer.

The codes accepted by the M-600A are:
- Morse — 5-60 words per minute
- Baudot
- RTTY — 75, 110, 150, 300, 600 & 1200 Baud and TOR (SITOR) — ARQ & FEC modes.

The M-600A uses state of the art Microprocessor circuitry to let you monitor thousands of CW and RTTY signals in Marine, Commercial, Government, Military and Press services.

Simple connections to your shortwave receiver and video monitor or printer will put your system on the air in minutes for new horizons in monitoring.

Further information may be obtained from Emtronics, Box K21, Haymarket, NSW, 2000.

NEW ALL MODE TRANSCEIVER
The Yaesu FT-757GX all mode transceiver blends the finest features of late model HF transceivers into a volume smaller than any predecessor and actually simplifies the circuitry and construction, at the same time.

Features include:
- Three microprocessors,
- Dual VFOs and eight memories,
- Programmed memory scanning,
- All modes — SSB, QSK, CW, AM and FM,
- Whisper quiet cooling fan,
- Uncluttered front panel with only necessary operating controls — all presettable controls are mounted on rear panel.

All items normally sold as extras are already installed and provided as standard. These include AM, FM modes, a 600 Hz narrow CW filter, iambic keyer with dot-dash memory, 25 kHz marker generator, IF shift and width filters, noise blanker and AF speech processor.

The FT-757GX will be available from Bail Electronic Services, 38 Faithfull Street, Wangaratta, 3677, in October.

DRESS UP WITH A QSL CARD HOLDER
Now in stock are plastic QSL Card Holders which are designed to neaten up any shack.

Two card holders are supplied with each pack. Each card holder contains twenty pockets. Forty cards can be displayed neatly on the shack wall for $3 plus $1 post.

For further details contact: GFS Electronic Imports, 17 McKeon Road, (PO Box 97) Mitcham, Victoria 3132. Phone (03) 873 3939.

RX-2300-KIT
MICROWAVE DOWNCONVERTER
ASSEMBLY MANUAL

Prices:
- Manual only
- Hardware only
- Electromax only
- Complete kit

DOWNCONVERTER KIT FOR 2.3 GIGAHERTZ NOW AVAILABLE
The 2.3 GHz downconverter kit, the Model RX-2300 is designed for easy assembling and may be tuned to any 50 MHz band between 1.69 and 2.7 GHz. Interesting services included within this range are Weather Satellites, NASA's S-Band Space Shuttle Video and Audio link as well as a NASA beacon on the moon. The IF frequency is user selectable between 54 and 220 MHz.

Because use is made of a low noise microwave transistor in the RF Amplifier stage the RX-2300 exhibits an extremely good sensitivity.

All components are supplied with the kit including a comprehensive instruction manual, diecast metal case and BNC Connectors. Price of the kit is $89 plus $5 P & P.

For further information contact the distributors: GFS Electronic Imports, 17 McKeon Road, (PO Box 97) Mitcham, Victoria, 3132. Phone (03) 873 3939.
COUNCIL REPORT
Divisional Council met at Amateur Radio House on the 16th September. Eighteen applications for membership were approved. Council decided that the NSW component of the annual subscriptions would remain at $7, making the 1984 subscriptions $30 for full members, $28 for associates, $23 for students, $18 for family members and $23 for pensioners. VK2 now has the lowest rates of all the Divisions.

Council discussed a member’s suggestion that broadcasts be discontinued on 10.6 and 2 metres SSB to allow the beacons to operate continuously. It was resolved that, as there is a considerable audience to the broadcasts on these frequencies, broadcasts will continue, with the beacons being disabled during broadcast times as is the current practice. Due to technical restrictions the broadcast transceivers cannot operate simultaneously with the beacons.

Dural Officer Jeff Pages VK2BYY reported that approaches to the Department of Communications regarding interference to the Dural 2 metre repeater from a nearby paging transmitter had proved fruitless, as the noise from the transmitter was well within specifications. The paging transmitter is currently undergoing testing and is expected to go into full time service in the near future.

The effect of the interference is to cause a significant reduction in the repeater’s sensitivity, and as it is caused by wideband noise radiated from the paging transmitter there is nothing that can be done at the repeater site to alleviate the problem. Council decided to refer the matter to the Federal EMC Coordinator.

An application from the Central Coast Amateur Radio Club to change the frequency of their 2 metre repeater VK2RAG from channel 6750 to 6725 was approved for submission to the Department of Communications. A repeater application from the Liverpool and Districts Amateur Radio Club and a beacon application from the Hunter Branch Radio Group were also approved for submission to the Department.

Council appointed Vince Roberts VK2PRB as the VK2 Slow Morse Co-ordinator, replacing Ross Wilson VK2BRC who has been transferred to Canberra. Council records its appreciation for Ross’s efforts and wishes Vince well in his new position.

The divisional Librarian, Aub Topp VK2AXT, wishes to thank those members who responded to the request for books and magazines in a recent broadcast. Those who responded were VK2QL, VK2HV, VK2ZAB, VK2PJJ, VK2ZSC and two anonymous members and Council records its thanks for their contributions. The library is always looking for old books, bulletins and especially solid state devices, application notes and manuals.

EDUCATION SERVICE 1982 ACCOUNTS
These accounts have now been audited by the Division’s auditors and they state, in part, that “the accounts … are properly drawn up in accordance with the provisions of the Institute’s regulations” and that “the accounting and other records … have been properly kept in accordance with the rules of the Institute”. As at the 31st December, 1982, the Education Service Subcommittee had a balance of $35,453 and realised a surplus for 1982 of $1,577. Council feels that the expense of providing each member with a five page booklet of these accounts would be prohibitive, and advise that any member wishing a copy can either call in at the Divisional Office, write asking for them or ask on broadcast callbacks for a copy to be posted to them.

The Education Service committee members had a very successful year in 1982 supplying novice kits to prospective amateurs while writing two new publications — “Into Electronics” and “100 Basic Electronic Projects”.

CONFERENCE OF CLUBS
The 9th Conference of Clubs is being held at the Central Coast Leagues Club, Dan Drive, Gosford, on Sunday 6th November, commencing at 10 AM. Any WIA member is welcome to attend as a spectator. The Conference provides Council with valuable feedback from the large proportion of the members represented by the club delegates, and we thank the Central Coast Amateur Radio Club for providing the venue for this Conference.

SHOALHAVEN REPEATER
The Shoalhaven Amateur Radio Club has advised that it is rebuilding its repeater VK2RSD into a 496 mm rack panel to be compatible with the new building erected by Shoalhaven City Council. The club has been given sufficient rack space for both its 2 metre and 70 centimetre repeaters. To help cover the costs in providing this service the club is looking for “repeater members” at $5 per year, particularly from the many mobiles who use the repeater during the holiday periods.

Information from members and clubs for inclusion in the January Mini Bulletin should be forwarded to the Divisional Office at PO Box 1066, Parramatta, NSW 2150, to be received no later than 12th November.

73 from Jeff Pages VK2BYY

SUBS RATES AND JOINING FEES 1984

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Family Member (eg wife) without AR — deduct $12.05 from appropriate full or ass rate, except:—
ACT — $20, VIC — $15, QLD — $11, NSW — $18

Subs subject to confirmation.
The Victorian Divisional Council at a special meeting to discuss the Institute's budget for 1984 decided on a modest increase in most of the annual membership subscription rates.

Councillors examined all aspects of the WIA's financial affairs with the Divisional Treasurer Des Clarke, VK3DES giving a detailed run down on expenditure and revenue.

Australia had a wage freeze (now ended) and in line with the freeze the division did freeze its membership subscription rates for 1983.

This freeze included absorbing a $2 increase in the Federal WIA component. For those who may not know about the make up of the subscriptions — they're really two subscriptions in one. The federal component pays for AR magazine, and the various national and international responsibilities handled by the WIA's Federal Executive.

It was impossible for the VK3 division to continue the freeze and absorb another increase in the federal component — and the considerable cost increases faced by the division in 1984.

State Government taxes, charges and rates have risen, and postage went up last month.

For example the electricity bill for the Institutes' VHF/UHF repeaters alone will be $1,000 in 1984 — a 30%-35% increase on 1983.

Department of Communications licence fees will cost the division $800 — repeater licence fees have been increased 25%.

The operation of repeaters is not cheap, but they're an essential service provided by your division.

Radio amateurs who are not WIA members also use the repeaters — perhaps members could encourage those non-members to join the Institute and help pay their share of repeater costs.

Apart from operating costs which include site rentals and insurance, an allocation is made in the budget for some upgrading work on repeaters.

Another major service to members are the inward and outward QSL bureaux. Your division, unlike others, doesn't make a charge to members for each card handled.

Non-members are however charged per card they want sent overseas.

Increased postal charges make the operation of the QSL service more expensive — but at the same time it makes the QSL bureaux a valuable service for radio amateurs and SWLs.

The running of an attended office results in expenditures including wages, postage, power, telephone, office supplies, rates and insurance.

The Wireless Institute Centre is the contact point for the WIA in Victoria — both for the member, the non-member wishing to join, people wanting to enrol in the theory and Morse classes, and for those wanting to make inquiries about our hobby including government agencies and other organisations.

Volunteers man the office on weekdays to handle inquiries, book and disposals equipment sales being a major part of office activities.

The Administrative Secretary, Maxine Conheady attends the office two days a week to handle correspondence and general office duties.

A substantial allocation has been made for upgrading the Divisional Sunday Broadcast through VK3BWI — a major refurbishing of the broadcast facility has begun.

To maintain services to members in a climate of rising costs, and for necessary repeater and broadcast upgrading, the scale of subscription rates had to be changed for 1984.

A full member is now $35 (an increase of $3), associates $30 (up $2), country full $35, and country associates $30.

The student grade is $20 (unchanged from 1983), pensioner grade $23 (covers federal component only — nothing retained by division), family member remains at $15 per additional member.

Despite the subscription increases — I'm sure you'll agree they're still excellent value for money.

The full member grade for example is less than 68 cents per week. Subscription renewal notices are being sent out this month.
NORTH QUEENSLAND RADIO CONVENTION

The Townsville Amateur Radio Club staged the North Queensland Radio Convention over the weekend of 23, 24, and 25th of September at James Cook University, Townsville. Our Division President, Guy Minter was there and here is the text of Guy’s speech at the convention…

On behalf of the Wireless Institute of Australia, as Divisional President, I congratulate the Townsville Amateur Radio Club on the proud achievement of once again staging the North Queensland Radio Convention.

It is ten years since I attended your first Biennial Convention. It is indeed a proud milestone in the records of amateur radio in North Queensland, and especially of the Townsville Amateur Radio Club, that one club has been able to stage such a large function so many times, so successfully.

TARC as a club is especially fortunate to have the depth of administrative talent it has. It ensures that all the many details are handled without fuss or bother, so that all of us attending this Convention may enjoy the fruits of their labour. Now most of you attending this Convention know the excellent things that TARC has done over the years. However, a few of you may not realise what the Institute has done. The Wireless Institute of Australia was founded in 1910 and is the oldest radio society in the world. Being old does not necessarily mean it is good — look at that the Amateur Radio Service is not only as he did such a good job talking to the President, Bill Wardrop’s phone number, during normal shopping hours. Fortunately, by the time you read this it will be past but hopefully a worthwhile exercise.

SUBS DUE

By now you will probably all be aware that the 1984 Subscriptions are due and subscription notices will be posted shortly, if they have not already been. In VK5, this year, happily we did not need to raise subscription rates to increase our revenue. However, we did make some changes to bring us in line with other divisions. If you read page 43 of April 1983 Amateur Radio you will note that we are the only division that still differentiates between country and city members and that with changes in the EDP System being mooted and membership application forms being reprinted this seemed like an appropriate time to bring about these changes. We hope that the country members will not take this as a personal affront, particularly at this time when we are doing our best to improve communications between us. At the same time we have brought the Family Membership into line with some of the other States and with what it should be, which is either Full or Associate membership (depending on whether you have a callsign or not) without the cost of AR.

MORE PR

A non-amateur friend recently asked me to explain the contents of a tape which her husband had been lent by another amateur. The tape turned out to be the opening address to the RD Contest which, it was felt, they might both be interested in as they are members of an RSL Sub-group. Needless to say I was only too happy to oblige (including showing her two past copies of AR with photographs of me and the Trophy!) The conclusion of all this was that they decided that they would like someone to speak on amateur radio at one of their meetings, so, never one to miss a PR opportunity, I gave her the President, Bill Wardrop’s phone number, as he did such a good job talking to the Kiwanis.

DIARY DATES

4th-6th November Electronics Exhibition at Morphettville Racecourse.
20th November WIA Picnic at Bridgewater Oval.
22nd November WIA General meeting (subject unknown).

NO BUY AND SELL ON NOVEMBER 29th
6th December Christmas meeting — Thebarton Assembly Rooms. The speaker will be Wally Watkins VK20EW on his recent visit to the Peoples Republic of China.
IONOSPHERIC PREDICTIONS

LEGEND

- From West Australia
- From East Australia
- Better than 50% of the month, but not every day

Len Poynter VK3BYE
Predictions courtesy Department of Science and Environment IPS Sydney. All times in UTC.

Less than 50% of the month

PATHS — Unless otherwise indicated (ie LP = Long Path) all paths are Short Path.
CORAL COAST GROUP

I am writing to you to let you know about the Coral Coast Group. The Coral Coast Group which was started by Les Bell VK4LZ of Airlie Beach, Queensland on 28th September, 1967 and has been going every day without a break since. Frequency 7.060 MHz, Time 2100 UTC. The original call signs were VK40W, VK40B, VKX4Z and VK4Z2W.

During that period there have been over 600 different stations on this group with many other listeners. It is probably the longest running net in the world with Stations from New Guinea down the coast to Victoria and sometimes Tasmania and an occasional ZL.

The net has been averaging around sixteen different stations per day. Les Bell’s wife Bertha has kept all the records of the net up to date.

Les has been active in quite a few marine rescue operations and was associated with the tracking volunteers keeping all the records of the net up to date. He installed a lot of radar equipment and has an OBE.

Les Bell VK4LZ will be 80 years old in January.

GENTLEMAN’S AGREEMENT

The re-designation of the ‘CW only’ to ‘narrow Bandwidth’ on a gentleman’s agreement basis will inevitably result in a lot of friction between CW operators, and those using faster baud rates. I cannot understand why the old band plan could not have been simply ratified and made official. Traditionally, RTTY operators, and recently those using AMTOR and ASCII, have sought contacts in the grey area between the CW band and the SSB band, eg on 40 metres between about 7.035 and 7.045 MHz. This idea has worked out quite well, as it means a smaller band need be searched to find contacts.

Just where is the definition of ‘Narrow-Band’ going to come from? As the baud rate is increased, the occupied bandwidth increases also (Hartley’s law). For instance: amateurs with an interest in computers will probably want to send tapes of software to each other over bands up to 1500 baud. Such a signal would easily occupy an SSB bandwidth. It can be imagined what sort of feelings would be generated among the die-hard CW crowd down on 7.082 MHz locked in battle for some exotic station with a data signal rattling away close by!

There are indications that the popularity of CW is as great, if not greater than ever (the number of stations in the Sunday CW net prove this). Stations using the only true narrow bandwidth mode should not be penalised by having to rub shoulders with the spectrum gobbles that we may expect in the years to come. A lot more work has to be done to work out a fair band plan which actually reflects the numbers of operators and their particular interest — and such a band plan made law, not simply a ‘gentleman’s agreement’.

For instance: on 40 metres, 7.000 to 7.035 could be CW only, 7.035 to 7.045: RTTY, data etc, 7.045 and above; all modes. SSB enthusiasts may argue that CW and RTTY should not be allowed in the upper segment. It should be remembered however, that a clean telegraphy signal occupies only a fraction of the space that SSB uses, and it should not be difficult for SSB operators to avoid interference from this source. This issue of band planning is a very emotional one, and more thought and discussion must be allowed to occur before any band plan is put into force.

Drew Diamond, VK3XU
43 Bayana Crescent, Croydon, Vic 3136

GRATITUDE

I am writing this note to express my gratitude. About four years ago I passed the exam for my novice (just) and I set myself two goals, DXCC and ARRL “WAS”.

I have both of these awards now and I now realise how much help I needed and received.

Firstly to DOC for giving mugs like myself a chance in amateur radio by bringing in the novice level.

To the wonderful people manning the bureau especially VK2, you were great, ARRL were very prompt re WAS.

And last but not least the amateurs in Australia and throughout the world that helped me. I say but one word... THANKS.

Leo J Butcher, VK2VUB
128 Boyce Road
Maroubra, NSW 2035

THANKS AND APPRECIATION

On behalf of the Maryborough West State School P&C, may I extend to the many amateurs who supported our recent art unit, our thanks and appreciation.

Unfortunately none of you was successful in winning any of the prizes. All three prizes however went to local residents.

Here are the winning ticket numbers, 1st: Ticket 0663, 2nd: 1801 and 3rd: 3769.

The Micro Bee Computer prize proved very popular among amateurs. With this in mind, may I suggest the WIA could get a computer as a prize in a future competition (perhaps this competition could be associated with the payment of the 1984 WIA membership fee, where each member is given a lucky number on (prompt) payment of their 1984 dues!).

Yours faithfully
E L King, VK40A
45 Wilson Street
Maryborough, 4650

TRIBUTE TO NARA, 9M2LN

I have written the enclosed as a tribute to Nara, 9M2LN, who became a silent key on 21st July, 1983. I was wondering if, in view of the great help he has been to so many VKs, it would be possible to print it in AR magazine.

His session is now carried on most ably by Hock, 9M2FR, in the tradition that Nara started.

Yours faithfully
Joel Collin, VK2EBR
PO Box 22
Yowal, NSW 2868

TO NARA — 9M2LN

Dear Nara, this must be, to you. Our last, our sad “goodbye’. We always will remember you. Though many years go by, The key you used so expertly, Is silent evermore!
GEOMAGNETIC & SUNSPOT ACTIVITY 1983

Ap INDICES

MONTHLY | MEAN | HIGHEST DAILY

1/83 16 | 75 | 10/1
2/83 27 | 143 | 5/2
3/83 23 | 86 | 2/3
4/83 24 | 61 | 2/4
5/83 22 | 77 | 24/5
6/83 15 | 70 | 13/6
7/83 12 | 40 | 24/7

LOWEST DAILY | DAYS OVER Ap 15

3 | 6/1 | 12
5 | 1/2 | 18
3 | 27/3 | 13
8 | 11/4 | 22
5 | 26/5 | 13
3 | 4/6 | 12
4 | 11/7 | 9

PROVISIONAL MONTHLY MEAN SUNSPOT NUMBERS 1983

[HIGHEST DAILY]-[LOWEST DAILY]

1/83 85.8 | 61/6 | 55 | 3/1
2/83 50.1 | 28/2 | 10 | 14/2
3/83 66.5 | 109 | 9/3 | 12 | 13/3
4/83 27.7 | 137 | 30/4 | 36 | 5/4
5/83 100.2 | 132 | 13/5 | 60 | 31/5
6/83 90.6 | 143 | 23/6 | 59 | 30/6
7/83 82.1 | 114 | 22/7 | 40 | 28/7

QSP

AMATEUR ON FLIGHT 007

A Korean amateur, Lim Sang Ki HL1IJ was one of the crew members of the Korean airliner which was shot down on 1st Sep, 1983.

AMATEUR RADIO, November 1983 — Page 70
**FOR SALE — ACT**


ICOM IC730S 20W output esp for Novice $450. Kenwood TR7/320 FM $5290. Tandy 4 pen graphic colour printer $260. VK KHY OTHR. Ph: (062) 51 5632.

**FOR SALE — VIC**

**FOR SALE — NSW**

**FOR SALE — TAS**

ANTENNA TUNER Ten Tec 247. 1.8-30MHz, built in SWR meter, long wire, bal line, coax output. 100 W continuous 300 W peak. $110. VKKSD3 OTHR. Ph: (02) 456 1577.


COLLIN S KWM2 as new with spkr & pw supply. All factory updates plus DX processor. All manuals and bulletins. Box spare valves. $600 ONO. VK2PMA OTHR. Ph: (02) 498 8690. BH.

COLLINS KW300. Collins R930A, Robot keyboard B00. JIL SX100 scanner. Datong up converter UC-1. Tokyo Hy-Power labs HL-408B 3-30MHz amp. $787 787. BH.

COMPLETE YAESU RIG in good working order. Tcxvcr FT3010 with CW/AM filters, power supply FT3010, antenna tuner FC902, dummy load-wattmeter YP150. HyGain vertical antenna 14AVG/WB, vertical antenna mounting kit 14HM, 35 feet coax leadin cable, original manuals and boxes. Total price $1150. VK2BOA. Ph: (049) 83 8981.


FT-101 comprehensive workshop manual as new $20. 6-6.5GHz final tubes for FT-101 $9 each. 12-18VY driver tubes for FT-101 $3 each. All tubes unused. FT-101B owners manual $5. VK3KB. Ph: (03) 587 1593.


HI-250A by HyGain, triband antenna 10-15-20m. Good condition, on ground. $200. VK3BDM. Ph: 49 5160 BH.


ICOM IC-740. As new, only 6 months old. Must sell $825. Peter VK3BO/ZDV OTHR. Ph: (058) 21 6070. BH.

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SHURE 4440 duplex impedance desk mike. VGC $45. Bill VK3BO. Ph: 49 5160 BH.

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**ADVERTISERS’ INDEX**

AMATEUR RADIO ACTION .......... 8

ATN ANTENNAS 50

BAIL ELECTRONIC SERVICES 57

BC CW ELECTRONICS 57

DICK SMITH ELECTRONICS 57

EASTERN COMMUNICATION CENTRE 57

EMTRONICS 57

FQS ELECTRONIC IMPORTS 57

Germany 57

HARMAID 57

HIGH TECHNOLOGY COMPUTER SYSTEMS PTY LTD 50

HY-TECH DISTRIBUTORS 50

IAN J TRUSCOTT ELECTRONICS 57

ICOM AUSTRALIA PTY LTD 50

MICROVATURE DEVELOPMENTS 50

MICROCHIP DISTRIBUTORS 50

MICROWAVE DEVELOPMENTS 50

NOVICE LICENCE — VK2 50

OPITALUX 50

SCOTT & BRUCESMITH 50

SKYTRIM 50

TRAEGER DISTRIBUTORS (NSW) PTY LTD 50

TRIO-KENWOOD (AUST) PTY LTD 34-39

VAINS ANTENNA SERVICES PTY LTD 50

VICTORIAN INDUSTRIES 50

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**FOR SALE — ACT**

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**FOR SALE — ACT**

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HIDAKA FT-101B. Good condition, with manual & mike in original carton. Includes mod for 10MHz operation. $379 plus freight. Merv VK4Z2E OTHR. Ph: (07) 343 5061.

**FOR SALE — ACT**

YAESU FT-101E txcvr in top condition $500. Yaesu Linear FL 2100 $375. D104 crystal mike, new $75. VK4AGL OTHR. Ph: (071) 41 2315.

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Stan Roberts and Staff — VK3BSR
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FEATURES

Multi-Pin Plugs for Surplus Gear by John Hassell VK6ZGF/NXX ........................................ 28
November’s Best Photographs ................................................................. 67
Regulations & Standards for the New Radio Communications Act ..................................... 51
Reminiscing & Reality by Leo Weller VK3XY .............................................. 51
Russian for English Speaking Amateurs by Ian Forster VK3ST ........................................ 30
Square-Two Converter by Drew Diamond VK3XU ............................................. 24
Station Control Panel — Not a Weekend Project by Ivan Huser VK5GV ................................ 14

DEPARTMENTS

A word from your Editor ................................................................. 12
Advertisers Index ........................................................................ 80
ALARA ......................................................................................... 69
AMSAT Australia ........................................................................ 60
Awards — Pioneer Shire Centenary & Gold Coast ARS Award .......................................... 69
Behind the Mike & Key — F6CVR & WB3CON ........................................ 54
Club Corner ................................................................................ 70
Contests — VK2/2L QSO Party & RTTY results, Rules for 40, 75 & 160 m tests & RTTY .... 62
Education Notes ........................................................................... 69
Equipment Review — Kenwood R-2000 Receiver ...................................................... 16
Equipment Review — Parameters 7040 Digi Multimeter .................................................. 22
Five-Eighth Wave ........................................................................ 72
Hamad........................................................................................ 79
Here’s RTTY! FSK ..................................................................... 66

DRAFTING

GIL SONES* .................................................................................. VK3AUI
GEORGE BROOKS .......................................................................... LIZZ KLINE

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JOHN J A HILL ............................................................................ VK3WZ

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The Editor
PO Box 300, Caulfield South Vic. 3162

How’s DX .................................................................................... 52
International News ....................................................................... 44
Intruder Watch ............................................................................ 67
Ionospheric Predictions .............................................................. 76
Letters to the Editor ..................................................................... 74
Magazine Review ......................................................................... 49
National EMC Advisory Service .................................................. 68
Novice Notes — Build a Better Balun .............................................. 48
Obituaries — VK5MO, VK2AIS, VK2MT, VK4AO & Mrs Gene Trebilcock ............................ 79
Pounding Brass ........................................................................... 64
Presidential Comment ................................................................... 13
QSP ........................................................................................... 33, 39, 65 & 75
Service Bulletin — Modification for SX200N ........................................... 31
Silent Keys — VK2GI .................................................................... 79
Spotlight on SWLing .................................................................... 55
Thumbnails — VK4XN ................................................................... 54
Try This — The Microwave Oven Test by John Hassell VK6ZGF/NXX ................................. 21
VHF UHF — an expanding world ..................................................... 56
VK2 Mini Bulletin ........................................................................ 72
VK4 WIA Notes ........................................................................... 73
Who is this Amateur? .................................................................. 19
WIA News .................................................................................... 12

WICEN News — Report on Disaster Communications Study ............................................. 65

DEADLINE

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- CVR-2 CONVERTER
  allows your SX-200 to cover the SHORT WAVE bands, 0.55 to 30 MHz
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- Send and receive ASCII, Baudot, and Morse code.
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- RTTY speeds of 45, 50, 67, 74, 110, and 300 Baud.
- High or low RTTY tones.
- Send and receive CW at 3 to 40 WPM.
- 5 inch green CRT display.
- Four page video screen display.
- Six programmable HERE IS messages.
- Pre type up to 15 lines of text.
- External keyboard included.

As from 1st DECEMBER, 1983 WE SHALL BE LOCATED AT:
758 George Street, Sydney, NSW 2000 (Next to Radio House)
Phone: 2110531

AZDEN the FM KING
PCS-4000
$459

- 8 MHz COVERAGE, CAPSARS BUILT IN:
  142.000-142.995 MHz in selectable steps of 5 or 1 kHz – COMPARE!
- TINY SIZE: Only 2” H x 5.5” W x 6.6” D. COMARE!
- MICROCOMPUTER CONTROL: At the forefront of technology.
- UP TO 8 NON-STANDARD SPLITs Ultimate versatility for CAPSARS. COMPARE!
- 16 CHANNEL MEMORY IN TWO 8-CHANNEL BANKS: Extends frequency and standard offset.
- DUAL MEMORY SCAN: Scan memory banks either separately or together. COMPARE!
- TWO RANGES OF PROGRAMMABLE BAND SCANNING: Units are quickly reset. Scan the two segments either separately or together. COMPARE!
- FREE AND VACANT SCAN MODES: Free scanning stops 8 seconds on a busy channel. Vacant scanning stops on unoccupied frequencies.
- DISCRIMINATOR SCAN CENTERING (AZDEN EXCLUSIVE PATENT): Always stops on frequency.
- TWO PRIORITY MEMORIES: Either may be instantly recalled at any time. COMPARE!

PCS-300 – The Standard
For Comparison $359

- 8 MHz Coverage.
- Ideal size and weight distribution.
- LCD Display with timed lamp.
- 10 Key Autopatch.
- PL,Ton., Switch.
- Programmable “odd splits”.
- 9 Channel memory with scan.
- Automatic inclusive or exclusive programmable band scan.
- Busy and vacant scan modes.
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- Transmit lock.
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- High or low power.
- True FM.
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- Rugged commercial-grade modular construction.
- Super low receiver.
- IEC Antenna connector.

WE ARE AUTHORISED DEALERS FOR:
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SEE US FOR BEST PRICES AND SERVICE

NEW HAL SYSTEMS

SYSTEM I
This is the top-of-the-line HAL combination for the serious RTTY enthusiast. It is composed of the MH7400, ST6000, DSK3100, and optional printer. HAL can supply cable set C-1 to connect this system to your transceiver. Put System 1 in your shack for the finest in RTTY operation. The ARQ1000 may be added for use in AMTOR or ARQ applications.

SYSTEM II
This is the attractiue and versatile CT2200 system from HAL which includes the ARQ1000, KB100, KI12 monitor, RS2100, and optional printer. This combination offers a unique set of features at a reasonable price for the radio amateur or shortwave enthusiast. Cable set C-2 integrates this system to your transceiver. Complement your shack with this extremely versatile system from HAL.

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EMB-1, the professionally made noise bridge for all kinds of RF measurement.
EMB-1, the best investment in your shack!
Adjustment of single and multi-band dipole, inverted veer, beam, vertical, mobile whip or random system for maximum performance.
Range extender, expanded capacitance range (150pF).
Other uses: Tune antenna tuners, adjust tuned circuits, measure inductance, capacitance, RF impedance, baluns, transformers, electrical circuits, velocity factor, impedance of coax, etc.

JRC:JST-100
Only After You Have Seen Everything Else – Come and See the Fantastic JST!

The JRC JST-100 HF transceiver is a new digitally synthesized, microcomputer based transmitter/receiver. It incorporates an 11-channel memory and two digital variable frequency oscillators, allowing various types of operation in all amateur bands in the emission modes of A3J, A1 and F1. The JST-100 is designed for compact and lightweight construction and ease of operation.

WRITE FOR BROCHURE

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Besides our extensive range of SWL Accessories, such as Active Audio Filters, Pre-selectors, Active Antennas, etc., we also carry Antenna Tuners for Shortwave and Communications Receivers to improve the reception and efficiency of your receiving system.

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**SX-3 PRE-SELECTOR**

$120

**KX-3 RX ANT. TUNER**

$99

**SX-3 PRESELECTOR**

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MIZUHO: SX-3 PRESELECTOR

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**IS YOUR RECEIVER OR TRANSCiever DEAF? THEN THE ONLY SOLUTION IS THE "SX-3" — AN 18dB PRE-AMPLIFIER**

**SWL NOTE! Use an antenna tuner to improve your reception. And increase the sensitivity of your system.**

### NOW YOU CAN RECEIVE:

- **CW, RTTY, ASCII, TORSITOR, AMTOR WITH THE NEW INFOTECII-M600A**

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- **Full passband tuning (PBT).**
- **New! NBTA Noise Blanker supplied as standard.**

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**THE INTELLIGENT COMMUNICATION RECEIVER**

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**Plus CW filter. Clears tune-up whistle from SSB automatically.**

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- **1:1, 2kW for dipoles $29**
- **HOKUSHIN HS-50B, 1:1, 2kW for dipoles $32**
- **WELZ DP-BUS BU7, 1:1, 2kW for beams $40**
- **SCALAR 4:1, 2kW for beams & dipoles $49**
- **EMTRON EBL 300 3:1, 300W for ant. $29**
- **EMTRON EBL 1000 4:1, 1000W for ant. $33**
- **EMTRON EBL 2000 4:1, 2000W for ant. $44**

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**WELZ CT7300, 300W, 250MHz ..... $110**

**ANTENNA ROTATORS**

**KR-250 light duty rotator **

$115

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$259

**KR-2000RC heavy duty rotator **

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**KR-500 elevation rotators **

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8 core rotator cable

$0.95/metre

**SWR & POWER METERS**

**SP-600 ..... $199 + $10 Post**

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**SP-15 ..... $68 + $6.50 Post**

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**SP-250 ..... $269 + $8.50 Post**

**TP-20G ..... $269 + $8.50 Post**

**TP-05X ..... $31 + $4 Post**

**RF-151D ..... $199 + $58.50 Post**

**CN-820 ..... $79 + $4 Post**

**CN-540 ..... $89 + $6 Post**

**CN-550 ..... $109 + $6 Post**

**CN-720 ..... $185 + $6 Post**

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**TOYOGA-450, 2pos, 2W, 500MHz ... $26**

**WELZ CH-20A, 2pos, 2W, 900MHz .... $39**

**WELZ CH-20N, 2pos, 2W, 1300MHz ... $59**

**DAIWA CS-201, 2pos, 2W, 500MHz .. $29**

**DAIWA CS-301, 4pos, 2W, 500MHz .. $39**

- **DRAINER TYPE**
- **EGG TYPE $1.00**
- **DOG BONE TYPE. 70mm long $1.50**
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- **OPEN WIRE TRANSMISSION LINES INSULATED 450 OHM Brown Polyethylene**

**AWG Size: 18 Conductor: Solid BCW Nom. O.D. 0.75 x 9/32**

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**LOW LOSS 10D-2V Extra Low Loss UHF RG-58/U**

**75 OHM TYPE 7C-2V Heavy Duty Low Loss for Dipoles, Inverted "V" etc. This is not a TV cable.**

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**CORRESPONDENCE & MAIL ORDERS: Box K21, Haymarket, NSW. 2000. Australia. WRITE, PHONE OR CALL IN!**
NOTICE TO ALL HAMS

To comply with the new Government regulations the TS-430S will be known as the TS-43X and the TS-930S Mark II will be known as the TS-93X Mark II.

These are not new world models and are for Australian sales only.

The performance and features are identical to the present model numbers and the only difference is that the out-of-Amateur band transmissions are no longer possible. However the Receiving section is totally unchanged.

All equipment capable of transmitting outside of the Amateur Bands rate a 30% duty and this equipment is not in the spirit of Amateur Radio.

PLEASE NOTE

Due to a shipping problem the TR-9500 was not available in November but will be available from mid-December. Also production delays on the AT-230 mean stocks will not be available until after January 1984. All orders placed during the Summer Sizzlers Sale will be honoured at that price for delivery in early February.

NEW INEXPENSIVE BASE STATION
TS-530SP
NOW WITH NOTCH FILTER & BUILT-IN AC POWER SUPPLY.

The TS-530SP HF transceiver has all the features of TS-530S but with improvements and the very latest in circuit technology.
The Dealers and Staff of TRIO-KENWOOD (AUSTRALIA) PTY. LTD., wish you all a very merry, happy and safe Christmas and a prosperous New Year.

SUMMER SIZZLER SPECIALS

CHECK THE NOVEMBER ISSUE OF AMATEUR RADIO FOR 6 PAGES OF SUPER DEALS.

REMEMBER THESE LOW PRICES ARE ONLY AVAILABLE UNTIL 31-1-84 OR TILL STOCKS ARE SOLD.

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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Cat D-2940

All new, All mode, All powerful . . .
Computer Aided Transceiver

**FT 757 GX**

Wow! What a transceiver. Everything you could EVER want . . . and then some!
Even before its release, Yaesu have over 5000 on back order: that's just from the brochure!

It's the absolute latest state-of-the-art in design - in fact, its CAD/CAM (computer aided design, computer aided manufacture) ensures unbelievable standards of reliability.

- All mode - including FM with no optional extras
- All HF bands from 160 to 10m including WARC
- General Coverage Receive - 500 to 29.999MHz
- Computer Aided - use with your micro for external control
- Full 100W PEP/DC at 100% duty cycle
- Tiny 238 x 93 x 238mm (smaller than some 2m rigs!)

**NOT $1399 AS RUMOURED . . .
NOT EVEN $1199 - ONLY $999.00**

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**FP 757 GX**

**SWITCH MODE SUPPLY**

Neat! Fits under your FT 757 and you'd hardly notice it was there!
Designed just for the FT757, makes your base station really look the part. 240V input.

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*$299.00*

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**Antenna Coupler**

The very latest auto coupler for your 757. Great for mobile & contest use - you can almost work into a piece of wet string!

**Cat D-2942**

*$399.00*

**FIF 232 C**

**RS-232C Interface**

Run your transceiver via your micro. Allows external control of VFO, memory functions, etc. 4800 Baud - so it's fast!

**Cat D-2943**

Due in stock next month!

*$99.00*

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*Before buying elsewhere check the Dick Smith ‘Invisible Extras’*

- We honour Yaesu's 12 month guarantee: beware of others who may only offer you a 90 day warranty!
- We have the largest service centre to back that guarantee. If anything goes wrong with your Yaesu, we can fix it fastest!
- Dick Smith Electronics: Australia's largest supplier and Yaesu factory approved distributor and service centre.
- Dick Smith Electronics have over 40 stores throughout Australia (with more to come!) plus over 200 approved re-sellers. You're never far from friendly help and service!

All available from most Dick Smith Electronics stores . . .
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UHF Transceiver

Remember the early days of radio? When an amateur built his own gear and was so proud of it! Sadly those days passed. With incredible advances in technology, it became economically and technically impossible to compete with commercially built equipment. Now home brewing is here again!

And what's more, with the all new Dick Smith UHF Explorer, you'll end up with a transceiver less than the cost of a commercial unit - and not just any good - better! YES! A completely up-to-the-minute design featuring phase locked-loop frequency synthesis.

ECONOMY ALL MODE

ONLY $24.50

UHF Antenna Kit

Just for your UHF transceiver. Includes deluxe gutter gripper base, UHF coax and whip with cutting details. Also suitable for UHF CB.

Build your own Phone Patch

Phone patching is legal from November 1st! Build your own phone patch and save a fortune... very simple kit, suits most transceivers. Compare our price from built-up units!

ICK SMITH Electronics

All items normally in stock at the 'ham shacks' listed above - other Dick Smith stores may order them for you.

Dick Smith Ham Shacks are located in the Dick Smith Stores listed below. You'll find a licensed amateur at each Shack.

- Sydney: 125 York St 267 9111 • Sydney: Bridge St 27 5051 • Gore Hill 162 Pacific Hwy 49 8011 • North Ryde Lane Cove • Waterloo Rd 88 3855 • Gosford 315 Mann St 25 032 • Melbourne: 399 Lonsdale St 67 9834 • Richmond Bridge Rd 428 1614 • Springvale Springvale & Dandenong Rds 54 052 • Brisbane: Buranda 166 Logan Rd 391 6233 • Townsville Ingham Rd & Cowley St West End 72 5722 • Toowoomba Bowen & Ruthven Sts 38 4300 • Adelaide: Wadley & Market Sts 312 1962 • Perth William St & Robinson Ave 28 6944 • Canungra Wharf St & Albany Hwy 451 8666 • Hobart: 25 Barrack St 31 0800.

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One name takes all the confusion out of selecting a multimeter.

ED-450C
PD-470C

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A DIVISION OF THE ANI CORPORATION LTD (INCORPORATED IN N.S.W.)
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BIG RANGE OF IMPORTED FRAMES — VERY QUICK SERVICE — DISCOUNT FOR ANY AMATEUR OR SWL AND A CAMERA STORE TOO AT COMPETITIVE PRICES AT YOUR DISPOSITION

SEE YOU SOON

VK2BPO

THE WOODPECKER BLANKER
Now sold by mail order to New Zealand, West Germany, Great Britain the Netherlands, Sweden and the U.S.A. (US Patent Pending)

- Available as a kit or fully assembled and tested
- Kit includes fiberglass PCB all components including IC sockets, drilled cabinet and full instructions

A REAL BARGAIN at $49 kit and $75 fully assembled and tested (Plus $6.50 post and handling) — the price has not increased in 18 months — but be warned — 20% price rise expected from December 15.
- Can be used as both an IF stage blanker and an audio stage blanker.
- as an audio blanker, can be plugged into any receiver or transceiver with no soldering or tinning required.
- as an IF stage blanker connects into most existing transceiver noise blankers

NICHOLLS COMMUNICATIONS
P.O. BOX 246 JAMISON A.C.T. 2614 AUSTRALIA
PHONE (062) 51 4367

On behalf of our advertisers
WE WISH YOU
SEASON’S GREETINGS

Butternut’s new model HF6V offers more active radiator on more bands than any other vertical of comparable height. DIFFERENTIAL REACTANCE TUNING ™ circuitry lets the 26’ antenna work on 80/75, 40, 30, 20 and 10 metres and a loss-free linear decoupler gives full quarter wave unloaded performance on 15 metres. It can also be modified for remaining WARC bands.

- Completely automatic bandswitching 80 through to metres including 30 metres (19.1-10 15 MHz) — 160 through 10 metres with optional TBR-160 unit
- Retrofit capability for 18 and 24 MHz bands
- No lossy traps to rob you of power. The HF6V’s three resonator circuits use rugged HV ceramic capacitors and large-diameter self-supporting inductors for unmatched circuit Q and efficiency
- Eye-level adjustment for precise resonance in any segment of 80-75 metres, incl. MARS and CAP ranges. No need to lower antenna to OSV between phone and CW bands.
- For ground, rooftop, tower installations — no guys required

Model HF6V (automatic bandswitching 80-10 meters) .... $282
Model TBR-160 (160 metre base resonator) (When supplied as part of HF6V) ................. $66

For complete information concerning the HF6V and other Butternut products, amateur and commercial contact the Australian distributor

TRAEGE DISTRIBUTORS (NSW) PTY LTD
PO Box 348, Moree, NSW. 2400.
Cnr Adelaide & Chester Sla.
Phone (067) 52 1627

* Patented device

AMATEUR RADIO, December 1983 — Page 11
The festive season is upon us. Holidays and the Christmas and New Year Festivities are now on everyone's mind.

Many will be thinking of new equipment. Others will be planning portable and mobile operation. Our advertisers have something to suit. Remember to tell them that you saw it in Amateur Radio.

When undertaking mobile and portable operation give a thought for safety. Look up and watch out for power lines when rigging temporary aerials.

Have your extension leads checked. Treat unknown power points with caution. Simple checks may save your life. Some holiday power sources may not be as safe as we have come to expect. A modicum of care and simple checks will keep your holiday happy.

Make this holiday a safe one.

Whilst relaxing and recovering from a hectic 1983 why not write up your premier project. Amateur Radio is always looking for good articles. So take the time and write for your magazine.

I would like to thank the Publications Committee, contributing editors and all contributors for their support during the year. Special thanks also to the staff of the Federal Office and to Betken Productions for all the effort they have put into the production of the magazine.

Last but not least I would like to wish every reader the compliments of the season.

PHONE PATCHING

The Institute is not happy with the policy currently issued and will be negotiating the details with Telecom.

Below is a precis of the relevant sections.

2 CATEGORIES PERMITTED TO INTERCONNECT
2.1 Radio amateurs operating a fixed or mobile service.

4 AUTHORITY TO CONNECT
4.1 For all situations an application for authority to connect will be necessary and would be valid for twelve months.
4.2 When applying for authority, all categories are required to submit documentary evidence of inclusion in para 2.1 above.

5 RESALE
5.1 Service that interconnection provides may not be sold, leased or rented.

7 RADIO LICENCE
7.1 The radio service to be interconnected and where appropriate must have a licence.

8 CHARGES
i Call Charges
   Natural call rates will be charged.
ii Access Charges
   Non business telephone service — $2 per month (per connect point between the radio service and the switched telephone network).

9 CONNECTION
The connection of radio equipment as defined will only be permitted via a Telecom provided socket installed exclusively for the purpose. Standard charges will be applied for installation of the socket.

10 TECHNICAL REQUIREMENTS
Equipment used to provide the interconnect facility must meet the technical requirements of Telecom specifications 1053, 1439, 1302, 1222 and any other specifications that may be produced specifically for this purpose. Details of the equipment will need to be submitted to Telecom for evaluation and a permit for its use issued before it can be considered for use of an authority to connect. Standard charges for evaluation of equipment will apply.

These conditions replace all previous and take effect from 29/9/83.

Naturally, Phone Patch can only be conducted between countries with which Australia has Third Party agreements and Phone Patch facilities.

LORD HOWE ISLAND

Following representations from the amateur community to DOC, approval has been given for the callsign VK2LHI to be employed by amateur radio clubs or amateur groups engaging in “DX” competitions, for specified limited periods, from Lord Howe Island.

Approval has been given to the Down Under DXers Club to use the callsign VK2LHI during the CQ World Wide DX Contest taking place between 23rd October 1983 and 3rd November 1983. Club station rules apply for the duration of the contest.

CONVENTION 1984

By the time members read this issue and have recovered from the Christmas holidays, the next WIA Convention will only be four months away.

Now is the time to bring to the attention of your Division Councils items that you feel need to be discussed at the convention.

"Little bit of RF in the shack, OM!"
by VK2EBM
TRADITIONAL CHRISTMAS?

It's that time of the year again, some say “The Silly Season”. Children in particular look forward to it. We parents still have vivid memories of last year's Christmas celebrations.

It seems the older we get, the quicker each year seems to pass — something traditional?? One could say that is the price we pay for progress.

Talking of progress, let me reflect on some of the current doings within the Federal Body of the WIA. There are several items on our plate, but two of these require an early “airing” to advise members of our position, while most of you are relaxing and enjoying the holiday festivities, several of your volunteer representatives will be working extremely hard.

Two important items are:

1. Proposals by Queensland yachtspeople trying to get their foot into the top 50 kHz of the 20 metre band for marine use exclusively.
2. Consistent advertising of general coverage transmitting amateur equipment, by an established NSW amateur retailer, and directed towards mariners.

In both of the above, we are being hampered by articles published in yachting magazines, which condone the use of converted amateur equipment on marine and other commercial frequencies.

This type of activity is not only unethical, it is also illegal to use amateur equipment on marine frequencies.

In my opinion, both of the above items are simply — “not on”.

We must be very careful that the power of the “might y dollar” does not edge its' way into the amateur service again.

These continued threats do not enhance relations between the amateur and yachting fraternities. Our complaints are falling on deaf ears, therefore, WE must now be prepared to take action to protect our interests:

(A) Closely monitor marine traffic in the amateur bands, particularly 20 metres, (14,313 MHz), then,
(B) Take special note of the joint WIA/ NZART statement published in the August issues of AR and Break-In (NZ), and other magazines.
(C) Give consideration to a complete shut down of maritime mobile “traffic nets”, except in cases of emergency. (Are they serving any useful “Amateur” purpose??)
(D) Consider a boycott on the retailer(s) who has lined his pockets at our expense, by openly advertising and selling converted amateur transmitting equipment to the yachting fraternity.

This action alone has been the cause of much frustration, and one of the main reasons for the imposition of the 30% tariff duty.

Make it known to the retailer the reason for the boycott.

The new radio-communications act will assist here, if and when it is finally passed by the Senate. In the meantime, and prior to new regulations being formulated, much harm is being done to the Amateur Service by these parasites.

We therefore must look after our own interests first.

DON'T FORGET:

Subscriptions for 1984 are now due, please renew promptly to ensure proper continuity.

A SPECIAL CHRISTMAS NOTE:

Alcohol and cars don't mix — TAKE A TAXI INSTEAD — WE need you TOO!!

A joyous and safe Christmas from Bruce Bathols, VK3UV on behalf of the WIA Executive.
In this the fourth and final article, I would like to present some ideas for a station control panel and extend the discussion to include some notes on the shack layout.

My interest in station control panels goes back to an early fascination for the control console associated with broadcasting stations. The panel currently being used at VK5QV is the fifth in a line of such panels which have been constructed over the years and is by far the most complex. This is due in part to the advances made in solid-state electronics and the practicability of packing a lot of electronics into a comparatively small space.

The front of the panel is a standard 19 inch (483 mm) rack and panel width, is 4⅘ inches (120 mm) high and slopes back from the vertical by about 20°. The panel is positioned centrally under the shelf supporting the HF equipment — see cover photo.

The electronics associated with the control panel is completely shielded in a metal enclosure behind the panel proper. The rear apron of the enclosure is used for the entry and exit of cables.

Mounted on the apron are two double general-purpose-outlets, a fuse, a key-switch and several sockets. As well as the 240 V, two 12 V regulated supplies and a 9 V regulated supply are brought out. Due to lack of space, most of the connections are made using fly-leads through grommeted holes. Shielded compartments are used to isolate the power and audio sections from the rest of the circuitry.

CONTROLS

Figure 1 shows the placement of controls on the front of the panel.

1. Microphone equaliser. The three knobs on the left, control the equalisation of the panel mounted microphone. The fourth knob is a slide switch used to select the appropriate input to the transceiver — microphone 1, microphone 2, tape recorder, two-tone test signal etc.

2. Microphone 1. This is a panel mounted electret microphone permanently connected to the graphic equaliser.

3. Microphone 2. This socket is for the connection of an alternative station microphone. The transceiver push-to-talk connections are also brought out to this socket.

4. Two-tone oscillator. Frequency, balance and gain controls are brought out.

5. Headphone sockets. These sockets are connected so that standard stereo phones can be used. One socket is attenuated such that there is a balance between speaker and headphone volume.


7. Speaker switch. This connects the
8 Beam rotator control. A 'centre-off' type toggle switch is used to control a prop-pitch motor via solid state relays. Two light emitting diodes indicate the direction of rotation of the beam. Beam heading is shown on a great circle map located above the equipment.

9 Station monitor. This is a copy of commercial 75 mm cathode ray oscilloscope. On receive, it operates as a panoramic monitor using a panoramic adapter. On transmit, it operates as a RF monitor via a capacitive RF attenuator. The time-base has two settings which are automatically selected when going from transmit to receive.

10 RF attenuator. See figure 2 for details.

11 Display centering. This control centres the panoramic display.

12 Tape recorder switch. This allows the tape recorder to be switched between two sources.

13 Key select. Either the manual key or the CW keyboard may be selected by this switch.

14 Push-to-talk. Moving this switch upwards places the transceiver in the transmit mode. The relay in the transceiver is used to switch on the linear amplifier, a flashing LED above the PTT switch and at the same time storage space for tapes.

15 Time setting buttons. Time select the appropriate time-base rate for the monitor.

16 Time setting buttons.

17 Main power switch.

18 Auxiliary power switches.

19 Tape indexing. Although not yet operational, these push-buttons will enable a particular message stored on an endless cassette to be indexed ready for playing. This should be useful for RTTY 'brag' tapes.

CONSTRUCTION

Although this is by no means meant to be a constructional article, some reference to the problems encountered may be of interest to anyone contemplating such a project.

One major problem associated with such a project of course is the metal-work. Even if one has access to metal-working facilities, the marking out, drilling, filing etc is quite a tedious process.

After the metal-work is completed use a good automotive undercoat before spraying the final colour. I used automotive touch-up laquer available in spray cans. This produces an excellent finish although rather expensive.

Two six-digit clocks showing UTC and local time respectively operate from a single crystal. A battery back-up maintains correct time during power failures.

12 Time setting buttons.

13 Main power switch.

14 Auxiliary power switches.

15 Tape indexing. Although not yet operational, these push-buttons will enable a particular message stored on an endless cassette to be indexed ready for playing. This should be useful for RTTY 'brag' tapes.

SHACK LAYOUT

The acquisition of a station control panel allows most of the cables associated with the installation to be routed behind the equipment thus providing an open, tidy, functional operating area.

Also with the equipment raised above the table top, dials and meters are more easily read, and at the same time storage space for the typewriter, paper or whatever is made available.

“don’t do anything much! He calls CQ and answers all the questions.”

from 73 Magazine Jan '83

“I don’t do anything much! He calls CQ and answers all the questions.”

by VK2EBM

FINALE

This series of articles was written in an attempt to show how the writer went about setting up a shack and perhaps to stimulate some ideas among readers. In no way am I saying that this is the only way. For instance, the layout of a shack and the equipment in a shack is an individual thing and to some extent may well be dictated by the amount of real estate assigned by the XYL as ‘for amateur radio purposes only’.

NOTES


"Verticals?? I had a vertical that was so bad it wouldn’t even receive QRMs."

by VK2EBM
No doubt many present owners of the R-1000 will be considering an update to the 2000 so I am sure that a few comparative comments might be of interest. However let's go back one step before this and look at the evolution of the current model. I am sure many readers will recall the TRIO receivers of the early 1960s. They were single conversion four band valve sets with somewhat mediocre performance. I well recall the reams of modifications that were published in AR and other magazines around that time to cure frequency drift and provide better sensitivity, mostly to little avail. In spite of this, many hundreds of these receivers must have been sold and a few still seem to pop up on the second-hand market from time to time. These were followed by a couple of similar design but with transistors instead of valves. In those days this was a mixed blessing. Sensitivity and drift characteristics were better but often cross modulation was almost intolerable.

The R-1000 arrived on the scene in 1979 and at last we had a receiver with all required facilities and a completely professional performance. Many thousands of these receivers must be in current use in both amateur and SWL shacks as well as many professional locations. A couple of years ago, Kenwood released the R-600 which was basically an economy version of the R-1000.

The R-2000 is somewhat larger but the same weight as the 1000. The main difference is in increased width, up by 75 mm. The increased width allows for a good size front facing speaker. The somewhat controversial carry handle come tilt bale of the R-1000 has been replaced with a conventional tilt bale and a side mounted carry handle.

Basic specifications remain the same with full coverage from 150 kHz to 30 MHz with reception facilities for SSB, CW and AM plus the added FM mode. But from here on things change somewhat. Band changing is now fully electronic. Band up/down buttons allow for moving in 1 MHz steps either singly or by holding the button down in rapid sequential steps. Ten memories with memory scan or programmed band scan are available with digital readout to indicate memory selection. The digital frequency readout now reads to 100 Hz and also doubles as a clock which can be set for two time zones with a 24 hour readout. Three speed tuning in 50, 500 Hz and 5 kHz steps make for easy tuning across the bands.

Without doubt the Kenwood design engineers have closely followed the electronic design of the TS-430S transceiver. Even the appearance has quite a family resemblance.

THE R-2000 TECHNICAL FEATURES

As is unfortunately typical these days, no circuit description or details are covered by the instruction manual. However a block diagram is included and a few details from this will be of interest. Six band pass filters are fed from the antenna input via a 10 dB per step front end attenuator. The RF stage is single dual gate FET followed by a buffer stage into a balanced mixer the first IF of 45.9 MHz. Second conversion is to 9.9 MHz and the third to 455 kHz. Balanced mixers are used throughout. Provision is made for four filters of which three are supplied, a 2.7 kHz for SSB, a 6 kHz for AM and a 15 kHz for FM. The option is a 500 Hz CW filter. Three detectors are switched for SSB/CW, AM or FM. The frequency selection, memory and scanning modes are controlled by the CPU which is powered by a lithium battery when the primary supply either AC or optional DC is removed. This battery has an estimated life of five years.

THE R-2000 IN USE.

On initial switch on the 2000 really looks superb. The digital readout is bright and clear enough to read right across the room. The selected memory channel is identified with a bright yellow readout to the left of the frequency readout. A nice feature noted when the receiver was set on my desk where the rubber buffers on the tilt bale, no possibility of scratching my desk this time. Firstly the two clocks were set, one on UTC, the other on local. The clock...
also has a timer function that allows the receiver to be automatically switched on at any pre-set time along with a tape recorder if required. It was noted that the SSB BFO frequencies were well out of adjustment and received SSB signals sounding very high pitched. USB was acceptable but perhaps a little the other way—a bit bassy. Naturally the instruction book contains no information on correcting this, so it was left as is.

The ten memories were programmed for our favourite operating frequencies and a few shortwave broadcast channels. As explained from the distributor, our R-2000 did not operate below 2 MHz. The instruction manual refers to this as an 'X' model. A note included from Kenwood says that the receiver is capable of receiving 150 kHz to 30 MHz by cutting D59 on the printed circuit board behind the function switch. I was unable to locate D59 during a quick search of the main printed circuit board. During the setting up process, I was rather disappointed to see that Kenwood have done away with the recessed, upward facing rear panel which was quite an innovation on the R-1000.

Close-up of Switches.

The tuning system is now fully electronic with three push button selected rates. These are 50 Hz, 500 Hz and 5 kHz steps which give an actual tuning rate of 10, 100 kHz and 1 MHz per knob revolution. These speeds are not always used. As is in progress. I feel that Kenwood have not chosen these speeds as well as they might. They are all too fast. I feel that 10, 100 Hz and 1 kHz would have been a better choice. The 1 MHz per tuning knob revolution is after all taken care of with the up/down button. However I must admit that tuning SSB signals is a very simple process, but the next step up, I found a little too fast for AM stations. I wonder if there is a simple modification to change this.

Perhaps the best thing on the R-2000 is the memory system. It is, in fact, almost identical to the TS-430S transceiver. The ten memories are programmed with both frequency and mode. So you can have an USB channel on 20, a LSB memory on say 40 and VFO plus a few more top stations. It is then possible to select any one by a push of the appropriate memory button or to scan around them sequentially. The system will pause long enough at each memory so that the operator can check if a stop is required. If so, a push of the hold button will stop the scanning sequence.

The programmed band scan using memories nine and ten can be used to tune automatically between any frequencies entered in them. The scan speed is selected by the tuning rate buttons.

AM reception with the R-2000 is excellent. Kenwood have dropped the wide selectivity position of the R-1000 and now provide selection between 6 kHz at the -6 dB points or the SSB filter of 2.7 kHz. The narrow/wide button that allows this selection also selects the narrow CW filter or SSB selectivity of 1.0 kHz -4.5 dB and at 700 Hz -3 dB. This is quite acceptable performance and was useful lopping off some of the excess highs in the LSB position. AGC action was checked by listening to a variety of strong and weak signals. There was no pumping or popping on strong signals and in general SSB reception sounded very smooth. AGC decay is selectable for slow or fast with a front panel switch, but is not automatically selected with a change of mode. Next the crystal calibrator was fed into the antenna input and the tuning set to produce a 1 kHz tone. Audio output checks were based on this.

The R-2000 was very acceptable. The stability was excellent with little shift over a half hour period from a cold switch on. Pity I was unable to check the low frequency performance. This is where many current receivers fall down badly. While looking around for the elusive D59, I noted that it is possible to have either open scan or scanning that will stop on signal. To arrange this, a jumper is changed on the circuit board accessible with the bottom cover removed. Further details are on page 11 of the instruction manual.

INSTRUCTION MANUAL

The R-2000 instruction manual is completely disappointing. It is a four language thing with English as the first part. So far as operating procedure and installation goes, it is quite good. Various types of antennas are discussed in relation to their use with the R-2000. However apart from a block diagram and circuit diagram, there is no technical information at all. A short section on short wave propagation is interesting.

The last page discusses the options available for the receiver. These are two different headphones, a CW filter and the very excellent Kenwood World Clock. Installation instructions are provided for the CW filter.

CONCLUSIONS

The R-2000 receiver is, without doubt, a very advanced piece of equipment. Not only that, but the overall performance is very good in most wanted respects. Some might consider the appearance to be a bit over-styled and the S meter is certainly not up to the overall standard of design. The R-2000 will however put Kenwood right out front in the popular general coverage receiver market for some time to come.

Our review model was supplied by KENWOOD AUSTRALIA and all enquiries regarding the R-2000 should be directed to them or one of their local agents.
**EVALUATION AND ON AIR TEST OF THE R-2000 RECEIVER**

Serial No 3070643

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging</td>
<td>***</td>
<td>Double carton with foam inserts.</td>
</tr>
<tr>
<td>Size</td>
<td>**</td>
<td>Larger than preceding model.</td>
</tr>
<tr>
<td>Weight</td>
<td>***</td>
<td>Same as preceding model.</td>
</tr>
<tr>
<td>External finish</td>
<td>***</td>
<td>Well finished but slightly over styled.</td>
</tr>
<tr>
<td>Construction quality</td>
<td>***</td>
<td>Good quality boards and internal wiring.</td>
</tr>
</tbody>
</table>

**FRONT PANEL**

- Location of controls: ***
  - No concentric controls. All well laid out.
- Size of knobs: ***
  - All very good.
- Labelling: **
  - Clear labelling.
- Meter: *
  - Very over styled. Hard to read.
- VFO knob action: **
  - Very smooth, but tuning rates not ideal.
- Dial readout: NA
  - Bright and easy to read. Accurate resolution to 100 Hz.
- Analogue: NA
  - One of the best yet.
- Digital: ***
  - Not nearly as good as the R-1000.
- Status indicators: ****
  - Very adequate ACC performance.

**REAR PANEL**

- VFO stability: ****
  - Hard to fault, see test section.
- Digital dial accuracy: ****
  - Spot on.
- Memories: ****
  - Recalls both frequency and mode. Best yet seen.
- Shift/width: NA
  - No shift or width controls provided.
- Notch filter: NA
  - No notch filter.
- Spurious responses: ***
  - Realistic response. Smooth action.
- S meter: **
  - Very adequate AGC performance.
- ACC performance: ***
  - No problems with strong signals.
- Signal handling: ****
  - 10 dB steps. Better chosen than R-1000.
- RF attenuator: NA
  - No RF gain control.
- RF gain: NA
  - No RF gain control.
- Sensitivity: ***
  - On subjective test, very good.
- Selectivity: ****
  - Good choice offered — adequate selectivity for most purposes.
- Noise blanker:
  - Woodpecker: *
    - No effect on Woodpecker.
  - Electrical & ignition noise: ****
    - Worked well on this type of noise.

**QUALITY OF RECEIVED SIGNAL**

- Internal speaker: **
  - Front facing speaker. Satisfactory quality.
- External speaker: NA
  - No optional speaker offered.
- Headphone output: ****
  - Stereo compatible. Output level good.
- Tone control: ***
  - Very useful top cut.
- MANUAL (owner's handbook): **
  - Satisfactory as operator manual. No technical information.

**WHO IS THIS AMATEUR?**

He first obtained his licence on 18th September 1936 and immediately began operating from 90 Prince Street, Thompson Estate, Brisbane. In the space of twelve months he had made over 1000 contacts on CW, including DXCC — something few OT amateurs accomplished in their first year of operation. The all-homebrew station was extremely neat and efficient, with the transmitter using a pair of 45s in parallel in the final stage to a half watt vertical on 20 metres and the receiver a three tube TRF.

A WIA Queensland member since pre-war days, he served on executive on more than one occasion, being QSL Officer twice (a duty he discharged with considerable efficiency) and Morse code instructor when the meetings were held in the Celtic Chambers.

During WWII he served as a W/O in the Navy for the full five years of its duration, then commenced working with the PMG as a technician and moved to Dalby. He later returned to Camp Hill, Brisbane and spent a considerable time at the Frequency Measuring Station at Capalaba until his retirement in 1979. As a 'DXer par excellence' and a member of FOC and RSGB he became known as 'Brisbane's Mr DX', having over 300 countries confirmed to his credit.

The beautiful bushland setting of Loganlea, south-east Queensland is now his chosen place of abode where he has an extensive garden — but still finds time to put his snappy fist or clear voice on the air almost every day. One can best describe him as an amateur who puts in a high key performance in a low key manner. His callsign fits in nicely with the work he performed in the PMG — viz Radio Frequency measuring — maybe you've already guessed. Yes, its VK4RF (Romeo Foxtrot or Radio Frequency) and his name is Fred J Lubach.
MULTI PURPOSE CRIMPING TOOL

G 30040

The Greenpar crimping tool G 30040 is a versatile, low-cost tool which enables the small user of BNC, TNC, and UHF connectors to take advantage of the reliability and ease of assembly offered by crimped connections.

- 3 die design permits crimping of both 50 and 75 ohm connectors.
- Full closure mechanism ensures complete crimping operation.
- Rigid high leverage design provides consistent high quality crimped connections.
- Crimp die sizes to BS 5310 and IEC recommendations.
A MICROPROCESSOR CONTROLLED ANTENNA SYSTEM

As satellite communication is becoming more commonplace it is desirable that antennas be automatically controlled to follow a satellite in its path across the sky. This will free the amateur from the problems of tracking and enable him to concentrate on communicating with his fellow amateur. This article describes a preliminary design for using a microprocessor for automatic control of an antenna.

THE PROBLEM

The 3 dB beamwidth of an antenna is usually several degrees. A five element yagi has a 3 dB beamwidth of about ±25° while a twelve element Yagi at 1296 MHz has a 3 dB beamwidth of about ±8°.

With parabolic antennas the beamwidth depends on the diameter and surface irregularities. Typical values are:

a) Frequency 1297 MHz
   Diameter 3 m
   3 dB beamwidth 5°
   Power gain 30 dB

b) Frequency 5761 MHz
   Diameter 3 m
   3 dB beamwidth 2°
   Power gain 38 dB

c) Frequency 10,369 MHz
   Diameter 1 m
   3 dB beamwidth 2°
   Power gain 38 dB

These figures indicate that an antenna control system which can point the antenna axis to within ±2° of the actual satellite position at any time will suffer very little degradation of signal strength at the receiver input.

The tracking problem is three dimensional but can be simplified into a linear equation for the horizontal plane from 0 to 360 degrees and a parabolic equation in the vertical plane from 0 to 90 degrees. These two combined motions will give complete coverage of any point in the sky.

The vertical elevation above the horizon can be expected to be an inverted parabola of the type

$$\Theta = AT - BT^2$$

where $\Theta$ = degrees above the horizon
$A, B$ are constant values
$T$ = time after the satellite rises above the horizon.

The ability of the computer to do arithmetic will determine how complex an equation can be followed.

For a preliminary design a period above the horizon of 100 minutes was chosen. This is of the same order as that expected for the phase III satellite in the southern hemisphere.

A feedback loop is used to check that the antenna has moved. If not a repeat instruc-
tion is issued until the antenna moves as required. Alternatively an alarm could be given if the antenna fails to move.

A small parabolic dish antenna from a disposals radar system was available. This antenna has gearing for movement in both the horizontal and vertical planes and is suitable to prove the overall design.

**CHOICE OF COMPONENTS**

**STEPPING MOTORS**

Sufficient accuracy can be obtained using a stepping motor for each drive. The Philips motor type 9904 112 27001 has a step of 7.5 degrees, using a gear ratio of 75/1 the step becomes 0.1 degrees at the step of 7.5 degrees, using a gear ratio of

**MICROPROCESSOR**

A National Semiconductor chip, the INS 8073 microprocessor chip is used. This device is an 8 bit microprocessor with a wide range of arithmetic (8 and 16 bit) with a tiny basic interpreter built in to the CPU in an internal 2.5 kiloword PROM.

The availability of Tiny Basic makes programming much more efficient and quicker than using machine language. Tiny Basic is a suitable language for control applications.

**PROGRAMMING**

The programmable timer was set to provide an interrupt to the processor at minute intervals. For the first trial a time of 100 minutes above the horizon was chosen. The constants A and B of the equation \( \Theta = AT - BT^2 \) can be chosen to give the required minimum elevation, for the period of 100 minutes, as required for any satellite.

The flowchart for the programme for the vertical movement is as shown in the illustration.

For the first trial the time and angle of elevation were printed on the console and the angle output to a LED display.

The programme was written in TINY BASIC with machine language subroutines to increment the time and to increment or decrement the angle as required. These subroutines are called up using a LINK instruction.

At each minute interval the processor calculates the value of \( \Theta \) and steps the antenna until this value is reached by forward or reverse stepping as required.

After debugging, the programme was transferred to EPROM which was then plugged into the board with the programme starting at location 2000. The programme was started from the console.

After successfully proving the programme for elevation a new programme is being written which will enable movement for elevation and azimuth for follow any equation desired or to move the antenna to any position in the sky when the coordinates are fed in from a keyboard.

**CONCLUSION**

The INS 8073 microprocessor provides a low cost solution for the control of an antenna system to follow a given equation across the sky or to move immediately to point to a given point in the sky. The availability of the TINY BASIC language on this chip makes programming relatively simple and cost effective.

I will be happy to provide a copy of this listing to experimenters or alternatively programme an EPROM for anyone who wishes to seriously experiment in this field.

**FEEDBACK CIRCUITS**

A small rotary pulse generator could be used to check the movement of the antenna eg a Philips V 23465 digital shaft encoder with 5000 pulses per revolution.

A Sony Digiruler was available and this was adapted to measure circular motion by wrapping the magnetic strip on a wheel of suitable diameter, the wheel rotating with the antenna. The digiruler emits a pulse every 0.05 mm of movement of the strip past the reading head. The pulses can be counted with a 7492 chip and the computer can be programmed to check the movement after each step. The digiruler can sense forward or reverse rotation.

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**THE MICROWAVE OVEN TEST**

John Hassell, VK6ZGF/NXX

77 Kalinda Drive, City Beach, WA 6015

Many vital pieces of amateur radio gear such as loading coils, antenna traps and RF chokes can be home made using odd bits of PVC piping or various plastic containers as coil formers. One drawback with this practice is that there is no way of knowing the dielectric properties of the PVC pipe or deterrent bottle you may have on hand. This is especially a problem if the project is an antenna loading coil through which you intend to run the legal power limit of RF.

If the plastic material has poor dielectric properties in strong RF fields, then at best you will end up with a lossy loading coil of indifferent Q, or worse, the whole thing will melt into a gooey mess under sustained high power.

Here is an easy way to test the dielectric properties of various plastic items you may wish to press into service. The only major piece of test gear required is a microwave oven. The method is simple. Place a sample of the material in question on a paper plate. Pop this in the microwave oven for three minutes or so at high power. If the sample is a good dielectric it will remain cool or only get slightly warm. If the dielectric properties are poor, then the sample will get very hot or even melt. Hence the paper plate.

By comparing how warm various types of plastic get, it is possible to select the best for the job.

One word of warning. Be very sure no metal is in the sample you are testing. If you wish to test coax cable, remove the center conductor and all the braid. Even a small whisker of wire will get hot enough to set fire to the plastic being tested.

---

**JOIN A NEW MEMBER**

**URGENT!**

Please let us know of clubs and schools etc. starting theory classes.

Where, when, how much and whom to contact.

Contact Brenda VK3KT.
The most common piece of test equipment in an amateur's shack used to be a moving coil multimeter with a sensitivity of somewhere between 1000 and 20 000 ohms per volt. When a high impedance measurement was required, a VTVM was usually lifted down from the shelf, plugged in and allowed plenty of time to warm up and stabilise. With valve equipment the norm, these meters provided sufficient accuracy, usually within 2-5%, to build and service amateur radio equipment. But this is changing rapidly. Transistor and integrated circuit equipment often demands more sensitive and accurate measurements, and digital multimeters provide this with high impedance measurement and no 'warm up'. They are also becoming more affordable. One such digital multimeter is the Parameters Model 7040.

**APPEARANCE**

The 7040 is a hand size instrument built into a high impact ABS plastic case and weighs less than 400 grams. It also contains a metal shield to minimise RFI problems. The functions are selected by two dark coloured push buttons, and one of six light coloured push buttons is used to select the appropriate range. Change over from volts/ohms to current requires the hot lead to be moved to one socket for up to 2 amps and to a second socket for up to 10 amps.

The 13 mm, 3½ digit liquid crystal display is easy to read from a wide range of viewing angles. A tilt bail enables the multimeter to be raised to approximately 30 degrees. A standard 216 9 volt battery powers the instrument, and a socket is provided on the side of the case for an external regulated power supply. A single sheet leaflet lists the ranges, resolution, accuracy and operating instructions. It also includes a circuit diagram and parts list.

Overrange indication is provided by a leading digit of '1' and the remaining three digits blanked. A 'LO BATT' indicator came on when the battery voltage dropped below 7.1 volts.

**SPECIFICATIONS**

The basic accuracy of the multimeter is quoted as ±0.1% of reading +1 digit. The accompanying table has been extracted from the detailed specifications, and gives an overall picture of the ranges and accuracy of the instrument.

**PARAMETERS 7040 SPECIFICATIONS SUMMARY**

All accuracy figures quoted assume a one year calibration cycle and an operating temperature of 18°C to 28°C.

**DC VOLTAGE**

Ranges: 200 mV, 2 V, 20 V, 200 V, 1000 V (max DC input)  
Accuracy: ±0.1% of reading +1 digit  
Input resistance: 20 Mohm on 20 V to 1000 V ranges.

(Measured: 0.4 Mohm on 200 mV range, 1 Mohm on 2 V range)

**AC VOLTAGE**

Ranges: 200 mV, 2 V, 20 V, 200 V, 750 V (max AC input)  
Accuracy: ±0.5% of reading + 5 digits  
Frequency Range: Up to 20 V — 45 Hz to 500 Hz  
200 V and 750 V — 45 Hz to 120 Hz  
Input impedance: 10 Mohm shunted by less than 100 pF  
for 20 V to 750 V ranges.

Response: Average responding, calibrated in RMS of a sine wave.

**DC CURRENT**

Ranges: 200 µA, 2 mA, 20 mA, 200 mA, 2 A, 10 A (max AC input)  
Accuracy: up to 200 mA ±0.5% of reading + 1 digit  
Ranges: 200 mA, 2 A, 10 A ranges: ±1% of reading + 5 digits  
Overload protection: as for DC.

**RESISTANCE**

Ranges: 200 ohm, 2 kohm, 20 kohm, 200 kohm, 2 Mohm, 20 Mohm  
Accuracy: 2 kohm-200 kohm: ±0.3% of reading + 1 digit  
2 Mohm: ±1% of reading + 1 digit  
20 Mohm: ±2% or reading + 1 digit  
Maximum DC source voltage: High — 2.8 V, Low — 280 mV.

**HOW IT PERFORMED**

A series of tests were carried out, including comparisons with a more elaborate digital multimeter. A number of DC voltage and current tests were performed over the range 100 µV to 20 volts and 5 mA to 0.5 A. No problems were encountered, and accuracy on a comparative basis was well within specifications. The linearity was checked across ranges and was within ±1 digit. The voltage drop across the meter when it was measuring current was checked and found to be 0.25 volts at full scale for currents up to 200 mA. However, this rose rapidly on overrange current values.

An audio oscillator was first used for AC voltage tests, and a convenient frequency of 1 kHz selected. The two DMMs were connected and a significant difference noted in the readings over a wide range of voltages. Connections were double checked and when no explanation could be found, the specification leaflet was consulted! It was here that the explanation was found — accuracy was maintained only up to 500 Hz. Other digital multimeter specifications were consulted and all told a similar story. The frequency response was then investigated and the following results noted for a nominal 1.500 volts:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Reading (V)</th>
<th>Difference (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 Hz</td>
<td>1.495 V</td>
<td>0.3%</td>
</tr>
<tr>
<td>1.0 kHz</td>
<td>1.470 V</td>
<td>2.6%</td>
</tr>
<tr>
<td>2.5 kHz</td>
<td>1.398 V</td>
<td>6.8%</td>
</tr>
<tr>
<td>5.0 kHz</td>
<td>1.235 V</td>
<td>17%</td>
</tr>
</tbody>
</table>

The 3 dB point was around 7 kHz. Thus the DMM can be used for approximate comparative measurements over the majority of the audio range, with absolute measurements being confined to below 500 Hz. A number of tests of 50 Hz AC voltages over the range 0.2 to 20 volts were made, and again, accuracy on a comparative basis was well within specifications. Tests were also made on typical audio signal voltages. However, the readings were confused, as the sampling rate, about 3 per second could not cope with a rapidly varying voltage. (The more elaborate DMM also suffered from the same problem). No AC current tests were performed.

A variety of resistors were measured, including a number of 1% types, and accuracy on a comparative basis was well within specification. The 7040 provides a choice of two source voltages for resistance measurements — 2.8 volts and 280 millivolts. The low voltage is useful for in-circuit component checks in the vicinity of semiconductor components, as it is below the 'turn-on' threshold of semiconductor devices. The higher voltage gave better results, especially on low and high resistances.

**CALIBRATION PROCEDURE**

Recalibration requires a 190 millivolt DC and pure sine wave AC source. The re-
CONCLUSION
A digital multimeter is a useful addition to the test equipment in an amateur shack once its idiosyncrasies are mastered. As with any piece of sophisticated test equipment, compared to a conventional multimeter, it takes a little time to learn its full potential. The Parameters 7040 is a versatile instrument that can make life a lot easier — no more misread scales, probes round the wrong way, needles embracing the stops, and so on. Its accuracy, resolution and sensitivity are more than satisfactory for amateur purposes, and at a quoted 100 hours from a carbon-zinc cell, or 200 hours from an alkaline cell, it is economical to operate. Any disadvantages? Well, a good RF probe, say good to 500 MHz would be nice!

The test instrument was supplied by Parameters Pty Ltd, of 53 Grosvenor Street, Mordialloc, Victoria. The Sydney Office is at 41 Herbert Street, Artarmon, NSW.

ANOTHER COUNTRY

Whilst on a relaxing holiday the opportunity arose to make the holiday a mini DXpedition. With a little resourceful thinking antennas were quickly erected and a very enjoyable time was spent on the bands to make a simple holiday into a memorable time.

My XYL and I were travelling north on a holiday, when we found ourselves at Port Macquarie from where there is a regular air service to Lord Howe Island.

My FT101 was in the car with some home brew helical whips, but if I took the rig to the island the whips wouldn’t be much use (without the car) so I began to think of what else I could use for an antenna.

Before leaving Port Macquarie I purchased a reel of light nylon fishing line and arranged for the owner of a TV shop (who also happened to be an amateur) to supply me with 10 metres of hook-up wire soldered to the centre conductor of a Belling Lee plug.

Our accommodation at the island was a self contained flat which had some nicely placed palm trees about 10 metres tall. I tied a piece of coral to the fishing line and threw it over a palm, then attached the hook-up wire to the fishing line and hauled it up the tree.

A piece of galvanised wire poked into the ground made an earth connection and I attached this to the earthy side of the Belling Lee plug. That's a bit for luck. The wire was soldered to a Belling Lee plug and trimmed to a measure. I cut off 5 metres of wire to make a vertical plus the usual co-ax and thirty countries were worked during the next four days. On the fifth day I turned on the rig, but it was very quiet — not even any noise. On looking out the window, the reason was soon apparent. The antenna and co-ax had disappeared — spirited away in the night!

I guess I must have been causing some BCI to someone. It certainly wasn’t TVI, because one of the delights of Lord Howe was that there was no TV to interfere with.

That was a bit distressing. Now all I had was about 2 metres of co-ax and about the same length of hook-up wire. An amateur is supposed to be resourceful and I was determined that no antenna snitcher was going to keep me off the air. So back to my friendly supplier of hook-up wire.

The plan now was to make up a 20 metre vertical that could be suspended from a palm tree and retracted into the flat at night for safe keeping.

Using what appeared to be 9 inch vinyl tiles on the kitchen floor as a measure, I cut off 5 metres of wire to make a vertical plus the usual bit for luck. The wire was soldered to a Belling Lee plug and trimmed as before. The vertical wasn’t as good as the inverted vee, but it managed to pull in thirteen countries including five new ones.

Back home later, when I measured the antenna, I found it was 4.57 metres from top to plug and had 1.05 metres of earth lead. It was fed with 50 ohm co-ax. The dimensions bear no relation to anything I’ve heard of before — but it worked.

For many of my contacts, it was their first with Lord Howe, and a number of them said ‘Thanks for a new country OM.’ I got several new countries myself — including Lord Howe Island (thanks to Dick, VK2BKE) and joined the select band of people who have worked Lord Howe FROM Lord Howe.

There are frequent air services to Lord Howe Island from Sydney and Port Macquarie. The island is administered by New South Wales and is located in the Pacific Ocean about 700 km north east of Sydney. Apart from being a first class DX location, it’s a wonderful place to have a holiday and — another country.
The 'Square-One' receiver described in AR January-March '83 covers 1.6 to 2.0 MHz. Converters will be required to tune other frequency bands. This converter design may be used with any receiver which tunes 1.8 to 2.0 MHz or more.

An example of this application may be for use with a general coverage receiver which tunes perhaps 0.55 to 30 MHz in four or five bands with a 455 kHz IF. Such a receiver may provide adequate performance at low frequencies, but have very poor bandspread, stability and image rejection at higher frequencies. However, by preceding the receiver (now a tunable IF) with a converter, the bandspread, stability and image rejection characteristics of the 1.8 to 2.0 MHz range are substantially preserved whilst tuning the higher frequency bands.

The construction of the Square-One receiver allowed space for converter(s) in the under chassis area. With this part added, the receiver becomes a 'full-blown' amateur band receiver. If all bands are not required, then only those bands actually needed may be provided for, and the other bands added later as desired.

**PERFORMANCE**

The Square-Two converter when used with the Square-One receiver yielded the performance shown in Table 1.

- Signal handling ability is quite good. On-air tests to date have yielded no incidents of cross modulation, 'Square-law effect', or bothersome internally generated inter-modulation distortion products.

- The second IF (9 MHz) was measured in excess of -100 dB for every band. Only one internally generated spurious signal was noted; a very weak sub-microvolt spur on 28.143 MHz.

**BLOCK DIAGRAM DESCRIPTION**

A band-pass filter (BPF) is required for each band. They prevent the introduction into the mixer of frequencies which are images of the desired frequency, and reduce overload of the RF amplifier by strong out of band signals. The broadband RF amplifier provides gain to incoming signals before they are applied to the singly balanced mixer.

The oscillator input port of the mixer is supplied with a crystal derived and filtered signal which heterodynes the incoming signal to 1.8-2.0 MHz. For example, to receive 7.0-7.2 MHz, the crystal oscillator must supply 7 - 1.8 = 5.2 MHz. Therefore, an incoming signal on 7.0 MHz will be heterodyned to 1.8 MHz, and a 7.2 MHz to 2.0 MHz. The crystal is always 1.8 MHz less than the lower edge of the band to be received. For input frequencies of 1.8 to 2.0 MHz, no crystal is required. On this band, the signal must negotiate a BPF to prevent overload by BC stations, and is passed by the mixer (remember, it is singly balanced, and the signal frequency is not suppressed). A look at the overall block diagram will show how the entire receiver operates.

**CIRCUIT DESCRIPTION**

The input BPF is necessary to pass only the band of interest. Three top-coupled tuned circuits are used to cover each band, and are switched into operation with two wafers of a four wafer, 11-position switch. Capacitive dividers provide input and output impedances of about 50 ohms so that signals may be routed via miniature 50 ohm coaxial cable. The broadband RF amplifier and mixer are identical to those used in the Square-One receiver. The amplifier has a gain of about 10 dB, and employs a bipolar transistor with feedback. This stage is not easily overloaded or damaged by excessively large signals, and has good linearity.

The mixer is singly balanced, and has about 9 dB gain. U1 a CA3028 differential pair is driven in push-pull via T2. 100 ohm resistors R17 and R18 terminate the balanced secondary of T2 so that the input impedance of the mixer looks like 50 ohms. On all bands except 1.8 MHz, a crystal derived signal is injected into the current source transistor of U1 in common mode, so little or no oscillator signal...
An individual crystal oscillator is required for each HF band. This method was used to avoid switching crystals (a messy business). Also, some crystals require a different circuit arrangement for correct operation. The 1.700 MHz crystal for the 3.5 MHz band requires a Pierce oscillator, those for 7.0 to 21 MHz require a Colpitts, and those for the 28 MHz band require an overtone circuit. The crystal frequency applied to the mixer must be very clean to avoid the production of spurious signals, and the reception of harmonic images. For example; on the 7 MHz band the crystal operates on 5.200 MHz. The second harmonic of the crystal (10.4 MHz) may mix with an unwanted signal on 8.6 MHz and produce an IF of 1.8 MHz (10.4-8.6 = 1.8). The input BPF will do a good job of attenuating the unwanted signal, but some very strong signals exist in that band, and may appear along with the wanted signals. By reducing the harmonic content of the crystal frequencies, the level of unwanted signals from this cause will be greatly reduced — in this case about 70 dB. Therefore each crystal

Fig 2: Overall Block Diagram.

Fig 3: Input Bandpass Filter.

Fig 4: Input RF Amplifier/Mixer.
oscillator is followed by a tuned circuit to clean up the oscillator signal before it is applied to the mixer.

During final testing of the complete receiver, it was found that the residual noise level of 3.5 MHz was rather higher than expected. It was found that noise from the power supply was being injected into the RF amplifier via the +12 V rail. This problem was eliminated by the inclusion of RF filter, C26, RFC2, C27. So +12 VF designates a filtered supply.

**CONSTRUCTION**

The RF amplifier and mixer components are accommodated upon the copper side of a home made double sided PCB, and the oscillator assembly upon a second board. It is therefore not necessary to drill holes for components. Each BPF is constructed upon a double sided board with a square of PCB material screening each section of each filter. A small hole will be required in each screen so that the leads from the top coupling capacitors may pass through the screen. See photo. Most of the image rejection performance of the receiver derives from the input BPF’s, so care must be taken in their construction.

Those who have made the Square-One receiver will have already developed their own way of winding coils upon the Aegis 3510 formers. It is a good idea to firstly select which of the four tags are to be used to terminate the start and finish of each coil, and stick to those tags for every coil. This will reduce the likelihood of any problems later on. Sufficient wire should be removed from the wire spool before fixing the spool in a vice. The start (top) of the winding may be soldered to the selected tag. With the wire taut, and holding the former at the top and bottom with its axis parallel to the floor; the required number of turns are wound onto the former. With the layer complete, the end (finish) may be firmly wrapped around one of the feet and the wire cut off. All coils should be immediately labelled with a pencil upon the tag ring to identify it. Shellac or clear nail varnish must be applied to each winding to hold them in place. When dry, the finish ends may be unwrapped from the foot, cut to length and soldered to the selected tag. A two or three cm
Wire is B & S enam. All coils wound on Aegis 3510 Assemblies.

2 cm of wire at each end of the winding, and drill a tug to set the twists, and remove the are about three twists per cm. then give the until there are about 11 loops. Leave about 2 cm of wire at each end of the winding, and remove about 1 cm of enamel from each wire. A multimeter set to ohms can be used to identify the separate windings. It is essential that the end of one winding be connected to the start of another winding to form the centre tap for the secondary of T2, and the primary of T3. Bifilar transformer T1 is made in a similar manner. Once again, it is essential that the end of one winding is connected to the start of the other winding to form the centre tap.

The crystal oscillator board assembly can accommodate eight fundamental oscillators (Pierce and Colpitts) and two overtone oscillators. The final number of oscillators depends on the needs of the user. The photo shows the oscillator board fitted with one Pierce for the 3.5 MHz band, seven Colpitts (with crystals installed for 7, 10, 14 and 21 MHz bands), leaving three spare, and one overtone crystal installed for 28 MHz leaving one spare. The crystal frequencies required for each band are calculated: Y = f - 1.8 where f is the lowest frequency of the band required, eg to tune 28.0 to 28.2: Y = 28 - 1.8 = 26.200 MHz. It was originally stated in the Square-One article that a 3-section, 11-position wafer switch would be required for the bandswitch. However, as it turned out, a 4-section, 11-position switch was required. The acquisition of this switch must be left to the resources of the individual, although one or two sources exist. It may be necessary to buy a 3 x 11 and a 1 x 11 switch and add the bank from the 1 x 11 to the 3 x 11 switch. To do this; undo the two rear nuts and carefully remove all the wafers and spacers. Note this positioning of the little fibre washers and the orientation of the wafers. Do the same with the 1 x 11 switch. Cut two of the spacers in half. This will allow the switch to be re-assembled as a 4 x 11 one. Make the wafer nearest the front that which switches the crystal oscillators. The next wafer — close spaced, should be that which switches the 12 VF supply to the oscillators.

Each PCB and BPF may be mounted upon the under chassis area of the Square-One receiver with threaded spacers. These may be fixed to the chassis with Araldite to save the problem of drilling holes in the chassis with assemblies already mounted on the other side. A short length of braid should be soldered between the oscillator assembly and the RF amplifier.

The crystals should be socketed. A cheap source of sockets are pins removed from miniature tube sockets. Slip the pins onto an old crystal to help with soldering the pins to the PCB with the correct spacing.

### Alignment

A signal generator which covers the HF bands is available, but not essential to get the converter section going. If a generator is available: apply about 10 uV to the input with the RF gain pot set to maximum and see if the signal can be found where expected. The middle section of each BPF will provide the sharpest peak when tuned, and this one should be tweaked first to obtain a signal for each band being so adjusted. The generator level may be steadily reduced whilst adjusting the 12 VF supplies to the oscillators. The acquisition of sections will be rather broad in their response. Check the sensitivity at each end (1.8 and 2.0 MHz) to make sure the sensitivity response is reasonably flat. Some compromise in settings may be necessary to obtain gain flatness.

If no signal can be obtained at all: check that the oscillator for the problem band is operating. The trimming capacitor for the Colpitts crystal oscillator have some C engaged in order for the oscillator to work. With a weak signal applied, it should be possible to peak the oscillator coil for strongest signal response for each band. It may be found that the overtone circuit will not work immediately.

<table>
<thead>
<tr>
<th>Band</th>
<th>C101, 105, 106</th>
<th>C102, 107</th>
<th>C103, 104</th>
<th>L101, 102, 103</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8</td>
<td>1000 pF Styro</td>
<td>4700 pF Cer</td>
<td>47 pF Cer</td>
<td>8 uH: 45 turns No 30</td>
</tr>
<tr>
<td>3.5</td>
<td>470 pF Styro</td>
<td>2200 pF Cer</td>
<td>22 pF Cer</td>
<td>4.2 uH: 26 turns No 28</td>
</tr>
<tr>
<td>7.0</td>
<td>220 pF Styro</td>
<td>1000 pF Cer</td>
<td>10 pF Cer</td>
<td>2.1 uH: 14 turns No 28</td>
</tr>
<tr>
<td>10.0</td>
<td>180 pF Styro</td>
<td>680 pF Cer</td>
<td>6.8 pF Cer</td>
<td>1.5 uH: 17 turns No 24</td>
</tr>
<tr>
<td>14.0</td>
<td>120 pF Styro</td>
<td>470 pF Cer</td>
<td>4.7 pF Cer</td>
<td>1.0 uH: 14 turns No 24</td>
</tr>
<tr>
<td>21.0</td>
<td>82 pF Styro</td>
<td>330 pF Cer</td>
<td>3.3 pF Cer</td>
<td>0.8 uH: 9 turns No 22</td>
</tr>
<tr>
<td>28.0</td>
<td>56 pF NPO Cer</td>
<td>220 pF Cer</td>
<td>2.7 pF Cer</td>
<td>0.5 uH: 7 turns No 22</td>
</tr>
</tbody>
</table>

Wire is B & S enam. All coils wound on Aegis 3510 Assemblies.
Try adjusting the slug. A point should be reached where the oscillator 'plops' into life, and there will be another point where it will drop out again. Set the slug at some point between these limits where the signal peaks. Check that the oscillator will start each time it is switched out and in. It will be found that the actual frequency will now be very close to that marked on the crystal.

If no generator is available; the calibrator signal (from the Square-One) may be used to align each band. The 50 kHz signals are strong enough on most harmonics to allow something to be heard. Pick a fairly strong one, and peak the BPF coils as described above. The oscillator coils may also be peaked using the calibrator signal. When the BPF's have been adjusted, the crystal oscillators may be brought onto frequency, either with the help of a counter, or more simply by adjusting each crystal trimming capacitor so that each band lines up with the calibrator signal at the same point from band to band. It will not be possible to accurately align the 28 MHz crystal, but the error will be small, and the cal pot on the Square-One will allow for this.

The converter may also be adjusted using signals and noise from an antenna. However, this method is more difficult of course due to fading etc. With a reasonable antenna connected to the input, the receiver should sound lively, provided of course that the chosen band is in fair shape.

Please send a large SAE for a copy of circuit board artwork and component location diagrams to the address stated at the beginning of this article.

Photography: Peter Dalliston and Ken McLachlan.
References: Solid-State Design — ARRL.
Radio Handbook — Editors & Engineers.
Radio Communication Handbook — RSGB.
Parts sources:
Coil formers, RFC's: Aegis (makers), Magraths.
Toroids: Magraths, Ellistronics, Watkin Wynne.
CA3028: Magraths, Ellistronics, Rod Irving.
Band Switch: Radio Parts, Magraths.
Crystals: J & A Crystals.
Coax: Acme Electronics, Ellistronics.
Enamel Wire: Magraths, Ellistronics.
Magraths: 55 A Beckett St, Melbourne, 3000.
Ellistronics: 289 LaTrobe St, Melbourne, 3000.
Aegis: 141 Christmas St, Fairfield, 3078.
Rod Irving: 48 A Beckett St, Melbourne, 3000.
Radio Parts: 562 Spencer St, W Melbourne, 3003.
Watkin Wynne: 32 Falcon St, Crows Nest, 2065.
J & A Crystals: 20 Deiville St, Mentone, 3194.
Acme Electronics: 2 Canterbury Rd, Kilsyth, 3137.

MULTI-PIN PLUGS FOR SURPLUS GEAR

John Hassell, VK6ZGF/NXX
77 Kalinda Drive, City Beach, WA 6015

Most military surplus gear is inter-connected by cables with multi-pin plugs. Usually by the time the gear arrives in the amateur shack the essential cables and plugs are long missing and the equipment has to be haywired together to get it working.

Here is a simple way to make multi-pin plugs, using the socket in the equipment as a template for the pin spacings.

1. Tape a square of waxed lunch wrap firmly over the socket.
2. Cut from a suitable gauge of bare copper wire the required number of pins. The length of the pins will vary with the type of socket, but about 2 cm will do for most applications. Trim as needed later. Select a wire gauge to give a firm fit in the socket holes.
3. Push the wire pins through the wax paper into the socket holes. Check that the pins do not protrude too far through the socket.
4. Find a plastic jar or wide mouthed plastic bottle with plastic screw lid. The diameter of the jar should be slightly larger than the socket. Cut the top off the jar about 1.5 cm down from the lid. Drill a hole through the lid to take the cable, and grommet if needed.
5. Place the top section from the jar over the socket, centre carefully and tape in place. Ensure the threaded end is uppermost.
6. Mix some epoxy filler. (I use PlastiBond.) Pour the epoxy into the jar section and fill until about 5 mm of the pins remain exposed. Allow to set, then withdraw the newly-made plug from the socket. Peel off the wax paper.
7. Slide the jar lid on to the cable. Solder the cable wires to the plug pins. Screw the lid on to the body of the now-completed plug.

NOTE. Many multi-pin plugs and sockets use a keyed centre pin to ensure that the plug and socket are mated correctly. As our new plug lacks this refinement it is best to mark with paint the correct orientation of the plug in the socket.
DX — WHO PAYS?

DXers of the amateur fraternity all have their answers to the questions of how to obtain QSL cards from the desired contact, but let us try and have some answers to the questions raised by the DX station.

An amateur decides to visit an island which has no resident amateur population, for a three months holiday. The island has only recently gained its independence and is off the beaten tourist track. At various fairs the aircraft of vintage years and the customs people being very curious about the transceiver, our amateur is duly installed in a comfortable room overlooking the beach. There is no TV or other entertainment after dinner and as our man is of sober habits and lives a quiet life at home, this looks like a great location for a quiet holiday.

The amateur decides to try and listen for amateur contacts. The usual long wire strung to a nearby coconut tree, through a tuner to the transceiver and he is ready. The band seems quiet enough — usual gagle of voices between 200 and 210, a net operating a few kilohertz lower, no recognisable DX callsigns so let's try 195, as he's in a remote location which he considers should count as DX.

His first hour of operating brings a plithora of calls, all calling at once, in an effort to make the contact. This is great. At home on the mainland his calling of “CQ-DX” has only produced one new country in six months and many calls from the more populous areas of the world. Now already in the log are four relatively rare stations and one he’s never heard before.

Granted, there hasn’t been anyone operating from this island during the last six years but he hasn’t anticipated being this popular.

After four hours and eight pages of his log book used, propaganda fizzes out and he’s ready for bed, contemplating how great it was to be wanted by so many operators. The questions of “who is your DXer” has only produced one new country in six years but he hasn’t anticipated being this popular. After four hours and eight pages of his log book used, propaganda fizzes out and he’s ready for bed, contemplating how great it was to be wanted by so many operators. The questions of “who is your DXer” has only produced one new country in six years but he hasn’t anticipated being this popular.

Twelve months after that glorious holiday on the beautiful tropical isle the tide of activity, his total QSOs at home had only filled one and a half log books — nothing compared to the paperwork in his luggage. Home sweet home!! — One of the first sights to greet him in the shack was a grocery carton. Mum had put all his mail in it and it was half full. Mum had already mentioned that the postman had asked “what was Bob selling”.

Slitting open a few envelopes and noting their contacts, Bob was amazed. There were two with US dollar bills, three with four International Reply coupons (IRC) in each and two with just cards and a note on the bottom of the card reading “pse QSL direct”. There must be over two hundred envelopes in the carton.

The next day brings another deluge of mail and by the end of the first week at home, three hundred and seventy five envelopes have disgorged nearly four hundred QSL cards. $155 US, three hundred and forty five SAE, five hundred and ten IRCs, some SASEs and mint foreign stamps of various countries. He’s opened a Pandora’s Box.

Better have some QSL cards printed pretty quick or the Fraud Squad will be around asking questions. Now — what kind of card to print — lets have a look at some good DX cards already received from overseas. Now that’s a good one from VPg looks a little like where the operation took place and in the holiday slides are one or two that could be used for a good card picture. Now for some prices to get the cards printed. Wow — $875 for five thousand cards. Suppose that will have to do and after all I’ve already collected $350 from incoming mail so far. That will surely be enough cards to answer all incoming mail.

Six months later — with the incoming mail drying up, the intrepid holiday DXer begins to count the cost. Practically all his spare time has been taken up with mail opening, sorting, checking contacts in the log, writing return QSLs, enveloping and posting. The local postal clerk tends to shun him now if possible — wonder why.

After all he only had to count and stamp some IRCs whenever there was any posting to be done, then occasionally he did have to look up the Postal Guide to see if a certain police existed and how much it cost to airmail all four there. Apparently nobody else in the district uses IRCs and no one sends out so many confirmations direct. It’s so difficult trying to explain about confirming contacts by mail as the postal clerk thinks if I’ve spoken to them, what’s all the mail about. Things that cannot be talked about on the radio?? Weird!! Oh well that’s the last card posted off.

During the last six months, there was only about sixty QSLs received via the bureau. That’s good, now to sum up our work to date.

<table>
<thead>
<tr>
<th>Credit — Envelopes received</th>
<th>4800</th>
</tr>
</thead>
<tbody>
<tr>
<td>QSLs received</td>
<td>5000</td>
</tr>
<tr>
<td>SAE received</td>
<td>4300</td>
</tr>
<tr>
<td>IRC at 40 cents each</td>
<td>$1</td>
</tr>
<tr>
<td>$1 US</td>
<td>$200</td>
</tr>
<tr>
<td>Total</td>
<td>$8 100</td>
</tr>
</tbody>
</table>

| Debit — Postage             | $2880 |
| Print Cards & Envelopes     | $ 300 |
| Total                       | $3780 |

Balance — $4320

Now everyone will say the holiday paid for itself and at the moment this does look to be so. However, time passes and at the following WIA meetings the QSL officer keeps handing over thick wads of cards from the incoming bureau. Heck! with answering the direct cards our friend had forgotten about the bureau. So another printing is necessary but this time it costs $895 for five thousand cards which should be enough to satisfy the demand.

Two months after that glorious holiday on the beautiful tropical isle the tide of bureau cards is almost as strong as the direct QSLs were in those first hectic months of being home. By now there have been five thousand cards sent out at 2 cents a card and the kitty is looking quite different to the early days. Bureau operation and card printing have reduced the profit to $3000. Still that is quite a handsome profit for doing work that was enjoyed — or was it?

The suntan soon disappeared because weekends were spent answering QSLs and his middle expanded because of lack of exercise. His mum noticed that seldom, if ever, was her favourite evening TV pro- gramme jitting as Bob was not transmitting anymore. She had heard him muttering to himself a lot lately too. Words like — never again — all those blasted cards — thirty seconds contact causes five minutes paper work — I’ll get a manager next time.

Note — All characters are completely fictitious and have no reference to any living persons or DX stations.
Russian shown in this article has not been spelt correctly and this has been done deliberately in order that the pronunciation could be taken literally straight from the text. The reason why this has been done is that when consulting the various RUSSIAN/ENGLISH guides that are available, it has been found that if the Russian phrases in general as printed in these books are not understood by European Russians, they were perhaps intended for confusion rather than assistance.

The following phrases will be sufficient to at least allow a very simple contact to be realised and it is certainly not intended as a guide for the experienced linguist or Russian language expert.

It should be remembered that if a contact is to be attempted, one must speak slowly as the accents are worlds apart let alone the languages and in general I have found nearly all Russian speaking people only too willing to assist in respect of language difficulties, provided of course, that they know what is required of them. Remember, most of the English speaking Russians have a limited English vocabulary and also have difficulty in understanding if you speak too fast.

From January to May 1983, I have had over 400 contacts with stations in European Russia and at least 200 of these contacts were with stations in European Russia. I might add that I only started to learn the Russian required to establish contact in January and for a person all in the Russian language. I might add that I only started to learn the Russian required to establish contact in January and for a person who was a very poor French scholar many years ago in school, I have found it to be a very rewarding and challenging exercise.

The Russian alphabet is quite different to our own as are various vowel groups and many of the phrases shown in this article are shown purely for pronunciation. Any attempt to write Russian, using the methods shown here, to a Russian speaking person will, quite probably, send the recipient into peals of uncontrollable laughter. If you would like to write in Russian, then I would suggest a more serious look at the experienced linguist or Russian language expert.

The following is a typical very short QSO between VK3ST and UK9ACP. The English will be first to give the guide followed by the Russian alphabet.

Good morning —
DÖBRI DOTRA

The above should be enough to get you through a very basic QSO and remember that most Russians speak a limited amount of English so don't be afraid to change language if you lose track, can't understand or want to know/respond to some other comment. Some other useful phrases that may help are:

1 — CHETERYA
2 — DVA
3 — TREE
4 — CHITERYA
5 — PYAT
6 — SHEST
7 — SYE-EM
8 — VÓSYEM
9 — DYÉVIT

Listen to the reply and with care you should be able to piece together the response using the information already given.

UK9ACP this is VK3ST, thankyou my friend Gene, excellent
OOLYARNA KOSTYA DYÉVIT ÁNNA CENTRALI PARVIL YA ZOOK KOSTYA TREE SÉGAY TAKYÁNA, SPASIBA MI DROOK GENE, PRIKRÁNSA.

Thankyou for the signal (report) 59
SPASIBA ZA SIGNÁL PYAT DYÉVIT

Thankyou my friend Gene for the beacon contact
MOY DROOK GENE, SPASIBA ZA HORIZA SE-ÁZ

I will QSL 100% via the bureau to Moscow
QSL STO PROSFÉNTÓV BUREAU MOSKVA

Until we meet again on the air, good luck to you my friend
DO-NÓY-DY VÝRÔTCHIE VA VÉERIE,
VSEY'V VAM DÖBROVÓ MOY DROOK
SYÉ-EM DYÉSIT TREE

UK9ACP this is VK3ST. Goodbye, thankyou my friend
DO-NÓY-DY VÝRÔTCHIE VA VÉERIE,

Thankyou, UK9ACP this is VK3ST,
SPASIBA UNIFORM KILO DYÉVIT ALPHA CHARLIE POPPA YA VICTOR KILO TREE SIERRA TANGO

(My name is) MANYA ZOV'OT IAN (spell phonetically)
(INDIA ALPHÁ NOVEMBER)

Good morning — DÖBRI DOTRA
Good afternoon — DÖBRI DÉEN
Good evening — DÖBRI VÝCHER

My name is Ivan
MANYA ZOV'OET IÁN (spell phonetically)

Your signals are 5
VASH SGNÁL PYAT DYÉVIT

My city/town is
MOY GOROD

My transceiver is a Drake TR7 and my antenna is a four element yagi
MOY TRÁNŚCÉVER, DRAKE TAKYÁNA

Listen to the reply and with care you should be able to piece together the response using the information already given.

UK9ACP this is VK3ST, thankyou my friend Gene, excellent
OOLYARNA KOSTYA DYÉVIT ÁNNA CENTRALI PARVIL YA ZOOK KOSTYA TREE SÉGAY TAKYÁNA, PRIÖN

Thankyou, UK9ACP this is VK3ST, thankyou my friend Gene

Good
HÖR-OŠA-YÖ (HOROSHÖ)

I am sorry
YA O-CHEN SOZ-OLÁYOO

What is your callsign?
KAKOYI VASH POZÍNOY?

Please
PAZHÁOOSTA
Please give me your name? (QTH)
Pazhaoosta DA'TYE SnOWA VASH IMYA? (Goorod)
Repeat your name? (QTH)
Pov-Tor-ITA SNOWA VASH IMYA? (Goorod)
Thank you very much my friend.
Bolshoye spasiba moy drook
I hope to see you again.
Yes - DA ... No - NIET ...
Friends (plural) — Drooze-Ya ... If speaking to a lady, one should say "MOYA PADROOGA" my friend
The temperature is 20 degrees (above freezing).
Dvatsad Gra-Dusaf (tipla) or TemperatooRA dvadosad GADOOSOF
Today is good weather
SivoD-Nya hor-oshya-pa-goda
Today it is
SivoD-Nya (warm) tiplo ... (very hot)
Ochen Zharko ... (hot) Zsarko ... (cold) Pra-KhloDna ... (cold)
Kholodna
Please speak slowly
PaszaLsta gava-ri-Tye M-Yed-Lyenna
I do not understand you
Ya nye Pani-Mayu Vas

To those of you who are willing to give it a go, I am sure that you will find that contrary to popular belief, learning to use a language can be very satisfying and will certainly put some value on those QSL cards that are received via Box 88 in Moscow.

In conclusion, I would like to thank Gene Shcumat, UA9AAP and the many other Russian speaking amateurs who have assisted me during my initial learning period and I feel that a special bond grows and develops between those who try to help others and this should be encouraged wherever and whenever possible. Remember that we are in a specialist area that involves communication and communicating. Let us get out there and communicate and learn from one another.

Editor's Note
Thanks are due to R Hancock, VK5AFZ, for checking and, where necessary, correcting a few phonetic equivalents and also for the following notes.

Use of the Russian phonetic alphabet is not really necessary, as all Russian amateurs are familiar with the International Phonetic Alphabet. However, the Russian system is used to a greater extent between Russians themselves so it is handy to know if you want to "eavesdrop" on USSR stations. Personally I would advocate that everyone uses the International Phonetics on all occasions for the sake of uniformity and to avoid confusion.

Also, a reminder that VK stations conducting a QSO in a foreign language are required to identify their call letters in English at the appropriate intervals. Identification in the foreign language only is not sufficient.
MORSE CODE AND YOUR COMPUTER

About two years ago, I became interested in computers and bought myself a TRS-80. There were a number of other computers available and a wide range of prices. Knowing nothing about any of them, I settled for the TRS-80 on the recommendation of a friend who had one.

I learned to programme it by following the excellent instructional manual which came with it, but I found it helped to study a couple of other books on basic programming which were available from the Tandy Store.

I knew computers could be used for sending and receiving Morse code and RTTY but had no idea how to write a programme to do this and enquired about getting a programme already written. The programmes advertised by various software suppliers seemed to be limited to calculating the lengths of elements for antennas or for keeping a log book. There were hardware and software packages that could be bought, but these seemed to be far too expensive.

Finally, I decided to write a programme myself. I looked for guidance in various magazine articles, but the authors were theorising with algorithms about how it could be done or giving programmes in machine language which I didn't understand. I'm strictly a self-taught Basic only programmer.

There seemed to be three problems:

— how to generate Morse
— how to decode Morse
— how to connect (interface) the computer to the rig

I found out that, without some more expensive hardware, the TRS-80 could only communicate with the outside world through its connections to the cassette tape recorder used for loading and storing programmes. One of the connections is to the remote plug of the recorder’s motor during recording or play-back. I set to work to write a programme that would turn on the motor for the length of a dit, turn it off for the same time, then turn it back on for the length of a dah. By connecting the remote plug to an audio oscillator instead of the tape recorder, that would have sent the letter A.

The instruction “OUT 255.04” turns on the motor and “OUT 255.0” turns it off again. A delay loop is needed to determine how long the motor is on or off. As we are not using the motor, it’s really a matter of how long the cassette relay in the computer is turned on or off, which governs how long the oscillator is on or off.

I found by experimenting that the Morse speed in WPM when divided into 400 gave the number of loops required for a delay equal to one dit at that speed. I use the expression “X1=(400/B1)”, where “X1” is the number of loops and “B1” is the number of WPM. Thus the instruction needed to send a dit is: 10 OUT 255.04: FOR I=1 TO X1: NEXT I: OUT 255.04.

There is a need to send a dit length space after each dit or dah, so the next instruction would be: 20 FOR I=1 TO X1: NEXT I.

Because a dah is three times as long as a dit, the loop needs to be of a length equal to X1*3 (X1 multiplied by 3 for those who don’t read Basic). So a dah followed by a space would be sent by: 30 OUT 255.04: FOR I=1 TO X1: NEXT I: OUT 255.0 FOR I=1 TO X1: NEXT I. If we put in another line: 40 GOTO 10 we have written a programme that will keep on sending DIT DAH until you switch it off.

If we put a space the length of 3 DITS after the DAH, the letter A will be sent continuously, so we’ll amend line 40 to read: 40 FOR I=1 TO X1: NEXT I: GOTO 10.

The next thing is to construct a piece of hardware, so that you can hear the Morse sent. For this you will need a small relay, a battery to run it, an audio oscillator module and a separate battery if it happens to use a different voltage from the relay. A small speaker will allow you to hear the oscillator.

Make up the hardware, plug in the remote plug, and enter the programme. If you have a TRS-80 you should now be able to hear continuous A’s. If you don’t have a TRS-80, but you have a computer with connections for an external tape recorder, it may work if you find the number of its cassette port and substitute that for the number 255 in the programme. If your computer doesn’t have such a connection, I’m afraid I don’t know what you can do.

Being able to send a lot of A’s will not be of much practical use, so a bit more programming is needed to send all the other letters of the alphabet, as well as figures and punctuation.

I might say at this stage that since writing my programme, I have learned of several other ways to generate Morse with a programme in Basic, and know that there are a number of machine language programmes that will do it. However, this is the only one that I have tried, so I’ll stick to what I know.

The next step is to write sub-routines for sending one, two and three dits, and one, two and three dahs. Any letter, figure or symbol will be made up of one or more of these. Then we can input a letter to the computer by typing it on the keyboard, and have the computer say to itself “if this is an A, then GOSUB for one dit and GOSUB for one dah and return for the next letter”. For the letter C it would be GOSUB for a dah then a dit then a dah and another dit. The input of the letter is achieved by the INKEY$ function of the computer which strobos the keyboard to find out which letter has been pressed, then calls the sub-routine for generating the dits and dahs for that letter.

If you have a look at the programme listing, you will see that line 120 is the INKEY$ function which determines which key has been pressed. Line 130 converts that letter to its ASCII equivalent (that is — a number which means a letter).

Lines 130 and 131 convert the ASCII numbers so that A to Z equals 1 to 26 and 0 to 9 equals 27 to 36.

Line 137 causes the computer to go to one of the lines between 310 and 650 which means the appropriate letter or figure. That line then calls up the sub-routine that generates the Morse for the letter or figure. Much the same thing happens with lines 170 to 270, which generate some useful phrases and punctuation, etc, and line 180 which sends eight dits to indicate an error. The other parts of the programme do things like sending pre-recorded messages, and if you’ve been able to follow the explanation so far, you’ll have no difficulty in working them out.

The next part of the programme is a bit more difficult. This is the part that decodes Morse. The following short version of the decode portion, which has explanatory statements may help you to understand it.

Even though I wrote it, I have to think pretty hard myself to work out what it is doing. I mentioned earlier that there are other programmes available to send Morse. As well, there are programmes you can buy to decode Morse. The ones I have seen are either in machine language so I don’t know what is happening or they are in Basic and don’t work. At least, I haven’t been able to make them work — and I believe that I’m not alone in this. Anyway, mine does work — if the Morse comes from a code oscillator — but I have problems if the Morse comes off the air.

To some extent this is due to static and random noise, but I think that to a large extent, it is due to badly keyed Morse.

Anyway programme one is a short listing of the decode section of the programme which has Rem statements which may help you to understand what it is doing:

The programme senses whether there is a signal at the input port number 255, which is the cassette input to the computer. If the value of that port is 255 then there is a signal and if there is no signal, the value is 127. I don’t really know why, it just works that way. Then the time that the signal is there is measured to find out if the signal is long or short — that is whether it is a dit or a dah. In between dits and dhas the spaces are measured to find out

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Page 32 — AMATEUR RADIO, December 1983
15 INPUT "SPEED IN W.P.M."; W$: REM** OMIT WHEN MERGED WITH SEND ROUTINE, WHICH HAS A SIMILAR INPUT
16 Z=1744/48*1/W$: REM** Z=LENGTH OF ONE DIT, LINES 30+31 & 40+41 LOOP 1744 TIMES IN A MINUTE. THE LENGTH OF ONE WORD IS EQUAL TO 48 DITS AT 1 W.P.M. W IS THE NUMBER OF W.P.M.
21 A$=INKEY$: IF A$="$" GOTO 15 REM** HIT $ TO CHANGE SPEED.
22 REM IF A$="#" GOTO ** START OF "SEND" ROUTINE
23 V=V+1: IF U=1 AND V=Z+5 THEN PRINT CHR$(32):U=0: REM**PRINTS A SPACE AT THE END OF A WORD.
25 IF INP(255)=127 THEN 21 ELSE 40 REM**LOOKS TO SEE IF THERE IS A CHANGE OF SPEED OR RETURN TO SEND ROUTINE.
30 V=0: X=0: Y=Y+1: IF Y>=Z+3 THEN 101 REM**IF SPACE IS EQUAL TO 3 DITS OR MORE, LETTER IS COMPLETE, SO PRINT IT.
31 IF INP(255)=127 GOTO 30 REM**MEASURES TIME KEY IS UP.
40 OUT255, 1: : : : s s s s : s B s s s s s s A 41 IF INP(255)=255 GOTO 40 REM**MEASURES TIME KEY IS DOWN. COLONS MAKE LOOP TIME OF 40+41 SAME AS 30+31 - 1744 PER MINUTE.
60 IF X>=Z AND X<Z*3 THEN T$="." REM**IF SPACE IS EQUAL TO 3 DITS OR MORE, LETTER IS COMPLETE.
70 IF X>=Z*3 THEN T$="=" REM**ACCUMULATES THE DITS AND DAVHS UNTIL A LETTER IS COMPLETE.
101 IF W$="." THEN PRINT "A": GOTO 150 REM LINES 104-140 COVER D-Z AND 1-0
102 IF W$="=" THEN PRINT "B": GOTO 150
103 IF W$="-" THEN PRINT "C": GOTO 150
104 REM LINES 104-140 COVER D-Z AND 1-0
141 IF W$="..." THEN PRINT "ERROR": GOTO 150
150 W$="": U=1
160 Y=0: GOTO 21 REM** GOES TO LOOK FOR THE NEXT LETTER.

whether they are spaces between symbols (one dit length) letters (one dah length) or words (five dit lengths).

If you try the programme and it doesn't seem to work - particularly if you get a lot of E's, I's or S's - change the value of W a little at a time until it comes good. However, unless you have a source of good clear Morse without any static or random noise, you'll get some funny results. The receive programme works quite well on Morse generated by the send portion of the programme and recorded on tape for later playback.

That brings us to the next point of how you get the received Morse into the computer so that you can decode it.

Morse recorded on tape can just be put in through the normal cassette connection to the computer. To hook up a rig, it would probably only be necessary to take a lead from the phone jack or extension speaker socket, or even by a tap across the voice coil oscillator into the Aux socket of the tape recorder.

To connect the computer to the rig to transmit Morse on the air, connect the spare set of contacts (the normally open ones) on the relay in the piece of hardware mentioned earlier to the key jack of your rig.

No doubt, the receive portion of the programme would work better if it was in machine language, but I don't know how to do that. You may think that the send portion is a bit cumbersome, with all those GOSUB's. However, it is written and it works. If I were doing it again I would do it differently, but isn't that the same with any project we attempt?

If you would like a copy of the programme on cassette tape, I'll be glad to supply it — just send me a Jiffy bag and enclose a cassette tape, your name and address and return postage.

OLYMPIC GAMES 1984
Amateurs in California with the numeral 6 in their call sign will have the opportunity to commemorate the 23rd Olympiad in 1984 during the months of July and August.

The FCC will permit the amateurs to substitute the number 6 with either "23" for the 23rd Olympiad or "84" on a voluntary basis.

from The ARRL Letter, Vol 2 No 20.

NEW AWARD
The "Lower Eyre Peninsula Amateur Radio Club Inc", based at Port Lincoln, on Lower Eyre Peninsula, will have the official opening of it's new club facilities on Sunday, 29th January, 1984.

To mark the occasion, a first ever Eyre Peninsula Award will be issued with a special endorsement for opening day. The official opening of the club rooms and the launching of the award will coincide with the city's annual "Tunarama Festival".

AMATEUR RADIO, December 1983 — Page 33
10 'TO CHANGE CALL SIGN EDIT LINES 70, 1010 AND 1060
20 CLS
30 PRINT"
***MORSE CODE***" 7 1/4/83.
7
35 WRITTEN BY ALAN MACLEAN? VK3ASL, QTHR.
40 INPUT"INSERT SPEED REQUIRED IN WORDS PER MINUTE";B1
50 XI-(400/B1)
60 PRINT "TUNE'
!. SEND
#. CHANGE SPEED
RECEIVE */..
70 PR I NT" COMMENCE
CALL CQ
- . FROM
i. VK3ASL
).
= . END MESSAGE
il. ERROR
+.
80 PR I NT "END OVER *. BREAK
90 PRINT"TYPE f TO SEND MESSAGE ENTERED IN LINES 910 AND 960"
110 P1 =0: K--0: J =0: Q1 =0: J1 =0: R1 =0
120 B$==INKEY$ii IFB$=""THEN120
130 A1=ASC(B$> : I FA 1 >64 AND A1 < 91THEN Al=:Al-64: G0T0137
131 IFA1>47ANDA1< 58THENA1=A1-21:GOTO137
132 IF A1=32 THEN GOTO 300 ELBE 139
137 ON A1 GOTO 310, 320.- 330, 340, 350, 360, 370, 380, 390, 400, 410.. 420.- 430, 440, 450, 460, 4
70, 480, 490, 500, 5.10, 520, 530, 540, 550, 560, 565, 570, 580, 590, 600, 610, 620, 630, 640, 650
139 IF B$="!"G03UB800!G0T0110
140 IF Bt="#"THENPRINTCHR$(10)"**SENDING**"sG0T0110
150 IF B$="4"G0T020
160 IFB$= "'/."GOTO 1120
170 I FB$= " ?<"G0SUB740-! G0SUB710! G0SUB740: G0SUB710: G0SUB740: G0T0670
180 IFB$=" 7 "THENQl-lsGOTO1000
190 IFB$="("G0SUB740:G0SUB710SG0SUB710: G0SUB780:G0SUB710:G0T0670
200 IFB*=">"THEN Rl=l:GOTO1050
210 IFB$=" *"G0SIJB710: G0SUB740: G0SIJB710: G0SUB740s G0SUB710: G0T0670
220 IFB$~"="G0SUB740-G0SUB730:60SUB740:G0T0670
230 IFB$="H"G0SUB730:G0SUB740:GGSUB710:G0SUB740:G0T0670
240 IFB$=" , "G0SUB750:: G0SUB720: G0SUB750: G0T0670
250 IFB$="."G0SUB710:G0SUB740:G05UB710:G0SUB740:G0SUB710:G0SUB740:G0T0670
260 IFB$="?"G0SUB720-G0SUB750:GQSUB720:G0TO670
270 IFB$="/"G0SUB740:G0SUB720!G0SUB740:G0SUB710:G0T0670
280 IFB$=" + "G0SUB71OsG0SUB780:G0SUB710:G0SUB780iG0SUB710sG0SUB780:G0SUB710:60T01
700
290 IFB$="f"THENP1=1:60T0900
300 G0SUB775:G0T0670
310 G0SUB710 G0SUB740: G0T0670 7 7 'A
320 G0SUB740 G0SUB730: G 0 T 0 6 7 0 7 7
330 G0SUB740 G0SUB710: G0SUB740 s G0SUB710 !60T0670' 7 C
340 G0SUB740 G0SUB720! G0T0670 7 D
350 60SUB710 G 0 T 0 6 7 0 7 7 E
360 G0SUB720 B0SUB740: G0SUB710 sG0T0670' •-F
370 G0SUB750 G0SUB710: G0T0670 7 ' G
380 G0SUB710 G0SUB730: GDT0670 7 H
390 G0SUB720 G0T0670' 7 I
400 G0SUB710 G0SUB760J G0T0670 7 J
410 G0SUB740 G0SUB710 s G0SUB740: G0T0670' 7 K
420 G0SUB710 G0SUB740! G0SUB720S G0T0670 7 7 L.
430 G0SUB750 G0T0670'' M
440 G0SUB740 G0SUB710: GOT0670' 7 N
450 G0SUB760 G0T0670'' 0
460 G0SUB710 G0SUB750: G0SUB710S G0T0670 7 •"P
470 G0SUB750 G0SUB710: G0SUB740: G0T0670 7 7 Q
480 G0SUB710 G0SUB740: G0SUB71OS G0T0670 7 7 R
490 G0SUB730 G0T0670' 7 e
wJ
500 G0SUB740 G 0 T 0 6 7 0 7 7 T
77
510 GOSUB720 S0SUB740: G 0 T 0 6 7 0 U
7
V
520 G0SUB730 G0SUB740: G0T0670
77
530 G0SUB710 G0SUB750." G G T 0 6 7 0 W
540 G0SUB740 G0SUB720: G0SUB740: G0T0670' v
y\
550 G0SUB740 G0SUB710: G0SUB750: G0T0670' 7 Y
560 G0SUB750 G0SUB720: G0T0670'' Z
565 G0SUB760 G0SUB750: GDT0670'' 0
Page 34 — AMATEUR RADIO, December 1983


570  GOSUB710: GOSUB740: GOSUB760: GOTO670 '1
580  GOSUB720: GOSUB760: GOTO670 '2
590  GOSUB730: GOSUB750: GOTO670 '3
600  GOSUB730: GOSUB710: GOSUB740: GOTO670 '4
610  GOSUB730: GOSUB720: GOTO670 '5
620  GOSUB740: GOSUB730: GOSUB710: GOTO670 '6
630  GOSUB750: GOSUB730: GOSUB760: GOTO670 '7
640  GOSUB760: GOSUB720: GOTO670 '8
650  GOSUB760: GOSUB740: GOSUB710: GOTO670 '9
670  GOSUB775: PRINTB$:
680  IF P1 = 1 THEN GOTO 900
690  IF Q1 = 1 THEN GOTO1000
695  IF R1 = 1 THEN GOTO1050
700  GOTO110
710  OUT255, 04: GOSUB770: OUT255, 0: GOSUB770: RETURN ' DIT
720  OUT255, 04: GOSUB770: OUT255, 0: GOSUB770: OUT255, 04: GOSUB770: RETURN ' 2 DITS
730  OUT255, 04: GOSUB770: OUT255, 0: GOSUB770: OUT255, 04: GOSUB770: OUT255, 0: GOSUB770: RETURN ' 3 DITS
740  OUT255, 04: GOSUB780: OUT255, 0: GOSUB770: RETURN ' DAH
750  OUT255, 04: GOSUB780: OUT255, 0: GOSUB770: OUT255, 04: GOSUB780: OUT255, 0: GOSUB770: RETURN ' 3 DAHS
760  OUT255, 04: GOSUB780: OUT255, 0: GOSUB780: OUT255, 04: GOSUB780: OUT255, 0: GOSUB770: OUT255, 0: GOSUB770: RETURN ' 4 DAHS
770  FOR A1 = 1 TO X1: NEXT: RETURN ' DIT LENGTH
775  FOR A1 = 1 TO X1 + 1: NEXT: RETURN ' SYMBOL AND WORD SPACE
780  FOR A1 = 1 TO X1: NEXT: RETURN ' DAH LENGTH
785  OUT255, 04: FOR A1 = 1 TO 3000: NEXT: OUT255, 0: RETURN ' KEY DOWN 6 SECS
790  IF J = J + 1
795  CS$="A MESSAGE OF 255 CHARACTERS MAY BE INSERTED HERE."
800  IF J1 > LEN(C$) THEN 950
805  B$ = MID$(C$, J, 1)
810  GOTO130
815  K = K + 1
820  D$ = "AND ANOTHER ONE HERE."
825  IF K > LEN(D$) THEN 110
830  B$ = MID$(D$, K, 1)
835  GOTO130
840  J1 = J1 + 1
845  B$ = "VK3ASL"
850  IF J1 > LEN(L1$) THEN 110
855  B$ = MID$(L1$, J1, 1)
860  GOTO130
865  J1 = J1 + 1
870  B$ = "VK3ASL"
875  IF J1 > LEN(L1$) THEN 110
880  B$ = MID$(L1$, J1, 1)
885  GOTO130
890  GOTO130
895  B$ = "**RECEIVING**"
900  Z = 1744 / 48 + 1 / B1
905  A$ = INKEY$: IF A$ = "$" GOTO20
910  IF A$ = "#" THEN PRINTCHR$(10) "**SENDING**": GOTO110
915  V = U + 1: IF U = 1 AND V > Z + 5 THEN PRINTCHR$(32): U = 0
920  IF INF(255) = 127 THEN1150 ELSE1210
925  V = 0: IF V = Z + 3 THEN1260
930  IF INF(255) = 127 GOTO1190
935  IF INF(255) = 255 GOTO1210
940  IF X > Z AND X < Z + 3 THEN S$ = "."
945  IF X > Z + 3 THEN S$ = "-"
950  W$ = W$ + T$: GOTO1190
955  IF W$ = "." THEN PRINT"A": GOTO1630
960  IF W$ = ".-" THEN PRINT"B": GOTO1630
965  IF W$ = ".-." THENPRINT"C": GOTO1630

AMATEUR RADIO, December 1983 — Page 35
Bill Blitheringtwit & the BLACKOUT ...

Bill Blitheringtwit was thoroughly fed up with the whole mobile situation. It had been nothing but disaster from beginning to end, resulting in a mutilated car and a wrecked antenna, not to mention a microphone trampled beyond redemption. He decided he had had enough of being banned from the house by a determined better half and that it was time he resumed activities inside. After all, it had been weeks since the affair of the ruined antenna and a new one had been erected by then by a tradesman.

A tradesman! Merciful heavens! Couldn't Bill have done that sort of thing himself? Amateur Radio was about doing things yourself, not to mention a microphone trampled beyond redemption. He decided he had had enough of being banned from the house by a determined better half and that it was time he resumed activities inside. After all, it had been weeks since the affair of the ruined antenna and a new one had been erected by then by a tradesman.

Then the smoke started. Thick, oily and revolting. It came through the holes in the top of the power supply box and got steadily thicker.

This caused Bill some alarm. The device had never done this before, even though he could recall hearing unusual pops and squeaks from it last time he had used it. He wasn't sure what to do. It didn't occur to him to switch off the power supply at the socket. Instead he suddenly remembered he had a glass of beer with him. Instantly he tossed the contents of the glass over the supply, so it would fall through the holes and put the fire out.

There was a loud bang as the house fuses blew and Bill's wife, happily watching TV with her brand new antenna, was dramatically plunged into darkness, a better job himself for half the price!

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There was a loud bang as the house fuses blew and Bill's wife, happily watching TV with her brand new antenna, was dramatically plunged into darkness, a better job himself for half the price!

He wandered into his long neglected shack and stared at his gear. It was covered with a fine film of dust and quite a few cobwebs. This wasn't because of his enforced absence: it always looked like that. Bill felt something stirring within him, a strange longing tinged with frustration and a certain amount of trepidation. There was his ancient Star, the Rolls Royce of rigs, neglected, lonely and calling for him.

Suddenly he sat at the table. Dare he? Why not? After all, Amateur Radio was about doing your thing and why shouldn't he do his? Damn it! A man can stand just so much! He turned on the power supply. It was silent and did not emit the loud hum he was used to. Strange! The plug was in and switched on. He gave the cord a yank and at this stage the smell began. It was a smell like an old Incinerator, mixed with burning rubber, together with dust. He wiggled the power cord about a bit and heard odd crackling sounds.
**ABBREVIATIONS IN COMMON USE**

Magazine articles and books dealing with almost any aspect of modern electronics will be found to contain quite a few acronyms and other abbreviations for frequently-used terms. Once the abbreviations are known, communication often becomes easier and more efficient than if they were not used; but until the abbreviations are known, it can be very difficult. Below you will find most of the abbreviations in common use, with their meanings briefly explained. Used as a reference, this should allow you to follow most articles and books.

- Specialised or less frequently used abbreviations should usually be defined in the articles in which they appear, either in the text at the first appearance, or in a separate glossary. For more complete explanations of meanings than are given here, refer to standard texts.

### Abbreviations in Common Use

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>Ampere (Amp)</td>
</tr>
<tr>
<td>AC, ac</td>
<td>Alternating current</td>
</tr>
<tr>
<td>AF, af</td>
<td>Audio frequency</td>
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<tr>
<td>AGC</td>
<td>Automatic gain control</td>
</tr>
<tr>
<td>AH</td>
<td>Hamads — at home or private number. After hours</td>
</tr>
<tr>
<td>ALC, alc</td>
<td>Automatic level control</td>
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<tr>
<td>AM, am</td>
<td>Amplitude modulation</td>
</tr>
<tr>
<td>AMSAT</td>
<td>The Radio Amateur Satellite Corporation</td>
</tr>
<tr>
<td>ANL</td>
<td>Automatic noise limiter</td>
</tr>
<tr>
<td>AOCP</td>
<td>Amateur Operator’s Certificate of Proficiency</td>
</tr>
<tr>
<td>AR, ar (s)</td>
<td>Amateur radio (service), Amateur Radio magazine</td>
</tr>
<tr>
<td>ASCII</td>
<td>American Standard Code for Information Interchange</td>
</tr>
<tr>
<td>ATV</td>
<td>Amateur television</td>
</tr>
<tr>
<td>avc</td>
<td>Audio volume control</td>
</tr>
<tr>
<td>balun</td>
<td>Balanced to unbalanced transformer</td>
</tr>
<tr>
<td>bc</td>
<td>Broadcast</td>
</tr>
<tr>
<td>BCD, bcd</td>
<td>Binary coded decimal</td>
</tr>
<tr>
<td>bci</td>
<td>Broadcast interference</td>
</tr>
<tr>
<td>BFO, bfo</td>
<td>Beat frequency oscillator</td>
</tr>
<tr>
<td>bit</td>
<td>Binary digit</td>
</tr>
<tr>
<td>Bus</td>
<td>Hamads — business or working hours, office hours</td>
</tr>
<tr>
<td>CB</td>
<td>Citizens band</td>
</tr>
<tr>
<td>CCIR</td>
<td>ITU — Comité Consultatif International des Radiocommunications</td>
</tr>
<tr>
<td>Ch</td>
<td>Channel</td>
</tr>
<tr>
<td>cm</td>
<td>Centimetre</td>
</tr>
<tr>
<td>coax</td>
<td>Coaxial cable</td>
</tr>
<tr>
<td>CRO</td>
<td>Cathode Ray Oscilloscope</td>
</tr>
<tr>
<td>CW, cw</td>
<td>Continuous wave, carrier wave (Morse)</td>
</tr>
<tr>
<td>dB</td>
<td>Decibel</td>
</tr>
<tr>
<td>DC, dc</td>
<td>Direct current</td>
</tr>
<tr>
<td>DX, Dx</td>
<td>Distance (relative)</td>
</tr>
<tr>
<td>EHF, ehf</td>
<td>Extra High Frequency (30-300 GHz)</td>
</tr>
<tr>
<td>EHT, ehl</td>
<td>Extra High Tension (V)</td>
</tr>
<tr>
<td>EMC</td>
<td>Electromagnetic Compatibility</td>
</tr>
<tr>
<td>EME</td>
<td>Earth-moon-earth (moonbounce)</td>
</tr>
<tr>
<td>emf</td>
<td>Electromotive force (V)</td>
</tr>
<tr>
<td>ERP</td>
<td>Effective radiated power</td>
</tr>
<tr>
<td>F</td>
<td>Farad</td>
</tr>
<tr>
<td>FCC</td>
<td>Federal Communications Commission (USA)</td>
</tr>
<tr>
<td>FET</td>
<td>Field effect transistor</td>
</tr>
<tr>
<td>FM, fm</td>
<td>Frequency modulation (“NB” — narrow band)</td>
</tr>
<tr>
<td>fsd</td>
<td>Full scale deflection</td>
</tr>
<tr>
<td>FSK</td>
<td>Frequency shift keying (F1 mode)</td>
</tr>
<tr>
<td>g</td>
<td>Gram</td>
</tr>
<tr>
<td>GDO, gdo</td>
<td>Grid dip oscillator</td>
</tr>
<tr>
<td>GHz</td>
<td>Gigahertz (1000 MHz)</td>
</tr>
<tr>
<td>h</td>
<td>Hour (24 hour clock), hecto</td>
</tr>
<tr>
<td>H</td>
<td>Henry</td>
</tr>
<tr>
<td>HF, hf</td>
<td>High frequency (3-30 MHz)</td>
</tr>
<tr>
<td>hi, hi</td>
<td>Greetings</td>
</tr>
<tr>
<td>HT</td>
<td>High tension (V) (also hV, HV)</td>
</tr>
<tr>
<td>Hz</td>
<td>Hertz (cycles per second)</td>
</tr>
<tr>
<td>IARU</td>
<td>International Amateur Radio Union</td>
</tr>
<tr>
<td>IC, ic</td>
<td>Integrated circuit</td>
</tr>
<tr>
<td>IF, if</td>
<td>Intermediate frequency</td>
</tr>
<tr>
<td>ITU</td>
<td>International Telecommunications Union</td>
</tr>
<tr>
<td>K</td>
<td>Kilo (1000) — e.g. kilo-ohm (1000 ohms)</td>
</tr>
<tr>
<td>kg</td>
<td>Kilogram</td>
</tr>
<tr>
<td>kHz</td>
<td>Kilohertz (1000 Hz)</td>
</tr>
<tr>
<td>km</td>
<td>Kilometre</td>
</tr>
<tr>
<td>kW</td>
<td>Kilowatt</td>
</tr>
<tr>
<td>LAOCP</td>
<td>Limited Amateur Operator’s Certificate of Proficiency</td>
</tr>
<tr>
<td>LC</td>
<td>Inductance-capacitance (ratio)</td>
</tr>
<tr>
<td>LED</td>
<td>Light emitting diode</td>
</tr>
<tr>
<td>LF</td>
<td>Low frequency (30-300 kHz)</td>
</tr>
<tr>
<td>LT</td>
<td>Low tension (V)</td>
</tr>
<tr>
<td>m</td>
<td>Metre</td>
</tr>
<tr>
<td>mm</td>
<td>Millimetre</td>
</tr>
<tr>
<td>MHz</td>
<td>Megahertz (1000 kHz)</td>
</tr>
<tr>
<td>mW</td>
<td>Milliwatt</td>
</tr>
<tr>
<td>MCW</td>
<td>Modulated CW (A2 mode)</td>
</tr>
<tr>
<td>meg</td>
<td>Usually meghohm</td>
</tr>
<tr>
<td>MF</td>
<td>Medium frequencies (300-3000 kHz) (medium waves)</td>
</tr>
<tr>
<td>MHz</td>
<td>Megahertz (1000 kHz)</td>
</tr>
<tr>
<td>mic</td>
<td>Hamads — microphone (also mike)</td>
</tr>
<tr>
<td>mm</td>
<td>Millimetre</td>
</tr>
<tr>
<td>max</td>
<td>Maximum operated transmissions</td>
</tr>
<tr>
<td>MUF</td>
<td>Maximum usable frequency</td>
</tr>
<tr>
<td>NL</td>
<td>Noise limiter</td>
</tr>
<tr>
<td>ns</td>
<td>Nanosecond (0.000000001) (one thousand millionth of a second)</td>
</tr>
<tr>
<td>OSC</td>
<td>Oscillator</td>
</tr>
<tr>
<td>OSCAR</td>
<td>Orbiting Satellite Carrying Amateur Radio</td>
</tr>
<tr>
<td>om</td>
<td>Old man</td>
</tr>
<tr>
<td>p</td>
<td>Power</td>
</tr>
<tr>
<td>P</td>
<td>Peak (p page, pp pages)</td>
</tr>
<tr>
<td>pico</td>
<td>(0.000000000001) (one millionth)</td>
</tr>
<tr>
<td>PA, pa</td>
<td>Power amplifier</td>
</tr>
<tr>
<td>PCB</td>
<td>Printed circuit board</td>
</tr>
<tr>
<td>peak</td>
<td>Peak envelope power</td>
</tr>
<tr>
<td>pf</td>
<td>Picofarad</td>
</tr>
<tr>
<td>Ph</td>
<td>Hamads — telephone No. (STD code first)</td>
</tr>
<tr>
<td>Phone</td>
<td>(tone) Telephony-segment. voice transmission</td>
</tr>
<tr>
<td>pivo</td>
<td>Peak inverse voltage</td>
</tr>
<tr>
<td>PM, pm</td>
<td>Pulse modulation, phase modulation</td>
</tr>
<tr>
<td>ppi</td>
<td>Plan position indicator (radar)</td>
</tr>
<tr>
<td>PSU</td>
<td>Power supply unit</td>
</tr>
<tr>
<td>Q</td>
<td>Reactance-resistance ratio, transistor</td>
</tr>
<tr>
<td>Q code</td>
<td>CW abbreviations — see Handbook for amateur operators</td>
</tr>
<tr>
<td>QTHR</td>
<td>Hamads — address correct in current WIA call book</td>
</tr>
<tr>
<td>RF, rl</td>
<td>Radio Frequency</td>
</tr>
<tr>
<td>RFC, rfc</td>
<td>Radio frequency choke</td>
</tr>
<tr>
<td>rfi</td>
<td>Radio frequency interference</td>
</tr>
<tr>
<td>RI</td>
<td>Radio Inspector</td>
</tr>
<tr>
<td>RMS, rms</td>
<td>Root-mean-square</td>
</tr>
<tr>
<td>RST</td>
<td>Readability, strength, tone (reporting signals) (RS only for telephony)</td>
</tr>
<tr>
<td>RT</td>
<td>Radio Telephony</td>
</tr>
<tr>
<td>RTTY</td>
<td>Radio teletype (teleprinter)</td>
</tr>
<tr>
<td>Rx</td>
<td>Hamads — receiver</td>
</tr>
<tr>
<td>SAE</td>
<td>Also sase. Sell Addressed Stamped Envelope</td>
</tr>
<tr>
<td>SHF</td>
<td>Super High Frequencies (3-30 GHz) (microwave regions)</td>
</tr>
<tr>
<td>S/N, s/n</td>
<td>Signal to noise (ratio)</td>
</tr>
<tr>
<td>SS</td>
<td>Solid State</td>
</tr>
<tr>
<td>SSB</td>
<td>Single Sideband (suppressed carrier) — A3J mode</td>
</tr>
<tr>
<td>SSTV</td>
<td>Slow Scan Television</td>
</tr>
<tr>
<td>Std</td>
<td>Standard</td>
</tr>
<tr>
<td>SWL</td>
<td>Short Wave Listener</td>
</tr>
<tr>
<td>SWR</td>
<td>Standing Wave Ratio</td>
</tr>
<tr>
<td>Tcvr</td>
<td>Hamads — transceiver</td>
</tr>
<tr>
<td>TPI</td>
<td>Turns per inch</td>
</tr>
<tr>
<td>TPL</td>
<td>Tuned plate tuned grid</td>
</tr>
<tr>
<td>TV, tv</td>
<td>Television</td>
</tr>
<tr>
<td>TVI, tvi</td>
<td>Television interference</td>
</tr>
<tr>
<td>Tx</td>
<td>Hamads — transmitter</td>
</tr>
<tr>
<td>UHF</td>
<td>Ultra High Frequencies (300-3000 MHz)</td>
</tr>
<tr>
<td>V</td>
<td>Volt</td>
</tr>
<tr>
<td>VFO, vfo</td>
<td>Variable frequency oscillator</td>
</tr>
<tr>
<td>VHF</td>
<td>Very high frequencies (30-300 MHz)</td>
</tr>
<tr>
<td>VLF</td>
<td>Very low frequencies (3-30 kHz)</td>
</tr>
<tr>
<td>VOX</td>
<td>Voice operated transmission</td>
</tr>
<tr>
<td>VU</td>
<td>Volume unit</td>
</tr>
<tr>
<td>VXO</td>
<td>Variable crystal oscillator</td>
</tr>
<tr>
<td>W</td>
<td>Watt</td>
</tr>
</tbody>
</table>
A TRICKY CALCULATION?

Last year this magazine held a competition which involved a one transistor amplifier. Although the usual rule of no correspondence being entered into applies, I think it might be interesting to look at the problem, which was as follows:

\[ \frac{16}{200 + 16} \text{ k ohms.} \]  
This works out as 14,814.814 ohms.

Obviously the voltage at the base of the transistor is reduced and consequently as \( V_{bc} = 0.600 \text{ volts} \), the voltage across \( R_e \) must reduce hence \( I_e \) reduces. Now when \( I_e \) reduces so does \( I_b \) as \( I_b = I_e/100 \).

But \( I_b \) flows through \( R_1 \) and helps determine the voltage at the base which determines \( I_b \) which . . . See the problem?

For those who don't like algebra this is a good point to stop reading.

A one transistor amplifier is shown in Fig 1. The question was what readings would be obtained on

(i) A volt meter with a 20 k ohm per volt sensitivity set on the 10 V range.
(ii) A volt meter with a 10 M ohm input resistance.

Firstly let us check the voltage across \( R_2 \) without the volt meter \( V \).

The current through \( R_e \) is 1 mA thus the voltage across \( R_e \), \( V = IR \)

\[ = 1 \text{ mA} \times 1 \text{ k ohm} \]

\[ = 1 \text{ volt} \]

Now \( V_{be} = 0.600 \text{ V} \)

Thus the voltage at the base is 1.600 V positive with respect to ground. This is the same voltage as is across \( R_2 \).

The current through \( R_2 \) is

\[ I = \frac{V}{R} \]

\[ = \frac{1.600/16}{000 \text{ amp}} \]

\[ = 0.1 \text{ mA} \]

The base current of the transistor is

\[ I = \frac{1 \text{ mA/100 or 0.01 mA}}{0.001 \text{ mA}} \]

As both these currents come through \( R_1 \) the current through \( R_1 \) is \( 0.1 + 0.01 \)

\[ = 0.11 \text{ mA} \times 100 \text{ k ohm} \]

\[ = 11.000 \text{ V} \]

The voltage across \( R_1 \) and \( R_2 \) is thus

\[ 11.000 \text{ V} \]

11.000 + 1.600 volts or 12.6 volts as shown. (Just as well!) If we put a volt meter across \( R_2 \) it will draw some current. For the first part of the question, the volt meter has a resistance of 20 k \( \Omega \times 10 \text{ V} = 200 \text{ k ohm.} \) This in parallel with \( R_2 \) becomes less than 16 k ohms. It becomes \( R_p \). The result of two resistors \( R_a, R_b \), in parallel \( R_p = \frac{R_a R_b}{R_a + R_b} \) or 200 x

16/(200 + 16) k ohms. This works out as 14,814.814 ohms.

As drawn the open circuit voltage at \( X \) is

\[ 16 \times 12.6/(16 + 100) = 1.737 \text{ 931 volts.} \]

If we were to short \( X \) to ground the short circuit current would be

\[ 12.6/100 \text{ k} = 0.126 \text{ mA} \]

The bias circuit is equivalent to any circuit that has the same characteristics as itself. Fig 2(b) shows such an equivalent with \( V = 1.737 \text{ 931 V} \) and \( R = V/0.126 \text{ mA} = 13,793.10 \text{ ohms.} \)

This is shown in Fig 3. Remember that the effect of \( R_e \) at the base of transistor \( T \) is modified by the current gain of the transistor (the principle of the emitter follower).

To solve the problem we need to redraw the circuit and to go on step by step. Consider Fig 2(a) which shows the bias resistors \( R_1 \) and \( R_2 \).

The current flowing in Fig 3 is

\[ \frac{(1.737 \text{ 931} - 0.600)/(100 + 13,793.1) \text{ mA}}{0.01 \text{ mA}} \]

This is the base current of the transistor \( T \) which is the same as we calculated before. So our equivalent circuits are working!

Fig 4 shows the effect of the volt meter. Note that so far, apart from Thévenin's Theorem which is really only a little logic, we have just been using Ohm's Law and a little knowledge of transistors. The next bit requires some algebra.
We can proceed several ways but here is one method.

Consider the two current loops. AB EF and ABCDEF.

Firstly (1) \( V - IR - ImRv = 0 \)

The volt drops must equal the supply voltage, or in other words the sum of the supply voltage and the volt drops in a closed circuit is zero.

Next (2) \( V - IR - 0.6 - lb \times 100,000 = 0 \)

These equations can be solved to get \( lb \) and \( Im \). (Find someone studying year 10 or enter into further correspondence or . The meter reading is of course tedious and not at all tricky. Although it is a practical exercise from the secretary of the Harbour Labour Council for NSW. The run was to start at 9 AM at the Botanical Gardens, go past the Opera House through the Rocks area, across the Harbour Bridge and back to the start, about 10 km in all.

WICEN were approached to provide emergency communications. Unfortunately owing to a previous commitment, they were not available. A group of nine amateurs then organised themselves to provide a base station and some ten check points along the route. Richard, VK2ANB was monitoring from home and provided the only telephone link. The frequency used was 144.8 MHz FM. Fortunately no emergency occurred and communications were progress reports only.

The following amateurs participated with great enthusiasm: Glenys VK2NMH, Bob VKYPE, Simian VK2AVD, Steve VK2KBL, Gary and YL Carrol VK2ZKT, Peter VK2YDP, Martin VK2PWJ, Richard VK2ANB, and Kurt VK2KBG.

The group received a letter of thanks and congratulations for a competent and professional exercise from the secretary of the Labour Council for NSW.

Kurt Reichstadter, VK2KBG

Did you hear about the send-off party in the completely automated office? The computer got loaded and tried to unfasten the electric typewriter's ribbon.

Fig 4 — Equivalent circuit with volt meter added.

\[
\begin{align*}
V &= 1.737 931 V \\
R &= 13,793.10 \text{ ohms} \\
Im &= \text{meter current} \\
lb &= \text{base current} \\
l &= \text{Im} = lb \\
Rv &= 200 \text{ k ohms or 10 M ohms}
\end{align*}
\]

AMATEUR EXERCISE

During the week between the 11th and 18th September the City of Sydney and the Premier's Department of NSW staged a Carnivale Festival. One of the many venues was a fun run on the 18th organised by the Labour Council of NSW. The run was to start at 9 AM at the Botanical Gardens, go past the Opera House through the Rocks area, across the Harbour Bridge and back to the start, about 10 km in all.

WICEN were approached to provide emergency communications. Unfortunately owing to a previous commitment, they were not available. A group of nine amateurs then organised themselves to provide a base station and some ten check points along the route. Richard, VK2ANB was monitoring from home and provided the only telephone link. The frequency used was 144.8 MHz FM. Fortunately no emergency occurred and communications were progress reports only.

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Did you hear about the send-off party in the completely automated office? The computer got loaded and tried to unfasten the electric typewriter's ribbon.

73 de
VK3AFW

Search & Rescue TRS-80

Can a TRS-80 have an important role in a search and rescue mission? Definitely, say several Utah TRS-80 users as they have demonstrated the use of the machine as members of Utah Civil Air Patrol in the USA. Civil Air Patrol is a nationwide volunteer organization dedicated to search and rescue, aerospace education and a youth programme.

Some of the functional programmes include compiling search effectiveness reports, listing a day's aircraft search effectiveness and — get this — offer a computer recommendation of best allocation of air search planes for the next day's effort.

Other programmes keep track of up to 50 planes participating on a search (listing pilot information, time launched, time landed and total hours flown), and programmes that convert latitude and longitude to the Air Force standard search grid (based on aircraft sectional maps) or converting the search grid back to latitude and longitude.

There are programmes that teach search and rescue technique by way of game format and programmes that keep track of people participating in search exercises.

One of the most useful items of software is the "Aircraft Data" programme that keeps track of Utah Wing CAP's aircraft. This programme shows the status of the aircraft (including member-owned planes), the colour of each plane, and other items involved in search missions concerning pilot qualifications, plane equipment and configuration.

The air data programme runs on TRS-80 Model 1, 32K, with printer and disk. Other programmes will run on Level II, 16K.

The search programmes are easily changed to meet local requirements or even those of other groups apart from CAP involved in Search and Rescue missions.

TRS-80 owners or amateur radio operators who would like to obtain the software with the intent of assisting a search group are invited to contact Lt. Col. Jerry Wellman, Utah Wing Civil Air Patrol, 840 East 6th Avenue, Salt Lake City, Utah 84103, USA.
A Transceiver

Spoil yourself this Christmas with a special offer from ICOM.

1. MINICOM IC-25A/H
   A small package with 25/45 Watt punch. IC-25A/H has 5 memories, 2 VFOs, 2 scanner systems and is a full featured 2 meter FM transceiver for the space conscious operator.

2. MINICOM IC-45A
   A small size 10 Watt unit featuring 5 memories, dual VFOs and much more. 70 cm FM transceiver. The space saver.

3. IC-745
   All band, SSB, CW, RTTY, HF transceiver with general coverage receiver. 16 memory channels, IF shift and PBT as standard are just three of its features.

4. IC-751
   Competition Grade all band HF transceiver with general coverage receiver. 32 memory channels, optional internal power supply, with FM as standard.

5. IC-290H
   State of the art 2 meter 25 Watt all mode transceiver with 5 memories and 2 VFOs. This unit provides base station features in a mobile package.

6. IC-490A
   A 70 cm all mode transceiver with base station features like, full capability scanning, 5 memories, 2 VFOs and more. All of this in a mobile package.

7. IC-271A
   25 Watts of FM, SSB, CW for 2 meters. Base station with 32 full function memories for frequency offset, offset direction, AC option.

8. IC-2KL
   All solid state 500 Watt HF linear, automatic band change when used with ICOM HF system.

ICOM AUSTRALIA PTY. LTD. 7 Duke Street, Windsor, Victoria, 3181 Australia. Phone: (03) 512284. Telex: AA35521 ICOCAS
for “All Seasons”

All deal from your authorized ICOM dealer.

---

**ICOM Scoops the World with**

**IC-120**

NEW

23 cm. 1 Watt. FM mobile transceiver opening up new horizons in the amateur radio spectrum, in a mini-package.

**IC-730**

All band, all mode, all solid state 100 Watt HF transceiver. This go-anywhere mobile has a built-in pre-amp.

**IC-471A NEW**

Base transceiver 25 Watts, all mode, 430-450 MHz. With 32 memory capacity, storing frequency, mode, offset direction and offset frequency. AC option.

**IC-AT500/100**

Automatic couplers for ease of operation with the ICOM HF system.

**IC-02A NEW**

2 meter hand held FM transceiver with keyboard entry, 10 memory channels, scanning and many sought after features.

**IC-04E NEW**

70 cm hand held transceiver with keyboard entry, 10 memory channels, and much much more.

**IC-R70**

For world wide coverage at its best try this commercial grade communications receiver, covering 2 MHz-30 MHz.

**IC-2A**

The ever popular synthesized 2 meter FM hand held, field proven radio.

---

All stated specifications are approximate and subject to change without notice or obligation. WARNING when purchasing an ICOM unit please confirm that you are dealing with an Authorized ICOM Dealer as the ICOM Warranty applies only to units supplied by ICOM Australia Pty. Ltd to Authorized ICOM Dealers.
"HAMS IN SPACE"

To commemorate the amateur radio operation of W5LFL aboard Space Shuttle "COLUMBIA" STS-9, a special philatelic cover (envelope) is to be issued in conjunction with the Solomon Islands Radio Society.

The cover will state "FIRST AMATEUR RADIO OPERATION FROM EARTH ORBIT" within the Amateur Satellite Corporation (AMSAT) logo.

A 45c Solomon Islands postage stamp featuring orbiter COLUMBIA will be affixed to the cover and cancelled on the first day of operation.

The cover will be available from PO Box 81, Honiara, Solomon Islands at a cost of US$1.00, 5 IRCs or equivalent for direct mailing by air.

Covers can be supplied in mint condition within a sealed envelope, by air, for an additional US$1.00 for up to 10 covers.

Examples:
1 cover addressed and mailed US$1.00
1 cover, mint, within envelope US$2.00
5 covers, mint, within envelope (5 + 1 =) US$6.00

Peter Taylor, H44PT

JARL HAM FAIR '83

The JARL Ham Fair was successful in that it not only recorded the largest number of visitors, about 38,000, but there was also an IARU Region III booth, in commemoration of WCY, for the first time. The WIA was a participant in this booth.

Masayoshi Fujikuma, JM1UXU, Secretary Region III, IARU.

WIA material on wall.

The IARU exhibited several panels, written in Japanese, on the wall of the booth depicting the outline structure of the IARU and its regional organisations, their purposes and main activities in the past with particular emphasis being placed on the results of WARC-79, new HF bands and new UHF and EHF bands for the amateur satellite service.

Visitors showing great interest in the IARU booth.

These exhibitions contributed to arousing interest in international amateur radio organisations and their importance.

MALTA

The use of hand-held receivers is now permitted provided that they are used indoors as base stations.

JAPAN

The Radio Law of Japan has been changed to allow amateur radio operation by aliens in Japan. Main conditions are that the aliens' government permits Japanese citizens to operate similar stations in their country and that the Japanese Government determines the conditions to ensure equality of treatment. The first reciprocal agreement to be made under the new law was with the USA.

AR

STS-9 UPDATE

The launch date of STS-9 has slipped from the end of October to the end of either November or February. After recovering the Solid-fuel Rocket Boosters (SRBs) from STS-8, NASA discovered excessive erosion of the ablative material lining one exhaust nozzle and funnel. The ablative material protects the metallic portions of the nozzle and funnel from burning through during the burn of the engine. (Once an SRB is ignited, it will burn until the fuel is exhausted.) Should burnthrough occur during ascent, the Shuttle would probably be thrown into a violent spin and go off course.

ZL1HV in Breakin Oct 83

Page 44 — AMATEUR RADIO, December 1983
### Table of Amateur Radio Frequency

<table>
<thead>
<tr>
<th>Frequency Band (Category)</th>
<th>Type of Service</th>
<th>Remarks and Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800-2000 kHz</td>
<td>AMATEUR</td>
<td>This band has been extended to reflect the decision of WARC 79. Amateurs will be required to avoid 1870 kHz – 4 kHz.</td>
</tr>
<tr>
<td>3500-3700 kHz (Primary)</td>
<td>AMATEUR</td>
<td>No change to this band</td>
</tr>
<tr>
<td>7000-7100 kHz (Primary)</td>
<td>AMATEUR</td>
<td>This band has been reduced in accordance with WARC 79 requirement. Refer to RES 641.</td>
</tr>
<tr>
<td>10 100-10 150 kHz (Secondary)</td>
<td>AMATEUR</td>
<td>New band, allocate in PNG on 11th December, 1981.</td>
</tr>
<tr>
<td>14 000-14 350 kHz (Primary)</td>
<td>AMATEUR-SATELLITE</td>
<td>No change.</td>
</tr>
<tr>
<td>18 068-18 168 kHz</td>
<td>AMATEUR</td>
<td>Not allocated at this time due to existing services in neighboring countries.</td>
</tr>
<tr>
<td>21 000-21 450 kHz (Primary)</td>
<td>AMATEUR</td>
<td>No change.</td>
</tr>
<tr>
<td>24 890-24 990 kHz (Primary)</td>
<td>AMATEUR-SATELLITE</td>
<td>New Allocation. All Amateurs to avoid the frequency 24 900 kHz – 4 kHz.</td>
</tr>
<tr>
<td>28 000-29 700 kHz</td>
<td>AMATEUR</td>
<td>No change.</td>
</tr>
<tr>
<td>50-54 MHz (Primary)</td>
<td>AMATEUR</td>
<td>Change on category of service to the 50-52 MHz band.</td>
</tr>
<tr>
<td>144-146 MHz</td>
<td>AMATEUR</td>
<td>No change.</td>
</tr>
<tr>
<td>146-148 MHz (Primary)</td>
<td>AMATEUR-SATELLITE</td>
<td>No change.</td>
</tr>
<tr>
<td>430-440 MHz (Secondary)</td>
<td>AMATEUR</td>
<td>*Amateur-Satellite permitted 435-438 MHz in accordance with footnote 664. (Note: band reduced from 420-450 MHz.)</td>
</tr>
<tr>
<td>440-450 MHz (Secondary)</td>
<td>AMATEUR</td>
<td>This band is allocated in PNG under footnote 666.</td>
</tr>
<tr>
<td>576-585 MHz (Primary)</td>
<td>AMATEUR</td>
<td>No change. This band allocated under Regulation 342. Additional allocation in PNG on a Primary basis until such time as reallocated to the Broadcasting Service.</td>
</tr>
<tr>
<td>1240-1300 MHz (Secondary)</td>
<td>AMATEUR</td>
<td>Band reduced from 1215-1300 MHz. *Amateur-Satellite permitted 1260-1270 MHz in accordance with footnote 664.</td>
</tr>
<tr>
<td>2300-2450 MHz (Secondary)</td>
<td>AMATEUR</td>
<td>*Amateur-Satellite permitted 2400-2450 MHz in accordance with footnote 664. Refer also footnote 751.</td>
</tr>
<tr>
<td>3300-3500 MHz (Secondary)</td>
<td>AMATEUR</td>
<td>No change. *Amateur-Satellite permitted 3400-3410 MHz in accordance with footnote 664.</td>
</tr>
<tr>
<td>5650-5850 MHz (Secondary)</td>
<td>AMATEUR</td>
<td>No change. *Amateur-Satellite permitted 5650-5670 MHz in accordance with footnote 664.</td>
</tr>
<tr>
<td>10-10.45 GHz (Secondary)</td>
<td>AMATEUR</td>
<td>No change.</td>
</tr>
<tr>
<td>10.45-105 GHz (Secondary)</td>
<td>AMATEUR-SATELLITE</td>
<td>New allocation for Amateur-Satellite.</td>
</tr>
<tr>
<td>24-24.05 GHz (Primary)</td>
<td>AMATEUR</td>
<td>No change.</td>
</tr>
<tr>
<td>24.05-24.25 GHz (Secondary)</td>
<td>AMATEUR</td>
<td>No change.</td>
</tr>
<tr>
<td>47-47.2 GHz (Primary)</td>
<td>AMATEUR</td>
<td>New Allocation.</td>
</tr>
<tr>
<td>75.5-76 GHz (Primary)</td>
<td>AMATEUR</td>
<td>New Allocation.</td>
</tr>
<tr>
<td>76-81 GHz (Secondary)</td>
<td>AMATEUR</td>
<td>New Allocation.</td>
</tr>
<tr>
<td>142-144 GHz (Primary)</td>
<td>AMATEUR</td>
<td>New Allocation.</td>
</tr>
<tr>
<td>144-149 GHz (Secondary)</td>
<td>AMATEUR</td>
<td>New Allocation.</td>
</tr>
<tr>
<td>248-250 GHz (Primary)</td>
<td>AMATEUR</td>
<td>New Allocation.</td>
</tr>
</tbody>
</table>

### Summary of Footnotes

Below is a reproduction of the footnotes referred to in the Table of Amateur Radio Frequency Allocations for Papua New Guinea.

**664** In the bands 435-438 MHz, 1260-1270 MHz, 2400-2450 MHz, 3400-3410 MHz (in Regions 2 and 3 only) and 5650-5670 MHz, the amateur-satellite service may operate subject to not causing harmful interference to other services operating in accordance with the Table (see No 435). Administrations authorising such use shall ensure that any harmful interference caused by emissions from a station in the amateur-satellite service is immediately eliminated in accordance with the provisions of No 2741. The use of the bands 1260-1270 MHz and 5650-5670 MHz by the amateur-satellite service is limited to the Earth-to-space direction.

**666** Additional allocation: in Canada, New Zealand and Papua New Guinea, the band 440-450 MHz is also allocated to the amateur service on a secondary basis.

**751** In Australia, the United States and Papua New Guinea, the use of the band 2310-2390 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile services.
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Why bother with a balun in the first place you may ask. A balun is a device which transforms a balanced load to an unbalanced load or, looking at it from another angle, it enables a coaxial (unbalanced) feedline to be connected to a balanced dipole antenna without the usual problems.

WHAT PROBLEMS?

If we refer to Fig 1 we see a transmitter producing an RF signal which is fed into a coaxial cable. A current I1 flows in the centre conductor of the cable and an equal current I2 flows in the opposite direction on the inside of the outer conductor. At any instant these currents retain the same relative amplitudes but are 180° out of phase.

\[ I_2 = I_3 + I_4 \]

Fig 1. Illustration of the effect of connecting a coaxial feeder to a balanced aerial.

Meanwhile, at the antenna, which we have directly connected to the coaxial cable, we see that at this instant of time I1 is flowing from the centre conductor out along the antenna. If all were well and compatible we would have a current I2 flowing from the antenna back inside the coax. Because the current from the antenna does not see any difference between the inside and the outside of the coax a splitting of the current occurs with some current flowing down the outside of the braid and some down the inside. The division ratio, and hence the relative sizes of I3 and I4, is complex. If the coaxial cable is an odd number of quarter-wavelengths long then a high impedance will be seen on the outside and I4 will be negligible. I3 will then be equal to I2 and all will be well. If the cable is a multiple of half-wavelengths then a low impedance will be seen and I4 will be much larger than I3. The coaxial cable then becomes a significant part of the antenna.

Because of its proximity to the ground for part of its length (or a tower, guttering, etc) it will be lossy. Being largely vertical it will be vertically polarised and so will introduce more noise into the receiving system. Further, if the transceiver is not well grounded for RF, microphones, keys etc can be a source of RF burns due to lots of RF in the shack. The transceiver is connected to a radiating part of the antenna.

Intermediate lengths will produce intermediate effects. A balun can isolate the outer braid from the antenna and allow I3 to be the same as I2. Note that although Fig 1 shows I2, I3 + I4, I3 and I4 can have large phase angle differences. Remember we are dealing with RF, not DC. I3 and I4 could even flow in opposite directions — that is I4 could have had the arrow pointing down. The situation can become literally quite complex and it is beyond the scope of this article to go into the mathematical proofs.

It is sufficient to say that the overall effect is to alter the antenna in respect to:

1. Radiation pattern — shape is changed, vertical radiation increases.
2. Received noise level is raised due to pick-up on the outer of the feedline.
3. Antenna efficiency drops due to absorption of feedline radiation in nearby conductors.
4. Antenna system resonance and impedance are altered giving a different VSWR.

Yes you can connect coaxial cable directly to a dipole and get good results but you can do better by using a balun.

BUILD A BETTER BALUN

Note that about a quarter of the core is left free of winding. This is because the high frequency limit is set by resonance of the inductance of the winding and the shunt capacitance. Capacitance across the end of the winding is thus important and is reduced by keeping the ends of the winding apart. The upper frequency limit is the frequency at which the reactance falls below 250 ohms.

In fact the reactance rises with frequency until parallel resonance occurs.

Further increases in frequency are accompanied by a fall in reactance magnitude until eventually series resonance occurs. See Fig 3. The useful range extends above the parallel resonant frequency even though the reactance is capacitive — it is the reactance magnitude that is important as this "throttles" the current trying the flow down the outside of the coax.

Actually the coaxial cable winding can be replaced by a two wire transmission line although for the best results (lowest VSWR over greatest bandwidth etc) the transmission line should be the same impedance as the feeder (which will be coaxial) which in turn should be the same as the antenna.

Twin feeder of 50 or even 70 ohm is not as readily available as coax. Commercial baluns often use enamelled wire twisted together. This can be quite satisfactory. I believe that for the home brewer a better alternative is to use a length of figure-8 240 V flexible twin cable. A length of about one metre should be cut off and the two conductors split apart to form two wires. Be careful not to bare the wires except at the ends. Put two ends in a vice and tighten the jaws. Pull the two wires out until taut and fit them into the chuck of a hand drill. Turn the hand drill to twist the wires tightly together. The length of the cable will shorten slightly. When removed from the drill and vice the cable will untwist a little but it should retain at least one twist per cm. If not, repeat the twisting process.

In original form the figure-8 flex (called zip cord in the USA) has an impedance of around 140 ohms and is suitable for use up to 21 MHz, without much loss. When twisted as above it
has an impedance of 60 to 80 ohms and makes a good low loss 3-30 MHz balun. This balun works well with a dipole which is in the clear. It is not quite so good when the dipole is unbalanced due to say proximity of trees or bends in the dipole legs.

As windings AB and FE appear in series across the end of the cable their total voltage is V. If they have the same turns then each has V/2 across it. Winding CD has the same turns as AB and so has V/2 across it also. The load is across FE and CD and has V/2 + V/2 = V across it. The centre point EC is connected to the coax braid which is nominally at ground. It may be grounded to the tower etc. Thus the load at a particular instant will have +V/2 at one end and -V/2 at the other (with respect to ground) whether or not point X is grounded.

If no current flows on the outside of the coax it has ground potential all along its lengths. (No current = no volt drop.)

Removal of winding FE could allow points X to take up a different potential and current would then flow outside the coax.

A tertiary winding may be made using half a length of flex or a length of enamelled wire of size 22 SWG.

If you have a commercial balun and want to check whether it has a tertiary winding a simple check can be made with an ohm meter. Remove the balun from circuit and measure the resistance between the two input leads. If it is low there is (probably) a tertiary winding. If it is open circuit there is no tertiary winding.

In some baluns the winding is made along a rod of ferrite. This does not alter the operation although more turns will be required for a given inductance.

There are many other forms of balun other than the simple 1:1 device described here. The next most common type gives a 4:1 impedance ratio but many other ratios are possible as can be seen by reading the references.

**SPECIAL NOTE FOR READERS**

1. I welcome contributions to this section especially construction articles suitable for beginners, novices and SWLs.
2. If there is something in one of these columns that puzzles you or you want to take issue over a point please re-read the article before putting pen to paper. Then if you still have a need to write please include an SAE. I certainly don't want to discourage reader's letters as they are a most important feedback — I always reply personally — but observance of the above two points will reduce my stationery bill.

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AMATEUR RADIO AND ELECTRONICS
STUDY GUIDE
by Ion Ridpoth, ZL1QCG. ISBN 0-473-00149-7

This excellent book is unusual in that it is entirely handwritten and not typeset. As with the work of the old scribes the text is clearly printed in a neat and individual hand. It is the author's contention that students learn faster when they have a study guide which presents the theory in a concise and uncluttered way. The text is comprehensive in its coverage and is accompanied by several technical and explanatory drawings on each page. In spite of the author's intention, the format does on occasions get a little cramped. Sufficient material is included to cover the requirements of the Grade III amateur radio examination conducted by the New Zealand Post Office. In doing so it exceeds the requirements of all grades of Australian amateur licences and fills the gap between simple beginners tracts, Novice study guides and the professional engineering texts. Topics covered include:

- Resistors
- DC, AC, Frequency
- Capacitors, Vectors
- Inductors
- Transformers
- Reactances in series and parallel
- Resonance
- Semiconductors
- Power supplies
- Amplifiers
- Oscillators
- Valves
- Radio transmitters
- Radio receivers

Radio waves and propagation
- Aerials
- Transmission lines
- Test instruments and measurements
- Problems, with answers and useful formulae.

Some 10 percent of the book goes beyond the requirements of the AOCP theory: even so the book would be a valuable aid to anyone studying for either the NAOCP or AOCP theory exams. Topics recently appearing in NZPO exams are marked with a flag.

The diagrams are well chosen, each one being worth nearly 1000 words, and help to make the theory more readily absorbed. Overall this book compares most favourably with locally produced texts in the same category. Teachers of courses in amateur radio should seriously consider this book as a standard text.

BEGINNER'S GUIDE TO AMATEUR RADIO

To the outsider, amateur radio may seem to be a form of CB or, on closer acquaintance, a highly technical and mysterious hobby. Any person with a curiosity about amateur radio and "serious" short wave listening would find this book invaluable.

Young budding engineers, scientists and technicians now at secondary school could find an introduction to the prince of hobbies (amateur radio) through reading this book. Frank Rayer writes with an easy style and covers every significant aspect of amateur radio and short wave listening. A generous number of drawings, circuits and graphs are used to lucidly explain each important aspect. Although this book is written about the hobby as practiced in the UK it will be of value worldwide. The theory of radio communication is painlessly explained to the layman. Indeed, at the end, a casual CB operator would be well on the way to successfully sitting for a Novice licence. The reader would become as well informed about all aspects of amateur radio as most experienced amateurs — at least in the general sense if not in technical details of some complexity.

Those aspects of amateur radio that often baffle the uninitiated are clearly explained.

Frank Rayer was well known, through Europe especially, for his technical writings. Sadly he died shortly after completing the manuscript for this book.

It may be that had Frank been able to proof-read the manuscript the minor criticism I have would have been unnecessary. That is that some terms are introduced and used without explanation, for example Hz, S/N, VK, VK7. There may be others that I did not find, but as hundreds of other similar terms are covered it is not a bad score.

If you want to know "all about amateur radio without really trying" (or becoming one) then this is the book for you. Who knows, after reading the book you might find yourself smitten with the bug. If you want to avoid that fate then don't read this book.

The review copy was kindly provided by Butterworths, NSW. Copies can be obtained from most good book stores at a recommended price of around $12.
REMINISCING AND REALITY
Leo Weller, VK3YX
46 Peperell Avenue, Syndal, Vic 3150

REMINISCING AND REALITY
To divert my inquiring mind after I, at a young age had already wrecked the kitchen clock, the tin opener and the gramophone, my father introduced me to Meccano.

This provided me with many hours of great enjoyment at my “Meccano table” in the corner of my bedroom and an easy choice of presents for my parents, uncles and aunts.

With another birthday coming up soon, I asked my father during dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a 20 cm horizontal-thrust ball bearing with gear teeth from the special parts department of Meccano instead of the dinner if I could have a

With this, a tradition was born which lasted many, many years. The only change being from the Meccano to the radio shop, which my father introduced me to.

After the radio shop we would go to a coffee lounge and, while sipping coffee my father would listen to me, trying to enter my world of electronics so far removed from his extremely busy business life.

The tradition was accepted and continued by the YL and later the XYL.

Contemplating on all this we are slowly tuning up and down the seemingly closed 15 metre band, an endless desert of white noise.

My good XYL carried the tradition over to our three daughters.

Nevertheless, for the girls, presents have a rating. A book is on top. Tools, cable, coax is alright, but who wants to give a crystal, one can hardly see it!

Dreaming of the future I hope our sons-in-law and grandsons again have this privilege and advantage of a then very old family tradition.

Hey! The band is opening up, there is a signal, very weak — dah dit dah dit dah dit dah. Still weak but readable BY1PK. That is the only amateur station in China!

REGULATIONS AND STANDARDS FOR THE NEW RADIO-COMMUNICATIONS ACT

Very shortly the Radiocommunications Bill will become an Act. It is essential that we now turn our attention to the associated Regulations and Standards.

The Bill/Act is mainly a legal document and dealing with it was mainly a legal operation. The Regulations and Standards will be far more technical and rather less legal; therefore, far more members of the Amateur Radio Movement will be in a position to contribute with comments, suggestions and material towards ensuring that, wherever possible, the regulations and standards associated with the new Radiocommunications Act are as favourable as possible to the Amateur Radio Service. Of course, we cannot expect to win on every aspect; however, with a concentrated and co-ordinated effort, and the pooling of all available resources by ALL Australian amateurs should ensure that we have the best chance to make a “fair dent” in this most complex area of the new Act.

Yes, the Regulations and Standards will, almost certainly, be highly technical and highly “politically” charged. It will therefore be most advantageous for us, the Amateur Radio Movement, to ensure that we keep our own house in order, ensuring the minimum of internal politics. This is one area where we need to break down any barriers which may exist between various factions within our movement, and present a united front. Let’s make sure that ALL the resources available to the Amateur Radio Movement are concentrated behind one central co-ordinated effort. This is one area where, “United we stand — divided we fall”.

The Wireless Institute’s CASPAR (Communications Act Special Planning And Response) Committee has been instructed by the Federal Executive to provide an independent response to all regulations and standards pertaining to the new Act. The committee has been instructed to co-ordinate and correlate material and information from ALL Australian amateurs and to consider all available information, including overseas information, in relation to the various regulations and standards as and when they are presented by the Department of Communications. The CASPAR Committee recognises the material which was submitted during the review of the Radiocommunications Bill but was held over due to its relevance to regulations and standards.

The CASPAR Committee will require the assistance of ALL Australian amateurs with, what could be, one of the most complex and difficult issues to which the Amateur Radio Movement has ever had to address itself.

All correspondence in connection with any aspect of the Radiocommunications Bill/Act should be directed to: The CASPAR Co-ordinator, Tony Tregale, VK3QQ, PO Box 300, Caulfield South, Vic 3162.

NOTICE

ALL copy for inclusion in February 1984 Amateur Radio must arrive at Box 300, Caulfield South, 3162 no later than 3rd January.
Stephen VK2PS, a Federal Councillor and constant contributor to this column has made a number of pertinent comments with reference to my remarks in September AR.

Stephen comments that "VK amateurs are not very good QSLers in general and few make the exepion but this phenomenon is not a new development. When I was first licensed in Europe in the late 1930s, it was well known to the fraternity, that to receive a VK QSL card was a pure miracle and that has not changed over the years.

Stephen, quoting the example that he entered the 1982 ALARA contest, had sixteen VK QSOs and QSLed the lot. After twelve months waiting, he is the proud owner of five return cards. Just over a thirty percent return. Not really good for a fellow VK operator! One wonders how an overseas operator would fare.

Another valid remark that is made concerns the VK2 Divisions incoming QSL card cabinet which is bulging to the seams. Stephen writes "I wonder why the recipients are not picking them up? If they do not QSL, why not tell the other party during the QSO that they do not and no card should be sent. If they feel that it is impolite to tell the unfortunate amateur on the other end, that he, the VK amateur, does not QSL, it is definitely rude not to reply to a card, even if it is not wanted.

Further to the above, Stephen remarks "that for many a contact to VK by overseas countries, it is a very valued contact, in many cases their first and that card could be needed for DXCC and other awards. But alas — VKs do not QSL and the few who do, your cards are certainly valued overseas."

Not to be overlooked of course is the SWLer, and as Stephen points out, quite a few VK amateurs are unaware that it is obligatory in certain countries, before receiving a transmitting licence, that they provide proof that they are adept in the methods of reception and have a general interest in the hobby.

Stephen urges all amateurs to reply to all SWL cards if they are legitimate.

Other notes extracted from Stephen’s letter include the wane of DXing in this country, which was evident by the multitudes desisting on the minority of SSB operators who were evident on the twenty metre band during the recent VK/ZL contest. My personal opinion is that the VK operator has many facets of the hobby available to research, from DXing to RTTY, SSTV, AMSAT, VHF to naming a few without considering construction of that “special” project, perhaps we have too much to occupy our leisure time or are we just lethargic.

Another of the comments made in the lengthy letter by Stephen is that “Rag-chewing” is fine, nice and essential, but nothing beats the joy, the elevating feeling of good luck and reward for patient listening and searching, when one has a successful QSO with the one only amateur in a certain overseas country. An example of this is a QSO with D44BC the only active amateur in that country.

Thank you Stephen for taking the time to sit down and commit a few of your thoughts to paper. Have we any other takers with any ideas?

A FIRST

A number of firsts were claimed by Graham VK6RO for CW and SSB on the 18 and 24 MHz bands (refer AR August 1983, p25).

No other amateur has forwarded any documentery evidence that they beat Graham on the question of being the first to QSO with Graham appears that it is all yours. Congratulations on your efforts and the use of the new bands so promptly.

HUNTING LIONS

A contest, which is sponsored by Lions International annually, to promote international relations and further friendship between individuals of different nationalities. The trophy has been won again for the second consecutive year for the SSB section by Lindsay VK6NO. The CW section was won by well known DXer Tim BV2A. Congratulations to both operators.

The 1984 contest will be held on the 14th January and further details may be had from Alan Heath, PO Box 1904, GPO, Adelaide, SA 5001.

CHINA ON SSB

It was pleasant to hear Tom VE7BC, working from BYU1PK and trying to satisfy all comers under very arduous conditions.

All countries including VK and ZL were given excellent opportunities to work this much wanted country and the operators took advantage of airing their lungs in the split operation.

Some operators were very critical of the amount of spectrum used for the split operation, but on this occasion it was justified in my book. This amateur was operating under severe difficulties, apparently there was a high QRM level to start with, the QRM was unbearable as propagation was open to many continents at the same time and it necessitated spreading the listening area to 60 kHz. It is a one off occasion really when one thinks of it.

Severe drift was only one of the problems that Tom had to contend with, which was probably caused by fluctuating line voltages. The line was playing up and arcing to some extent and not once did I hear this gentleman lose his "cool".

Congratulations Tom on a job well done and your assistance to the amateurs of China over a considerable period has culminated in you giving many amateurs, worldwide, a new country on SSB towards the end of WCY 1983.

The self appointed policemen that manned the BYU1PK transmit frequency probably meant well in advising everyone of the listening frequency area but one ZL overdid it a bit in my book. If you were lucky enough to be called you would never have heard your call because of the QRM but Tom, as I said before, was very patient.

NEW PREFIX ALLOCATIONS

The New Zealand Post Office has announced new prefixes which will become effective as from the 1/1/84.

This rearrangement leaves ZL1-4 as it was, ZL5 Antarctic Bases, ZL6 Intruder Watch and Emergency stations, ZL7 Chatham Islands (formerly ZL/C), ZL8 Kermadec Island (formerly ZL/K), ZL9 Auckland and Campbell Islands (formerly ZL/A) and visitors will receive a ZL0 prefix.

Tokelau presently ZM7 will change to ZK3. It is not clear whether existing amateurs in these areas will still retain the calls they are using this year until they finish their tour of duty or revert to the new system immediately.

BANGLADESH

Apparently the licensing authorities have had a change of heart and have at last decided to allow amateur activity.

This is indeed a breakthrough that another country has officially joined the amateur ranks again and it is a tribute to the amateurs in this country that have been working behind the scenes to bring this event about.

GLOBETROTTING AGAIN

Iris and Lloyd Colvin, W6GL and W6KG, are on the move again. This time it is down South America way with envisaged stops in Columbia, Ecuador, Peru, Bolivia, Chile, Argentina, Uruguay and Paraguay.

They both hope to be active on all bands, SSB and CW, and will be paying particular attention to the lower bands including thirty metres.

Iris and Lloyd ask that all operators limit QSOs to one per band per mode per country and please QSL to the Yasm Foundation, PO Box 2025, Castro Valley, California 94546.

ALBANIA???

After a seven week excursion in BY, Marcel F2SA hopes to be in ZA between the 15th January and 15th February.

Marcel who is a UNESCO official thinks that there will be a possibility to obtain an amateur licence.

DESECHOE ISLAND

At the time of writing these notes there is an unconfirmed report from a reliable source that this island will be activated next month.

Watch out for anyone signing KHS!

4U1ITU

4U1ITU was active on the 23rd October.
to celebrate the commencement of the International Telecom '83 Exhibition and Conference.

A special certificate to commemorate this event in World Communications Year will be made available to all amateurs that contacted the station on this day and to SWLers on a heard basis on application to Rudi F8RU, who is the manager of the ITU.

KERMADEC

Latest reports are that Warwick should be active from this month. For latest reports on this much sought after area it would pay to monitor the International Pacific DX Net on Tuesdays and Fridays at 0600 UTC on 14.265 MHz +/- QRM.

BURUNDI

Jim "Bull" Bullington ex TYA11, now the American ambassador in that country has obtained an amateur licence. His tour of duty is for two years and his call is 9U5JB QSL ONSNT.

MALPELO ISLAND

Well this much wanted country was active as planned and all Pacific island areas were well catered for. The operating techniques used by the group, as found at this QTH were excellent.

Signals were not as strong as anticipated and it is thought that the operators were not able to reach the top of the island which is 375 metres above sea level. To achieve better coverage of the world, it was envisaged that a helicopter, from the Columbian naval boat that took them out, would be necessary to achieve the optimum position. Apparently this facility was not available.

The unnecessary QRM on HKOTU's transmit frequency is something that everybody could have done without. This back chat from the guardians or policemen on the frequency emanated from all continents and many familiar voices, including those of VK operators, were monitored. Gentlemen, no YL operators were monitored, it is completely unethical let alone being illegal to QRM another station.

Maybe it is time that all amateurs brushed up on their DXing techniques, and perhaps it would be a good resolution for 1984, to assist rather than resist rare DXpeditions that cost figures that sound like telephone numbers to launch and that is not taking into account the unpaid hours of all the volunteers.

AVES ISLAND

This island is located at co-ordinates of 63°38'W and 15°42'N with approximate dimensions being 570 metres long, 130 metres at the widest point narrowing down to thirty metres at the other extremity. The whole area is only three metres above sea level at high tide.

In conjunction with the Radio Club of Venezuela's golden anniversary's celebrations it is hoped to activate this area at the end of February 1984. Actual dates are dependent on the Venezulean Navy's commitments and a stay of three days is envisaged.

The call will be YV0AA with both SSB and CW modes being used on envisaged frequencies from 160 through to 10 metres. QSL arrangements are in the hands of YV5DFI, PO Box 50332, Caracas 1050-A Venezuela.
ANTARCTIC LOGS

Peter VK3FR, QSL Manager for VK0AP, as with some other QSL Managers for Antarctic expeditions, will be receiving logs in the near future when the operators return home. This will enable them to process the balance of the cards that are outstanding, including those that have not been verified by the exchanging of logs on the amateur bands, an excellent practice in theory, but one which is not always convenient to all parties.

JANUARY'S COLUMN

Owing to the early deadlines, due to the holiday season that typists and printers enjoy, the January notes have been prepared in advance by Jim VK3YJ. Don't miss Jim's summary of 1983.

CW SWLING WITH ERIC L30042

28 MHz

4EAT, JEPZC, KX6QG, UA0CCI, VE7AQ, KF1Z, W7MD, W7NL, AJ8N.

21 MHz

DJ6JE, FBFTT, FK8KAJ, F8OQH, H8BBN, HJ2Q, KH6OW, L8IDB, L21EA, LK7QJ, UK8HAA, VE7AQ, VK7NNG, VU83ZV, WLT7, Y54JA, Y6BMF, 457WP.

14 MHz

C02HT, C52QN, CU1CHQ, E19G, ENSA, FK8BU, FMTBZ, FMTW7, G3ABN, HASKFL, I2AMH, K6CF, KP4BBN, O63N, S8BGA, VP9DR, VU2KSP, Y8LASQ, V5SAN7, 3BBFG, 457NS, 4ZAMK.

10 MHz

DJ2XJ, F3NB, G3RHI, OK1DAV, O29WD, W1UY, N4SU, W8ECB, VE1BB, Y84DD, Y3XO.

7 MHz

DL7AFY, ENMA, HA2BCZ, I1RCD, L1XPD, O6NBR, T158GA, U8RFU, VE2MHO, Y84FN, ZK3RW.

3.5 MHz

GMGLDR, H7U7G, P28RR, SM6CPEY, U1AIZ, UK2RDX, ZI6HK.

1.8 MHz

VK2DSG, VK3(2), VK5(4), VK6HD, VK7(2).

QSLs RECEIVED BY ERIC L30042

10 MHz CW

DX5CN, DX4CL, F28S, G3AACK, HB8AMO, JASQMG, ORESB, OK1D1W/O, K3XKA, K45E, FK8BZD, F9TMC, F08GM, HATRO (3.5), H7C7MN, H85VC, ISOUME, L5UNAN, P42E, SM7ALC (3.5), SVNIN, T126BLY, T3OCH, DJ6XJS1, UW38B (3.5), VK8CON (1.8), VP9SH, W2AUW, W6RRA (N3A), Z4UJ, 5W1EJ.

WORKED ON THE EAST COAST

28 MHz

320CT, WB8SAJ, XE2XM, XE2NNZ, ZK2NU.

21 MHz

320CT, BY1AA*, C5A6DJ, F0KJP, HK0TU, HJ2L, T2ADE, VK0RC, VK4AML, V9QEH, V9JQD, W6SDJO/KH8, X1USS, Y8B08G, ZC4YC, ZF2OE, Z45PB.

14 MHz

32D2M, 3V8PS, S8B8KM, Q8TV, Q8DT, SH4M, 98BMPD, A9DQ8, BY2AA*, BY1PK, CP2FS, C21RK, CE3B, C02H, D3FNS2/T2, F8BW1, FC8TT, G3XPPW, G6H6K, H4s4AA, HK0TU, HZV20, I8NNK, J3TJN, KATECK/KL7, K14USV, KH/3BE, KPE3J, KX4XO, K8PO, L6V8E, L8ABF, L8ABF*, P9Y1AZAE, PY24C9, PZ1BZ, SL4ZLY, SP8MV, SP6KWI, ST2ZA, T2ADE, T2WCY, T77B, T77V, T8RCR, VE1ASU*, VE7B0C/KH8, VK925S, VP8BAGA, VP8BALD, VR8KBG, UX1SS, Y230G, Y430H, Y442IP, Y689GB, Z2KHS.

7 MHz

32D2M, 3V8AA, 8Y5IC, C21RK, C21RK, CE3ELS, CP8BG, CP8FD, CP8HI, CT1YF, CT20G, E8ABH, G3GCOR, JA2AHY, K1C7UR, K4L7AT, KPD5EX/V2A, LA5M8, QA4MM, TA3NN, T12CF, VK28CC/LH, VP2YO, WHADG, VY3S8Q, VY3B0S, ZB2GR, Z1IK, Z1HS, ZP5PX.

3.5 MHz

JF1IST, VK9WCY.

1.8 MHz

VK8HD, ZL1AAS.

THANKS

In compiling these notes, information has been gleaned from such sources as RADCOM. QSL MANAGERS LIST, WORLD RADIO, QRZ DX, VERON, DXNEWSHEET, DXQZ DX, DX NEWS SHEET and LONG SKIP which were used together with reports from VK's zHDS, PS, 38Y, UX, YJ, YL, 6HD, NE and SWL 30042. Amateurs from overseas countries which have contributed include AD1S, G3NBC, IBSAT, ZL1AMM and ZL1AMN. Thanks to one and all.

To all contributors and readers of this column, happy Seasons Greetings to one and all is extended from our QTH to yours, with hopes that 1984 brings health, happiness and lots of DX to one and all.

Remember that the curse of most DXers is that most have to work and miss out on some of the “goodies” that are on the bands.

SOME INTERESTING QSLs RECEIVED

BY1PK, FP3AA, GH6MF/KH8, HASQG, HAA5M, UV23J, LA8PBF, OK8KF, OH9MW, OMR9W, OZ1EE, PY1EEM/PYOT, SV1DLD, W3AUKH/DUZ.

FACES BEHIND THE KEY AND MICROPHONE

Charlie — F6CVR.

Ruthanna WB3CQN, who is presently visiting VK, with Misti W3DOG.

ERIC NISSEN VK4XN

1930

Eric, who was born in 1905, sat for his AOCP at the Dalby PO in late 1929 and his Morse test was carried out by Eber Lane who subsequently became a most senior PMG executive. However Eric had been interested in amateur radio well before 1930.

Transmitting equipment comprised a Radiotron UX112A audio output type valve, 1/2 amp filament, in split Colpitts oscillator circuit. Plate supply was approx 135 volts from a number of old ‘phone type dry cells, cases punctured and immersed in water in glass jars.

Receiver was a UV200 “soft” type valve regenerative detector with audio amplification.

Antenna: a “windom” type single wire feeder, flat top 132 feet and 50 feet high.

Eric was particularly interested in 10 metres in his early days and counts XU2UU, China, among his early DX contacts.

In the late ‘30s Eric “invested” in a Philips 25 watt transmitting triode, and took the 220 volt anode supply from the DC town mains. Unfortunately little was known of sunspot cycles in those days and there were many disappointments on 10 metres.

In 1929, Brisbane radio identity, Russel F Roberts donated a cup to the VK4 Division for “operating above 14 MHz”. Bob Beatson (ex VK4BB), 1929, Rev Delbridge (ex VK4JR), 1930, and A R (Mac) McKenzie (ex VK4AKG) were winners before VK4XN in 1932, 1933, and 1934 who retains the cup.

Among Eric’s stories is one of a Puss Moth flight from Brisbane to the Downs and back experimenting with 5 metres.

Over 31 years on the 4QS Dalby staff, will be receiving logs in the near future when the operators return home. This will enable them to process the balance of the cards that are outstanding, including those that have not been verified by the exchanging of logs on the amateur bands, an excellent practice in theory, but one which is not always convenient to all parties.
Well, it is the end of the year and the final month of the World Communications Year 1983. There have been several events on shortwave commemorating this, for example both Radio Netherlands and Radio HCJB mounted amateur radio stations from their studios or sites. PABP&CJ was located in the Radio Netherlands studios in Hilversum, while HC1JB was able to utilise the antenna arrays at the Ecuadorean Gospel station site at Pilo, when these were not required for their broadcasts. Unfortunately poor propagation prevented us in this area from either hearing or working them. As well, several administrations released special prefixes to the amateur service to celebrate WCY '83.

It is unfortunate that the amount of deliberate interference or jamming has markedly increased during the year. Osten-
sibly the celebrations have focused on communications, yet there are some signals designed to deliberately frustrate that endeavour.

As the declining sunspots have caused propagation on the higher frequencies to fail away, there has been an increasing occupancy of lower frequency allocations, with the resulting congestion only too apparent. Fortunately, some traffic is being re-routed via the communications satellites, yet developing nations have found that it is more economical to utilise HF communications.

Perhaps in 1984 we will see a possible growth in traffic and volume over shortwave frequencies. Many countries are modernising and expanding their external broadcasting outlets, wishing to communicate their views to other nations. However, it is a fact that many domestic receivers with SW capabilities, are not able to cope with the congested bands. That is why stations such as Radio Moscow dominate the bands with their super-powered senders and vast antenna arrays, drowning out the competition. Many organi-
sations are either forced into erecting senders and arrays to punch through, or to alter their frequencies to where broadcasting is not normally heard.

Therefore, I believe that the amateur community should get behind the Intruder Watch Service and log any interloper that strays into our exclusive allocations. The amount of traffic from intruders on our bands is increasing and if we don’t act and complain, we could lose them by default. Many of the intruders have considerably more power output than a normal amateur is allowed. Often they plonk down on a channel, with a form of frequency shift operation, running reversals, blanks or often an unmodulated carrier. They do this to keep the channel occupied denying it to other users. This practice by intruders, I must add, is not confined to amateur allocations.

One phenomenon that has been around for a while is Long Delayed Echoes (LDEs). Although I have been aware of them, I haven’t personally come into contact with them. Basically what happens is that amateur and commercial operators hear their signals several minutes after they have ceased transmitting.

Of course, this has spawned a variety of theories ranging from time warps to UFOs. However, Robert Freyman, a former scientist with the US government at Los Alamos, has solved the riddle. He proposed that occasionally radio signals became trapped in a conductive duct of plasma, created by the solar wind. This duct extends to the Troposphere, where it “blinds” with the Earth’s geo-magnetic field. Any radio signals in this region enter the duct. This is determined on the ALF and MUF, and signals are usually propagated into space towards the sun. However, if this duct collapses, the RF signal is reflected back to earth and is heard again, often after a considerable delay.

Scientists at the Soviet Polar Geophysical Institute have researched this theory with experiments and have confirmed that this is in fact what causes the LDEs. This phenomenon is quite common on signals from polar regions, where the earth’s magnetic field and the solar wind blend most efficiently. Naturally, because of the USSR’s geographic location, signals are subject to LDEs. Mr Freyman was awarded the Commemorative Medal of the Soviet Polar Geophysical Institute for his discovery. No doubt, the OTHR pulses helped the scientists confirm the theory of LDEs.

Only a few months ago, one Melbourne DXer was wondering if there was a correlation between exceptional MW propagation he was observing, and the sightings in central and eastern Victoria of UFOs. However, it is more likely that there is some ionospheric ducting similar to LDEs causing this, rather than the “little green men”. This ionospheric ducting could also explain why some UFOs are tracked on radar.

Well, Radio Australia, the overseas service of the ABC has done some programme re-
organisation, according to Media Network on Radio Netherlands. They are reportedly dropping transmission to Europe and North America and concentrating instead on the Asian/Pacific region. Their weekly communications magazine — “Spectrum” has been replaced by “Talk-Back” which will continue with more DX information similar to what “Spectrum” had, but with more input from overseas. You can hear it at 1610 UTC Saturdays repeated at 0210 and 0730 Sundays.

Also the ABC Domestic Shortwave Station in Sydney — VLI — on 6.090 MHz, ceased operations as from Saturday 8th October. It is unlikely to reappear for some time as it was becoming increasingly difficult to procure spare parts for the ageing transmitter. I believe that two regional shortwave trans-
mitters in the Northern Territory will be operational sometime in 1984. With VLI now departed, many SWLs are able to copy the 300 kW transmitter of Radio Luxembourg. I believe that it is in English during the European night time in parallel to their MW outlet, but the majority of programming I hear is in Dutch.

The weekly Southern Cross DX Club net is now heard an hour earlier at 1030 UTC on approx 3.570 MHz each Thursday. The reason being we have decided to keep the net on local time, as it was getting late at 1130 when we are on Daylight Saving Time. This year, only Queensland and the Northern Territory are remaining on Standard Time, as WA is going to try Daylight Saving again. The net will revert to 1130 UTC as from March.

Well, it only remains for me to wish everyone the compliments of the Season and I hope that you have good listening during 1984.
The opening continued throughout the day and evening and although some unusual repeater openings were heard there were no further real contacts made to VK5 or VK3 from Sydney. I understand from the VK1 gang that VK5ZO in Mt Barker was heard in Canberra but I am not sure whether a contact was actually made.

There are two new stations on 2 metres in Canberra. Peter VK3ZQS who is operating portable pending receipt of his VK1 call and Ian VK1BO who puts a good signal into Sydney on both 2 metres and 70 cm, with 100 watts PE and 10 watts PE respectively.

Two metre contacts with Doug VK3UM at Chirnside Park (Melbourne) have been continued throughout the month. The scheduled attempts at 2230 and 2245 each Saturday and Sunday (local days) on 144.200 MHz have resulted in contacts being made every weekend during September. Participating stations have included Brian VK2QP (formerly VK2ZHT) and myself in Sydney, with VK1RK, VK1KAA and VK1VP in Canberra.

"Particularly interesting was the contact on 23/9 at 2235. Doug was good copy here for 27 minutes and tried 70 cm. His 80 watt PE signal was heard here in Sydney by myself and Brian VK2QP for a short time on two occasions so it is now only a matter of time before the first 432 MHz SSB contact is made between Melbourne and Sydney.

"VK2YEZ in Griffith can be heard in Sydney any time he transmits with his beam in this direction. John has also continued his 70 cm contacts into Melbourne. He has 150 watts PE on 70 cm and has so far worked Doug VK3UM.

"Jeff VK2EJJ is another station south west of Sydney at Wagga who can be worked from Sydney at almost any time. Sometimes Jeff is limited to 10 watts but still makes it.

"John VK2ZXQ in Gunnedah, Don VK2ADY in Tamworth, Doug VK2XDH in Uralla have all been active on 2 metres during September and can be heard in Sydney on 144.2 at 1030 almost any week night. Les VK2DSG at Duri also puts in an appearance on 2 m SSB after a long absence. He was 5x4 in Sydney at 1047 on 22/9."

Thanks for keeping us informed of your contacts Gordon, by doing so must lead to more eventual contacts as people realise there are stations to be worked on a regular basis.

THE MELBOURNE SCENE

After a long written absence I have received a massive epistle from Doug VK3UM at Chirnside Park, a Melbourne suburb, giving details of happenings in that area, and written whilst travelling on the train to work! I have extracted the relevant items of interest to readers, quite a lot being for my personal reading!

On the equipment side Doug says he came back to VHF operating after his sojourn some years ago in VK8, as the result of an occasion when "a VK1X scoffed at the fact that I would be able to hear VK3UM on 2 metres meteor scatter. The challenge was sealed naturally when "a couple of dozen" was laid on the line!

Doug writes: "It so happens that on our first sked on 144.020 that we bumped into Eddie VK1VP and Bill VK4LC who had been doing the same thing for months on 144.015. Needless to say, by getting together we all started to hear each other although from Eddie to me was as expected, too close. Many half contacts were had between VK4LC, Angus VK4KAG and myself when we came to meet Gordon VK2ZAB. Bill was consistently hearing Gordon for minutes on end and on what I strongly believe was aircraft enhancement!"

"To cut a long story short, I finally arranged with Gordon to look towards Melbourne. Calculation indicated that with the systems gains at the time that +3 dB forward scatter signals were possible. On our first attempt this was proved correct and although not a full QSO I was able to hear Gordon for 90% of the time and read him Q5 for 10% of the time. My antenna then consisted of two 10 element beams. Next followed replacing the RG214 with heliax and fine tuning the preamps until I was able to realise an 0.8 dB NF (on the HP automatic noise measuring device). This resulted in the first of many Sydney/Melbourne QSOs and the meteor scatter skeds were dropped in favour of a concentrated approach to forward scatter.

"The 10 element yagi was next tried, spaced 16 feet horizontally and 14½ feet vertically, with open wire phasing sections. This wire was abandoned as it could not be kept tight, so settled for a linear balun on each antenna and a 4 to 1 coaxial power divider. This set up gave great results and the Sydney/Melbourne path became easy. Forward scatter reports received from as far north as Narribri (1000 km)."

"Because the tower was also needed for other antenna commitments, the four came down and were replaced with two 13 elements. But the four had a gain of almost 20 dB with classic side lobes at -14 dB and front to back 35 dB. Sun noise on a quiet sun was up to 9 dB. Having two unused 13 elements on the ground was irksome, so after some further thought it looked as though they might be placed in a four way configuration straddling the TH6 already in place! They were deliberately overcoupled to reduce the side lobes and finished up with 10% feet vertical, so that now the four are again giving almost 20 dB of forward gain with a slightly wider

There are no listed beacon changes this month, although there will be a callsign change in the near future to the Macquarie Island Beacon. More on this later. Three new beacons are listed in VK6 — see text for details.

TWO METRES AND ABOVE

It has been very pleasing of recent times to be continuing to receive detailed reports of what has been happening on 144 MHz and above in New South Wales, and this month an indication of what has been happening in Victoria.

Gordon VK2ZAB has sent along another letter outlining contacts from the Sydney area to various locations throughout NSW. He reports:

"The most interesting happening was the tropospheric refraction opening on 2 metres which occurred on 19th September. (Local day.)

"Bob VK1ZQR advised me at 2245 that there appeared to be an opening to VK5 and..."
front lobe without side lobes. The 3 dB points are around 5° which raises the old point that a high gain antenna can only be used if you know where and at what time to point the thing! Also, with 300 watts PEP output the ERP is sufficient to cause RFI starting some 3/4 mile from the array. Even 10 watts makes a lot of noise!! As a result of this problem, evening skeds were abandoned largely in preference to Saturday and Sunday mornings, with interesting if not predictable results.

**THE VAGARIES OF PROPAGATION**

Doug continues: "We became interested in the propagation modes encountered. When you reach a situation of high gain antenna, very low noise front ends and a fair bit of string, the path becomes a wild goose chase. One of the problems which cropped up with similar setups many things begin to happen that are not all explained in the ‘best books’."

"Forward scatter follows the predicted computations that Sydney/Melbourne (distance 630 miles) will provide signals twenty four hours a day with station system gains as described, but there are many times when there is not a trace of any signal. It is therefore surprising that signals were scattered upwards at times."

"Aircraft enhancement. Here Gordon and I agree to disagree that this provides our basis for the regular (ho hum) contacts. This is our continuing theme for ‘research’ at this time. But what is certain is the enhancement that does occur. Typically signals (on the noise floor) will rise rapidly over a thirty second period without flutter, and provide signal levels of up to 24 dB on the Sydney path and over 50 dB on the Canberra path for periods approaching five and ten minutes respectively."

"Gordon can be Q5 S1 which increases to S5 for five minutes, while Canberra is inaudible normally, but signals have been seen to S9 -20 dB (normally S7) for up to ten minutes. Signals disappear as rapidly as they appear. Any times they are disguised by following flights and run into each other. It is not unknown for up to half an hour of continuous enhancement to occur."

"Signals are characteristically steady (viz: no flutter) with generally slow but not deep QSB. When you think about it the cross town aircraft clutter most people know would not be present at these distances so a single signal path will predominate. What causes it? I believe there are three possibilities: (1) Reflection off the condensation trails left by aircraft; (2) Reflection caused by the temperature shear effect caused by the heat from the aircraft engines; (3) Reflection from the surface of the aircraft. In short, I favour (3) but as mentioned earlier Gordon is not convinced but rather feels another mechanism is responsible. We are both working towards trying to establish what and why and how, and time only will tell."

**INTERESTING SIDELIGHTS**

"Try this one. During the widespread opening you reported a couple of months ago, the band was open to Mick VK5ZDR all day on the Saturday, and at 7 PM local I worked Launceston, but the beam heading was Q5° and signals S9 +20 dB and the direct path was S7! Definite reflection media which I have never encountered before or since. At the same time Garry VK3ZHP reported working VK7 on 70 cm on the same heading only on that band the direct path was stronger! Les VK3ZBJ found the same effect!"

"Another interesting 'effect' noticed on odd occasions with Gordon VK2ZAB’s signal is a hollow sound, almost to the point of an echo. Queue and unexplained."

"Sun noise is also a problem on early morning skeds and limits the noise floor (which thankfully is either hopeless or excellent with the latter predominating). As most stations use 2 meter equipment the sun is found, sun noise can, for short periods (even when elevated well above the horizon) reach S9 proportions."

"The VK5RSE beacon. Generally, Les VK3ZBJ and myself (VK3UM) can always detect the signal but for most others it takes tropo enhancement for them to hear it. Use it for beam alignment and roughly checking meteor counts."

**OSCAR 10**

Further from Doug: "Last month installed the 'telephone' (viz: Oscar 10) and what a boon for getting what is going on around. The OSCAR beacon is excellent with the sun and high gain antenna can only be used if you now where and at what time to point the array. Even 10 watts makes a lot of noise!! As a result of this problem, evening skeds were abandoned largely in preference to Saturday and Sunday mornings, with interesting if not predictable results."

**MULTI-BAND BEACONS IN WA**

Wally VK6KZ has written advising of the installation of a new multi-band beacon at Busselton, south of Perth, on 8th October, and operating since 0630 UTC that day. Frequencies are: 144,019 MHz (zero beat, key down); 432,057 MHz and 1296,171 MHz.

"As you can note, these are harmonically related, and the system comprises a common 144,019 MHz drive source. A 72 MHz crystal is used and this is frequency shift keyed. About 40 watts at 144 MHz is fed from the transmitter to a box mounted on the tower adjacent to the antenna. The 23 watts of 144 MHz signal is fed through the first power divider with approximately 10 watts fed to two S element horizontally polarised yagis. One yagi is pointed at Perth (014°) and the other to Adelaide at 100°."

"The other half of the power goes to a varactor multiplier to produce 432 MHz. A second power divider sends power to the 432 MHz and another to a second varactor multiplier. The 432 MHz array is a screen reflector with three lobes favouring Adelaide, Bunbury and Perth. The system efficiency is such that less than ½ watt is available on 1296 MHz but at least there is only one metre of coax run to the antenna!"

"The frequencies were chosen to avoid the EME schedules on 432 MHz and to give reasonable frequencies in the 144 and 1296 MHz bands. The frequencies conform with the WIA Band Plan in that they were chosen because of the special circumstances of this beacon(s)."

"Already there have been reports of almost continuous twenty four hour a day reception of the 144 MHz beacon in Albany, Perth and Watheroo (200 km north of Perth and 400 km north of Busselton). The 432 and 1296 MHz beacons were heard in Perth for over two hours the day after they were installed and the 432 beacon has been heard periodically yesterday and this morning (10th October and 11th October). It will be interesting to see how reliable the path is to Perth (and elsewhere) on the higher frequencies."

"The beacon is operated by the WA VHF
Group (and paid for by it) with the help of the Geographe Radio and Electronics Group of Busseston who have it at their meeting place/ radio shack.

“Construction was a team effort with Don Graham VK6HK, Barry Grey VK6ZSB, John Lehmann VK6ZK, Bob Blanco VK6KRC and myself VK6KZ being most involved. A modular design was chosen to provide flexibility and easy maintenance or repair. Shortly a 432/1296 MHz beacon would be installed in Perth and once sites can be finalised there are plans for 144 MHz beacons at Exmouth and Norseman.”

ACTIVITY IN WA

“The Manjimup (Max VK6FN) to Watheroo (Peter VK6ZPG) path of 400 km on 144 MHz continues to be very dependable with Bob VK6KRC in Perth in the centre and very active. This is an almost nightly sked with those three. John VK6ZK and Ron VK6FM in Perth continue checking 144 MHz propagation to Wally VK6WG in Albany. Last week Steve VK6ASF (Exmouth) was working via the Geraldton repeater and he indicated that his signals were coming in at that time. There were no signs of Steve direct on 144 MHz in Perth but Denis VK6LD 200 km south of Perth was able to work Steve direct on 144 MHz SSB with Steve using two x 5/8 wavelength vertical antennas! People from Bunbury, 470 km south of Geraldton were also able to work Steve in Exmouth via the Geraldton repeater. Roll on summer!”

“Don Graham VK6HK and I have pushed our 3.5 GHz working to 80 km and look forward to trying the ducting possibilities when they occur. I understand the 10 GHz beacon in Perth is still running well. Activity on that band has fallen since Roger Nottage VK6NR left for Tasmania.

“Wednesday morning 12th October: We had at least six hours of 432 and 1296 MHz reception of the beacons from 0900 to 1500 UTC.”

Thanks Wally for that latest information, and your new beacons have been added to the beacon list. I hope anyone hearing them will advise Wally as even 2 metre signals don’t come too easily from the far west coast of WA.

MOBILE VK6RO/M ON HOLIDAYS

Graham VK6RO has once again headed north with his 6 metre equipment and had a good time working JAs, 150 of them on 50 MHz and all from the mobile IC505 and 10 watts output to a quarter wave mobile whip on the roof of the car. There were a total of ten openings starting from 25th August at Carnarvon with one JA at 1027 UTC.

On 26th August at Carnarvon one opening 0700 to 0913 working thirty five JAs. 27th August: Dampier, one opening 0623 to 0820 and nine JAs. 28th August: TV on 49.750 at 0920 and 1130 at Dampier. 29th August: TV on 49.750 again at Dampier at 0505 and 0710. 30th August: JA2IYG beacon 51x at 0740, with TV on 49.750, at Port Hedland. 31st August: 6th September: Carnarvon, TV on 49.750 at 0555.

Graham noted the following: “On 26th August JAs were 5x9+ on 50 MHz in QSOs but JAs not hearing VK6RTT beacon only 3 km away on 52.320 MHz. This also happened at other times.

“In many of the day-time openings the MUF probably only reached 50.300 MHz and it certainly never got to 52 MHz.”

“Only two night-time TEP openings, on 2nd September and 4th September. Between 50 and 52 MHz was outstanding. I only heard one JA on 52 MHz and none were worked there. Last year I worked eighty six JAs, this year 150, mainly due to the use of 50 MHz.”

“I have now worked 953 JAs while mobile on four holidays in the north-west of VK6 during 1980, 1981, 1982 and 1983, and all worked with 10 to 20 watts output and quarter wave whip.”

“That’s a good effort Graham and thanks for writing. It will be interesting to see what happens over the next few years with the sunspot cycle at a low point, and any comparisons which can be made on 50 and 52 MHz. If you continue to make trips to the north I would expect you to be able to draw some conclusions!”

NEW ZEALAND VHF FIELD DAY

Readers are reminded of the annual VHF to SHF Field Day being held in New Zealand on 3rd and 4th December. On Saturday 3rd December the field day operates from 0500 to 1100 and Sunday 4th December from 2100 to 0300 UTC and all bands from 6 metres up will be included. It may well be worth while turning your beams in their direction for possible contacts, particularly if you live in the Eastern States.

SIX METRES COUNTRIES LIST

It is proposed to have the first listing of countries worked by Australian amateurs in the February 1984 issue of “Amateur Radio”. It was decided to not print the list in January because the closing date for copy in Melbourne is 18th November and the consequent problems associated with production over the Christmas holiday period. Therefore, you have one last chance now to upgrade your former list if you have already submitted it to me, or to send your list if you haven’t already done so. The method of sending information was published last month and must follow this format. Those lists already to hand include some very good tallies. It is important that any list for inclusion be in my hands no later than 23rd December, after which date I cannot guarantee inclusion this time.

MACQUARIE ISLAND

The operation by Peter McLennan VK0AP has now ended. The equipment however has been handed over to David Rasch VK0CK. David is using the call sign is VK5CK.

A new EPROM for the keyer with David’s call of VK0CK has been provided.

David has also taken his own TS660 with him.

The equipment on loan is courtesy of Lionel VK3NM who provided the major items and Gill VK3AUI. The major items are an FT680, a Lunar 100 watt amplifier and a Werner Wolff beam.

The keyer may shift to 52.150 MHz and readers will be advised when operation has commenced.

Those who have still to work this rare six metre country have another year of operation.

GENERAL NEWS

The summer DX season is almost upon us and we will probably see an increase in Es activity and number of days for openings whilst in the low part of the sunspot cycle. And don’t overlook 2 metres during periods of high Es activity, especially when short skip is around. Two metre openings if any, will probably be only of short duration, so don’t waste time talking about yourself or equipment, get the signal reports over and go looking for someone else, so giving as many as possible to share in these unique openings.

This issue starts my fifteenth year of writing these notes. I thank all my faithful correspondents who by their input make the pages possible. I will always read every letter, but there are obviously plenty of people out there who do get something from the notes judging by the nice letters I receive. Thank you everyone, I do the best I can for you and for the art of VHF, but much of any success the column may enjoy directly relates to the input which you, the reader, gives it by your letters setting out your exploits and that of others on the VHF bands.

One continuing compounding problem for me as your Sub-Editor is the fact that I still need to work to keep the wolf from the door, and my work as a television technician is very demanding on hours which are frequently very long and hence I run into problems with time to do all that I would like. Hence, I often have long periods without being able to even get on the air which grieves me. Hopefully this will all change before too long as I propose retiring at the end of 1984 and this should give me time to improve the input to the column if for no other reason that I should be able to fire up the gear more often. I would dearly like to be involved in the scatter work that Gordon VK2ZAB and Doug VK3UM and others are presently conducting, and from 1985 onwards I will be available for specialised work in this field, I already have the equipment capability but not the time to use it! I take this opportunity of extending Seasons Greetings to all my readers and hope you can work plenty of DX. May Father Christmas be kind and present you with that much longed for transceiver or other piece of equipment, and that it will not cost you a fur coat or a new dishwasher for the XYL as well! My thanks to the Editor of “Amateur Radio” and others associated with its publication for bearing with me all these years, and having to put up with my typewritten copy for so long! I must say however, that the treatment given me by the Editor and his staff has always been very generous and there have been very few items submitted which have not been printed, so we must all be grateful for that! And it’s been an interesting year, who would have thought it back in 1978 when this column was commenced.

Closing with the thought for the month: “The reason so many politicians stand on their records is that they are afraid somebody might read them!” 73. The Voice in the Hills.
Well another year is nearly over and for ALARA it has been a very eventful one. In July our AGM was a success with all executive positions filled.

In August we celebrated our eighth birthday and plans are progressing well for our first get-together at Midura in September, 1984. Quite a lot of interest has been shown and hopefully it will be well attended.

Our membership is increasing monthly and we are always pleased to hear from new YLs on air and hope they will join our group. Welcome to new members: — Alice XYL of VK3PEC on 9th October, 1983 and to Lois WB3EQN on 19th October, 1983 who was sponsored by Gwen VK3DYL. Welcome to Australia to Siegi VK4VSF formerly P29NSF, a member of ALARA for some time.

WCV; some of our members were involved in activities for WCY through their zones and clubs and also a couple of magazine articles have helped to publicise the women’s involvement in amateur radio.

1983 has seen a number of women moving forward into more prominent roles in the WIA and this is an encouraging sign that we are being accepted into what was for many years a mainly male domain. Two of our members are now federal councillors and several are now office bearers at zone levels.

ALARA’s Contest No 3 will be over when you read this and again I say thank you to all who participated and remind you to please send your log in by 31st December, 1983. Remember this is the first year to be counted and this is an encouraging sign that we are being accepted into what was for many years a mainly male domain. Two of our members are now federal councillors and several are now office bearers at zone levels.

ALARA’s weekly net for the Daylight Saving Time period is at 1000 UTC this hopefully will suit more people and the new net frequency is 3.580 MHz ± QRM.

Congratulations to member Joy VK2EBX, who in June this year learned she had won the Bronze Swagman Award for Bush Verse for 1983 out of 500 entries. Joy and family travelled to Winton Qld for the presentation (see photo). The competition is held every year to promote the writing of Australian bush verse after the style of Henry Lawson and Banjo Patterson. A very talented lady who has won other prizes for her “scribbling” (Joy’s words) and this is certainly a delight to read. Visit to “down under” is anticipated by Ruthanna WB3CNQ in late November early December. Mavis VK3BIR is arranging a busy day on 10th December which will give some of the YLs a chance to meet Ruthanna.

I would like to take this opportunity to thank all members of ALARA for your support and news for this column, so very necessary to keep the interest in us alive and well.

ALARA wishes all our readers a very happy Christmas and joyous festive season and may 1984 be all you would wish for yourself and families. Until next year drive safety and I look forward to another year with you all.

MEMORIAL TROPHY

The Townsville Amateur Radio Club has provided a magnificent trophy to commemorate the memory of Mrs Constance McKenzie OBE, formerly VK2FY, the first licensed YL and woman member of WIA. Mrs Mac is well known for her teaching of Morse code to over 10,000 servicemen during WW2.

ALARA feels very honoured to be offered this trophy for a CW section of their contest and the committee is at present working on how best we can incorporate this trophy into our contest next year. Watch this column for details. Our thanks to Mr Bill Woodger and the Townsville ARC.

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**BRONZE SWAGMAN AWARD**

**Bush Verse**

33/73/88 Margaret, VK3DML

**GREEN GINGER NIP** by Joy Colls, VK2EBX

The heat was oppressive, the blowflies hummed loud,
The whirlies’ wind blew up the dust;
And the plane that the young outback minister flew
Was the colour of reddish-brown rust.

Three Sundays the little church out in the bush
With the earth and the sky slept in union,
But the fourth Sunday woke with a bustle and stir
For the once-a-month Holy Communion.

The minister, earnest and solemn of face,
His sermon rehearsed and amended;
Flew the battered old plane o’er the featureless plain
As the morning sun slowly ascended.

He bumpily landed, and bounced to a halt
On the runway ‘twas hard to define!
As he steppned from the plane he was gripped
by a thought!

He’d forgot the Communion wine!!

The people awaited in chattering groups,
While children played noisily round,
As the person approached, and without more ado
His dilemma began to expound.

A young lad came forward, a freckle-faced kid;
"Please sir, my dad’s got some home brew.
We live just a little way off from the church,
I could go get a bottle for you."

Why, thank you, young Tom, that is really most kind."

Off he went at a pretty fast clip;
And returned very quickly with, clutched in his hand,
A bottle of green ginger nip.

The service proceeded. The wine, duly blessed,
Was passed round the small congregation,
But the potency of that nefarious nip
Was the subject of much speculation!

For ‘twas said of that brew that a thimble or two
Would lay an ox out in his stable;
So proceedings took on a more boisterous note
As the cup was returned to the table.

The last hymn was warbled with much voice and pep,
Though some reached “Amen” far too soon.
With some of the singers a bit out of step
And most of them quite out of tune!

The organist’s playing, so slow and sedate,
Was the subject of much speculation!

The minister sighed as he picked up the cup—
"Tis my duty to finish it all!!"

"’Twas late when the little plane started its run,
And shakily climbed in the blue;
And that minister cannot recall to this day
How he sat in the cockpit and flew!

And he still flies his plane in the heat or the rain,
And that minister cannot recall to this day
How he sat in the cockpit and flew!

So proceedings took on a more rollicking beat,

But the fourth Sunday woke with a bustle and stir
As the minister approached, and without more ado
His dilemma began to expound.

A young lad came forward, a freckle-faced kid;
"Please sir, my dad’s got some home brew.
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So proceedings took on a more rollicking beat,
EIRP is used. There does appear to be a faulty antenna relay on board the transponder, however, the designers are confident that with time the relay may lose the 10 dB of attenuation currently in the system. Notwithstanding there are operators who can muster that magnitude of power and communicate. Reg VK5QR is the only Australian amateur to QSO through Mode L at this time.

**SPACECRAFT SYSTEMS EXPERIMENTS**

The UoSAT-B spacecraft will carry a number of systems experiments alongside the scientific experiments described in last month's column. These system experiments are concerned with developing an improved, cost-effective spacecraft bus and experiment support facility for future amateur low-earth orbit missions — with special emphasis on low-cost Get-Away-Special (GAS payloads on the Shuttle).

1) NAVIGATION, ATTITUDE CONTROL AND STABILISATION

A low-cost medium performance stabilisation system is an essential feature for most low earth orbit secondary or GAS payloads. The stabilisation mechanisms most suited to these requirements appear to use spin, magnetic and gravity gradient techniques as none of these need employ expendable spacecraft resources for their long term operation. The UoSAT-1 mission was primarily intended to be earth-pointing utilising gravity gradient methods after an initial inertial, spin stabilised period — the necessary attitude manoeuvres being effected by on-board magnetorquers. The very simple navigation instrumentation and single-axis magnetorquer on UoSAT-1 performed well, it with some difficulty due to their simple nature. The spacecraft was spin stabilised and successful magnetic attitude manoeuvres demonstrated complete control over the spacecraft dynamics and placed it in the correct attitude for gravity gradient stabilisation. The stabilising boom, however, was prevented from deploying fully due to a snag of the cables feeding the scientific magnetometer within the tip-mass on the far end of the boom. Even with only a short (1 m) deployment of the boom, the spacecraft was successfully gravity gradient stabilised for a few days with marginal stability alter which it was returned to its spin stabilised state. The experiments carried out with UoSAT-1 demonstrated the basic feasibility of a low-cost attitude control and earth-pointing stabilisation system, however, the simplicity of the navigation sensors and the partial deployment of the boom prevented the study and evaluation of the operational performance of the system. It is proposed, therefore, to include improved navigation sensors (eg: sun angle sensors, earth horizon sensors, improved navigation magnetometer) on UoSAT-B in addition to spin-axis and spin-plane magnetorquers and a reliable boom. This combination will enable the spacecraft to be navigated to an expected accuracy of within 1° degree and a combination of passive nutation dampers and active magnetic damping (using the on-board computer) will contain the nutation and vibration of the spacecraft of within an expected ±2 degrees.

2) COMPUTER HARDWARE, SOFTWARE AND MEMORY TECHNOLOGY

On-board memory storage has been a perennial requirement for spacecraft and is now highlighted by the proposed Packet Radio Communications Satellite (PACSAT) being studied by AMSAT. Large amounts of solid-state memory (as opposed to tape recorders) is becoming increasingly attractive, however, little experience has been gathered as to the performance of many of these devices in a long-term space environment. As these devices represent the core of a PACSAT type spacecraft, the UoSAT-B mission will provide essential data. In conjunction with the Packet Communications Experiment, various types of CMOS static and dynamic memory devices and a CMOS NSC800 microprocessor will be flown to assess their performance. An RCA 1802 microcomputer will be employed as the main spacecraft computer, as on UoSAT-1. The basic architecture will be unchanged and additional peripheral interfaces will be added to support the UoSAT-1 experiments. Software and data will be loaded from the ground command stations into the spacecraft computers as necessary.

3) TELEMETRY SYSTEM

The telemetry system used on UoSAT-1 will be upgraded with the addition of an optical hardware-generated checksum for each channel. The ambiguous format of the digital status channels will be resolved by adding 'channel numbers' to each block in the same format as the current analogue channels. An improved dwell facility will allow selection of a number of channels for repeated display. In order to make space for these facilities, the RTTY, 110 baud ASCII and CW downlink formats will be removed, although some of these can be output through the 1802 computer.

4) COMMUNICATION SYSTEMS

The simple and effective transmission formats adopted for UoSAT-1 have proved
highly successful for reception by low-cost ground-stations but suffer from certain limitations at low signal levels and in noisy environments. It is proposed to experiment with error-resilient coding techniques and other transmission methods (whilst remaining simple and cheap to receive) — eg: PSK. The currently proposed PSK modulator will have facilities for 9600 Baud data transmissions. The 2.4 GHz experimental beacon on UoSAT-1 has generated great interest amongst radio amateurs and has proved a viable data downlink. It is proposed to provide a 2.4 GHz engineering downlink from UoSAT-1 carrying telemetry and experiment data. Once UoSAT-1 has been stabilised and commissioned, one uplink will be made available to radio amateurs for general access to the digital Packet Communications Experiment, in order that the effectiveness of the on-board traffic control software can be studied in addition to spacecraft for a nominal launch date of 1st December 1983.

Together with 54 other space objects.

A Spacecraft Design Review was held on Monday 26th September where the final experiment compliment and system design were examined, resulting in a number of changes in the light of the last few weeks work. Further minor changes will inevitably continue to be made as a result of design and prototyping experience. Negotiations have been completed concerning the procurement of solar arrays. Batteries remain unresolved as yet, although considerable effort is being expended by Larry Kayser on procurement. Latest reports from Canada look promising. One source of small pin-pullers has been identified for tip-mass caging, although others are still being sought. The Navigation Sensors Electronics PCB artwork has been prototyped using in-house PCB CAD, the PCB produced and constructed. The sun sensor prototypes are being tested. Artwork for the CCD and radiation/particle detector memory boards is complete, and boards are under construction.

### OSCAR-10 APOGEES DECEMBER 1983

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<td>43 13</td>
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<td>57 1</td>
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### OSCAR-10 APOGEES JANUARY 1983

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<th>ORBIT #</th>
<th>APOGEES UTC</th>
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<th>Long DEG</th>
<th>Beam Headings</th>
<th>SYDNEY AZ DEG</th>
<th>ADEL ADELAIDE AZ DEG</th>
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Mario Acuna (LU9HBG) has agreed to provide an improved Navigation Magnetometer. Most 1802 computer experiment interfaces have been prototyped in preparation for PCB layout. The PCB layout of the telecommand decoder multiplexers is under way. Electronic component procurement is progressing well. Detailed specifications of the spacecraft system and interfaces are being prepared. These will be posted once the transients have died away!

**SATELLITE PREDICTIONS**

I have received considerable feedback on the subject of predictions and the main area of concern centres on Oscar-10. One positive suggestion was to provide the apogee for the day in the knowledge that for a time period plus and minus three hours of apogee that beam heading remains virtually constant. However, that plus and minus three hour window only holds for apogees in the centre of the overall (currently 14-15 days) cycle. At the start and finish of each cycle the TOTAL access to Oscar-10 may only be one to two hours maximum.

Acting on this suggestion I have computed the relevant information for Perth, Adelaide and Sydney for December 1983 and January 1984 and comments either for or against the predictions in this form would be appreciated as they will absorb considerable magazine space.

**SATELLITE ORBIT ELEMENT TUTORIAL**

An excellent article explaining the significance of elliptical elements has been compiled by Phil Karn KA9Q AMSAT Vice-President, Engineering. It details in the most simplistic manner the elements and considerations for elliptical orbits. In view of its length and the fact that the erstwhile editor demands copy for the January issue in the next week or so, I intend to include this tutorial along with other operating hints in the January issue and return to the normal column in February.

**UPS AND DOWNS FOR JULY-AUGUST 1983**

Once again thanks to Bob VK3ZBB we have the latest listing of launches and re-entries.

**THAT TIME OF YEAR AGAIN**

Yes, another year is about to pass, and I can only but conclude this year’s contribution by extending to all readers of this column Season’s Greetings and a Prosperous Year in 1984 for Satellite Communications.

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**CONTESTS**

Reg Dwyer, VK1BR
FEDERAL CONTEST MANAGER
PO Box 236, Jamison, ACT 2614.

**DECEMBER**

3-5 ARRL 160 metre Contest
3 Ross Hull Memorial VHF Contest
START:
10-11 ARRL 10 metre Phone Test

**JANUARY**

7 Ross Hull Contest. ENDS
21-22 White Rose SWL Contest
28 French CW Test
27-29 CWVW DX 160 metre Test

**FEBRUARY**

4-5 French 40 metre Phone
11-12 John Doyle National Field Day
11-12 Dutch PACC Test
18-19 ARRL CW DX Test
25-26 CWVW 160 metre CW
25-26 RSGB 40 metre CW

**THE RD CONTEST AND NOVICE CONTEST**

Because of the mail strikes affecting the delivery of logs to my post box, I have held the closing date of the contests open for a longer period to allow for the slow logs to arrive.

This means that the results will be delayed and are expected to be published in the February edition of AR providing this strike (current at the date of writing) concludes within the very near future.

**VK-ZL QSO PARTY**

The VK-ZL QSO Party held on 40 metres on 8th August between 2000 and 2200 hours was just as enjoyable as in the past in spite of much poorer conditions. Those who used both modes — CW and SSB — certainly had the advantages as copy was very much easier under the prevailing conditions on the CW end of the band.

**RESULTS:**

<table>
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<th>Station</th>
<th>Contacts</th>
<th>Multiplier</th>
<th>Score</th>
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<td>18</td>
<td>9</td>
<td>810</td>
</tr>
<tr>
<td>ZL3BJ</td>
<td>16</td>
<td>6</td>
<td>480</td>
</tr>
<tr>
<td>ZL1JG</td>
<td>15</td>
<td>6</td>
<td>450</td>
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<tr>
<td>ZL1VLX</td>
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<td>7</td>
<td>420</td>
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<tr>
<td>ZL2HS</td>
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<td>200</td>
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<tr>
<td>ZL3AY</td>
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**THE "AIRNET INDIA" INTERNATIONAL DX CONTEST — WCY 1983 — CW SECTION**

The purpose of the "AIRNET INDIA" International DX Contest 1983 is to enhance the activity of the amateur radio movement in India and offer an opportunity to all world amateurs to establish on a competitive basis contacts between one another and Indian amateurs.

This contest will further be an effort to commemorate the WCY 1983 and will be run by the organisers of the "AIRNET INDIA" a voluntary net organisation of Indian and DX, amateurs. The team for conducting the contest will comprise of the following: VU2AID, VU2BBJ, VU2AIG, VU2RX, VU2NA, VU2TN, VU2TS, VU2YZ.

**ZL2US** 18 9 810  
**ZL3BJ** 16 6 480  
**ZL1JG** 15 6 450  
**ZL1VLX** 12 7 420  
**ZL2HS** 8 5 200  
**ZL3AY** 3 3 120  
**VK3X** 28 10 1400  
**VK3KS** 27 9 1215  
**VK3JA** 24 10 1200  
**VK4AE** 24 9 1080  
**VK4AI** 23 8 920  
**VK4CJ** 22 8 880  
**VK4OX** 24 7 840  
**VK7CH** 18 8 720  
**VK2ADR** 18 8 720  
**VK4BG** 18 7 630  
**VK3FC** 16 7 560  
**VK3ZC** 15 8 550  
**VK3LC** 17 6 510  
**VK3MV** 14 6 420  
**VK5KV** 13 6 390  
**VK3XF** 12 5 300  
**VK2HQ** 11 4 220  
**VK7AH** 11 4 220  
**VK4ALW** 7 6 210  
**VK3YW** 5 4 100  
**VK8EF** 6 3 90

**PERIOD OF CONTEST OPERATION** — Contest starts on 3rd December, 1983 at 0000 UTC and ends on 4th December, 1983 at 2400 UTC.

**MODES OF OPERATION** — Contest participants will confirm operations on the various amateur bands in accordance with the accepted conventions and practices. Only contacts with amateur stations authorised by the administration will be acceptable.

**FREQUENCIES OF OPERATION** — All frequencies in the HF band, inclusive of the new WARC bands can be used.

**POWER LIMITS** — Power will be limited to those authorised in each country.

**ENTRY CLASSIFICATIONS** — Category A — Single operator, multi-band, Category B — Single operator, single band. Category C — Multi-operator, multi-band... open to clubs only. Category D — Multi-operator, single band... open to clubs only. Category E — Family groups... OM/YL/YXL teams only.

**OPERATIONAL RESTRAINTS** — Cross band operation. Split Mode operation, Split frequency operation are not permitted. Multi-operator stations may not work simultaneously on the same band, but are permitted to work on different bands at the same time. Countries not permitted under the IARU are ineligible. Working on DXpedition frequencies would be discouraged.

**SCORING DETAILS** — All contacts on 14, 21 and 28 MHz bands with an Indian station counts two points and on the new WARC bands and 3.5 and 7 MHz bands count as four points. Working stations from pincode zones 2, 7 and 8 will double the points above. This is because there are very few active stations in these areas.

**MULTIPLIERS** — Number of zones worked in VU.

**FINAL COUNTS** — Number of contact points multiplied by the multipliers for each band.

**OPERATION DETAILS** — Give R S (T), and age of operator. Club stations will give instead of age the figures (02).

**SUBMISSION OF LOG SHEETS AND SUMMARIES** — All contest log sheets, summaries will be forwarded to the multipliers for each band.
RULES — Work as many stations as possible on 40 Metre Phone during the specified times of allowable operation. The same station may be worked once. Crossmode contacts will not count. Single operator stations may operate a total of 16 hours. All the multi-operator stations may operate the entire 24-hour period. Off periods must be noted in your log (plus or minus three minutes). Omissions of any required entry are automatically disqualified. Decisions of the contest committee are final.

CONTEST PERIOD — 0000 to 2400 UTC. 7th January, 1984.

AWARDS — Contest awards will be issued in each entry category and operator class in each DX Country represented. Other awards may be issued at the discretion of the awards committee. A minimum of 25 QSOs must be worked to be eligible for awards.

CONTEST ADDRESS — RTTY World Championship Contest, C/O The RTTY Journal, PO Box RR, Cardilf, CA 92007.

MULTIPLIER POINTS — One Multiplier Point is awarded for each of the forty eight Continental US States, (A District of Columbia contact may be substituted for a State of Maryland multiplier). Canadian Provinces/Territories DX Countries worked on each band (excluding US and Canada).

FINAL SCORES — Total QSO Points Times Total Multiplier points equals Claimed Score.

32 VK3BUS 87,480 68 JH3DPB 918
30 DJ40P 107,120 66 SM60EQ 1,188
27 SM7SLU 138,890 63 VK2APQ 2,160
26 JA1BYL 183,164 59 DK8DB 3,332
25 W5HEZ 258,625 57 PY3IT 3,960
24 JA5TX 258,625 57 PY3IT 3,960
23 JA1IQV 258,625 57 PY3IT 3,960
22 VE2QO 258,625 57 PY3IT 3,960
21 JA5TX 258,625 57 PY3IT 3,960
18 G3HJC 258,625 57 PY3IT 3,960
17 0K3KJF 258,625 57 PY3IT 3,960
16 W5HEZ 258,625 57 PY3IT 3,960
15 VK2GQS 258,625 57 PY3IT 3,960
14 JA1BYL 258,625 57 PY3IT 3,960
13 VK2GQS 258,625 57 PY3IT 3,960
12 JA1IQV 258,625 57 PY3IT 3,960
11 SM7SLU 258,625 57 PY3IT 3,960
10 JS2CFD 258,625 57 PY3IT 3,960
9 K4AGC 258,625 57 PY3IT 3,960
8 JA2VH 258,625 57 PY3IT 3,960
7JA2V 258,625 57 PY3IT 3,960
6 VK2GQS 258,625 57 PY3IT 3,960
5 JA1IQV 258,625 57 PY3IT 3,960
4 VK2GQS 258,625 57 PY3IT 3,960
3 VK2GQS 258,625 57 PY3IT 3,960
2 JA5TX 258,625 57 PY3IT 3,960
1 JA5TX 258,625 57 PY3IT 3,960

3. 73 Reg VK1BR A
This month's column is based on a letter received recently from Al Rechner, VK5EK, who has very kindly given permission to use it. The letter is self-explanatory, so without further preamble ...

Dear Marshall,

A member of the WIA for over thirty years, a licensed amateur for over twenty five, I have been a keen student of high frequency technique all my life. I have been reading your "Pounding Brass" column in Amateur Radio since its inception some twelve months ago. The column is well written, well researched and very informative. Often as not, it is the first thing I read. You are to be congratulated on it.

I claim to be very well informed on technical matters, and I have been unable to fault you technically, except perhaps for one minor point in the first column (August 1982, p 40). That point is the subject of this letter.

You imply that keyed continuous wave transmissions of the ordinary type: that is, the normal CW we hear on the bottom end of the amateur bands, should be more properly described as ICW or Interrupted Continuous Waves. This is incorrect. Interrupted Continuous Waves are fundamentally different from Keyed Continuous Waves. ICW transmissions are those in which the carrier wave is turned on and off at an audio rate, often by mechanical means. In early days, a simple buzzer was connected in series with the plate supply to the transmitter, so that when the key was pressed the buzzer "interrupted" the power supply at an audio rate. That is, the buzzer turned the power on and off at, say, 500 Hz. The result was a Morse signal on air that sounded very like a buzzer. It needed no BFO on the receiver, it had a piercing, raucous note that carried very well through heavy QRM, and was very pleasant to copy, and very easy to copy in the presence of QRM/QRN.

As can probably be imagined, the transmitted signal tended to be very broad and splattery and the system fell into disuse mainly for that reason. Although I can see no technical reason why the signal should be any wider than, say, an SSB signal. The system tended to be rich in audio harmonics, indeed it was this high harmonic content that gave the system its characteristic piercing sound. This would mean that sidebands would extend out for a couple of kHz either side of the carrier, giving a total bandwidth of, say, 3 or 5 kHz, which would be unacceptably wide today, particularly in the CW bands.

A variation of ICW is still in use today and can often be heard with marine traffic on the 500 kHz distress frequency. This variation involves modulating the carrier with a single, sine wave audio tone of about 500/800 Hz. When keyed, these transmissions can be read without a BFO, and when read with a BFO mean Morse code. As an example of this, how often have you heard a reference to how fast someone can "copy CW"? A purist would perhaps have us call the mode KCW for Keyed Continuous Wave, or perhaps even Keyed Un-Modulated Un-Interrupted Continuous Wave! Then again, A1A is perfectly adequate, and I am far less concerned with what we call it than how we use it.

Attached to Al's letter was a schematic for the PA of an ICW transmitter which is reproduced for its historical interest. But please don't try to build it, or if you build it, don't use it. Apart from its wastefulness in terms of bandwidth, ICW is not a permitted mode for amateurs in this country.

Next month we'll be talking about QRP operation, and I'll include a circuit which you can build from readily available parts and use to your heart's content. Till then, keep pounding brass, and keep the letters coming!

73.

AR

--

Power Amplifier Section of a 50 W ICW Transmitter.
INTRODUCTION
The Department of Communications and the Natural Disaster Organisation, Department of Defence jointly sponsored a Counter Disaster Communications Study, held at the Australian Counter Disaster College, Macedon, Victoria from 24th to 27th July, 1983.

The Study was attended by representatives from DOC, NDO, OTC, Telecom, Australia Post, State disaster control agencies, the ABC, AUSSAT, the Royal Flying Doctor Service and the WIA. The departments of Transport, Aviation, Industry and Commerce, Defence, Prime Ministers and Cabinet and Science and Technology were also represented.

As Federal WICEN Co-ordinator I attended as the WIA representative.

STUDY PROGRAMME
The Study opened with a little over a day devoted to briefings by agencies prominent in disaster communications before commencing a series of four seminar topics loosely related to the Study scenario. This was a simultaneous occurrence of a severe earthquake in Adelaide, a tropical cyclone and storm surge in Cairns and major statewide bushfires in Victoria.

COMMUNICATIONS REQUIREMENTS
The first seminar topic was the production of a list in priority order of counter disaster communications requirements, what could be termed a "wish list". This was then developed across the pre-disaster, disaster and post-disaster phases by levels of activity viz. Commonwealth, state, local authority and industry.

EXISTING CAPABILITIES
The second topic was the preparation of a summary of Australia's current capabilities, expanded to indicate considered deficiencies in capabilities and proposed solutions. The Study identified fifteen areas of deficiency as follows:

- Limited capacity for Defence communications network involvement in CD.
- Insufficient defence strategic and tactical capability.
- Lack of physical diversity.
- CB radio lack of range and inexpert operators.
- Lack of interactive capability for national (ABC and commercial) radio and TV.
- Lack of availability of aircraft as a communications tool.
- If cost were no object:
  - more HF capacity for interstate operations and direct contact to NDO.
  - another Transportable Emergency Broadcasting Station (TEBS) improvement of data links.
  - improved access to satellites.
  - provision of video links.
  - more media interface.
  - provide discrete auto telex system.
  - provide more staff and training.

SHORT TERM IMPROVEMENTS
The deficiencies of topic two led into topic three, "short term improvements" (achievable in a five year period). Generally these were low cost and/or management type fixes and were enumerated in the following areas:

- Telecom.
- Frequency allocations, usage and management.
- Licencing arrangements.
- Operator training.
- Infra-State/Territory liaison and co-ordination.
- Inter-State/Territory/Commonwealth liaison and co-ordination.
- Support from the Australian Defence Force including Defence Communications Network.
- Overseas Telecommunications.
- Broadcasting and other Media Liaison.

LONG TERM IMPROVEMENTS
The last topic addressed long term (to year 2000) improvements in CD communications and concentrated on seven aspects:

For Satellites. Greater flexibility through mobile ground stations; overcome the convergence factor on other communications agencies; mode compatibility with mobile radios and in the long term broadcast capability to individual households.

In the Immediate Disaster Area. All communications modes, viz. UHF, VHF, telephone, telex, video, FAX. With portable/mobile data systems using intelligent terminals to hold, review and transmit information. Electronic recording for log keeping purposes.

Federal/State/Territory Communications. Data, telephone, telex and FAX on a dedicated system with a planned backup system.

Role of Data Communications. An aspect of major advancement. Introduce system to control of operations, information gathering and distribution.

Operator Training. Through use of friendly equipment and provision of adequate funds for training experience.

Equipment Commonality. By means of user friendly equipment, systems translators and clear specifications followed by effective quality assurance and acceptance procedures.

Dedicated Backup. Achieved through reserves and acknowledge of obligation (ie: dedication to task) by all agencies. Needs full planning to identify alternatives and define levels of priorities of fall-back options.

SUMMARY
Throughout the study amateur radio took a low key role which was quite expected in the light of the full range of available communications depicted. However informal discussions with participants indicated a consistent respect for the amateur operator and his involvement, unfortunately coupled with uncertainty as to his role. As all State Emergency Services were represented it is now opportune for State WICEN co-ordinators to follow up with their SES communications officers their role and involvement in the appropriate State counter disaster communications plans.

A full report of the Study will be printed and issued to participants and their parent organisations, hence both FE and I will have copies as will the various SES officers so interested amateurs should have access to copies.

POLICE CARS OF THE 1990s
Will have their own exterior closed-circuit TV camera with video recording facilities, an internal TV monitor and a direct link with its force's headquarters central computer.

A specially converted working model of this type of police car was viewed by senior police officers from Germany, Denmark, USA, Britain and two officials from China at a recent International Police Video Symposium in south east England.

This car, a traffic control duties Ford, was converted at a cost of $30,000.
FREQUENCY SHIFT KEYING

As pointed out in the very first RTTY article I wrote in this series a HF bands FSK RTTY transmitter can be a very simple device indeed. There are many advantages in using “DC switched” FSK instead of the more common “Audio generated” FSK as obtained by feeding audio tones into a SSB type transmitter. For “DC switched” FSK there is no need to use any filters, mixers or audio stages etc. The transmitter could be as simple as a crystal oscillator fed into an antenna. In fact I have tried feeding the crystal oscillator stage of one of my transmitters straight into the antenna and did get good results for the fact I have tried feeding the crystal oscillator stage or stages to get more power output and most reply exceptionally so a few well chosen crystals will often suffice confined to very small portions of our bands and perhaps almost essential for SSB work.

Looking at the circuit the main points of interest are the switching action of the diode and the effects of capacitors C1 and C2. The diode switching is accomplished by the RTTY keyboard opening and closing the RTTY input connection. When the input circuit is closed the lower end of the diode (it’s Anode) is DC earthed through the RF choke and the low value R4 resistor, about +75 volts from R1 and R2 is applied to the top or cathode end. This voltage reverse biases the diode making it non conducting. When the input circuit is open the lower end of the diode is fed from R3, which is connected to +150 volts, the diode now conducts as +150 volts is 75 volts more positive than the +75 volts at the junction of R1 and R2 which is connected to the cathode end of the diode.

When the diode is non conducting C1 is in effect disconnected and has little or no effect on the crystal frequency but when the diode conducts C1 is connected and will pull the crystal to a slightly lower frequency. The RF voltages present on each side of the diode are confined to the RF switching circuit path by the RF choke and by R1, R2, C3 is a DC blocking capacitor and the ferrite bead is used to prevent VHF parasitics being generated. If C2 is set to zero capacitance the amount of frequency shift will be determined by the setting of C1. The maximum possible value of C1 should be great enough to give sufficient shift on the lowest frequency band use and this with the most reluctant crystal. It will then be found that on bands such as 28 MHz, even at the minimum setting of C1, more shift than desired will occur. If C1 is set at a fairly high capacity the switching of C1 will have a very little effect and a small shift can then be obtained. Of course the total combined capacity of C1 and C2 must not be too great or the crystal will not oscillate, but with sensible settings 170 Hz shift can be obtained on all bands. Summing it up. On lower frequency bands C2 is set to zero and C1 is set to a rather large capacity to get enough shift. On high frequency bands C2 is set to a rather large capacity and C1 to zero capacity.

Some crystals are more active than others and these will oscillate with large amounts of capacity across them, also some crystals require more capacity than others to shift a given number of Hz. It largely depends on the quality of the crystal used and the type of cut made. Two crystals of identical frequency may give different shifts with the same value of C1. I have found if you want to order a batch of several crystals of similar frequency most likely all of them would shift in much the same way. I find it is usually easy to get 170 Hz shift on all HF bands but sometimes difficult on 160 metres depending on the cut of the crystal.

I prefer to use the old style large crystals in holders that can be unscrewed rather than modern minute type used, plated crystals in sealed holders. My preference is because the larger crystals can handle more RF Power and their frequency can be changed by grinding them on a piece of glass coated with an abrasive paste. If you want tips about crystal grinding ask old timers, as crystal grinding was common place a few decades ago and most old timers have had a go at it. Often old style crystals can be bought at disposals shops for about $1 each. Usually amateur band frequencies will have been picked up by “early birds” but often crystals a little lower than an amateur band can be obtained and then ground to the desired frequency in the band.

Of course the same type of keying circuits can be used across a VFO tuned circuit or part thereof and it will be quite easy to get enough shift. The same basic circuit can also be used with solid state crystal oscillators except different resistor values to suit the lower DC supply voltages will be needed. I have found that most VFOs can be RTTY keyed by a slight...
change of supply volts. In one solid state VFO I tried .1 of a volt change in the 9 volts regulated supply gave 170 Hz shift. Of course the voltage changes need to take place very rapidly and if the RF filtering capacitors in the voltage supply line are large their value may need to be reduced. If you wish to build a VFO controlled FSK transmitter an easy way to do this is to buy an External VFO unit intended for a SSB type transceiver. This unit is then heterodyned with a few crystals to cover the desired bands. An easy way to check your shift is to print your own outgoing signals and adjust the shift to give proper mark and space indications. Well I trust the foregoing has encouraged at least a few to build their own RTTY transmitters as it is really quite simple especially with crystal control.

Last month I gave some details of Code Readers and Converters. Well I have spent quite a bit of time using a MBA-RO Code Reader on air and am favourably impressed by it. For those who obtain one of these units I would like to stress the importance of carefully studying the handbook instructions before attempting to use the unit as some very exact tuning is needed. The instruction book is easy to read and I note only one error on page 5 where, for 14 MHz amateur band RTTY, you are told to be sure to set the receiver switch to USB of course this should be LSB for amateur RTTY and in most cases it would be USB for commercial RTTY. I would have liked to see a normal reverse switch on the unit to save retuning using the other sidetband, but for amateur use this is hardly necessary as 99% of the time LSB will give correct copy.

Operating the unit I found it easier to read the one line moving display if it were some distance away and not just under my nose. The threshold control is rather critical but a bit of practice tuning in strong signals soon teaches you how to use the control. The unit operated well on CW, RTTY and ASCII. It should be a boon to SWLs, intruder watchers, for portable work and for monitoring ones outgoing transmissions. Mechanical RTTY operators would find the unit useful for receiving marginal signals which waste much paper before you get them tuned in, you could save your paper until you decided if the station is worth printing. The filters are tuned to 800 Hz for CW or RTTY Mark with space frequencies of 970 (170 shift) and 1225 (425 shift). The 800 Hz is an advantage for the typical transceiver CW filter but is a disadvantage for AF SK on VHF bands, however the catalogue states that the filter frequencies can be easily changed so this could be overcome.

Summing it all up the MBA-RO will not equal the convenience of a RTTY unit with a VDU page display, but on performance value per dollar spent very good value indeed.

73 from Bruce VK5XI

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**INTRUDER WATCH**

Bill Martin, VK2EBM

FEDERAL INTRUDER WATCH

CO-ORDINATOR

33 Somerville Road, Hornsby Heights, NSW 2077

You may remember in the Intruder Watch column last month, a random check of the 40-metre band, in the amateur segment, 7.0-7.1 MHz, revealed a staggering 70.7% of the segment taken up with intruder transmissions. Taking this a step further, and with many thanks to Col, VK4AKX, for his many hours monitoring intruders, we find that taking some observations over the period 1400 to 2130 UTC, (midnight to 7.30 AM EST) and taking an average of intruder activity, the results show that 49.98% of the amateur segment of 40 metres was occupied by broadcast intruders, and only 50.02% left for amateur use.

In other words, our primary segment of the 40-metre band is effectively reduced by half. Most of these intruders are based in China or Albania — very considerate of them — it would be a great state of affairs if all the radio frequency spectrum users wandered all over the bands at will, as these people do. Hopefully, in January, 1984, at Geneva, the WARC for broadcasters may see some changes. We certainly hope so.

Now for a little information of which, I think, most amateur operators will not be aware, and this one really bears thinking about, hopefully, also, it will drive home the point that every country involved in amateur radio MUST HAVE a working Intruder Watch.

**"THE SIXTY-DAY RULE"**

The "60-day Rule" is part of the International Telecommunication Union (ITU) radio regulations. Under the old numbering of the regulations, the rule was No 515 and 526.

This rule allows ANY administration to assign ANY of its stations to ANY frequency, and so long as no reports of harmful interference are received by the station or the International Frequency Registration Board (IFRB), of the ITU within the 60-day period, the administration can insist on registration of its usage of the frequency. If you think about it, you can see that ALL amateur frequencies are in jeopardy from this rule. It has been used in the past, and no doubt will be used in the future. So you can see that any new intruders heard must be reported quickly, or else we may find that we're stuck with them. Very shortly in the new year, I will make available some statistics on the number and type of reports processed by the Intruder Watch for the period 1st January, 1983 to 31st December, 1983.

Should make some interesting reading, and will be rather alarming for those who are not familiar with intruder activity. Very best wishes for Christmas and the new year to all, and many thanks especially to those who have given strong support to the Intruder Watch in 1983.

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**NOVEMBER'S BEST PHOTOGRAPHS**

The judges at AGFA-GAVAERT, Quadricolor and Waverley Offset Printing Group all select the front cover photograph of the November issue. This photograph will now be considered for the Optima camera prize at the end of the competition in June 1984.

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**AMATEUR RADIO, December 1983 — Page 67**
"THE LIGHT AT THE END OF THE YEAR"

The Bill is dead — long live the Act. By the time you are sitting down to your Christmas turkey we should have a new Radiocommunications Act.

The EMC aspects of the Act will, we trust, go a long way towards allowing us to see some light at the end of the most difficult political and practical EMC tunnel. The power contained in the Act will, pending the drafting of the regulations and standards, allow the Department of Communications to do the job for which they were appointed. The Department will, for the first time, be in a position to administer one of our most important natural resources, the radio frequency spectrum, with effective legal powers rather than the wishy-washy situation which has existed for so many years under the old Act.

The new Act will advantage the Amateur Service in most areas because the Amateur Service is a very responsible and a very technically qualified user of the radio frequency spectrum. The Amateur Service is very conscious of the need for effective EMC.

Indeed, the Amateur Service has been promoting the social, "political" and technical benefits of effective EMC for many years, and is well qualified in both the theoretical and practical aspects of EMC technology.

Nevertheless, members of the Amateur Radio Service should not forget that the Department of Communications does have the power to close down an Amateur Station. The Department of Communications is the government appointed control body for the supervision of the electromagnetic spectrum. In this role they are permitted to close down any communications or broadcast service, and this includes the Amateur Service.

Members of the Amateur Radio Service are most likely to be requested or directed to restrict hours of operation or close down their station in relation to a complaint of interference. However, in these enlightened days of modern communications technology, officers of the Department are well aware of who is to blame for various interference problems — they do not go out of their way to persecute members of the Amateur Service.

Amateurs should realise that the Department's Radio Inspectors, quite often, work under extreme psychological pressure when dealing with the very complex and diverse nature of interference. The situation is compounded by the many and varied problems encountered when dealing with human behaviour, coupled with the social, political and economic issues of our diverse society.

Officers of the Department of Communications may, when investigating a case of interference, find it advantageous to the smooth progress of the investigation, to request the amateur station to cease operations for a specified period of time, even though the amateur station equipment is not at fault. Under these conditions, members of the Amateur Service should, in the interest of good public relations, co-operate with the Department's officers in this respect.

However, members of the Amateur Service are entitled to be given reasons for any restrictions imposed by officers of the Department of Communications.

Members of the Amateur Radio Service are advised to contact the National EMC Advisory Service if they consider any action by the Department of Communications in respect of EMC is harsh or unjustified.

This may be a good time of the year to give the shack a "bit of a check-over" — perhaps review that "birds nest" of cables behind the equipment racks, shorten the excessively long cables, check the equipment earth bonding and check antennas for loose corroded connections ... A complaint of interference can arrive at any time — the new neighbour with his unfILTERED equipment, the Christmas present with "rabbit ears", or the robot with the disc memory.

As most of us know only too well, the majority of interference complaints are not caused by problems in the transmitting equipment but by deficiencies in the receiving equipment. However, it is most important to keep a close eye on those unwanted harmonics, which not only help to cause interference but also become a drain on your hard earned power. Transmitter alignment should be carried out with the aid of a spectrum analyser in order to ensure that all harmonic levels are as low as possible (or within manufacturers specifications) before the signal is fed to the low pass filter arrangement.

Use of a low pass filter alone does not make any provision for dissipation of the unwanted harmonic energy produced by the transmitter. Since there is a high degree of impedance mismatch between the coaxial cable and the input of the low pass filter at frequencies above the cut-off frequency, there is a high VSWR on the feed cable between the transmitter and the filter at harmonic frequencies. Also, since there is usually no provision for external dissipation of this energy, and since harmonic energy is continually being produced, dissipation occurs only in the final amplifier stage and in the cable. Consequently there is a likelihood of harmonic energy radiation from the transmitter itself, as well as possible harmonic energy radiation from the cable because of leakage, faulty connectors and so forth.

An obvious solution is to use a high-pass filter having a 50 ohm resistive load connected in shunt with the feed line, e.g. by means of a coaxial T connector. Such a high-pass filter should be designed to have the same cut-off frequency as the low-pass filter, to have a 50 ohm input and output impedance, and to have a series M-derived end sections so that its input impedance at frequencies below cut-off will be high.

The result will be that harmonic energy is dissipated in the 50 ohm load connected to the output terminals of the high-pass filter. The shunt effect of the high-pass filter will be negligible at low frequencies because of the high input impedance of the filter below cut-off. There will be no high currents and voltages at harmonic frequencies since the SWR at the harmonic frequencies will be close to unity. Harmonic energy will be dissipated outside of the transmitter chassis, and not all in the final amplifier, so the final stage will run cooler. Of course, all this can lead to less TVI. This concept of complimentary filters has been used for many years in hi-fi installations for separation of high and low frequencies.

Interference problems quite often involve third parties and for this reason members of the Amateur Radio Service should, at all times, be very conscious of the social, legal and "political" implications of entering another person's property for the purpose of making adjustments, modifications, or just observing any form of interference problem or complaint.

The National EMC Advisory Service warns against any attempt to make adjustments or modifications to any other person's property or equipment unless you have a positive, preferably written, statement from this person, giving you full authority to make adjustments and/or modifications, etc. The agreement should clearly state that no responsibility for the said person's property or equipment shall rest on any member of the Amateur Radio Service.

Throughout the year there has been many standard, as well as a number of strange EMC effects which have been brought to our attention. With the approach of summer the case of the "EMI pool" may be of interest — From NSW a VK2 amateur says, "For some eighteen months I have been troubled with AC arcing type noise reaching S9 on peaks and covering the HF spectrum and above. Evident around 6-7 AM and late afternoon. A pulse of 4 secs duration every 42 secs. I traced..."
the problem to a swimming pool automatic chlorinator about 250 yds from my station. The manufacturers replaced the offending unit with a later model solid-state unit."

From Victoria, a report on masthead amplifiers and associated installations. "A well known TV antenna organisation recommends that a MHA not be mounted within the structure of phased array TV antennas. It seems that the amplifier may radiate sufficient signal from its plastic box to be picked-up by the antenna and re-amplified, thereby causing oscillation at whatever frequency. Another problem appears to be the constant use of poor quality coaxial cable. Many of these cables, particularly those used with loose open weave braid. Signal leakage from these type of cables can get back into the MHA input. This is more of a problem where distribution amplifiers are used with high gain and the input and output cables are in the same duct alongside each other. The very high gain of MHA's is not usually required unless a very long output lead is required and in most cases a number of splitters are needed. About 15-20 dB is more than adequate in most cases."

Again from VK3 is a report on how to transmit computer data on your VHF phone signal. Set yourself up next to a big commercial computer and you can find that the AC supply is modulating your transmitter with information which you could well do without.

Finally, from VK... who was chasing a TVI problem, on and off, for months. Then, for unconnected reasons, VK... decided to give the shack a "bit of a once over". The clean-up revealed crossed antenna feed lines. It was a bit hard to decide how long the shack had been provided with high frequency heating. The moral is — identify your feed lines at both ends.

In conclusion, returning to the Radio-communications Act, I would like to remind all Australian amateurs that the CASPAR (Communications Act Special Planning And Response) Committee will again be co-ordinating and correlating the Institute's response in connection with the Regulations and Standards relating to the new Act. One cannot emphasise too much the importance of good and fair regulations and standards. The Amateur Radio Service will be affected by these, so it is most important that we produce, as far as possible, a truly united effort in the presentation of our case material. The drafting of Standards and Regulations will be a most complex, technical and political operation, and in this respect the CASPAR Committee will need as much assistance as possible from all Australian amateurs in order to try to ensure that the Amateur Service procures the best possible deal.

Any material, suggestions, comments etc in relation to any aspect of the new Act should be sent to — The CASPAR Co-ordinator, PO Box 300, Caulfield South, Vic 3162.

Finally, my thanks to all those who have assisted with the EMC operation throughout the year. ... Best Wishes for Christmas and the New Year from VK3QQ.

Mike Bazeley, VK6HD
FEDERAL AWARDS MANAGER
8 James Road, Kalamunda, WA 6076

Most of my time, whilst being Federal Awards Manager, seems to be taken up with DXCC matters. There is an obvious interest in this award and updating country totals. Checking through some of these country totals I have come across several errors. These errors, in the main, are caused by deletions not being taken off or, countries claimed which subsequently were not accepted for DXCC purposes. The present DXCC list contains 315 current countries and there is a deleted list of fifty one. The updated DXCC list can be found on pages 148 to 151 in the 1983/84 Australian Callbook. Those of you who are interested in the DXCC listings could you please check your scores against the current list and advise me of any errors, many thanks. Further copies of the DXCC list may be obtained from me — don't forget the SASE please.

Two possible additions to the DXCC lists may be KL7 Pribolof Islands and KHS Jarvis. The rumour mongers are betting a fifty-fifty chance on the former and little chance on the latter. Hope all that needed them made HKO Malpelo and BY on SSB.

PIONEER SHIRE CENTENARY AWARD
The address for claims for this award is Box 1065, Mackay, Qld 4740.

GOLD COAST AMATEUR RADIO SOCIETY
The new conditions for the two awards sponsored by the above Society are as follows:

THE GOLD COAST AWARD: requires five points. Two points for a club station VK4WIG or VK4VGC (one only to count) and one point for any club member. Applications to be sent to: The Awards Manager, PO Box 588, Southport, Qld 4215 and must show: Time, Date, Callsign, Name, Location, Frequency, Mode, and include $1.00 to cover postage.

100 REPEATER AWARD: requires one hundred contacts to be made through the Gold Coast Repeater VK4RGC (VHF or UHF). The same station must not be worked under seven days. Applications to be sent to: The Awards Manager, as above, and must show: Time, Date, Callsign, Name, Location, Frequency (VHF or UHF), and include $1.00 to cover postage.

To assist stations to obtain the Gold Coast award the Society will be starting a new club net on 21.175 MHz ± at 1500 UTC every Sunday afternoon commencing in November.

Well once again another year has gone by, may I take this opportunity to wish all a very Happy Xmas and happy DXing in 1984. 73 de Mike VK6HD.

The statistics for the August exams were received recently. Readers will be pleased to know that the pass rates recovered somewhat from the very low rates in February this year. The range this time extends from 24.4% (VK6) to 48.8% (VK5) with an overall figure of 39.1% compared to the February figure of 20.9% overall.

Five separate papers were used, some of them a repeat of previous papers, and some with a certain amount of new material added. I have not yet seen the papers, so cannot criticise, but I have not had much adverse comments from candidates.

Candidate numbers for this exam were very close to those for August 1982, but in all states except VK6 pass rates were higher this time — VKs 2 and 3 recorded their highest pass rates of the past three years.

However these top rates of 38.9% and 42.6% respectively are not as high as the top rate for the states with smaller numbers.

The pass rates for the 10 WPM CW exams however are, mostly, significantly lower than they were in February, or even August 1982.

Perhaps these results illustrate the variability that can occur. It is not likely that any particular Morse exam will be much harder than any other, but over the three years for which I have figures, 10 WPM pass rates by state have ranged from 26% to 85%, with the figures for VKs 2 and 3 varying from 26% to 51% and 35% to 43% respectively.

I have recently received a copy of the Instruction Kit prepared by the VK2 Division Education Service. It includes the new publication 'Novice Electronics' which together with the earlier booklet 'Into Electronics' provides a complete Theory course. This appears to provide a useful addition to the available material for students or instructors. It is simply written with clear diagrams and, in general, explanations that are easy to follow. These two books together with the '100 Basic Electronic Projects' from the same source would present an interesting and effective course for schools looking for some application and extension of their electronic units.

The kit also includes a Morse code instruction book and tape. While I do not personally advocate the learning procedure recommended in the course, I can see the whole kit is a very useful package for the student trying to struggle through without benefit of classes or assistance.

To those of you who may want copies of CW exam tapes, please get them to me as early in December as possible, as my copying facilities tend to be unavailable over the school holidays. Sample exam papers are less difficult. I would like to thank all those who enclose return postage or contributions with their requests for tapes or papers.

Best wishes to you all for the forthcoming holiday season and the New Year. May the bands you want to use be open and your equipment free of problems.

73 Brenda VK3KT
REDCLIFFE RADIO CLUB
The Redcliffe Radio Club's demonstration stand at the Caboolture Sunshine Festival attracted a great deal of interest. Andrew Hite of Caboolture and Steve Howarth of Redcliffe, (from left) looked over one of the many different pieces of equipment.

AUSTRALIAN CWQRP CLUB
The VK CWQRP Club has been disbanded. There are moves to form a new CWQRP Club and anyone interested, including former members please contact—Mr Len O’Donnell, VK5ZF, 33 Lucas Street, Richmond, SA 5033.

VICTORIAN MIDLAND ZONE
The December meeting will be the Christmas breakup at the home of the president Don VK3XBL at Mandurang Sth on Friday 16th from 6 PM onwards. BYO barbecue or cold salads etc if weather not suitable for barbecue. All welcome.

ANARTS
This year, being World Communications Year, the Australian National Amateur Radio Teleprinter Society made a special effort with their Annual RTTY Contest. The VK/ZL WCY RTTY Contest, and studying the logs received, it would appear that their efforts were well rewarded and the results most encouraging.

MOUNT ANAKIE REPEATER
The Geelong Amateur Radio Club, who has the responsibility for the operation and maintenance of the Mt Anakie Repeater VK3RGL, is presently conducting a fund raising effort due to the necessity to rebuild and relocate the Repeater to another site on Mt Anakie.

WIN THIS NOISE BRIDGE
Details in January Amateur Radio.
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CONTACT US FOR QUOTES
NOTICE OF MEETING

The Annual General Meeting of the Wireless Institute of Australia, New South Wales Division will be held at 2 PM on Saturday, 31st March, 1984.

Nominations for election to Council and agenda items for this meeting should be directed to The Secretary, PO Box 1066, Parramatta, NSW, 2150 and must reach the Divisional Office no later than Wednesday, 29th February, 1984. Nomination forms may be obtained from the office, either by calling, writing or phoning (02) 689 2417.

Any ordinary, ie full, member of the WIA NSW Division may stand for election to the Divisional Council. Would members please note that no business may be discussed or voted on at the AGM unless all members receive notice of such business (see Article 31). Please ensure that any motions you wish discussed reach the office by 29th February, 1984.

(sgd) David Walters. VK2AYO
HONORARY SECRETARY WIA NSW DIVISION

COUNCIL REPORT

Divisional Council met at Amateur Radio House on 14th October, 1983. Fourteen new applications for membership were accepted.

Council resolved to adopt the recommendations of Federal Executive on the proposed Radio Communications Bill, and congratulated Michael Owen in particular for his efforts on our behalf.

Council received three nominations for the Dick Smith Educator of the Year Award. After a secret ballot amongst the councilors Keith Howard, VK2AKX was given the award, which was presented at last month's Conference of Clubs.

Council decided to nominate Dick Smith, VK2DIK for the Ron Wilkinson Achievement Award for his outstanding solo around the world flight using and promoting the Amateur Radio Service in the countries he flew over. This Federal Award is made in honour of the late Ron Wilkinson, VK3AKC and is given for special achievement in any facet of amateur radio by any amateur.

REPEATER INTERFERENCE

Last month's report on interference to the Dural repeater by a new Telecom paging transmitter has a sequel, and it's good news. Shortly after last month's column was written, Telecom advised that, following representations on our behalf by the Department of Communications, they had fitted filters to the paging transmitter. As a result the interference to the repeater has been completely eliminated. Council expresses its appreciation on behalf of all users of this service for the efforts made by the DOC and Telecom officers, particularly as the transmitter concerned was operating well within specifications and Telecom were under no legal obligation to install the filters.

FIVE-EIGHTH WAVE

A few months ago I commented that we had heard 'rumblings of discontent' from VK8 and other sources. Well, although we are doing our best to solve any problems as they occur, and in general improve the lines of communication between divisional council and our far flung members, it did occur to us that perhaps now would be a good time to look at the possibilities of VK8 becoming an autonomous division. I made discreet enquiries to FE as to how one went about it. VK8s so, on his return to VK5, a questionnaire was sent to all VK8s asking for their opinions.

At the time of writing we are awaiting the results of this, and it may be well into the new year before I can report on the results. It was made clear in the questionnaire that there was no guarantee of success even if the results were favourable. Although there are 187 licenced amateurs in VK8, only about 50 of these are WIA members. It may be that FE and the other divisions (all of whom must agree to the proposal) will consider that 50 members is not enough to form a division, and that they will have to recruit more members before it can be considered. At this stage there are a great number of hypothetical ifs and buts and nothing will happen 'overnight'.

In a lighter vein — there is of course the possibility that VK5 may lose the RD Trophy without commitments. We thank you, Colin, for your efforts, and hope that someone out there will also see the need to keep our bands free of pirates. If you would like to help please contact a council member as soon as possible.

DIVISIONAL OFFICE

Members are reminded that Bankcard is now accepted for personal, mail or phone purchases from the Divisional Office. If purchasing by mail or phone, please give your name, Bankcard number and address (not a post office box). Note that only payments to the Division may be made by Bankcard; this does NOT include membership renewal, which is paid directly to Federal.

The Divisional Office is open each weekday between 11 AM and 2 PM, and in addition each Wednesday night between 7 PM and 9 PM and on the FIRST Saturday of the month between 11 AM and 2 PM. The Saturday openings are for a trial period to establish whether or not a demand exists for this service.

The Office stocks a wide range of publications of interest to the amateur. Send an SAE for a current price list. Membership badges, metal car badges, car stickers and blank QSL cards featuring the WIA emblem are also available to members.

The Office will be closed over the Christmas period, but at the time of writing the exact dates are not yet known. Listen to broadcasts for details.

On behalf of Council I wish all members and their families a happy and healthy Christmas and New Year.

73 from Jeff. VK2BYY

DIARY DATES

Tuesday, 6th December: Christmas Social — Thebarton Assembly Rooms with guest speaker — Wally Watkins. VK2DEW, talking on China. Bring your partner and a plate of supper.

24th January: Check December's Journal and Broadcasts for details.

Membership Subscriptions for 1984 are now due.

Please pay promptly for continuation of your membership!

Jennifer Warrington, VK5ANW
GPO, Box 1234, Adelaide, SA 5001

Page 72 — AMATEUR RADIO, December 1983
These pictures were taken at the sixth North Queensland Radio Convention held at the James Cook University, Townsville 23rd-25th September, 1983.

WIAQ President, Guy, VK4ZXZ bringing best wishes for a successful sixth North Queensland Radio Convention.

Hidden transmitter hunt prize to John, VK4NIE/YLG, "The Best Sniffer in North Queensland".

A small group of the crowd during the opening ceremony.

Bertha, XYL of Les, VK4LZ, receiving the floral art demonstration basket for 100% attendances at North Queensland Conventions.

Congratulations to Evelyn, VK4EQ, number 24 Merit Award, presented by Guy, VK4ZXZ, President of the Queensland Division.

Rogert, VK4CD, left, presenting prizes to fox hunt winners, Bill, VK4XZ and Terry, VK4ATY.

Seasons Greetings to all.

73, Bud VK4QY
JUBILEE ISSUE

Your copy of the Golden Jubilee Issue 1933-1983 Amateur Radio was a real credit to the editor and the picture of the OM amateur radio operator just fitted the meaning of what the Golden Jubilee is all about. May I say keep up the good work you are doing a marvellous job. Thanking you once again.

Yours faithfully,
H C Harmor
14 Scott Street
Selton Park, S083

LETTER OF THANKS

At our last meeting, it was resolved that a special letter of thanks be sent to you expressing our praise for recent issues of Amateur Radio but, in particular to AR!

Let a suitable celebration of fifty years of service.

May I say keep up the good work you are doing. It must be difficult to maintain such high standard but you and your team managed to give it that extra lift — a suitable celebration of fifty years of service to AR!

Best 73 es GO! Charles Ivlin, VK4BPI
Secretary
Mackay Amateur Radio Club
PO Box 1065
Mackay, 4740

ANARTIC STATION

I have been selected as a member of the 1984 Antarctic Research Expedition to Mawson station. I have just been granted a licence to operate amateur gear at the base (VKGOL) and would like to advise other amateurs that I will be striving to make many contacts in the period January '84 - February '85.

Here in Australia I am known as VK3YU and have never operated HF before. I am very excited about the possibility of developing my skills and techniques as an amateur, not to mention the joy of being able to speak with my fellow Australians back home.

I am an Electronic Engineer and will be making a detailed study of the ionosphere with the aid of devices such as an ionosonde, riometers, magnetometers etc.

Finally, congratulations on an excellent magazine. Yours faithfully,
Grant W Lamont, VK3YU (soon to be VKGOL)
Infrasonic Prediction Service
PO Box 702
Garringhurs, NSW 2110

BOUQUETS

Bouquets to Tom Lauder, VKS1L and Marshall Emm, VK5FN for their helpful hints on how to send CW

More power to them!

73.
Les Cullen, VK2WU
PO Box 31
Winnimarie, NSW 2777

NOVICE OPERATORS

I request everyone to re-read the article written by Rex Black, VK2YA on p 75 of October issue of Amateur Radio, where he submits a few quite valid grounds for the CW novices to be given a portion of the 7 MHz band. They could be distinguished by a 'C' after their callsigns.

Enough havoc has been caused in the offices of the DOC, the VK and Foreign Call Books with amateurs upgrading from novice to B to full call in a matter of six months or so.

This letter is to refresh the memories of the WIA council members who held office for the year 1980/81, I sent a letter to each divisional council containing many extracts from my (VK5NLC) Novice Notes that had been written in the VK5 Journals. It stressed the need for the skilled Novice CW operators being allowed to operate down to 21 and 26 MHz.

With the proposed extension of the 80 metre band, I request the Novice Allocation be extended up to 3.7 MHz (WARC-use the bands or lose them).

So many novices in VKC and VKS (myself included) doing slow Morse sessions. I suggest its frequency could also be moved up near the top end of the band, thereby easing local QRM to many stations trying to operate in the same locality. Port Lincoln for example.

Now in 1983 we find that the Third Party Net requires a given and clear frequency as many operators found we were giving it QRM during the recent RD contest. Novices could go up to 3.7 MHz and receive CWI also.

Once again, I strongly recommend that the next Federal Convention give some serious consideration about my proposals, there being NO necessity for any changes to existing novice callsigns etc.

With the use of my CW programmes, Primo Call that will be described in this magazine soon, a novice can put out a call on 10 and 15 metres, even when the bands seem dead. By continual use of CW programmes, the unskilled Novice Operator would be able to increase his speed up to 10 WPM and bypass the K call.

On page 26, AR July 1983, in "Representation to the DOC" I quote, "Possible use of Morse on VHFD by licencees 'unquote'. Surely my request would help to cancel out the above quote, also the claim that novices were not expected to upgrade to full call has been proved as false.

Yours faithfully
Lindsay Collins, VKGZ
12 Park Avenue
Rosslyn Park, 5072

EDITOR'S NOTE:

Matters requiring attention at the Federal Convention would be well worth your attention. The division, alter consideration may then submit an agenda item for the Federal Convention.

APPRECIATION

I wish to show my appreciation to all concerned in the "Golden Jubilee Issue 1933-83", which in my opinion was an excellent job in all aspects, and especially the old timers photos of past days, very good indeed.

I enjoyed the article on VK2ZI, also Gavin VK3YK and VK3RV, but the article on VK3BO by VK3ZS was a masterpiece of research and writing, so once again as one person in VK1, I thank all concerned.

Cheerio,
M E Austin, VK2KZ
8 Stanford Street
Kurri Kurri, 2327

TAKE A BOW SLOW MORSE OPERATORS

Re your very excellent nightly slow Morse practice broadcasts on 60 metres, I would like to convey my sincere thanks to those tireless operators who must have unlimited patience. It was largely through these broadcasts that I was able to obtain my novice licence.

I may, I would like to make a suggestion, which may or may not have been tried before. This being that a simple means of self correction of random type received would be to send simple text backwards. E.g.: EDOC ESROM WOLS.

ZONAL AWARDS

I agree with John Andersen, VK5ZFO, in the August issue, that the tragic Spratly Islands affair should cause us to reconsider the DXCC so-called countries list. No doubt in earlier days, the DXCC certificate was a genuine proof of one's dedication and operating skills, but in the 1980s, anyone can work a hundred countries over a major contest weekend. So what is the DXCC now worth? The difficulty in working all the countries on the list now is a political rather than a technical one, as illustrated by the Burma situation.

Mr. Andersen's suggestion to divide the world into areas by latitude and longitude, ignoring the countries concept, is a sound one since it does away with the nonsense of places like the St Peter and Paul Rocks being classed as a country. However, such a worldwide grid system already exists and is in use by the Moonbounce fraternity. It is called the "Maidenhead Locator System" since it evolved in discussions between Region 1 VHf operators in the English town of Maidenhead on 26th and 27th April, 1980.

In this system, the globe is divided into 324 "fields", each 20x from east to west and 10° from north to south, identified by two letters from AA through RR, the origins being latitude 90° south and 180° east. The "numbering" is always from south to north and west to east. (By the way, VK5ZFO's 20° x 20° grid would only give 162 areas.)

For VHF use, the main fields are further subdivided into the end result being a locator such as IO 93 WH for my location. Obviously any award based on this idea would only use the first two letters. So, instead of VK1 through eight only counting as one country, there would be ten fields to work. For example, Victoria is in QF and the Darwin region of NT is PH. There are already two zonal systems — the CQ Magazine one with forty and ITU one with ninety, so it is a moot point whether anyone would wish to sponsor such a new award. However, the Moonbounce folk, in their Lunar Letter Magazine, seem to be keen on listing the fields worked by contributors.

Yours sincerely,
Norman Fitch, G3FPK
Editor
"VHF Bands" Short Wave Magazine
49 Eskdale Gardens

IN REPLY TO 'WHO AM I'.

OCTOBER 83.

Firstly I may congratulate you on the interest you show in your son's hobby. I bet there are many other 'sons' around that wish they had a mother like you. Now for your problem. Out of the thousands of people that your son can
talk to around the world, you are the only one that he can call Mother. So, instead of using QL which I am sure you’re not, may I suggest that you tell them all that you are very proudly “My Son’s MUM!!!” Keep up the good work Madame.

Yours sincerely,
John Clark, VK2AUZ
PO Box 198
Engadine, 2233

BEREAVEMENT
5M2LN Nara . . . passed away 21st July, 1983 in Kuala Lumpur, Malaysia.
I have been requested by Nara’s widow Kuttyma, and family, to pass on their sincere thanks and gratitude to the many Australian and overseas radio amateurs, for their letters, cards, and messages of sympathy, following the sad loss of a line husband, father, grandfather, and the comradic amateur.
It is impossible to thank everyone individually, so please accept this as their personal message to each and everyone for their kind thoughts.
Nara will be sadly missed, but remembered always but all who knew him.
Arthur Pritchard, VK3DPA
45 McCulloch Street, Nunawading 3131
For Kuttyma Narayana and family,
Kuala Lumpur, Malaysia

VISIT TO UJUNG PANDANG
Recently I visited the city of Ujung Pandang in South Sulawesi, YB8. This visit was arranged by John YB8AX and myself as a contribution to WCY activities.
The cities of Lismore, NSW and Ujung Pandang have a twin city agreement and my XYL and myself were the first private visitors since the signing of the agreement. John took the opportunity of this visit to promote WCY and amateur radio to the authorities in South Sulawesi.
Two informal evenings were arranged during which I met about 100 amateurs and was able to tell them about amateur radio in VK land. I was surprised to learn that they were riding the crest of the CB boom and had recruited about 900 students into classes for amateur licences. It is anticipated their amateur population will be approximately 400 by the year 1985.
I believe my visit under the banner of WCY had the following effect:
• The authorities of South Sulawesi became aware of what WCY was about and support the concept.
• They also became very much aware of ORARI (similar to WIA but not a member of the IARU).
• Through the concept of WCY the twin cities agreement was considerably enhanced as many of their communications problems were overcome during the visit.
The Indonesian amateurs were very easy to communicate with and are very courteous and hospitable. The photograph shows myself with a group of Ujung Pandang amateurs. John YB8AX is third from the left.

SATELLITE EARTH STATION TESTING TO BEGIN SOON AT INNISFAIL
Earth stations are currently being installed at Innisfail, on the northern coast of Queensland, as part of a test programme to determine which equipment is best suited for receiving signals from Australia’s domestic communications satellites which are to be launched in the second half of 1985.
The Minister for Communications, Mr Michael Duffy, said that thirty eight earth stations, ranging in diameter from 0.9 metres to 2.4 metres would be tested at the Joint Tropical Trials Establishment.
A 30-metre mast with a transmitter on the top would be used to simulate signals from a satellite.
The earth stations would be linked to a specially built caravan containing monitoring equipment. Results of tests would be fed automatically into a master computer at the Department of Communications’ Canberra headquarters for processing and comparison.
“Results will be used to help decide technical specifications of the earth stations that individual householders will need to buy in order to receive the Homestead and Community Broadcasting Satellite Service (HACBSS),” Mr Duffy said.
“This service will enable all Australians to receive one ABC television service and at least two ABC radio services via the domestic satellites.”
Earth stations were also being tested at Port Hedland and Alice Springs to ensure they were subjected to the most extreme weather conditions — high rainfall, cyclonic winds, dust and wide fluctuations in temperatures.
Mr Duffy said DOC engineers would study the performance of the test earth stations under these conditions to determine how they would stand up to harsh weather once the satellite system began operating. Most households and communities who would invest in earth stations lived in conditions of extreme climatic change, so the ‘dishes’ had to be particularly resilient.
The smallest of the earth stations was expected to sell for around $1000 and should be easy to transport, install and maintain on a ‘handyman’ basis, Mr Duffy said.
“Trials such as the one to be conducted at Innisfail are essential so that when mass production of earth stations begins manufacturers will have proper system standards to follow.
“This is doubly important because Australia is breaking new ground with the HACBSS project — twelve GHZ earth stations have never been used for large-scale television and radio reception in climatic conditions as varied and extreme as Australia’s.”

MULTICULTURAL TELEVISION SERVICE TO TRANSMIT ON UHF ONLY
The Multicultural Television Service, currently transmitted in Sydney and Melbourne on both VHF on Channel 0 and UHF Channel 28, would only be shown on UHF Channel 28 from 1st January, 1985, the Minister for Communications, Mr Michael Duffy, announced on 31st August, 1983.
Mr Duffy said the announcement was being made at such an early date to ensure that all viewers of multicultural television could familiarise themselves with Ultra High Frequency (UHF) reception and equipment by the time Channel 0 was phased out.
“When the decision was taken to establish the Multicultural Television Service few people in Sydney and Melbourne had UHF receivers and antennas,” the Minister said.
“That situation is changing quite rapidly and today most receivers produced have both VHF and UHF capability.
“It was always intended that transmissions on VHF Channel 0 would be an interim step to allow people to receive it first on VHF and have time to learn about reception of Ultra High Frequency signals.
“As it is proposed that prospective new developments service, such as supplementary licences, RSTV services and public television — could be established on UHF, the Government considers it is time that existing and new multicultural television services should be transmitted solely on UHF.”
Mr Duffy said that Channel 28 transmissions currently covered 96% of the population in the Melbourne metropolitan television area.
Recently completed work on the UHF aerial on the Gore Hill tower in Sydney would ensure coverage similar to that of the other television channels in that city.
Extension of multicultural television to Canberra, Goulburn and Cooma in September/October this year, and to other metropolitan centres over the next few years, would be solely in the UHF band.
“The phasing out of Channel 0 is part of the Government’s policy to ensure the orderly development of use of the radio frequency spectrum,” Mr Duffy said.
“The VHF band is becoming crowded as new FM radio stations join the increasing number of television stations using this band. The result can be poor reception as one station interferes with another.
“On the other hand, the UHF band is less crowded and can accommodate more television services.”
Mr Duffy said UHF television provided extremely high quality reception, but viewers would have to ensure they had the correct receiving equipment. It was necessary for all sets to be connected to a special outdoor UHF antenna via a low-loss UHF cable.
Most modern television sets were equipped to receive UHF channels. Older VHF-only sets would require a small UHF/VHF down-converter to allow UHF reception.
The Minister said: “Most households with the appropriate equipment will have no difficulty in receiving the UHF signals. The quality of both the picture and sound will be as good as that offered by stations in the VHF band.”
Predictions courtesy Department of Science and Environment IPS Sydney. All times in UTC.

- Less than 50% of the month

PATHS — Unless otherwise indicated (ie LP = Long Path) all paths are Short Path.
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Both computers feature 20K BASIC and operating system, RS-232, serial IEEE-488 and parallel ports, video to standard TV or direct to monitor— disk and tape drives, printers, modems, light pens, etc. available plus hundreds of programmes for home and business — games, utilities, word processors, databases, home finance, education.

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★ WILL ROTATE A COMET

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### Obituaries

**Dick Baty VK5MD**

Dick Baty, VK5MD became a silent key on 16th September, 1983, he was 70 years old. Born in 1913, he obtained his licence in 1931 with the callsign VK5MH. He joined the Naval Reserve, and at the outbreak of war had to regrettfully decline a position with the then School of Mines (now the Institute of Technology) as a Radio Instructor, as he was called into the Navy as a Warrant Telegraphist.

At the end of the war (1946) he left the Navy with the rank of Commissioned Telegraphist and joined the Commercial Broadcasting Station in Sydney. In 1949 he joined Philips Electrical Industries where he remained until his retirement.

Around 1965 he again found time to become involved with amateur radio and unable to regain his old call sign, took the nearest available which was VK5MO. A keen CW operator, Dick was active on the bands until only a few months before his death, despite an illness which for many years had left him a semi-invalid.

A member of the WIA and RNARS, possibly Dick’s best known achievement was the winning of the 1934 Fisk Trophy for a six stage relay between states. (See 5/8 Wave’ for September and November, 1982, also p 8 AR 1.235.) Dick presented the trophy to the division in July, 1982 and it is on display in the B6B.

Although Dick’s passing has taken from us a well liked and respected member of the fraternity, we would not have wished his continued suffering and can only be grateful that he sleeps peacefully at last.

Our sympathies are extended to his wife Bette and sons Ian and Ashley.

Jack Coulter, VK5JK

### John Graydon VK2AIS

John’s amateur operations began on 7th February, 1938 with a QSO on 80 metres with VK2AH. Operating on HF and VHF, John pursued his interest in amateur radio up to the day of his untimely death on 10th July of this year.

Most of John’s working life was spent in the field of radio communications. A member of the permanent RAAF at the outbreak of war, he served through the war in many locations at home and abroad. He attained the rank of Flight Lieutenant in the Signals Branch.

In the post war years John joined the PMG Engineering Branch and later the ABC. He worked on the technical side of radio and television in the Sydney area. He retired from the ABC some few years ago.

To John’s wife Gladys we extend our sincere sympathy.

Keith VK2EKM (originally VK2TQ)

**Charles Hedley VK2MT**

1908-1983

It is with deep regret we record the passing of Charles Hedley, VK2MT.

Charles was first licenced in January 1933 and maintained an active interest in amateur radio for half a century.

A CW enthusiast, Charles participated in the pioneering days of Australian radio communications. Charles retired in 1973 from John Lysaght (Aust) Ltd at Port Kembla where he was employed as a Planning and Scheduling Engineer following a career which began at the Lysaght Newcastle plant in 1929.

Since the death of his wife several years ago, Charles, a quiet unassuming man, found comfort and companionship through his church and through the amateur fraternity.

An extensive traveller in his latter years. Charles had visited and befriended amateurs in Hawaii, USA and Canada.

To his daughter, granddaughter and son-in-law we share our feelings of sympathy.

Barry Hartley, VK2FE

**Ron W Holland VK4AQ**

Ron, VK4AQ, passed away on 30th September this year. Ron was born on 8th June, 1914, and due to the war, he had to wait until it finished before he could go on the air. He obtained his “ticket” in September 1939. He suffered considerably, during the latter part of his life.

He was a dedicated experimenter, and in his quiet way, was respected by all who knew him. Our condolences to his wife and family.

**MRS GENE TREBILCOCK**

Victorian members will be saddened to learn of the passing of Gene Trebilcock. Gene and her OM Eric operated the Victorian Inwards QSL Bureau for many years.

Deepest sympathy is extended to Eric and family.

### Trade Harms

**Trade Harms**

**WANTED — ACT**

TELEREADER or similar CW monitor. Dave VK1GD, QTHR.

Phone: (08) 54 1798.

**WANTED — NSW**

ATLAS 215 HF TRANSEIVER, Paul VK2ATR, QTHR.

Phone: (049) 59 3748.

**WANTED — VIC**

BROADCAST CARTRIDGE MACHINES. Any condition. Advise installation, demonstrations. 40 Ch CB conversions, accessories, new rigs weekly. BRIDGE DISPOSALS, 12 Old Town Plaza, opp Bankstown Railway Station, NSW. Mail order service and all enquiries to 2 Griffith Avenue, Roseville, 2069, or phone Sam VK2BVS, 7 pm to 9 pm only on (02) 407 1066.

**WANTED — OLD**

YAESU FT0X-40I or FTDX-560 transceiver in good clean condition, also Collins 305-1 linear amplifier, and copies of AR Magazine from January to December inclusive. VK4ZJL, QTHR. Phone: (07) 44 1749.

**WANTED — ACT**

YOUNG ENTHUSIAST requires any old Morse code related items. Keys, bush solderers, tape and inker machines etc. Will pay cash. Maurice VK3CW, Box 115, Fairfield, 3078. Phone: (050) 23 0038.

All copy for February AR must arrive at PO Box 300, Caulfield South, Vic 3162 at the latest by the 3rd January, 1983.

**Hamads**

PLEASE NOTE: If you are advertising items FOR SALE AND WANTED please write on separate sheets, including ALL details, eg Name, Address, on both. Please write copy for your Hamad as clearly as possible, preferably typed.

**Deadline**

All copy for February AR must arrive at PO Box 300, Caulfield South, Vic 3162 at the latest by the 3rd January, 1983.

Please insert STD code with phone numbers when you advertise.

Eight lines free to all WIA members. $9 per 10 words minimum for non-members.

Copy in typescript please or in block letters double spaced to PO Box 300, Caulfield South 3162.

Repeats may be charged at full rates.

OTHR means address is correct as set out in the WIA current Call Book.

Ordinary Harms 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.

**TRADE HARMS**

Conditions for commercial advertising are as follows: The rate is $15 for four lines, plus $2 per line (or part thereof) minimum charge $15 pre-payable. Copy is required by the deadline as stated below indexes on page 1.

AMIDON FERROMAGNETIC CORES: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE TO: RJ & US IMPORTS, Box 157, Mortdale, NSW 2223. (No enquiries at office: 11 Macken Street, Oakley, 2223).

CB RADIOS 569: Walkie talkies, short wave radios, military, outback, business, amateur, marine, repairs. RTTY Siemens 100. A printer $120; base mic $45; ultrasonic alarm $35; all ham bands on a single 6 It whip, 1.8 to 30 MHz, for base or mobile $300; aerials, installation, demonstrations, 40 Ch CB conversions, accessories, new rigs weekly. BRIDGE DISPOSALS, 12 Old Town Plaza, opp Bankstown Railway Station, NSW. Mail order service and all enquiries to 2 Griffith Avenue, Roseville, 2069, or phone Sam VK2BVS, 7 pm to 9 pm only on (02) 407 1066.

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**YOUNG ENTHUSIAST requires any old Morse code related items. Keys, bush solderers, tape and inker machines etc. Will pay cash. Maurice VK3CW, Box 115, Fairfield, 3078. Phone: (050) 23 0038.

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FOR SALE - ACT


FOR SALE - ACT

YAESU FT1 HF tcvr in ex cond S375. Kenwood TV502 2 m transverter (suit TS520 or 820) ex cond $150. Both items compl with cables. H'books etc. Laurie VK3KL. QTHR. Phone: (07) 5408 9908 or (07) 337 3249 AH.

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YAESU FT-7 HF tcvr in ex cond S375. Kenwood TV502 2 m transverter (suit TS520 or 820) ex cond $150. Both items compl with cables. H'books etc. Laurie VK3KL. QTHR. Phone: (07) 5408 9908 or (07) 337 3249 AH.

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YAESU FT-28F. VHF FM tcvr and FP-2 DC supply in good cond. Kenwood TS-520 HF tcvr Needs alignment and VFO-520 remote VFO and SP-520 spkr. All with manuals. All available for reasonable offer. Melbourne sale only. Buyer to collect. Roy VK3XY. QTHR. Phone: (03) 557 1265.

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ICOM IC2512S HF tcvrs. XtalS for 2.4, 8, Reg 50 channels. Inc IC2512T. Icom IC202T crystal bracket and nicad batteries. Icom vehicle mount bracket, 2 x 4 whips. 1 x 4 whip and H'books. Hardly used. S300. QTHR. Phone: (03) 323 5473 BH or (09) 44 3707.

KENWOOD TS-70A 2 m 144-148 MHz all mode tcvr. and 12 VDC $350. Kenwood TR7400A 25 W 2m synth FM mobile/base station $200. Yaesu FTV-650 6 m transverter $100. All ex cond in orig cartons. Danny VK6ZKV. QTHR. Phone: (07) 381 7877 BH or (09) 457 2421 AH.

ADVERTISERS’ INDEX

ACME ELECTRONICS 19
AMATEUR RADIO ACTION 47
ANDY’S RADIO REPAIR SHOP 10
ATN ANTENNAS 71
BAIL ELECTRONIC SERVICES 6C
CW ELECTRONICS 19
DICK SMITH ELECTRONICS 8 & 9
EMDRASIONS 4 & 5
GFS ELECTRONIC IMPORTS 2 & 3
HAMRAD 78
HIGH TECHNOLOGY COMPUTER SYSTEMS LTD 78
HY-TECH DISTRIBUTORS 126
IAN J TRUSCOTT ELECTRONICS 1F
ICOM AUSTRALIA PTY LTD 40 & 41
K BRUCESMITH & G SCOTT 46
LAMBERT COMMUNICATIONS 78
MACRAD 78
MALLINCOLE DISTRIBUTORS 46
MICROFONE DEVELOPMENTS 126
MOBILE ONE COMMUNICATIONS SYSTEMS 78
NICHOLLS COMMUNICATIONS 11
NOVICE LICENCE-VK2 71
OCTILUX 11
OPTUS 11
RACER WORLD LTD 18
SKYTRIM 47
TRADECO DISTRIBUTORS (NSW) PTY LTD 1
TRIO-KENWOOD (AUSTRALIA) PTY LTD 6 & 7
VANTIS ANTENNAS SERVICES PTY LTD 71
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