FEATURED IN THIS ISSUE:
★ OPTICAL COMMUNICATION FOR THE AMATEUR
★ OSCAR 8 READY RECKONER
★ JOHN MOYLE FIELD DAY RULES
★ TASMANIAN AMATEUR RADIO CONVENTION
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Amateur radio

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Cover Photo

Auction time at the Tasmanian Amateur Radio Convention held in Hobart over the week-end November 4-5, 1976. Associate member Alan Ruthven (holding microphone) tries to push the bids higher as Andrew VK7ZAJ (left) and Brian VK7ZBL display the goods (an old AWA modulation monitor).

Photo courtesy Tom Moffat VK7TM.
WIRELESS INSTITUTE OF AUSTRALIA

Executive Vice Chairman

P. WOLFENDEN VK3ZPA

On behalf of the Federal President, Officers and the Administration of the WIA I wish you all a Happy New Year and best wishes for 1979. It is traditional at this time of the year, to make New Year resolutions and look forward into the future.

This year, to some extent, we know what the future holds as we look forward — with some concern — to the World Administrative Radio Conference — WARC 79 — in October. The outcome of the WARC is still anybody's guess. The IARU Region III Conference held in October in Bangkok made this quite clear because at that time the position of many of the smaller countries with respect to the WARC was still unknown, if not unformed!

The preliminary position of the Australian Administration is reasonably well known, however, and whilst it is not entirely "sugar coated" as far as the Amateur Service is concerned, it is at least constructive and not anti-amateur radio.

The Institute, as reported in the past, has been instrumental in preparing the Australian Amateurs' case — a job which will not be finished until the actual WARC Conference is over. Right up until then, representatives of the various amateur bodies, including the WIA, will be providing advice to their administrations on matters pertaining to the Amateur Service which arise during the varied sessions at Geneva.

During this period, the financial strain on the Institute will be enormous — Geneva is NOT the cheapest place to stay for 10 weeks, especially during peak demand period such as an ITU Conference. Happily, the tremendous growth in membership of recent years — 118 increase in 1976 to 1372 increase in 1978 up to October — has enabled the Executive to financially plan ahead, although the continuing devaluation of the Australian dollar against the Swiss Franc must give rise to concern.

Membership growth has also enabled us to keep fees at an attractive level which in turn has generated more members. Further, during the year the Federal President in a personal letter to all non-members solicited contributions for the WARC committee.

You, as a member, can further help during our time of testing later in the year by encouraging membership of this Institute. In fact why not make a New Year resolution to join a new member during the year.

A Happy New Year to you all (let's hope the same greeting can be offered at this time next year).

P. WOLFENDEN VK3ZPA

Federal President: Dr. D. A. Wardlaw VK3ADW

Executive Vice Chairman • P. WOLFENDEN VK3ZPA

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VK8 — QSL Bureau, C/- VK8HA, P.O. Box 1418, Darwin, N.T. 5794.
VK9, 0 — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

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AMATEUR HANDBOOK

"Out of the blue" came a telephone call on a Monday morning asking if the Institute could collect the draft of the Handbook at the end of the week.

Not only was the Department's draft completed but the presence of a WIA representative was desirable to receive comments on the contents as written.

The Federal President and the WIA Secretary duly met the Departmental officer and received a copy. Various provisions in the draft were explained at some length during the handing over.

It soon became obvious that the new draft had taken into account all the numerous little concessions won by the Institute since the previous edition had been printed eleven years previously, but it now contained a number of new provisions which would require considerable investigation by the Institute.

The Federal President himself was absent from Australia, attending the CCIR meeting as a member of the Australian delegation. The Department had received many comments from the Executive when a revision was set in motion back in 1974. Some further work had been done, as well as discussions held on various specific questions with the Department. As one example, see the correspondence published on pages 20 and 21 of AR for September 1977.

At the Joint Committee Meeting late in August the WIA was told that the Department would have to produce a revision of the Handbook based on existing Regulations as both the proposed new Act and the outcome of WARC 79 were too far ahead. However, due to staff problems, the Handbook revision was unlikely to be done for some time.

As an outcome of this Joint Meeting the Executive persuaded VK1GB to undertake a further revision as already explained in WIANEWS, page 4, November AR. The Department's draft was completed very much sooner than anticipated and furthermore the Institute was asked to assemble comments in time for the Joint Committee Meeting scheduled for 22nd November (Letter RG53/2/1).

The Department were asked to grant an extension of three months so that the contents and implications of the draft could be given proper consideration for the reasons already explained.

Amateurs should be aware that the purpose of the Handbook is to set out in simple terms the regulations made under the Wireless Telegraphy Act. In most cases the provisions of the Handbook amount to an explanation of the effect of one or other of the Regulations.

REGULATIONS UNDER THE WIRELESS TELEGRAPHY ACT PREVAIL OVER PROVISIONS IN THE HANDBOOK

Under the Regulations, the Minister has the power to impose conditions on a licence. Penalties exist for contraventions of the Regulations and of any licence conditions.

Quite naturally, many amateurs will be interested in how the new draft of the Handbook departs from the contents of the old. It is not feasible to reproduce the new draft in full, but amateurs may rest assured that the Executive, with legal and technical advice from many expert quarters, has the matter well in hand in accordance with Federal Council policies.

Naturally, the new draft includes various provisions relating to Novice examinations, licences, conditions and similar matters already public knowledge through Departmental correspondence published in AR.

A number of new definitions have been introduced in Chapter 1. Some are well established — as "Amateur Satellite Service". Others are obvious in the contexts used — as examples "Slow Scan Television", "Repeater Station", "The Minister", "Session", and so on. One or two new definitions appear such as "Duplex Operation" in addition to several adapted from ITU Regulations, including "Harmful interference", "necessary bandwidth", "occupied bandwidth" and "spurious emission". The omission of a definition of a "portable station" has relevance elsewhere.

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Chapter 2 deals with qualifications for licences and now includes the reciprocal licensing provisions agreed by the Department in 1972 (see AR Aug. 1972, page 17) with some re-wording.

Chapter 3 covers examinations, which includes new material relating to Morse, and also refers the reader to appendices which have been considerably expanded.

Licences are dealt with in Chapter 4 and include new provisions relating to Club licences, pre-licensing conditions for repeaters and natural changes resulting from the change-over from "PMG's Dept." to "P. & T. Dept".

Mechanical provisions appear in Chapter 5. It is in this chapter that the new definitions on bandwidths and spurious have relevance. Repeater conditions are set out in full and some discussions, still open-ended, were held as to whether or not these (and indeed certain other material) would be included in examinations. An amateur will be required not only to use suitable monitoring equipment frequently but also must possess suitable calibration facilities to ensure in-band emissions. RTTY, facsimile, ATV and SSTV conditions appear in this chapter. Interference provisions are the same as in paras 68 and 69 of the existing Handbook. A new provision relating to poor quality signals appears as well as a number of variations relating to power (changed to 100W mean power output) and power measurement (accurate power measuring instruments for continuous use are required). A preference, for inspection purposes, is expressed for RF output connectors on transmitters.

Chapter 6 includes the General provisions. New additions include provisions relating to broadcasts from club (includes WIA) stations, "third party" does not include arranging skeds on behalf of another amateur station, nets for information exchange on behalf of social, religious and other specified organisations are forbidden, only an Australian amateur may operate from a station during the absence of a licensee, visitors to stations may not announce station call signs or operate equipment, more stringent logging conditions for club station operations and the retention of all log books 12 months after the last entry. Mobile operations may now extend to 4 weeks without prior approval (exception being club stations), provisions for second licences and call signs, new maritime mobile provisions, emergency network provisions and training exercises are included with some new material, call sign suffixes are updated, re-issues of deceased's call sign (5 years) and cancellations (2 years) and distress calls appear herein also.

Operating procedures are in Chapter 7 and include various fresh requirements relating particularly to duplex operations. Chapter 8 includes various miscellaneous items such as phonetic alphabet, Morse code, Q code, abbreviations and advisory committees.

HANDBOOK CONTENTS LISTED ARE ONLY IN DRAFT FORM

Readers should be careful to remember that these comments refer to an examination of the Department's new draft and are merely brief notations of many of the observed changes as seen in November 1978 when this script was prepared.

Members who might wish to make comments should consult with their Divisional Council.

EXAMINATIONS

At the time of writing an AOC theory exam syllabus had not been received from the Department.

MEETINGS

EXECUTIVE MEETING, 17th OCTOBER

Reprints of membership certificates and subscription notices were discussed. Position of Honorary Treasurer still unfilled. Brief reports discussed on WARC 79 and IARU matters. The Institute had promised (as already included in the budget) $1000 for IARU Region 3 association representation at WARC 79. Fresh office accommodation might be required in the near future if the existing tenancy is cancelled. Form RB 381 (Q) implications discussed. New publicity leaflet "8000" to be reprinted when Divisional subs rates for 1979 are known. Possibility of new Departmental draft of the Handbook.

PROJECT ASERT MEETING, 11th OCTOBER

Organisational matters.

FEDERAL REPEATER SUB-COMMITTEE

One meeting relating to repeater conditions and need for further data on 2m channel numbering systems, linking of repeaters and band plans.

PUBLICATIONS COMMITTEE MEETING, 2nd NOVEMBER

Usual volume of routine matters, revision and reprinting of WIA log book, consideration of a questionnaire, 1979 call book and availability of 1000 copies of December AR (Novice issue) for outside sale (one for one with December 1977 at no extra charge).

WARC 79 DONATIONS

—from non-members are pouring in resulting from the circular. Many donors also wish to join the WIA. It is disappointing to observe that some 200 letters to non-members have been returned to sender (address unknown, left address, etc.). This means that the 1979 call book for these people will be inaccurate unless some other method can be discovered to obtain further information on each one.

QSP

EXPERIMENTATION AND WARC 79

"Perhaps the real challenge for the amateur is at SHF and the upper end of UHF, in the development of simple and easily reproduced stable equipment for narrow-band applications such as CW and SSB; the spin-off would not be in communications so much as in designs for inherent stability in areas where synthesiser techniques are for one reason or another impracticable. This will enable interesting and important work to be done by amateurs — again, as at HF, in propagation.

It seems very likely that we have as yet only scratched the surface of knowledge of propagation, even at HF, and the amount to be learnt on the higher frequencies is enormous. And, as before, it is only the presence of a geographically randomly occurring service which makes the study possible, let alone practical. Therein lies our hope for the future, comprising as it does a mixture of "appliance operating" on the one hand, and technical experimentation on the other — and that is what amateur radio is about, exactly!"


GB

"While I have no wish to be burnt at the stake for heresy, I will venture the opinion that the 27 MHz band has generated far more radio amateurs in the short period since we lost it than it ever did while it was an amateur band." Extract from an article in the SA Journal October 1978.
OPTICAL COMMUNICATION FOR THE AMATEUR

Chris Long
6 Torrington Road, East Hawthorn 3123

HISTORICAL BACKGROUND

The use of audio-modulated light beams for communication pre-dates the first radiotelephone experiments by nearly 25 years. In 1881, Chicester A. Bell and Charles Sumner-Tainter used vibrating mirror systems to superimpose sound modulation on reflected beams of sunlight. Using receivers employing selenium photoconductive cells, ranges of about 700 feet were spanned by this “photophone” system (see Figs. 1-4).

With similar equipment, Rankine demonstrated a system with a range of several miles in 1916.

The German and Australian armies did some of the first communication experiments with modulated electric light sources around 1935, using techniques derived from the recording of optical sound tracks on talkie film. The high directivity and security of these systems gave them obvious military applications at a time when microwave hardware was not available.

A resurgence in optical communication came with the rapid advances in opto-electronics after 1960. In 1962, television signals were transmitted 18 miles using a modulated infra-red beam generated by a GaAs diode, prior to the general availability of the laser. The all-time distance record for terrestrial optical communication was set in May 1963, when a voice-modulated 6328 Angstrom helium-neon laser beam was transmitted 116 miles, from Panamint Ridge, near Death Valley, California, to a point in the San Gabriel Mountains near Pasadena. An amplitude modulated amateur radio transmitter was used for energising the laser.

Since that time, research has centred around pulse modulation of lasers (1963), coding techniques, heterodyne detection schemes using local laser oscillators (1965), optical FM (1968), and optical fibre light guide technology.

Optical communication is becoming successful as an engineering alternative to microwave technology because of the development of the laser, the existence of an established optical technology, and the lack of success with millimeter wave hardware.

Atmospheric optical communication is likely to remain limited to non-commercial applications. These include amateur radio, citizens band type point-to-point communication, and perhaps local area community broadcasting, as proposed by the British "Radio Love" group, and demonstrated by them around 1971 (see Fig. 5).

Its commercial applications will almost certainly be in conjunction with light guide optical fibre cable systems.

PECULIARITIES OF OPTICAL COMMUNICATIONS

The major difference between radio and optical communication is the emergence, at optical frequencies, of quantum effects. For a given transmitter power, the number of photons generated will decrease as the frequency increases. This is predicted by the Einstein-Planck relation:

\[ E = hf \]
Because of the corpuscular nature of the received beam, the signal itself, with its statistical fluctuations of power, is a source of noise in the system.

ATMOSPHERIC PROPAGATION IN OPTICAL COMMUNICATIONS

This section deals with the following areas:

1. Effect of atmosphere on optical signals
2. Over-the-horizon optical links using cloud scatter
3. Background ambience limitations
4. Effect of transmitter and receiver optics.

1. EFFECT OF ATMOSPHERE ON OPTICAL SIGNALS

Unlike radio propagation, where the atmosphere is generally transparent, the atmosphere can seriously degrade optical signals through scattering, absorption, refraction and dispersion. Scattering problems, due to particles suspended in the atmosphere, can be divided into three areas:

(i) Rayleigh scattering, due to molecular particles much smaller than the wavelength of propagation. This is inversely proportional to the fourth power of the wavelength. Blue light therefore encounters about 10 times the amount of scattering that red light encounters.

(ii) Mie scattering, due to particles comparable to or larger than the wavelength of propagation, such as those encountered in fog, smog and haze. Mie scattering is very difficult to calculate mathematically, but is severest when the particle size is approximately equal to the wavelength of propagation.

Hazy conditions are due to small dry particles in the atmosphere, and here the use of relatively long (IR) wavelengths can result in greatly reduced attenuation.

Stable fogs, consisting of water that has condensed on salt nuclei are often encountered in coastal and maritime regions. Stable fog particles are large and result in severe beam attenuation.

Selective fogs (smog) in which water condenses around smoke particles are found in industrial areas, and the particles are quite small, allowing transmission at IR wavelengths.

(iii) Scattering of radiation from unwanted sources into the beam path, producing limiting background light levels. The mechanisms responsible have been outlined above.

For almost all wavelengths less than 1.25 microns, including the visible spectrum, scattering is the major contributor to path loss and background light level limitations.

Absorption is caused by the atmosphere's molecular constituents. Peaks in the atmospheric absorption vs. wavelength curve correspond to the spectral absorption lines of the atmosphere's component gases, and may be as narrow as 1 Angstrom. This illustrates the care which must be exercised in selecting the wavelength of an optical communication system suited to atmospheric propagation. Absorption characteristics may vary by as much as 20:1 for different wavelengths.

Fortunately, the visible spectrum is almost free of molecular absorption bands as the atmosphere's major constituents, N2 and O2 absorb mainly ultraviolet radiation. Absorptions in the visible spectrum include slight ozone (O3) absorption between 5000 and 7000 Angstroms, and oxygen absorption bands at 6890 and 7600 Angstroms. The most important absorbing compounds at visual frequencies and low altitudes are H2O and CO2. Owing to the high absorptions of O3, CO2 and H2O at IF frequencies, the atmosphere is transmissive only in a series of narrow "windows", lying between the absorptive frequencies of these compounds.

Atmospheric refraction fluctuations may bend the light beam. When the atmospheric density discontinuities are large compared with the diameter of the beam, this may cause it to miss the receiver entirely. This is a point in favour of using a broad, dispersive transmitted beam. More usually, this bending only causes fluctuations in the received intensity of the beam, or "winkling".

When the density discontinuities or turbs are small compared to the beam diameter, alternate dispersion and focussing of the beam may result, having a similar effect. These atmospheric density fluctuations can cause interference to the transmitted beam at up to a 500 Hz rate; are worst in hot, windy conditions at low altitude; and constitute the main reason for favouring the pulsed-FM technique over simpler analogue intensity modulation for optical communications through the atmosphere. By using pulsed FM technique, amplitude variations due to atmospheric degradation may be clipped off at the receiver.

In laser systems, these atmospheric turbulences can cause a partial loss of beam coherence, with phase cancellation effects resulting in a source of noise, rendering heterodyne reception by a local laser oscillator impractical over all but short distances. The use of light guides and optical fibres seems to be the only way of overcoming these difficulties.

Despite the apparent limitations, reliability of optical links is surprisingly good,
particular up to ranges of 15 km. In one experimental system, a 3.5 km link gave 3 months of constant service on an alternate night usage, the signal to noise ratio never falling below 10 dB, even during heavy rain. Usually, the signal to noise ratio of this AM link, based on high pressure mercury vapour discharge lamps and the 931A photomultiplier exceeded 40 dB.

2. OVER THE HORIZON OPTICAL LINKS USING CLOUD SCATTER

At any time about 50 per cent of the earth’s surface is under cloud cover. The angular distribution of light scattered from clouds is a function of water droplet size and the wavelength of propagation.

Assuming that the beam width angles are very much smaller than the angle between the beams and the line joining the two sites, and considering the simple case where the transmitted and received beams are tangent to the earth with the cloud at the beam intersection, then the minimum height of the cloud for small $\theta$ will be:

$$H_{\text{min.}} = \frac{\text{Radius of the earth} \times \theta}{2}$$

(See Figure 6.)

If below $H_{\text{min.}}$, the cloud will be below the horizon at both transmitter and receiver. If above, there will be a decreased scattered intensity.

3. BACKGROUND AMBIENCE LIMITATIONS

By far the greatest source of unwanted background ambient light in optical communications is the sun, whose radiation approximates that of a 6000°K blackbody. This energy is received both by reflection from the background surrounding the transmitting end of the link, and by scattering in the intervening atmosphere. Three methods may be used whereby this background ambience can be avoided:

(i) Reduction in receiver beamwidth (field of view).

(ii) Reduction in optical bandwidth of the receiver by means of narrow spectral filters passing only the wavelength of propagation. Heterodyne reception can also be used to reduce received bandwidth.

(iii) The use of longer wavelengths and polarising filters to avoid the pickup of light due to Rayleigh scattering in the atmosphere.

Methods for reducing receiver beamwidth will be dealt with in the section on receiver optics. A compromise must be struck between the need for narrow beamwidth and the ease of lining up. Receiver mounting stability can be a major constructional problem with the very narrow beamwidths achievable in optical systems.

To further increase signal-to-noise ratio, we must use narrow spectral filters. For non-coherent sources, a wide spectral filter must be used to pass an appreciable amount of the transmitted light. Light emitting diodes, for instance, have a typical spectral width of 300 Angstroms. With a gas discharge light source, such as a high pressure mercury vapour lamp, a filter may be selected to accept one of the more dominant spectral lines. In the case of the mercury lamp, any one of the following wavelengths could be selected, according to the spectral response of the photodetector used:

- 4047 Angstroms Violet
- 4358 Angstroms Blue
- 5461 Angstroms Green
- 5780 Angstroms Yellow

Xenon arc lamps, having a relatively continuous emission spectrum, may not be selectively filtered in this way, and this is a major consideration against their usefulness for optical communications.

The best type of filter presently available for this is the optical interference filter. The simplest transmissive interference filters consist of a transparent film of calibrated thickness coated on each side with a semi-reflecting metallic film. Maximum transmission occurs at the wavelength for which the optical thickness is an integer multiple of half-wavelengths.

Single or multiplier filters of this type are obtainable, covering any wavelength required between 2000 Angstroms and 200,000 Angstroms. Transmissions of 90 per cent are attainable, with spectral bandwidths as narrow as 10 Angstroms in the visible region. They can be made to order by:

$$R = \frac{a^2}{\text{wavelength}}$$

Special requirements of the optics used for communications systems are as follows:

A. RECEIVER

(i) Must have maximum aperture to capture greatest number of photons from transmitter.

The use of long (IR) wavelengths to some extent alleviates scattering problems as the wavelength becomes larger than the scattering particles.

The scattered light of the sky is partially polarised, so that polaroid filters may be experimentally positioned at the receiver to remove this component of the scattered light.

4. SYSTEM OPTICS FOR ATMOSPHERIC PROPAGATION

The lenses and mirrors used for transmission and reception in optical communications are analogous to the antennae used in radio communication.

Ideally, the transmitted light beam should fall completely within the aperture of the receiver. This can’t be achieved economically except over short ranges, but the effects of the inverse square law can be offset quite effectively by optical means. The accompanying graph (Fig. 7) shows the loss between two optical systems of equal diameter and aperture “a”. The loss is seen to be kept low out to a distance “R” between the systems, of the order of $a/\theta$, where $\theta$ is the divergence angle of the transmitted beam. For $\theta = 10^{-x}$ radian and $a = 1$ metre, $R$ approx. = 10 km. Since the beam focussing achievable depends, owing to diffraction effects, on the wavelength of radiation and the aperture of the transmitting system, as $\theta$ approx. = wavelength/a, another way of expressing the distance for low loss is:

$$R = \frac{a^2}{\text{wavelength}}$$

FIG. 7: Transmission loss between two telescopes of equal aperture

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Both mirrors are concentrating the same number of photons per second, but since the larger mirror concentrates the image into a smaller area, the large mirror will give the most intense image.

**BUT** the problem is not as simple as it might seem, because other factors come into consideration, particularly at short focal lengths. When this becomes shorter than mirror diameter, the desired contour of the mirror for maximum received intensity changes, and must be mathematically re-designed to fit different contour functions according to which annulus of the mirror is being considered. Other factors to be considered in this horribly complex mathematical situation include the area of mirror made ineffective by being blocked by the light source, value of finite distance to image and convergence angles from the mirror edges, and a host of other problems.

To cap everything off, "f/D ratio" for mirrors is defined slightly differently than it is for lenses, to allow for the case where the source is physically inside the volume of the convex surface, which occurs for extremely large curvature, short focal length mirrors.

The only rule of thumb which can be given because of the complex factors is that one should tend towards using a mirror of large diameter and not too great focal lengths. When this becomes shorter than mirror diameter, the problem is not as simple as it might seem, because other factors come into consideration, particularly at short focal lengths, and therefore the image becomes less subject to aberrations. A large aperture lens is essential for good resolution. Chromatic aberration is not a problem with the optics of most light beam links, as they are only required to operate over a narrow band of optical frequencies.

For highest efficiency, the lenses should be coated to reduce internal reflections, though this isn't essential.

Focal length and therefore f/D is not an important consideration in the receiver optics. For a given diameter, a lens will collect the same number of photons no matter what its focal length might be, though long focal length lenses have the advantage of being thinner, and therefore easier to form. Lenses, however, are more susceptible to chromatic aberrations than mirrors, and so are less subject to optical communication.

For the transmitting end of the link, we want the diameter of the collimating optics to subtend the largest angle possible around the light source, to ensure the maximum radiation of energy. Directivity is not a critical consideration, and the beam may disperse a little to allow for bending by atmospheric refraction fluctuations. The smallest "f/D ratio" possible is desirable, so that the parabolic reflectors, rather than lenses, would seem to be the most suitable choice.

Larger diameter optics are desirable for a number of reasons. Consider the transmitting case, with a light source at the principal focus of two mirrors of equal "f/D ratio" but different diameter. "f/D ratio" is equal to the mirror focal length divided by its diameter, for most practical purposes (i.e. f/D ratio).

Since the mirrors have equal "f/D ratio", both will intercept the same angular cone of light from the source, regardless of diameter. Both will receive the same number of photons per second from the source, despite their differing surface areas.

Since their "f/D ratios" are equal, the large diameter mirror will have a longer focal length than the small diameter mirror. Image size is inversely proportional to focal length, so that the large diameter mirror will give the smaller image, since it has the longer focal length.

**OPTICAL COMMUNICATIONS SYSTEMS**

In choosing the light detection device for a communication system, we must first decide on the frequency of operation. The use of infra-red light, with its fog penetrating properties and large number of available photons per watt would seem a desirable expedient. But detectors which are sensitive to infra-red light are sensitive to heat, requiring expensive and bulky cooling systems to realise maximum sensitivity. The difficulties of focussing and aligning a beam of light which the eye can't see also offers inducement to move light signals a troom temperature. It is particularly useful at the violet end of the spectrum, between 3500 and 5000 Angstroms.

While the silicon avalanche photodiode and the cadmium sulfide photoconductive cell both have higher quantum efficiency in the visible spectrum than the photomultiplier, internal noise and dark current at room temperatures outweighs this attractive feature.

These limitations of the available detection devices, together with the difficulties encountered in detector refrigeration (e.g., window frosting, condensation, potential cracking of the glass envelope) all augurs towards the use of optical communication systems in the 4000 to 5000 Angstrom region, at least for the amateur.

Suitable modulated light sources in this region of the spectrum include the mercury arc lamp, and the argon laser (4880 Angstroms).

Even though photomultipliers require a 1000 volt power supply, their associated circuitry is very simple, their internal gain very high (typically 5 x 10^5), and their output large. Response speeds reach about 50 MHz on standard designs, and may extend into the GHz region with special designs.

Photomultipliers are sold with a range of different photosensitive surface materials, capable of giving responses of peak quantum efficiency in various areas of the visible spectrum. Typical photocathode surfaces suitable for use in the 4000 to 5000 Angstrom region may have peak quantum efficiencies of 25 per cent (see Fig. 8).

This is the number of photoelectrons emitted from the photocathode per incident photon, expressed as a percentage.

Like most photosensitive devices, some cooling of the device is advantageous, though not obligatory. Variation of photomultiplier dark current with temperature for various photocathode substances is shown in the attached graph (Fig. 9). Significant reductions in internal noise may be made by cooling to the temperature of dry ice. Below -40°C little improvement can be attained.

**GAS DISCHARGE LAMPS FOR OPTICAL COMMUNICATIONS**

The five most common commercially available gas-discharge lamps used for continuous illumination are based on:

1. **Fluorescent systems**
2. **Neon gas**
3. **Xenon gas**
4. **Sodium vapour**
5. **Mercury vapour**.

Except for short-range work, fluorescent and neon lamps may be discounted owing to the difficulty of collimating the light from these sources of large area and low intensity. The neon lamp's total light output in commercially available versions is very limited; and the fluorescent lamp's high frequency response is limited by the persistence of glow in the phosphor coating.

An understanding of the atomic processes involved in gaseous discharge is essential to a discussion of the relative merits of sodium and mercury lamps.
Light particles or "photons" are absorbed by an atom when the outer electrons of the atom move to an orbit slightly further from the atomic nucleus. The electron may have moved from its unexcited position, known as the ground state; or if previously excited, may move to a larger "permitted" shell. The amount the electron moves is dependent on two factors:

1. The amount of energy absorbed. Photons of high energy will cause a large movement. As photon energy is proportional to frequency, blue light will cause a larger electron displacement than red light.

2. The electron is only capable of moving to certain "permitted" shells within a specified atom. Only the photons of energy equal to the permitted energy level jumps will be absorbed, therefore only light of certain frequencies will be absorbed. This results in the existence of an absorption spectrum which is unique for every substance.

Conversely, if an electron loses energy by falling to a lower energy level closer to the atomic nucleus, this energy loss is emitted in the form of a photon. As with absorption, the light emitted by each substance will occur in a series of frequencies equivalent to the permitted energy level jumps for that substance. Hence we have an emission spectrum.

An electron's transition from a given energy level to ground state produces the "resonance line" emission of the particular substance involved. At this resonance frequency, the gas is capable of selectivity re-absorbing its light output, converting it into transitions between higher energy levels, giving output at lower frequencies. Selective absorption increases with the pressure of the gas in the discharge, so that to promote the emission of the resonance frequencies, the gas must be kept at low pressure. The resonance line is also suppressed at higher discharge current.
densities, as the atoms may be excited to higher energy levels before falling back to the ground state by successive excitation of incident electrons. Alternatively, the atom may transfer its energy to an electron without emitting a photon at all.

Therefore, with a sodium vapour discharge, where the resonance lines fall within the visible spectrum at 5890 and 5896 Angstroms, most efficient light outputs are achieved at low gas pressures and low current densities. For this reason, sodium vapour lamps are of low intensity and large source area to give a reasonable light output. So they are not suited to optical communications.

A superior alternative is the super-high pressure mercury lamp. Mercury’s resonance lines are at 1850 and 2537 Angstroms in the ultraviolet, so that for visual output, the higher energy level transitions at 4047, 4358, 5461 and 5780 Angstroms are promoted by the use of a discharge at high pressure and high current density resulting in an intense small source area well suited to optical communications (see Fig. 11). This is usually surrounded by a much larger diffusing bulb sometimes coated with a fluorescent substance to make use of the residual ultraviolet output. For use in optical communication systems the quartz phial must be removed by smashing the outer diffusing bulb, and re-mounting it inside a small clear-walled glass container. This should be done with great care, and on no account should the quartz arc be operated without an outer protective glass vessel. The arc emits a very large amount of harmful ultra-violet radiation, which can penetrate the quartz bulb, but which is absorbed by glass.

The mercury discharge strikes at about 180 volts with a light blue glow filling the entire bulb at first, then narrowing to a thin blue-green arc of high intensity as the quartz bulb warms up and the mercury pressure increases through conversion to vapour by the heat of the arc. It generally takes about 15 minutes for the lamp to reach its final intensity. In that condition, the discharge can be modulated up to about 20 or 30 kHz.

A disadvantage of this type of light source is that after it has warmed up, its striking voltage increases to such an extent that it is impossible to restrike if it happens to go out on a modulation peak, unless it is left to cool for a few minutes.

The use of a feedback circuit and a negative peak clipper in the modulator is suggested, to ensure that the arc is never completely extinguished by modulation peaks. Non-linearity of modulation may be corrected by positioning a photodiode near the arc, and connecting it to the modulator in a negative feedback loop.

The mercury lamp used must be derated to run in AM service with DC bias. To run at a continuous 30 watt output, for instance, a 60 watt lamp rating is required, to take care of peak power output under fully modulated conditions.

Another factor to be taken into account in the derating requirements is that most electrode heating is at the cathode end of the tube, owing to ionic bombardment. With AC operation, where the cathode is effectively switching rapidly from one end of the tube to the other, the heating effects are shared between the two electrodes. With DC operation, most of the heating effect takes place at one end of the tube, increasing the dissipation requirements over that for AC operation.

Arc polarity should be reversed from time to time to prevent the excessive ion bombardment of one electrode. To overcome this problem, RF bias could be tried.

The modulator should include some method of controlling the DC bias current through the arc, and metering to measure arc voltage and current, as these parameters drift considerably with changes of ambient temperature and modulation conditions. If arc current is not monitored, it could drift upwards beyond the dissipation ratings of the lamp and the modulator tubes.

**FIGURE 11**

In commercially available high pressure mercury lamps the discharge is maintained within a small quartz phial (see Fig. 10).

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**THE PHOTOPHONE — 1881 — AN EARLY EXPERIMENT**

With such an arrangement of apparatus speech has been communicated beyond ordinary speaking distances, and Bell explained to the members of the American Association for the Advancement of Science at Boston how Tainter and he had made a successful experiment over a distance of about 700 feet. It was in Washington, and Mr. Tainter worked the transmitting instrument on the top of the Franklin school-house, while Bell was at his laboratory in 1325 L Street with the sensitive receiver arranged in one of the windows. While his friend was at work at the distant school-house, Bell applied the telephone to his ear, and heard distinctly from the illuminated receiver the words — Mr. Bell, if you hear what I say, come to the window and wave your hat." In relating this incident subsequently to an English audience, Professor Bell remarked that he need hardly say with what gusto he rushed to the window and made the required signal.

Assuming that the beam angles are very much smaller than the angle between the beam and the line joining the two sites, and considering the simple tangent case where the transmitted and received beams are tangent to the earth and the scattering medium is conveniently at the beam intersection, then the minimum height of the cloud must be:

\[
H_{\text{min}} = \frac{\cos \theta}{2} \cdot \frac{1}{\cos^2 \theta}
\]

where \( R_e \) is the radius of curvature of the earth. For small \( \theta \) this equation is

\[
H_{\text{min}} \approx \frac{R_e}{2}
\]

If the scattering medium is less than \( H_{\text{min}} \) it will be below the horizon for both receiver and transmitter. A longer value of \( H_{\text{min}} \) means a decreased scattered intensity.

Energy level diagrams of sodium and mercury. The thickness of the lines indicates the visibility of the radiation. Invisible (ultra-violet or infra-red) radiation is shown by dotted lines. \( V_i \) is the ionisation voltage. In the case of sodium the visible light is produced mainly by the resonance lines (5890 5896 A); the higher level transitions are chiefly in the infra-red. The visible light produced by mercury is in the main due to the higher transitions (chiefly 5461 and 5791 A); the resonance lines (1850 and 2537 A) are ultra-violet.

Distribution of relative spectral energy and luminous flux of an HP 125W super high pressure mercury lamp in the visible zone. In the distribution of the energy, as in that of the luminous flux, the value of the strongest line is arbitrarily taken to be 100.

**CONCLUSIONS**

For amateur use, optical communication offers a cheap alternative to microwave systems for point-to-point communication.
FIG. 12: Optical system for modulated visual light communication

NB. GLASS ENVELOPE NOT TO BE PLACED IN CONTACT WITH ANY EARTHED METAL SUPPORT. POSITIVE SIDE OF 1kV SUPPLY IS EARTHED.

FIG. 13: Photomultiplier Circuit

HEATER CONNECTIONS OF 6SN7'S NOT SHOWN. THESE SHOULD BE PARALLELED AND FED WITH 6.3V-12A SUPPLY. ALL RESISTORS 1/2W UNLESS SPECIFIED. ALL VALVES USED HAVE STANDARD OCTAL (8 pin) SOCKETS.

FIG. 13 'A': Arc modulator

It can also be used for omni-directional transmission over short distances.

Simpler transmission systems, requiring less than, say, 50 kHz bandwidth, may use any readily modulated light source. Short range systems may employ light emitting diode sources which, except for the green phosphor-activated type, have a linear modulation characteristic, and are readily internally modulated at low voltages. Long range systems could use modulated high intensity gas discharge lamps, carbon arcs, gas lasers or solid state lasers. A coherent (i.e. laser) light source is not mandatory and may prove to be economically unjustified where bandwidth and background radiation are not critical considerations.

Optical communication ranges through the atmosphere can extend to over 100 miles and may be stretched beyond the horizon by the use of cloud scatter in favourable conditions. There has been little quantitative experimentation over these distances, despite the relative ease with which they can be achieved.

The system outlined here, using modulation of the power supply to a mercury arc, and a 6097 photomultiplier receiver, is only one of many alternative schemes for use at visual frequencies. Its effectiveness, in spite of its simplicity, indicates that the time is ripe for a substantial upsurge in amateur interest in such systems (see Figs. 12 and 13).

LEGALITY OF OPTICAL COMMUNICATION EXPERIMENTS IN AUSTRALIA

While this article was being written, I approached the Regulatory and Licensing Section of the Postal and Telecommunications Department, and made enquiries regarding the licensing of the system outlined here. Mr. Ditchburn of the Victorian
branch assured me that while there is no licence covering such equipment, permits are available for such devices under the terms of the Wireless Telegraphy Act at no charge to the applicant. I have been given the verbal assurance that while my written application is being processed, I may proceed with my present experiments without fear of legal action. An amateur radio licence is not required in addition to the permit.

Chris has now received from the P. and T. an official permit to experiment in this system. (Ed.)

ACKNOWLEDGEMENTS

- Assistance with field tests and equipment, courtesy John Egginton VK3ZGJ.
- Assistance with research on optics, courtesy R. A. J. Reynolds VK3AAR.

SUGGESTED READING


Chris Long with light transmitter, arc modulator and power supply.

Close-up of modulator.

Receiver with power supply.

Close-up of transmitter.

Photographs for AR DON'T KEEP THEM TO YOURSELF Send them in - NOW

Photomultiplier receiver.

UNFINANCIALS — REMINDER

Next month's AR is your last issue unless you pay your 1979 subscription promptly. This could include new members from last year owing an amount to render them financial to 31.12.1979.
Recently Group Captain E. R. (Bon) Hall, formerly the OC of the RAAF School of Radio, published his well researched book covering a history of RAAF Radio "A Saga of Achievement". The book brought to mind those early days of ham radio when a zealous bureaucrat said "Put them (the hams) below 200 metres — they won't be able to get out over the back fence down there". Of course we all know what happened when the hams lost the LF and MF parts of the spectrum. They were forced as a result into unknown territory where they pioneered DX communication and as a result commercial interests were quick to see the value of the HF spectrum.

What has all this to do with Bon's book? Well the Science Museum of Victoria has on permanent display an early two valve "low loss" HF receiver which is an exact replica of one built by Gil Miles VK2KI in 1924. Gil was originally licensed as a ham in 1919. When he retired from the Radio-physics Division of the CSIRO, Gil went on the air again under his present call. In those early days of radio, Gil was a keen ham and when he joined the RAAF as an Aircraftsman Engine Fitter, his ham radio experience was to prove history making. Gil's OC of No. 1 Squadron was Fit. Lt. Arthur Cobby, who was later to earn many decorations in the Second World War and who became an Air Commodore. Gil had heard the MacMillen expedition in the Arctic on his two valve receiver and mentioned it to Cobby. The expedition ship the "Bowden" was located off Greenland and an American ham, Don Mix W2TS, using the call WNP, was communicating regularly with hams at home and elsewhere. Cobby was a little dubious about Gil's claims so the little receiver was set up in his quarters at Point Cook and that evening Gil was able to receive WNP and copy the text of the material being transmitted by the expedition.

The unofficial historical moment had now arrived when Cobby asked Gil what it would cost to set up a transmitter which could communicate with the RAF in Britain. Gil said he could produce the transmitter for about £30. Cobby then transferred Gil to the Squadron's wireless section and with the assistance of Fit. Sgt. Barfield, the equipment was soon in operation and contact was made with the RAF. It was a year later that the RAAF commenced using the HF part of the spectrum with a receiver which was a replica of the little two valve job Gil had demonstrated to Cobby. Cobby, possibly because of reasons of protocol, never claimed the credit for that historical event, but for Gil it got for him a whole string of flying experiences.

As an engine fitter, plus radio experience and a knowledge of morse, he was the one who had most of the opportunities on various flights in machines which could only carry one passenger. Needless to say, this aroused a certain amount of jealousy. This produced one humorous episode in which Gil turned the tables. The RAAF, using two seaplanes, made an island hopping flight across Bass Strait to Tasmania during the survey of a proposed air mail route. Gil flew in one of the sea planes. Signals from Point Cook were last heard as the planes passed across Mornington. Gil couldn't raise the base at all after that but resourcefully he shifted to 600 metres where the obliging operator at VIM in the Domain, took his messages on the quarter hour and relayed them to the Navy Office a short distance away from the Domain station. Then when the VIM op. became busy he suggested to Gil that he call Flinders Island Radio VIL and he would no doubt be able to carry on handling the quarter hourly report from the seaplanes. This worked out well and all messages reached HQ. On the return journey signals from Base suddenly appeared again as they passed over Mornington. Was it gremlins, or was it that old green eyed monster? Hi.

There are many old-timers around with similar stories to tell about the contributions made by hams in the early days of radio. Perhaps some of them might be drawn out so that their experiences could be placed on record. Someone once said years ago "many a ham, after developing some improvement on his little rig at home, has gone to work next day and modified a high powered multi kilowatt commercial transmitter as a result". Maybe those days have now gone, but behind the scenes, hams with their innovative approach to electronics are still making valuable contributions behind the scene.

The replica of the two valve "low loss" receiver built by Gil Miles in 1924 and which is now a part of the historical radio section at Melbourne's Science Museum.

The receiver used "air-wound" coils, employed a regenerative detector and a transformer coupled audio stage using a UV199 valve. The base was removed from the detector valve to reduce losses. The simple little receiver started the RAAF with the use of the HF frequencies at a time when they were thought to be almost useless. Hams knew differently and as a result of their experimentation, commercial interests were quick to follow in the hams' footsteps.

If you know of similar stories to the one I have related, they should at this time be recorded because in some quarters ham radio is considered to be simply a fun thing without much to support its existence. We all know differently, but if we don't publish, how will the bureaucrats know.
The recent launch of Oscar 8 has now enabled low power stations to make use of Mode A. Perhaps the most difficult problem in working Oscar is to know when to listen. Many articles have been published in this magazine describing appropriate formulae and methods. The actual process of working out pass times is not difficult, but it certainly is tedious.

You don't need a digital system driven by electromotive force and a floppy disc, the digit (fingertrong method) driven by your own energy perhaps supported by a floppy wrist is really all that is required. With in excess of 2,500 possible combinations of bearings and times to be encountered on the first GMT equator crossing of the day, some rationalizing of method is desirable.

The proposed system, through the use of tables, enables the raw data, as supplied by AR, to be quickly converted to meaningful data, allowing you to decide on the usefulness of the orbit, as well as providing the acquisition time in your local time.

It is proposed to work an example through as the tables are introduced.

**RAW DATA:**

Amateur Radio, May 1975, Page 30, Oscar 8 Information Supplied:

**Table 1:** Predicted Longitudes of Evening Orbits Oscar 8 Longitude of First Crossing of GMT Day

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**Table 2:** First GMT Day Crossing Times and Crossing Times for Evening Orbits at the Equator (Expressed in Minutes GMT)

| Orbit No. | 0000 0001 0002 0003 0004 0005 0006 0007 0008 0009 0010 0011 0012 |
|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 5         | 413 414 415 416 417 418 419 420 421 422 423 424 425 |
| 6         | 516 517 518 519 520 521 522 523 524 525 526 527 528 |
| 7         | 619 620 621 622 623 624 625 626 627 628 629 630 631 |
| 8         | 723 724 725 726 727 728 729 730 731 732 733 734 735 |

**Table 3:** Ascending Nodes Giving Approximate Overhead Passes in Capital Cities (in degrees)

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**Table 4:** Longitudes of First Crossing of GMT Day

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**Table 5:** Minutes GMT

| Orbit No. | 0013 0014 0015 0016 0017 0018 0019 0020 0021 0022 0023 0024 0025 |
|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 5         | 426 427 428 429 430 431 432 433 434 435 436 437 438 |
| 6         | 529 530 531 532 533 534 535 536 537 538 539 540 541 |
| 7         | 632 633 634 635 636 637 638 639 640 641 642 643 644 |
| 8         | 736 737 738 739 740 741 742 743 744 745 746 747 748 |

**Table 6:** Minutes GMT

| Orbit No. | 0026 0027 0028 0029 0030 0031 0032 0033 0034 0035 0036 0037 0038 |
|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 5         | 439 440 441 442 443 444 445 446 447 448 449 450 451 |
| 6         | 542 543 544 545 546 547 548 549 550 551 552 553 554 |
| 7         | 646 647 648 649 650 651 652 653 654 655 656 657 658 659 |
| 8         | 749 750 751 752 753 754 755 756 757 758 759 760 761 762 |

**Table 7:** Minutes GMT

| Orbit No. | 0039 0040 0041 0042 0043 0044 0045 0046 0047 0048 0049 0050 0051 |
|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 5         | 542 543 544 545 546 547 548 549 550 551 552 553 554 555 |
| 6         | 555 556 557 558 559 560 561 562 563 564 565 566 567 568 |
| 7         | 658 659 660 661 662 663 664 665 666 667 668 669 670 671 |
| 8         | 762 763 764 765 766 767 768 769 770 771 772 773 774 775 |
The above process on another night schedule exists. If the orbits don't suit, try again. Look at Table 2 until you find the insert in AR for October 1972 and the predicted time of the first equator crossing. Using orbit 6, 189 degrees, by the opposite side of the earth to us and then approach us heading north west from the South Pole.

Use Table 3 to find the number of minutes to be added on. With an orbit 6 bearing of 189 degrees, if I was in Sydney, the amount of time to be added to 587 would be 85 approx. Hence the satellite should first be heard around 587 + 85 = 672 minutes GMT.

In Melbourne it should be heard 2 minutes earlier, i.e. 587 + 83 = 670.

The final step is to go to Table 4, which converts the GMT minutes back to standard time. You will see that 672 GMT minutes is 9.12 EAST etc.

I hope the tables will give help to those who wanted to try the satellite, but were a little confused with working out acquisition times.

Remember, the satellite doesn't wait if you are running late. It is always better to be a few minutes early, just in case! See you on Oscar 8!

---

**TABLE 3: CORRECTION TIMES TO BE ADDED TO TIME EXTRACTED FROM TABLE 2**

(Adapted from Amateur Radio, October 1972 Insert)

<table>
<thead>
<tr>
<th>Selected Orbit Bearing</th>
<th>Sydney</th>
<th>Melbourne</th>
<th>Adelaide</th>
<th>Hobart</th>
<th>Perth</th>
<th>Brisbane</th>
</tr>
</thead>
<tbody>
<tr>
<td>155</td>
<td>92</td>
<td>—</td>
<td>—</td>
<td>89</td>
<td>—</td>
<td>92</td>
</tr>
<tr>
<td>160</td>
<td>89</td>
<td>88</td>
<td>—</td>
<td>89</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>165</td>
<td>87</td>
<td>87</td>
<td>90</td>
<td>85</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>170</td>
<td>87</td>
<td>87</td>
<td>88</td>
<td>85</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>175</td>
<td>87</td>
<td>85</td>
<td>87</td>
<td>83</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>180</td>
<td>85</td>
<td>85</td>
<td>87</td>
<td>83</td>
<td>87</td>
<td>—</td>
</tr>
<tr>
<td>185</td>
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<td>85</td>
<td>87</td>
<td>83</td>
<td>87</td>
<td>85</td>
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<td>87</td>
<td>83</td>
<td>90</td>
<td>87</td>
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<tr>
<td>195</td>
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<td>83</td>
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<td>81</td>
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<td>230</td>
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<td>83</td>
<td>83</td>
<td>80</td>
<td>85</td>
<td>87</td>
</tr>
<tr>
<td>235</td>
<td>83</td>
<td>83</td>
<td>83</td>
<td>80</td>
<td>85</td>
<td>85</td>
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<td>80</td>
<td>85</td>
<td>85</td>
</tr>
<tr>
<td>245</td>
<td>—</td>
<td>83</td>
<td>83</td>
<td>80</td>
<td>85</td>
<td>—</td>
</tr>
</tbody>
</table>

Adelaide. Orbit 7, 215 degrees, would be reasonably close to an overhead pass in Perth. If you wish to study the positions of passes an shōw to interpret them, see the insert in AR for October 1972 and later articles.

Now you have established if a suitable orbit exists. If the orbits don't suit, try the above process on another night schedule. If you have found a suitable orbit, go back to the raw data and find the predicted time of the first equator crossing. Look at Table 2 until you find the crossing time, then look down the column until you find the time in GMT Minutes when your selected orbit crosses the equator. Using orbit 6, 189 degrees, by the opposite side of the earth to us and then approach us heading north west from the South Pole.

We now have to ADD a correction time to the 587 minutes, as the satellite has to travel over the North Pole, go down the

---

**TABLE 4: TIME CONVERSION: GMT MINUTES TO AUSTRALIAN LOCAL**

<table>
<thead>
<tr>
<th>Minutes Eastern Standard</th>
<th>Eastern Daylight</th>
<th>SA/NT</th>
<th>WA</th>
</tr>
</thead>
<tbody>
<tr>
<td>480</td>
<td>6.00</td>
<td>7.00</td>
<td>5.30</td>
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<tr>
<td>490</td>
<td>6.10</td>
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<tr>
<td>500</td>
<td>6.20</td>
<td>7.20</td>
<td>5.50</td>
</tr>
<tr>
<td>510</td>
<td>6.30</td>
<td>7.30</td>
<td>6.00</td>
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<tr>
<td>840</td>
<td>12.00</td>
<td>1.00am</td>
<td>11.30</td>
</tr>
</tbody>
</table>

NOTE: The calculations are based on a satellite period of 103.232 minutes and a longitudinal increment of 25.81 degrees.
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SKY. 15 21.100 and up.
SKY. 10 28.5 and up.

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TASMANIAN AMATEUR RADIO
CONVENTION, 1978

Story and photographs by —
Tom Moffat VK7TM
39 Pillinger Drive, Fern Tree, Tas. 7101

TARC '78 was held Hobart's College of Advanced Education over the weekend of November 4 and 5, after months of careful planning. In Tasmania the yearly conventions, or hamfests, are hosted by the three State branches of the WIA in rotation, the North, the Northwest, and then the South, so each branch organizes one every three years.

There's obviously a bit of competition among the branches to try to out-do each other, and the last one Hobart organised was a miserable flop.

Convention Committee Chairman Greg Noble VK7FT and his committee of nine were determined that this wasn't going to happen again, so they started planning seriously more than six months ago. The planned venue was changed several times because of space problems, so eventually it was decided to hold TARC 78 at the Mt. Nelson campus of the College, situated about 4 miles from the centre of Hobart.

There were a few problems to overcome, after all the place is a school and more or less open to the public.

But an area of the main administration block was set aside, which had plenty of display space, and also the advantage of a cafeteria nearby as well as a theatre where children's films could be shown.

So the TCAE was a bit of an experiment, since most other hamfests had been held in country halls.

The whole experience turned out to be an eye opener.

As each amateur arrived he was greeted at the registration desk and given a beautifully produced convention program, with the front cover done on Viewgraph transparency material to resemble a PCB layout.

Past the registration desk the building is split up into various levels and areas, separated by stairways and railings; so the operating equipment was in one area, the static displays in another, kids creche in yet another.

The impact was one of modern, expensive, spaciousness. After all, the college cost several million dollars to build.

Most of the home brew equipment was displayed in tall perspex cases, which gave it protection from prying fingers.

A bit of a shame in a way, because home brew equipment should be seen to be working before it can be judged for quality.

There are lots of projects, as we all know, that look nice but don't work.

The convention station, AX7WI, was set up on two long tables, with all aerial cables carefully routed out of the building in such a way that no one would trip over them.

The station operated on most licensed frequencies, with some of the most modern gear.

One particularly striking feature was a commercial video display unit and RTTY/Morse unit, a "glass teletype".

"Wag" Adeline and Terry VK7CT, both are very active in WIA affairs
It was interesting to see it taking CW and displaying characters on the screen, although most of us were slightly ahead of it copying by ear (wishful thinking Tom—Ed.).

It had switchable speeds and shifts for teletype, so for several hours on Sunday it was left to copy test messages from Casey Base in Antarctica, just outside the 20 metre band.

The convention was a tremendous public relations coup for amateurs and the WIA.

It was open to the public on Saturday afternoon, and radio enthusiasts and CBers flooded through to be given the “soft sell” good word on becoming a licensed amateur.

Part of this may have been because of the publicity given to the convention in the local paper, and on ABC radio’s “what’s on” segment on the Saturday morning.
The whole works were capped off by a cabaret on Saturday night, said to be one of the best ever.

So perhaps TARC 78 was the start of the new breed of conventions, as opposed to "hamfests". Not one word of criticism could be levelled at the organisers, it went like clockwork, everything worked as planned, and everyone went home happy.

But perhaps now is the time to mourn the passing of the old-style "hamfest".

Gone this year was the rough-and-ready atmosphere of the country hall, the "hams" baskin gin the sun near the front door sipping beer as the kids played in the grass or on the beach.

The impromptu mini-conventions in caravans or on the tail gates of station wagons as participants argued over the niceties of aerial design or the best way to work DX.

Gone was being woken up in the morning by a horse snorting through the open window of your caravan, or the fellow in the next van brushing his teeth in beer.

And gone was the big slap-up barbecue on Sunday afternoon, with hams, kids, wives, girlfriends, and dogs all gorging themselves on country sausages and steaks.

Gone were the fox hunts that finish up with the fox hiding in the ladies loo.

But maybe that's progress.

Perhaps the solution would be to have two get-togethers during the year, one a big glossy convention, open to the public, with the best equipment displayed, and every opportunity to freshen up one's knowledge on the state of the art. And the other one, six months later, a good old country hamfest, just for the fun of it.

EDITOR'S NOTE:
It was also my own personal pleasure to have been able to attend the Tasmanian Amateur Radio Convention. — One point that Tom has perhaps overlooked in his report is the excellent co-operation and liaison that exists with the Division, also the driving force behind the scenes known as the "wags" (women's activities group) who consisted of several of the wives of members in organising social events and fund raising, and very ably headed by Adeline Connor, wife of Terry VK7CT. — A tremendous show — well done Hobart. — (VK3UV).

QSP

BERYLLIUM AND POISONING
A QSP in AR recently drew attention to the extremely dangerous to the eyes fibreglass catalyst MEKP (methyl ethyl ketone peroxide). Another very poisonous substance, according to an article in QST July 1978 is beryllium, and almost all the beryllium compounds, when inhaled into the lungs in even incredibly small concentrations (0.01 micrograms per cubic metre). Beryllium oxide as a ceramic is used between the anode and heat sink in conduction-cooled amplifier tubes, in metal-ceramic power tubes and in Gunn and IMPATT oscillators and amplifiers to mount semi-conductor devices. The article warns that under no circumstances should beryllium oxide or articles made from it be crushed, filed, sawn, chipped, sanded, ground, put in contact with acid, swept or vacuumed.
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SSB for the radio amateur Cat. B-2212 $6.75
Amateur operating manual Cat. B-2208 $6.90

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Shinwa 500W L.P. filter Cat. D-7080 $19.50
Viking 5KW L.P. filter Cat. D-7086 $37.50
Type 101 rugged coax relay Cat. D-5210 $44.50
small egg insulators Cat. D-5300 $0.80
large egg insulators Cat. D-5302 $1.20

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TH3JR 3 element triband beam
Cat. D-4304 $199.00

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  - High load speed.
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**FINAL TUBES**

- **MODEL 102XX Heavy duty.**
  - Rotation torque: 600 Kg/cm.
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R-820 Communications receiver
TS-700-SP. All mode 2M. transceiver.
TS-600-A All mode transceiver
TS-7000-A 2 M. FM, 25W. Transceiver
TR-7500 2 M. FM, 10W transceiver
TR-7600 2 M. FM digital transceiver 800 CH.
TR-8300 70 CM. FM. Transceiver
VB-2200-A. Power booster for TR-2200
VFO-30-G Remote VFO for TR-7200 TX-12. MHZ-RX. 45. MHZ.

KENWOOD PRODUCTS:

TS-120-V all solid state transceiver 30 W.P.E.P.
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TS-700-SP. All mode 2M. transceiver.
TS-600-A All mode transceiver
TS-7000-A 2 M. FM, 25W. Transceiver
TR-7500 2 M. FM, 10W transceiver
TR-7600 2 M. FM digital transceiver 800 CH.
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KENWOOD AMATEUR RADIO EQUIPMENT
This was the good news for Australian amateur operators given to the WIA Queensland division convention by the Federal Liberal Member for Bowman, Mr. David Jull, as reported by Don VK4AMA.

More than 100 people heard Mr. Jull, a Parliament broadcasting committee member, open the convention at St. Lucia, Brisbane, on October 14.

More than 200 operators, friends and guests attended the convention at some time over the week-end and the good news travelled fast.

Mr. Jull said: "The decision for channel 5A to be used in metropolitan areas has been completely shelved and won't happen. "Furthermore, an investigation is now under way by the department to eliminate those areas that are using channel 5A for translator facilities in some of the country TV areas".

Mr. Jull said he believed it hadn't been for the pressure by Institute members, channel 5A use would have gone ahead. Australia would have been in all sorts of trouble and got into a ridiculous situation, certainly internationally. "The power of the people is something that is often debated... in Parliament House. It is very easy to get yourself cut off from the outside world. "Consequently, we found out from the Institute's members of the very real concern that you were having about the possibility of channel 5A being used. "May I congratulate members and people who approached Members, who wrote to the Minister and who wrote to committee members. "In fact, they formed themselves into a very satisfactory and hard hitting lobby group."

On channel 0 changes, Mr. Jull said the original idea was to transfer channel 0 stations in Melbourne and Brisbane to Channel 10.

But this would have caused problems in areas like Traralgon, Victoria, and Toowoomba, Queensland. Channel 5A was then a very real alternative.

On October 11, it was announced that Channel 0, Melbourne, was going to channel 10 as soon as possible. "I should think a similar announcement will be made in Brisbane about the fate of Universal Telecasters," said Mr. Jull, a former Channel 0, Brisbane, employee.

"Both stations I understand are quite pleased about the change because that certainly suits their network arrangements as well."
Ian Binnie VK4ZEB (f) and Roger Davis VK4AAR discuss Roger's radio course study guide.

(On October 12, the Post and Telecommunications Minister, Mr. Staley, announced the Federal Government was considering a proposal to change ATV-0's frequency to channel 10. He said before a final decision, he would invite comments from all affected stations and from the industry body.)

(Universal Telecasters manager, Mr. R. Archer, is reported to have said that ATV's proposal had no bearing on Brisbane's frequency.)

Questioned, Mr. Jull told the convention he believed quite a few adjustments could be made in Victoria. Queensland was not quite so bad, but channel 5A was just not on and that was terribly important.

He said the fact channel 0 was shifting would make him think that amateur radio operators would automatically get back to 50 MHz and up, the international 6 metre band.

He said there was worry with an initial concept that with Brisbane and Melbourne going to channel 10, the Special Broadcasting Service would take over channel 0 right round Australia.

"That's not on now either," he said.

Asked if the channel 0 change would alter the government's decision so far as WARC was concerned, Mr. Jull said he would get an answer for the Institute.

In covering several topics, Mr. Jull said he was terribly concerned with what was happening with the planning of the frequency spectrum in Australia.

A lot of stop gap decisions had been made. In many frequency areas, the country was starting to get into trouble.

There had to be much more time spent in the planning of frequencies and on their use if there was going to be some rational planning position.

CB radio was a major problem about to be faced. It was already a problem of the magnitude that many don't realise.

"I'm not here to decry CB operators en masse, but we certainly have problems with many people who call themselves CB operators."

Mr. Jull said: "We all know of the decision to go to UHF that is supposed to happen in 1982.

"There have been estimates of from 400,000 to 1.2 million sets on 27 MHz now. If they are supposed to become illegal in 1982, there is going to be tremendous pressure from that part of the community.

"It is going to be a hard decision when you consider the number of legal battles that may have to be faced.

"One would hope that when the Wireless Telegraphy Act is completely re-written and it must be re-written, that some of these hard decisions for government will be written fairly and squarely in the Act."

"If there is a delay in that Act coming to Parliament, that could be better in the long run."

"But will a government have the strength to fulfill that ultimate decision to take those sets off 27 MHz in 1982?"

"It's something I certainly ask for your co-operation."

"I think it is a very good idea for your members as a group to continue to pressure the minister on that point to make sure that decision is ultimately made."

"CB operators have had five years notice."

"Despite that, I feel we are going to have a fight on our hands."

"Anything you can do to alleviate that would certainly be appreciated."

"I think by the experience of channel 5A, you probably realise the amount of power and punch that an organisation such as yours can have."

"Indeed, if there are any other areas of these particular operations that concern you, I would ask that you submit objections so that again a concerted approach can be made to try to get some sensible and sane decision by government."

Mr. Jull spoke on the long delays in the handling of amateur examinations.

He said the management division had suffered a number of problems since the introduction of CB radio.

A review last year recommended 105 new positions. This had been whittled down to 67.

However, negotiations were under way with the Prime Minister.

An announcement of a staff increase was expected in a few weeks.

Questioned about how the department would cope in 1982, Mr. Jull said the last job anyone in the world would want at the moment would be that of a radio inspector.

In Brisbane, there were up to 50 and 60 TVI complaints a day. If there were 10,000 RIs, a start might be made tackling the problem.

"One can only hope that something like an army of RIs will be available to clean up the place," he said.

(The statements attributed to Mr. Jull, M.P., in this article have been checked against a copy of a transcript of the Opening Address supplied by the VK4 Division. Minor differences in wording occur, however the meanings are the same—Ed.)
7. The Teleradio 3BZ transmitter is a 8 to 12 watt AM/CW transmitter covering the frequency range 2.5 to 10 MHz using up six crystals to control its frequency. The output stage is the common 807 which is plate and screen modulated by a pair of 6V6-G valves in parallel. The unit works off 12 volts DC and draws 7.5 amps on transmit, which is about two amps more than the No. 122 set putting out the same power and including its receiver current drain too. The 3BZ could not be considered to be economical in its use of power.

The transmitter is reputed to have been used extensively by the coast watchers in WWII. The unit is extremely sturdily built and weighs 20 kilograms, and the companion 3BZ receiver weighs 19 kilograms — the weight of the accumulator is extra. The 3BZ enjoyed reasonable popularity amongst amateurs as it was easy to get at to do the various modifications they may have thought necessary. The circuitry is very ordinary and no doubt this is why it proved popular.

8. The 3BZ receiver, the companion to the 3BZ transmitter came in several different versions, the main difference being in the frequency ranges covered. The receiver in the photograph covers from 200 kHz to 30 MHz with a small gap between 520 kHz and 540 kHz, the IF frequency being 530 kHz. These sets were used in ships, coast watchers and many other areas. The set will operate on either 6 or 12 volts DC. The circuitry of the set is very ordinary having an RF stage, converter, one IF stage, a BFO and two audio stages. A vibrator Supply provides the HT for the set. A separate loudspeaker goes with the receiver.

These sets proved popular as general purpose communications receivers with many people, and until recently were still being used on board some Australian ships as their main receiver — not bad for a set 30 years old. Amateurs also found the sets good and many used them but no doubt most are gathering dust now.
JOHN MOYLE MEMORIAL FIELD DAY
CONTEST — RULES, 1979

Amateur operators and Short Wave Listeners are invited to make this contest, held in the memory of the late John Moyle, a huge success. Contestants may participate either as individuals or as part of a group. There are two divisions in this contest. The first is for 24 hours continuous operation, and the second for any continuous period of 6 hours. Either period must be within the 28 hours available.

CONTEST PERIOD
From 0400Z 10th February to 0600Z 11th February.

OBJECTS
The operators of portable field stations or mobile stations within the VK and P29 call areas will endeavour to contact other portable, mobile or fixed stations in VK, P29, ZL and foreign call areas on all bands.

RULES
1. In each division there are 8 sections.
   (a) Portable field station, transmitting phone.
   (b) Portable field station, transmitting CW.
   (c) Portable field station, transmitting phone, multi-operator.
   (d) Portable field station, transmitting open, multi-operator.
   (e) Portable field station, transmitting open, multi-operator.
   (f) VHF portable field, or mobile station, transmitting.
   (g) “Home” transmitting stations.
   (h) Receiving portable and mobile stations.
2. In each division, 24 or 6 hour, the operating period must be continuous.
3. Contestants must operate within the terms of their licence.
4. A portable field station must operate from a power supply which is independent of any permanent installation. The power source must be fully portable, i.e., batteries, motor generators, solar panels, etc.
5. No apparatus may be set up on site more than 24 hours before the contest.
6. All amateur bands may be used, but cross band operation is not permitted.
7. Cross mode is permitted, but note Rule 21.
8. All operators of a multi-operator station must be located within approximately an 800 metre diameter circle.
9. Each multi-op. transmitter should maintain a separate log for each band. A 2 FM rig may be separate from 2 AM or SSB rig, but note Rule 11. A separate QSO number series is required for each band.
10. All multi-op. logs should be submitted under one call sign.

11. Only one multi-op. transmitter may operate on a band at any one time.
12. RS or RST reports should be followed by serial numbers beginning at 001 and increasing by one for each successive contact.
13. SCORING FOR PORTABLE FIELD STATIONS AND MOBILES. Portable field stations and mobiles outside entrant’s call area — 15 points. Portable field stations and mobiles within entrant’s call area — 10 points. Home stations outside entrant’s call area — 5 points. Home stations within entrant’s call area — 2 points.
14. SCORING FOR HOME STATIONS. Portable field stations and mobiles outside entrant’s call area — 15 points. Portable field stations and mobiles within entrant’s call area — 10 points.
15. Portable field stations may contact any other portable field station twice on each band and mode within the period of the contest that provided at least 4 hours elapse after the previous contact with that station on that band and mode.
16. Stations may be worked repeatedly on 52 MHz and above providing 2 hours have elapsed since the previous contact on that band and mode. Note that FM, AM, SSB and any other voice modes are grouped together as PHONE.
17. Operation via active repeaters or translators is not acceptable for scoring.
18. All logs shall be set out under headings of date-time in GMT, band, emission, call sign, RST sent, RST received, and points claimed. List contacts in correct sequence. There must be a front sheet to show — name, address, division, section, call sign, call signs of other operators, location, points claimed, equipment used and power supply. You must also certify that you have operated in accordance with the rules and spirit of the contest.
19. Certificates will be awarded to the highest scorer of each section of the 6 hour and 24 hour divisions. The 6 hour certificates cannot be won by the 24 hour entrants. Additional certificates will be awarded for excellent performance.
20. Entrants in sections a, b, c, d, e and f must state how power for transmitting is derived.
22. Logs to be postmarked no later than 28 February 1979 and sent to F.C.M. Box 1065, Orange, 28000.

RECEIVING SECTION
This section is open to all short wave listeners in VK and P29 call areas. Rules are as for transmitting stations, but logs do not have to show report and serial number of the second station. Logs must 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 14 for home stations. A station calling CQ does not count. Portable and mobile stations, which must be listed in the left hand call sign column of your log, alone count for scoring. Stations in the right hand column may be any station contacted. A certificate will be awarded to the highest scorer of each of the 6 and 24 hour divisions, individual or multi-operator entries. Certificates will be issued for excellent performance.

PROCEDURES — PROCEDURES

What’s that?
What are we on about again?
We’re on about what happens when you report Intruders!

The first question asked by a new recruit to the Intruder Watch most usually is — "When you get our reports, what do you do with them? What happens?"

Well now! That’s a moot question, and can only be answered by giving you a complete run-down on our procedures —

Firstly — Reports are received from you on our form “Observer’s Log Sheet”, or on form Appendix 8, according to whether the intruder has been identified or not.

At the end of each month all Appendix 8 card copies are taken in to the Frequency Management Division of the Postal and Telecommunications Branch in Marland House, Bourke Street, Melbourne for appropriate action or filing. The green, or top copy is filed by the Federal Co-ordinator, and the yellow, or centre copy by your Divisional Co-ordinator.

The Federal Co-ordinator or his assistant then transfers all reports, both Appendix 8 and the Observer Log Sheet to forms designated IARUMS/S, and forwards them to the Regional (3) Co-ordinator. After receiving the Australian, New Zealand, and any other Region 3 reports, these forms are sorted into order of frequency and forwarded to the Headquarters Co-ordinator in the United Kingdom who, along with all the Region 1 and Region 2 reports compiles a World Summary (usually consisting of 20 pages of 60 or more reports per page) which he distributes to all Societies and Administrations throughout the world (65 copies in all).

It is known that these summaries will be taken into account by the delegates at WARC 79 this year, and will be used as
Evidence against those countries perpetuating intrusions. Both the Regional (3) Coordinator and the Assistant Federal Coordinator keep weekly schedules with the Co-ordinators in Region 1 and in Region 2 comparing reports and any relevant matters concerned with them.

Any reports that warrant immediate action are brought to the notice of our Administration, and during our skeds to the Region 1 Co-ordinator, who then acts upon them reporting to the British Post Office and to the Foreign Office. Very often he gets results by so doing.

Our Administration will not act upon any one individual report, but requires many more on any one intruder. Neither will they act unless their monitoring station can receive and verify the reports. Thus, it is incumbent upon us, the Amateur Observers, to supply as many reports as possible on any one intruder, and therefore, it is necessary to have many Observers to supply these reports.

Recently, it has been noticed that many more intruders are operating in our bands, especially on the 14, 21 and 28 MHz bands. Some occupy more than their fair share of any one frequency segment.

The Intruder Watch is constantly aware of this and of the devastating effect that some S9+ signals have on the Amateur Service. However, as specified above, without the number of reports necessary very little can be done.

Identification of the modes used by intruders can be ascertained by listening to the Region 3 identification tape which has been up-dated, and copies obtainable by forwarding a blank cassette or reel to the undersigned.

GO TO IT! WE NEED TO BE MORE VIGILANT.

Alf Chandler VK3LC
Region 3 Intruder Watch Co-ordinator

ATV NOTES

The photograph shows the British Amateur Television Club award which Winston VK7EM, recently received. Details of the award were published in AR in March 1978 but to briefly reiterate the requirements — 10,000 points must be logged at the rate of 2 points per kilometre for a successful identification of a fast scan amateur television transmission with a bonus of ten points for a confirmed two-way transmission. All Winston's contacts were with VK3 or VK5. It appears to be the first CO TV award issued. Congratulations Winston.

Winston has written to notify readers of his intention to be active again this summer from his home QTH of Penguin. He will be looking for any VK3 or VK5 station interested in ATV DX.

The equipment at VK7EM is all home brew except for the monitors. Pictures are transmitted on 426.25 MHz with inter-carrier sound on 431.75. Approximately 15 watts are fed to a broadband array with a clear view of Bass Strait towards Melbourne and districts further East.

Since his first two-way contact across Bass Strait in February 1972 he has taken part in 160 QSOs where test cards, photos and scenes around various shack have been exchanged. The highlight of last season was the reception of pictures from Trevor VK5TH, at Mt. Gambier, a distance of 550 km. The current Australian record of 550 km. The current Australian record of 550 km.

Our Administration will not act upon any one individual report, but requires many

WHY LISTEN TO SHORTWAVE BROADCASTING?

One of the least efficient users of the HF spectrum is International Broadcasting. This service still uses double-sideband AM emission, transmits the same programme on several frequencies in the same band, often to the same target area, and operates with seemingly unlimited power. Yet, a very basic question is seldom asked or ever asked, by broadcasters: Who is listening? Think of the people you know. How many of them use shortwave broadcasting as a source of news or entertainment? Unless you know an SWL hobbyist who collects QSL cards and who probably cares very little about the programme content of the stations he is listening to, chances are that you know very, very few people who pay attention at all to these high-powered broadcasts. In their travels to dozens of countries on all continents, the members of the International Amateur Radio Union (IARU) headquarters team have asked the question time and again, and generally have received the same answer. Even in the remote corners of the world, the regular audience for shortwave broadcasting is vanishingly small. Yet the greatest demands for more spectrum between 3 and 30 MHz are coming from the broadcasters.

Broadcasters often speak in terms of "hundreds of millions" of listeners, and use questionable statistical techniques to bolster this claim. Last year the League commissioned SRI International (formerly the Stanford Research Institute) to study the available reports on the size and composition of the shortwave broadcasting audience and prospects for future growth. The 40-page SRI report, which was included as an appendix to the League's filing, concluded: "Reduced to a single comprehensive statement, this study clearly shows that any demands made by HF broadcasters for increased spectrum due to increased audience demand simply cannot be supported by the information now available."—From WARD Newsletter No. 18 of IARU.

Page 30 Amateur Radio January 1979
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Hustler — 4 BTV w/80m Resonator, Vert. Antenna $135

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YAESU: FT101E (NEW STOCK — END NOVEMBER) $899
FT301 $930
FT301D $1090
FP301 $175

TRIO KENWOOD: TS520S P.O.A.
TS820 P.O.A.
TS820S P.O.A.

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MLA-2500

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Tired of push-button QSOs? Had it with the KW killers? The almost too easy life of power hamming? Then the excitement of Argonauting is for you. The QRPP world is different. A challenge? Of course. The test of an operator? Perhaps. But above all it is the thrill of working the world with 5 watts.

The Argonaut club is exclusive, not everyone is a member. But if you enjoy the spirit of conquering distance with lower power, you are "in." There are no dues — just the price of an Argonaut.

Join the thousands of fellow members in the Argonaut club, get in on the Argo fun. Your membership awaits you at your Ten-Tec dealer.

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- **TH3-JR** 10-15-20M junior 3 el. Yagi 12’ boom .................. $175
- **204-BA 20M** 4 el. Tiger Array 26’ boom ......................... $320
- **HY-QUAD** 10-15-20M full size Cubical Quad ....................... $260
- **2M 8 el. Yagi** with balun 126” boom ................................. $30
- **2M 5 el. Yagi** ............................................ $25
- **2M 14 el. Yagi** ........................................... $40
- **Bin-86 Balun for HY-GAIN beam buyers only** ..................... $20
- **BU-5 Balun suitable for 10M beams** ................................ $14

### ANTENNAS SUITABLE FOR 10M:

- **11M 5 el. Yagi** 17’ boom ........................................... $70
- **11M G.P. with 3 radials** ........................................... $20
- **CLR-2 11M 5/8 wave vertical w/3 radials 19’10”** ................. $40
- **CLR 11M 5/8 wave vertical w/4 radials 22’9½”** .................. $50

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- **Gutter Mount with ¾” 24 thread antenna mount** ................. $4.50
- **5M length RG-58U with PL-259 one end** ............................ $3
- **M-Ring body mount** ........................................... $3
- **12V Regulated supply** ........................................... $26
- **GLP Right angle RG-58U to SO-239 w/lock nut and weatherproof cap**..... $3.50
- **MLS Flight angle RG-58U to PL-259** ............................. $90c
- **PL-259 standard & solderless, RG-8U & RG-58U** ................. $75c
- **In-line splice RG-8U & RG-58U** ................................ $75c
- **SO-239 chassis connector 2 & 4 hole mounting** .................. $75c
- **Right angles & T-connectors** .................................... $1.50
- **Double male & Double female connectors** ........................ $80c
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- **Channel 51 T/R 146.55** ........................................ $5 pair
- **Channel 64 T/R 146.20** ........................................ $5 pair
- **No. 14 hard drawn copper wire** ................................ $10 per meter
- **¾” H.D. foam coax extra low loss** ................................ $1 per foot
- **Type RG-8U foam coax** ......................................... $80c per yard
- **Type RG-58U coax** ............................................. $30c per yard
- **8 core rotator cable** ............................................ 65c per yard
- **KEN KR-400 rotator with 28V AC control box** .................. $125
- **CERAMIC III rotator with 28V AC control box** ................ $175

### KENWOOD PRODUCTS:

- **TS-520S** 10-160M SSB/CW transceiver 240V AC .................. $700
- **TS-820S** 10-160M SSB/CW w/Digital readout ..................... $1100
- **TL-922 10-160M Linear Amplifier** ................................ $1200
- **TS-700SP 2M all-mode transceiver** ................................ $800
- **TR-7400A 2M transceiver** ...................................... $475
- **TR-7500 2M transceiver** ........................................ $275
- **DG-5 Digital display for TS-520S** ................................ $200
- **TV-506 6M transverter** .......................................... $225
- **TV-502 2M transverter** ........................................... $275
- **AT-200 Antenna matchbox** ........................................ $175
- **DS-1A DC-DC converter** ........................................... $70
- **DK-520 adapter for DG-5 to TS-520 use** .......................... $20
- **LF-30A low pass anti-TFI filter** ................................ $30
- **VFO-520 external VFO for TS-520S** ................................ $175
- **VFO-520S external VFO for TS-520S** ................................ $150
- **SP-520 external speaker for TS-520S** ................................ $40
- **SP-520 external speaker for TS-520S** ................................ $30
- **YG-88C CW filter for TS-520S** .................................. $55
- **YG-3395C CW filter for TS-520S** ................................ $50
- **MC-10 hand held microphone** ..................................... $20
- **MC-50 desk microphone** ......................................... $45
- **HC-2 Ham clock** .................................................. $25
- **SM-220 Station monitor** ........................................... $300
- **BS-5 (TS-520S) & BS-8 (TS-520S) pan adaptors for SM-220** .................. $55
- **TS-120V 12V DC mobile transceiver with NB, VOX, IF Shift & digital readout, 30W PEP** .................. $600

### NOVICE SPECIALS:

- **Transceivers for 10M coverage, AM/USB, 15W PEP** —
  - **SIDEBAND SE-502** 240V AC/12V DC win built SWR/RF meter 28.3-28.6 MHz .................................... $150
  - **UNIVERSE 224M** 12V DC 24 ch. 28.480-28.595 in 5KHz steps Clarifier operates on both transmit & receive .......... $125
  - **Set of Crystals for Amateur license holders for converting 23 ch. 27MHz CB units to 28MHz, suitable SIDEBAND, UNIVERSE, KRACO, HY-GAIN etc. SSB/AM units** .................. $40

### SUNDRIES:

- **FRG-7** 5-30MHz General Coverage receiver ........................ $350
- **FL-2100B Linear Amplifiers** ....................................... $550
- **FT-7** 10-80M 12V DC transceiver .................................. $525
- **ICOM IC-202 2M SSB portable transceiver** ....................... $175

All prices quoted are net, ex Springwood NSW, cash with order, subject to change without prior notice. All risk insurance is free; freight by air, road, rail or post at cost. All orders cleared on a 24 hours basis after receipt with payment.

Arle Bles (VK2AVA) Proprietor

Roy Lopez (VK2BRL) Manager
FT-901DM, 160-10M Transceiver $1585.
FT-901DE, 160-10M Transceiver $1375.
FV-901, External VFO for FT-901, Inc. pan adap. $349.
YO-901, Monitorscope for FT-901, Inc. pan adap. $112.
FT-901E, 160-10M Transceiver $1599.
YP-150, Dummy Load-Watt Meter $112.
QTR-24, 24 hr. World Clock $33.
YD-150, Dynamic Desk Mic $49.
FC-301, Antenna Tuning Unit Inc. SWR, PWR meter. $239.
FTV-250, 2M Transverter $329.
FF-501, DX 2kW Low Pass Filter $41.
TOYO. $18.
2 Position COAX Slide Switches 3.5-430 mHz YES POST FREE!!!!

ANTENNAS

HI-MOUND

MISCELLANEOUS ACCESSORIES.

SWR-200, Large dual meter SWR, $79.
D1awu 2 Post. Coax Switch $59.
5 position coax switch... $79.
TW5-120, 2 Position slide coax switch $22.
M-330, Dlawa Mic. compressor... $70.
5D-fb, Foam filled coax double shielded 2.02 dB loss per 100 feet. $1.20 per meter. $1.20 per meter.

EMOTATOR

BANKCARD

MORSE KEYS.

All Australian made DUO-Band Beams -15-10 M.4 elements only $159.00.
All Australian made Trap Beams.

NEW!!

SOLE AUSTRALIAN DISTRIBUTOR CHIRNSIDE ELECTRONICS.

ALL AUSTRALIAN MADE TRAP BEAMS.
FOR AMATEUR BANDS.

MADE WITH LOCAL COMPONENTS.
SOLID CONSTRUCTION.

All Australia made DUO-Band Beams -15-10 M.4 elements only $159.00.

CHIRNSIDE ELECTRONICS
26 EDWARDS RD.
LILYDALE 3140.
PHONE (03)726 7353
Our price only $399.

Prices and specifications are subject to change without notice.

New also available

All Australia made DUO-Band Beams -15-10 M.4 elements only $159.00.

Soon available ALL BAND trapped verticals.

DEALERS WANTED IN ALL STATES NOW.
AMATEUR SATELLITES
Bob Arnold VK3ZBB

RUSSIAN SATELLITES
On the morning of 28 October we were thrilled to hear the first signs of the new Russian OSCAR in its second day of operation. Its presence was first noted by Andy VK3ZWO and later by Peter VK7PF, and efforts were made to alert interested amateurs across the country. By the same evening contacts were being made by VK and ZL stations and these were repeated by more enthusiasts the following day. Excellent QSOs were achieved and the code of the satellite; some study was carried out to interpret the data — without significant result!

Perhaps the most interesting early observation was that RS1 was travelling in the opposite direction to the AMSAT OSCAR series, i.e. North to South for evening passes.

Later information confirmed the presence of two satellites RS 1 and RS 2, each with identical orbital parameters but with RS 2 running twenty minutes ahead of RS1. The two can be identified by observing the telemetry data. This comprises seven or fourteen groups of letters and figures, the following being typical:

- P01U
- C18U
- Z31U
- L83U
- B45U
- H38U

To stabilise the satellite electronics and to obtain some useful transmission, the batteries were switched off but we must emphasise that RS1 was not considered to be reliable.

HOW TO FIND THE RS SERIES
Passes around 4 and 5 are visible in the Eastern States each night and passes around 10 and 11 in the morning. Each pass is roughly two hours, so for pass 5 add eight hours to the time of Pass 1 from the table, then add 1 hour (for Melbourne, and a few minutes less for locations further north) to allow for the time the satellite takes to travel from its equator crossing to its acquisition time north of Australia.

Therefore, for pass 5 on 1 Jan. 1979 the acquisition time in Melbourne is 0043 + 0800 + 0100 = 0943 GMT or 8.43 p.m. EAST.

The ascending node will be 250° (from the table) plus 4 x 30° minus 360°, i.e. AN 10.

The path of ascending node 10 is roughly 195° Lat. 40°N, over Rabaul PNG, over Launceston, Tas. The path of any other ascending node can be found by adding or subtracting the difference between that AN and AN 10 quoted above and drawing a line parallel to the one described above. Don't forget the calculations given are for RS 1, RS 2 will be twenty minutes earlier.

I must emphasise that no official information has been released on RS 1 and 2 and it is only through contacts with many friends that I have been able to compile this report. I particularly thank the following for their enthusiasm and assistance:— VK3ACR, VK7PF, VK5HI, VK3QI, VK5ZIM, VK4ZIL, VK3ZDE, VK2ALU, ZL3AAD, JA1 ANG.

OSCAR ACHIEVEMENT AWARD
I know that many OSCAR operators have worked many Australian States and countries within the range of OSCARS 6, 7 and 8, but only four have yet claimed the OSCAR Award. The “old timers” particularly should have received confirmation of their contacts, so why not send in your claim? All you need is confirmation from six Australian call areas together with two other countries. Send your QSLs to Col. Hurst VK6HI, 8 Armadale Road, Salisbury Park, S.A. 5109, and receive your attractive certificate. Let's show the rest of the world that we do have a few able operators in Australia. Without this support we shall be left for dead when new ventures are being planned — possibly it is already happening.

AMSAT — OSCAR 7
Battery troubles still plague AO7 and communication difficulties have been noticed from time to time. Col VK5SHI reports that the battery temperature has been up to a high 58°C and this no doubt accounts for fairly continuous operation on Mode B in early November to cool things down.

Slightly varied parameters are given in the table to enable enthusiasts to calculate their own orbital data for future months.

AMSAT PHASE III
Revised frequencies for the Mode B transponder are given in the table.

AMSAT — OSCAR 8
Revised parameters in table.

<table>
<thead>
<tr>
<th>SATELLITE PARAMETERS</th>
<th>REVISION 3. NOVEMBER 78</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>A07</td>
</tr>
<tr>
<td>Launch Date</td>
<td>15 Nov. 74</td>
</tr>
<tr>
<td>Inclination Degrees</td>
<td>101.7010</td>
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<tr>
<td>Orbit Period Minutes</td>
<td>114.945247</td>
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<td>Orbit Increment Deg.</td>
<td>28.736717</td>
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<td>Apogee km</td>
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<tr>
<td>Perigee km</td>
<td>1450</td>
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<td></td>
<td>Max. Inp. 10W ERP</td>
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<tr>
<td>MODE A</td>
<td></td>
</tr>
<tr>
<td>UP</td>
<td>145.85-145.95 RC</td>
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<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td>29.4-29.50</td>
</tr>
<tr>
<td>MODE B</td>
<td></td>
</tr>
<tr>
<td>UP</td>
<td>432.125-432.175 LC</td>
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<td></td>
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<tr>
<td></td>
<td>145.925-145.975 LC</td>
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<tr>
<td>MODE J</td>
<td></td>
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<tr>
<td>UP</td>
<td>145.90-146.00 LC</td>
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<td></td>
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<tr>
<td></td>
<td>435.10-435.20 Inverted E</td>
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<tr>
<td>BEACONS</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>29.502 L</td>
</tr>
<tr>
<td>A</td>
<td>435.10 RC</td>
</tr>
<tr>
<td>B</td>
<td>145.972 LC</td>
</tr>
<tr>
<td></td>
<td>2504.1 LC</td>
</tr>
</tbody>
</table>

Polarisation for Southern Hemisphere:
- L — Linear.
- LC — Left hand Circular.
- RC — Right hand Circular.
OPERATING
No new DX stations have been reported recently although it is probable that some new call areas will be recorded when RS 1 is operating. It should be possible to work northern JA and most of SE-Asia from the Eastern States together with the Pacific area as far as Hawaii.

Martin VK4ZIL tells me he has worked all VK call areas including the elusive VK9 and VKO in the past few months to-  

awards

AWARDS COLUMN
Brian Austin, VK5CA
P.O. Box 7A, Clearfield, UT 84615

THE UNIVERSITY OF CAPE TOWN FESTIVAL AND AWARD 1979
To commemorate the 150th anniversary of the University of Cape Town, Cape Town, Republic of South Africa, the Cape Town Branch of the SARL will operate a special festival station with call ZS1-UCT (ZS1-University of Cape Town) and issue an award.

UNIVERSITY OF CAPE TOWN FESTIVAL STATION
Call Sign: ZS1-UCT.

Dates of transmission:

Time of transmission:
Saturdays and Sundays: 0600 GMT to 2000 GMT.
Weekdays: 0700 GMT to 1000 GMT; 1500 GMT to 2000 GMT.

Frequencys: 20 and 15 meters.

Use for calling. Actual frequency will depend on ORM.

40 metres — 7.250 MHz.
20 metres — 14.000 MHz.
15 metres — 21.000 MHz.
10 metres — 28.500 MHz.

Transmission modes:
All modes or combination of modes permitted.

All bands or combination of bands permitted.

Closing date for the award is July 1979.

No QSL cards are required. Send a copy of your log verified by two local amateurs.

Send applications to —
The Award Manager: ZS1MO, P.O. Box 5100, Cape Town 8000, Republic of South Africa.

10. A special indication is given for VHF contacts.

INITIAL ASSIGNMENT OF NEW W CALL SIGN

Prefix
Location

AH1, KH1, NH1, WH1
Baker, Canton, Ender- bury, Howland Is.

AH2, KH2, NH2, WH2
Quam

AH3, KH3, NH3, WH3
Johnston Is.

AH4, KH4, NH4, WH4
Midway Is.

AH5, KH5, NH5, WH5
Kingman Reef (except K suffix)

AH6, KH6, NH6, WH6
Palmyra, Jarvis Is.

AH7, KH7, NH7, WH7
Kure Is.

AH8, KH8, NH8, WH8
American Samoa

AH9, KH9, NH9, WH9
Wake, Wallis, Peale Is.

AL7, KL7, NL7, WL7
Alaska

AL8, KL8, NL8, WL8
Novaya Is.

KP1, NP1
Virgin Is.

KP2, NP2, WP3
Rancador Key, Quilla-

KP3, NP3, WP3
Bank, San Bern
erdal Bank, San Beren
dral Bank, San Bern
erdal Bank, San Beren
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dral Bank, San Beren
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**AMATEUR BAND BEACONS**

**20 MHz**
- **432.400 VK4RBB** — Brisbane
- **145.200 ZL2VHF** — Wellington
- **145.100 ZL1VHF** — Auckland
- **145.000 VK8RTV** — Perth
- **144.900 VK7RTX** — Ulverstone
- **144.800 VK5VF** — Mt. Lolty
- **144.700 VK3RTG** — Vermont
- **144.475 VK1RTA** — Canberra
- **144.101 VK2WI** — Sydney
- **143.200 VK1RT** — Melbourne

**50 MHz**
- **50.098 KG6JIH** — Guam
- **50.080 TI2NA** — San Jose
- **50.070 TK7HA** — Oregon
- **50.050 AU876** — New Brunswick
- **50.040 WJGJ** — Orange
- **50.020 WKKMA** — Oregon
- **50.010 KG6JFL** — Guam
- **50.000 VK8RTV** — Perth
- **49.990 V4Q** — Darwin
- **49.920 VK7RTX** — Ulverstone
- **49.810 VK6RTU** — Kalgoorlie
- **49.740 VK2** — Wagga
- **49.675 3D2AA** — Fiji
- **49.636 VK6RTU** — Kalgoorlie
- **49.600 5B4CY** — Cyprus

**10 MHz**
- **10.000 JD1YAA** — Marcus Island
- **10.000 KG6JDX** — Guam
- **10.000 KH6EQI** — Pearl Harbour
- **10.000 JD1YAA** — Marcus Island
- **10.000 KH6EQI** — Pearl Harbour

There will be those who will wonder at the sense of intense amateur activity, viz., Japan. But I am wondering at the sense of being able to hear JAS on 50 MHz and not able to work them because of our 2 MHz frequency difference. Given right conditions, of course, the MUF will continue to rise and JAS and others can then be worked on 50 MHz. And so the MUF can go on and on and up and up. When conditions change the MUF will slowly retract or go out quickly, but will often sit around 35 to 38 MHz for long periods. So a sweep of 30 to 54 MHz every so often is a good idea if you wish to see if someone is on the other side. So go out and see if you can examine the spectrum in its entirety because it is just possible that there may be a signal emanating from an area other than the north, e.g., Hawaii, with no FM signals to alert you, but as a general rule, there will still be a signal just below 50 MHz, as an indicator if you are likely to hear anything from other places anyway.

Receivers to tune 30 to 50 MHz or above are very scarce and the rather poor type of portable equipment available is not really suitable. There are a few coaxial antenna input sockets on the transceivers, but if you connect a Yagi or beam, it is likely you are listening to their front end selectivity is so poor that such problems must be present. So what to do?

If you are fortunate enough to get on to one of those small portable Army transceivers, then buy one. They are known as the PRC 10 or PRC 10A. They were made in the USA and used by the Australians and in fact were used by a lot of locals. They are well made, fully tuneable between 38 and 55 MHz with two RF stages in the receiver. They operate with 1.5 volts to the filament. If you attach an output has an output of about half a watt. They have a very reasonable bandspread, fitted with squelch, 1.5 MHz calibrator dial light switch, etc.

They are designed to work from dry cells, and have special valves of the 5678 series. 1.25 volts to the filaments, 67V4 volts at 25 mA and it needs to be at least that many volts, anything less and there will be no transmitters to both you and Kerry. To say that David VK5KK and I were pleased to work Bert also was an understatement! We worked Bert first, he had signals peak to 9. We worked him both as KH6EQI and also under his own call sign of K10D. He advised he is working as KH6EQI at 1016Z, sending 559 and receiving 559. Mark VK5AVOG tried hard to catch on to Bert but was unsuccessful. Several others tried, too. With a report, KH6EQI was able to catch in VK5, and managed to work 600 mm on 0945 to 1140Z with the strongest signals about 1300Z. So it’s been done from VK5 once again but unfortunately, no other stations. I believe AI VK5EK (ex VK52CR) worked Hawaii on six metres around 1960-61, and there is no support that this had been done by anyone heard during the last cycle.

**HAWAII WORKED ON SIX METRES**

Such a statement might not raise many eyebrows in northern VK but it does mean something when applied to southern States. As the reader will note from the extract last month, KH6EQI was finally worked in VK2 and VK5. To fill you in on the scene, perhaps we should start with this letter from Phil VK2DY, who lives in Moree, northern NSW.

"1-10-78: 0932 JAs 1, 2, 3, 4, 5 and 6. The 4, 5 and 6 gave me WAJA on six metres! 2-10-78: JAs 4, JAs 6 and 5 open for about 10 minutes. After a wait of some 18 years or so, it is about a dozen. You will not be given a second chance by me!"
certain the KH6EQI contacts would never have been made without the help of the beacon alerting those keen enough to listen and be on the air. Just because a beacon fails to flash does not mean it is out, it may be your turn next time, but it won’t be if you are not able to or prepared to spend the little time needed for this. Just don’t happen as a general rule, it means someone somewhere has done some homework in this case it was KH6EQI who was reporting enough to share in the final results. After KH6EQI had faded out, a number of JAs were worked in VK5 with signals to S9, which shows a pattern has been made without the help of the beacon alerting system. The KH6EQI contacts would never have been made without the help of the beacon alerting system. The KH6EQI contacts just don’t happen, a number of JAs were worked in VK5 with signals to S9, which shows a pattern of two stacked 8-element yagis for six metres which lower the vertical angle considerably.

VK2ZLL writes from Hargreaves, 40 miles north of Orange, to say he has been sharing in the increasing activity with VK9ZM. First contacts started on 18-9. On 14-10 he worked VK4XZ in Townsville, and further JA contacts on 15-10. VK4XZ was on S2/S3 with signals to S9. which shows a pattern of two stacked 8-element yagis for six metres which lower the vertical angle considerably.

VHF ADVISORY COMMITTEE

The VHF Advisory Committee was very encouraging to listen to the VHF broadcast of 5-11 and hear Peter Wollenden VK3PA, Chairman of the VHF/UHF Advisory Committee, saying he no longer sees any proliferation of the use of Channel 5A, particularly in the capital city areas. No doubt due in large amount of publicity we have tried to make in the last month. It appears the Japanese effectively know about the WIA and the general lobbying by amateurs in their own way has brought enough pressure to bear for the following to be done: we keep adding to the list, it is a work in progress. So of course they can work all they want to without having to worry about us. So it seems we are going to miss out on useful and unusual contacts through not operating on 50 MHz and unless P. and T. unbounds a little situation that is going to continue or some will take the chance and operate on 50 MHz and some won’t so of course they can work all they want to without having to worry about us. So it seems we are going to miss out on useful and unusual contacts through not operating on 50 MHz and unless P. and T. unbounds a little situation that is going to continue or some will take the chance and operate on 50 MHz and some won’t.

Many CBers operate on illegal channels with immunity because they are not known; we may find them and tell them the same if we wanted to, because of the needs to give call signs to confirm contacts.

Thought for the month: “Married life teaches one invaluable lesson: to think of things that are ahead not to say them.” That’s all for now. Many thanks to David VK5KK for providing the excellent notes last month.

73, The Voice In the Hills.

INTERNATIONAL NEWS

VHF, QRP, QRP

QSO

The Voice In the Hills.

TONGA

Printed in the September 1978 issue of Break-In is a letter to N2ART from the Supt., Dept. of Tel. and Tel., Nukualofa, Tonga, advising that all amateur radio licences expire 30th June each year and can only be renewed on written application at a T. and T. office.

QSP

PIRATES

It appears from the DX notes in Radio Communication October 1978 that pirate activities on the amateur bands are in demand by areas which can work 68 MHz.
The KENWOOD TS-120V HF Mobile Transceiver, packed with all the features for the Novice and Unrestricted Amateur — Check these features.

- Full band coverage 80m to 10m includes all crystals
- 30 Watts P.E.P.
- SSB-CW
- W.W.V.
- Digital Readout
- Rx sensitivity better than .25 UV S/N/N 10 dB
- Size 241 mm wide x 94 mm high x 235 mm deep.

Plus full range of accessories — VFO — Filters, etc.

KENWOOD TR-7600 VHF Mobile Transceiver.

- Power 10W or 1 Watt
- Memory
- Digital Readout
- Simplex and Repeater offset operation ±600 Hz
- Remote frequency control (available option)
- Size 60 mm Height x 160 mm Wide x 220 mm Deep
- Rx sensitivity better than .25 UV for 20 dB.

"TRIO-KENWOOD (AUSTRALIA) PTY. LTD."
31 Whiting Street, Artarmon, Sydney N.S.W. Australia 2064. Telephone (02) 438 1277

INTERSTATE DISTRIBUTORS:
Vic: Vicom Imports P/L (03) 699 6700
Qld: Mitchell Radio Co. (07) 57 6830
SA: International Communications Systems P/L (08) 47 3688
WA: Willis Trading Company (09) 321 7600
Tas: Advance Electronics (003) 31 5688
NT: R. J. Klose (089) 81 8704
CRYSTAL FILTERS - FILTER CRYSTALS - OSCILLATOR CRYSTALS
SYNONYMOUS for QUALITY and ADVANCED TECHNOLOGY

Listed is our well-known series of 9 MHz crystal filters for SSB, AM, FM and CW applications.

Export inquiries welcomed

<table>
<thead>
<tr>
<th>Filter Type</th>
<th>XF-9A</th>
<th>XF-9B</th>
<th>XF-9C</th>
<th>XF-9D</th>
<th>'XF-9E</th>
<th>XF-9M</th>
<th>XF-9NB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>SSB</td>
<td>SSB</td>
<td>AM</td>
<td>AM</td>
<td>FM</td>
<td>CW RTTY</td>
<td>CW RTTY</td>
</tr>
<tr>
<td>Transmit</td>
<td>SSB</td>
<td>SSB</td>
<td>AM</td>
<td>AM</td>
<td>FM</td>
<td>CW RTTY</td>
<td>CW RTTY</td>
</tr>
<tr>
<td>Number of Filter Crystals</td>
<td>5</td>
<td>9</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Bandwidth (6 dB down)</td>
<td>2-5 kHz</td>
<td>2-4 kHz</td>
<td>3-75 kHz</td>
<td>5-0 kHz</td>
<td>12-0 kHz</td>
<td>0-5 kHz</td>
<td>0-5 kHz</td>
</tr>
<tr>
<td>Insertion Loss</td>
<td>&lt; 3 dB</td>
<td>&lt; 3-5 dB</td>
<td>&lt; 3-5 dB</td>
<td>&lt; 3-5 dB</td>
<td>&lt; 3-0 dB</td>
<td>&lt; 5 dB</td>
<td>&lt; 6-5 dB</td>
</tr>
<tr>
<td>Input-Output Zt</td>
<td>500 pF</td>
<td>30 pF</td>
<td>30 pF</td>
<td>30 pF</td>
<td>30 pF</td>
<td>30 pF</td>
<td>30 pF</td>
</tr>
<tr>
<td>Termination Cj</td>
<td>30 pF</td>
<td>30 pF</td>
<td>30 pF</td>
<td>30 pF</td>
<td>30 pF</td>
<td>30 pF</td>
<td>30 pF</td>
</tr>
<tr>
<td>Shape Factor</td>
<td>(6:50 dB) 1-7</td>
<td>(6:60 dB) 1-8</td>
<td>(6:60 dB) 1-8</td>
<td>(6:60 dB) 1-8</td>
<td>(6:60 dB) 1-8</td>
<td>(6:60 dB) 2-3</td>
<td>(6:60 dB) 2-2</td>
</tr>
<tr>
<td>Ultimate Attenuation</td>
<td>&gt; 45 dB</td>
<td>&gt; 100 dB</td>
<td>&gt; 100 dB</td>
<td>&gt; 100 dB</td>
<td>&gt; 90 dB</td>
<td>&gt; 90 dB</td>
<td>&gt; 90 dB</td>
</tr>
<tr>
<td>Price</td>
<td>$ 40-65</td>
<td>$ 55-10</td>
<td>$ 59-30</td>
<td>$ 59-30</td>
<td>$ 59-30</td>
<td>$ 41-50</td>
<td>$ 73-45</td>
</tr>
</tbody>
</table>

In order to simplify matching, the input and output of the filters comprise tuned differential transformers with the "common" connections internally connected to the metal case.

Registration Fee: $3.00; Air Mail: 31c per 1/2 oz. Shipping weights: Filters 2 oz. ea. Crystals 1/2 oz. ea. All Prices in U.S. Dollars.

Matching Oscillator Crystals

<table>
<thead>
<tr>
<th>Crystals</th>
<th>Frequency</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>XF900 Carrier 9000-0 kHz</td>
<td>$4-75</td>
<td></td>
</tr>
<tr>
<td>XF901 USB 8998-5 kHz</td>
<td>$4-75</td>
<td></td>
</tr>
<tr>
<td>XF902 LSB 9001-5 kHz</td>
<td>$4-75</td>
<td></td>
</tr>
<tr>
<td>XF903 BFO 8999-0 kHz</td>
<td>$4-75</td>
<td></td>
</tr>
<tr>
<td>F-06 Crystal Socket (HC25/u)</td>
<td>$50</td>
<td></td>
</tr>
</tbody>
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Matching FM Crystals

<table>
<thead>
<tr>
<th>Discriminators for XF-9E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freq</td>
</tr>
<tr>
<td>XD-9-01</td>
</tr>
<tr>
<td>XD-9-02</td>
</tr>
<tr>
<td>XD-9-03</td>
</tr>
</tbody>
</table>

SPECTRUM INTERNATIONAL INC. Box 1084A, Concord, Mass. 01742 USA

EMONA electronics
Head Office, Sales & Service: 23 Judge St., Randwick 2031. Ph. 398 6378
City Branch: Room 208/661 George St., Sydney 2000. Ph. 212 4815
Cable Address: EMONA Sydney. A.H. CALL 398 6378

ALDA 103
totally solid state
SSB Transceiver
80 through 20 metres
250 WATTS
ONLY $495

GENERAL SPECIFICATIONS:
Semiconductors: 39 diodes, 23 transistors; 11 integrated circuits
Power Requirements: Nominal 13.8V DC input at 15 amps, negative ground only.
Power Consumption: Receive — 5.5 watts (includes dial and meter lamps); Transmit — 260 watts
Dimensions: 3 1/4" high x 8" wide x 12 1/2" deep
(82.55 mm x 228.6 mm x 317.5 mm)
Weight: 8 1/4 lbs (3.66 kg)

PERFORMANCE SPECIFICATIONS:
Frequency Range: 80 metre band — 3.5 to 4.0 MHz
40 metre band — 7.0 to 7.5 MHz
20 metre band — 14.0 to 14.5 MHz
Modes: CW, USB, LSB
RX IF Power: SSB — 250 watts PEP nominal
CW — 250 watts DC maximum
(adjustable)
Antenna Impedance: 50 ohm, unbalanced
Transmitter: Carried Suppression: Better than 45 dB
Side-Band Suppression: Better than 55 dB at 1000 Hz
Distortion Products: Better than 25 dB
AF Response: 500 to 2500 Hz
Spurious Radiation: Harmonics better than 45 dB below 30 MHz; better than 60 dB above 30 MHz
Frequency Stability: Less than 100 Hz drift per hour
(IF from a cold start at room temp.)
Microphone: High impedance 3000 ohm
Receiver: Sensitivity: Better than 0.5 watts audio output for 0.5 Vp input
Signal-to-Noise Ratio: Better than 10 dB S+N/N for 0.5 Vp input
Image Ratio: Better than —60 dB
(10 dB with respect to 0.5 Vp input: 80 metres — 130 dB; 40 metres — 100 dB; 20 m — 75 dB).
IF Rejection: Better than —70 dB
(10 dB with respect to 0.5 Vp input: 80 metres — 110 dB; 40 metres — 100 dB; 20 m — 75 dB)
Intermodulation Intercept Point: Better than 10 dB
Selectivity: 2.5 kHz — 6 dB; 5.0 kHz — 60 dB
Audio Output Power: More than 3 watts
Audio Distortion: Less than 5% at 3 watts

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Air Mail to USA and Europe: $A46.20
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....................................................................................... Postcode ........
Post to: Amateur Radio Action Subscriptions, Box 628E, Melbourne 3001.
LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

Dick Ashton VK5DQ
P.O. Box 11, Woomera, SA 5720
28th October 1978

The Editor,

Dear Sir,

I thought that you might be able to use the enclosed "press" we got from the Woomera newspaper (The "Gibber Gabber") in Amateur Radio. We don't often get mention in AR, so how about putting it in? — (Yes, most happy to — is published elsewhere in this issue — Ed.)

We are involved in regular (not quite weekly) Sunday morning QSOs with other SA Scout stations since the virtual demise of the 80 metre weekday night SA Scout net. Our skeds are with VK5BN and VK5BFT on 7070 +/- QRM most Sunday mornings at about 10.30 SA time, after the VK5 40 metre call-back has concluded. A number of Jamboree-on-the-Air stations in the Eastern States and Tasmania have expressed interest.

The Editor,

Dear Sir,

Your reply to Ron Goodwin VK2BNK, page 45, AR October 1978, is, is, this lack of interest with some operators and so after some 400 point scoring contacts, I turned the equipment off and vowed to never again enter any on-air contest that did not discriminate against the poor operator, or one that allows the idiot, the unthinking and ratbags to certify that they had operated in the spirit of the contest. Let us all look at our operating habits and if found wanting in some areas, don't shrug it off as a joke, do something about solving the problem. After all, amateurs are not the only ones who listen on our frequencies. Remember the slogan "use them or lose them"? How about, use them, but don't abuse them or lose them . . .

Perhaps next year, depending on rule conditions we will again try the RD . . .

Ian Foster VK3BLF,
Watts Road, Nicholson 3862.

10 Farrow Street, McDowell 4553.

The Editor,

Dear Sir,

A letter appeared in issue 6 of Amateur Radio Action (not AR) which complained of the Intrusion of full-grade operators into frequencies allocated for Novice usage.

This letter was attributed to Mr. Rob Stewart (VK2CBP), a radio club officer, who thought that it would clear up the networks of contact and some of adjacent frequencies but be regarded as an easy contact to be had by others with a callous disregard to the spirit of the contact.

By 2 p.m. EST, both my wife and myself were on the contest as time was short, we were subjected to very poor operating tactics by other stations, i.e. piracy of the frequency I was operating and the lack of contact and to keep the new frequency as fresh unbroken ground from which to score a few more elusive points.

As our tolerance started to wane, I became more critical of not only the very poor operating ethics of some amateurs but also of their signals. Some sideband signals were so wide in frequency and distorted that in comparison one could be forgiven for thinking that AM was the new mode that conserves frequency space. I presume that these competent operators were inclined to think that if they made their signals wide enough and loud enough they would not only suffer from adjacent QRM due to effective blocking of adjacent frequencies but be regarded as an easy contact to be had by others with a callous disregard to the spirit of the contest.

Mr. Stewart not only does not share the opinions expressed in the letter, quite to the contrary — he very kindly and patiently with some operators and so after some 400 point scoring contacts, I turned the equipment off and vowed to never again enter any on-air contest that did not discriminate against the poor operator, or one that allows the idiot, the unthinking and ratbags to certify that they had operated in the spirit of the contest. Let us all look at our operating habits and if found wanting in some areas, don't shrug it off as a joke, do something about solving the problem. After all, amateurs are not the only ones who listen on our frequencies. Remember the slogan "use them or lose them"? How about, use them, but don't abuse them or lose them . . .

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10 Farrow Street, McDowell 4553.
I wish to provide some guidance for amateur radio operators. A WICEN course must be short to retain maximum interest and participation, initially four evenings or one full day are suggested as a suitable duration.

A suggested WICEN course block syllabus is as follows:
- Aims of WICEN, register of members and equipment: 1 period of 40 mins.
- Emergency service voice procedure: 1 period.
- Message writing: 2 period.
- Formal message handling on air: 2 periods.
- SIGCEN procedures, formalities P. and T.: regs.
- VHF local coverage forum: 1 period.
- Call out procedure and WICEN administration: 1 period.
- May reading: 1 period.
- SES — local organisation and liaison: 1 period.
- This should be followed by a half day field exercise to complement on air work.

Voice procedure is based on SES practice, i.e., the grey "Civil Defence Communications, Part III, 1969" booklet.

The scope is deliberately wide, including as it does message writing and map reading, for example, to ensure that the WICEN operator has a good knowledge base to complement his local SIGCEN and local SES practice.

Course organisers can obtain more details, including instructors' lesson plans, by writing to the Federal Co-ordinator, or contacting their Divisional Coordinator.

WAGGA WICEN

So far this season there has only been one moderate flood on the Murrumbidgee, and WICEN was used to provide communications for the Wagga Rescue Club, as part of the excellent standing arrangements that exist between the two organisations. During the past six months, members of the Wagga Rescue Club obtained a new 200-watt heavy-duty radio tower for the purpose of erecting WICEN's VHF and HF antennas. It is reported that an association of a similar manner exists between WICEN and the Regional Headquarters of the Scouts of Australia in Melbourne.

WICEN IN Volvement in NDO Exercise

On Thursday, 2nd, and Friday, 3rd November, a new amateur radio club was recently formed in Tasmania. A Simple Repeater Control System; The Phoenix; SSB CB Conversions; The Universal Nolcher; The Twist; Updating Phased Array Technology; A Processor that works on a Very Small Scale; RAMmed by Morrow; Six said His Name; Your Own Digital Dial; The FM Rebroadcaster; Give 'Em a Break; It's Flora Clock; Build Your Own Digital Dial; The FM Rebroadcaster; J. B. Fields, Radioam; Counter Accuracy for Perfectionists; The New Op Amps; 22 Remote; Handling Old George; The IC-225 Scanner; Computerized Capacity Meter; A Much Needed Micorder Power Supply; Your Scope Can be Improved; How About SSB Call Squelches? Call Squelches — The Heathkit SQ-1; The New Improved Automatic Thermistor; Port Lincoln. At the Inaugural meeting on 5th November, twenty members were present.

Bruce Bathols VK3UV attended the Hobart Convention of the NDO. Bruce was appointed by the Executive. 1979 subscription rates will be $20.00 for all grades FACT and zones.

DIVISIONAL NOTES

ACT

The Mt. Gillion repeater stolen earlier this year was recaptured in Melbourne.

NSW

All the "N" suffixes have been used up and new suffixes in the VAA-VZZ series are being issued as well. All "N" suffixes vacated when Novices upgrade. Even the AA to B2Z call sign series have almost been completely used. 1979 VKZ subscription rates will be the same as for 1978.

NEWS FROM WAGGA ARC

ADVICE TO OPERATORS ON CALLING "SIGCEN"

The Novice Course for 78 is now completed, and the candidates are now waiting for the 21st November graduation day. This course was attended by those that have completed the 1978 NAOCOP course and are intending to enrol for next year full AOCP. For those who are not currently undertaking training with the Wagga Amateur Radio Club, and who wish to join the Club's 1979 Training Scheme (either NAOCOP or AOCP) you are invited to write to the Secretary, WAGGA WICEN, P.O. Box 71, Koorinang, Wagga 2650 for full details.

VHF REPEATER

The Wagga Club VHF Repeater (Ch. 3) is still fully operational and provides around 50 km mobile coverage in the Wagga area. The recently been raised to 30 watts into the coax, which feeds a 4.5 dBi aerial system. The receiver is operating via a temporary antenna until the system duplexer is satisfactorily completed and tested.

VICTORIA

In a recent appeal the Victorian Town Planning Appeals Tribunal decided that a planning permit for an amateur radio tower was not required even though erected on residential zoned land. Only a building permit is now necessary. 1979 VK3 subscription rates will be $21.00 for F and C, $20.00 for A and T, $12.00 for students and pensioners.

QUEENSLAND

The Sunshine Coast ARC has been re-formed under the Presidency of VK4CV. VK4 subscription rates for 1979 will be the same as for 1978.

SOUTH AUSTRALIA

A new amateur radio club was recently formed in Port Lincoln. At the inaugural meeting on 5th December, the staff of the Natural Emergency Operations Centre (NEOC). WICEN groups were involved in providing communication links to the affected areas from NDO headquarters in Coober Pedy.

The ACT WICEN group provided and manned a series of stations to give total coverage of the 28 hours of the exercise. During this time a large amount of message traffic was exchanged with WICEN stations in Cairns, Lismore and Gympie. Also the SA and WA groups were on listening watch and exercise traffic was passed to WA during the night period. A link into NOEC was maintained using a NOC high band VHF portable set.

At the initial debriefing, immediately after the exercise, the NDO Exercise Director expressed his thanks to the WICEN for a job well done and invited the Federal Co-ordinator to make proposals for WICEN involvement next year. Thanks are due to all amateurs who took part and demonstrated our capabilities.

BREAK IN August 1978

Otgo Branch 70 cm FM Transceiver; SL600 Series Transceivers; Great Circle Bearings.

YUKON PREFIX

July 1978 QST advises that the Canadian DOC has changed the call sign for all amateurs in the Yukon to VY1. Amateurs in the north-west territories will retain their VE8 calls.
HAMADS

* Eight lines free to all WIA members.
  * Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
* Repeats may be charged at full rates.
  * Closing date: 1st day of the month preceding publication. Cancellations received after 12th of the month cannot be processed.
  * QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

Surplus Conversion Manuals, radio astronomy, weather satellites, QTC and Repeater books, VXfer, EA, ETI, RTH, E.E. Mags. GC, pwtr., trans., pwtr. supplies, meters, antennas, Ameco PCL RF pre-amp. 1.8 MHz-54 MHz, many other misc. items; send large SAe for lists. Jeff Silverstein L30409, QTHR. Ph. (03) 546 3940 A.H.

TS820, complete with AC-DC power supply (1977 model), perfect cond., $500, or swap for new FT-7, with or without AC-DC power supply — will haggle. VK2AZT. Ph. (06) 49 1329.

Kenwood TS700B 2m multi-mode transceiver, as new cond., $750. ONO. J. Greeneing VK2ADP, 4/56 Wallace Street, Kingsford. Ph. (02) 398 2951.

Hidaka VS-41/60 KR multi-band strapped vertical 10-80m, incl. VS-RG radial wire traps for 80m and 40m, $91; 3 el. r/s band beam for 10m/11m, $60. VK3NBR. Ph. (03) 459 8578.

ICOM IC2202E 2m SSB, new model 3W PEP handset/base transceiver, unused, in original packing with standard accessories. $185; can list Cousins VK5IK, QTHR. Ph. Eudunda (SA) 25A.

Kenwood TR7400A, 2m mobile, $80 ch. 25W, $449; Kenwood TS700A, 2m all mode base transceiver, $499; trap vertical 18 AVT 50-10m, $95; all equipment new. VK2ZHL, QTHR. Ph. (04) 37 1616.

Drake Rx SSR1, $220; Katsuni electronic bug key, model EC 127, $35; Katsuni programmable memory electronic bug key, model EC 1024, $120. VK3ZAN, QTHR. Ph. (03) 306 9380.

Hygain 204B4 20m mono band yagi with BN86 balun, good cond., 3 yrs. old, $155. VK3UV, QTHR. Ph. (03) 90 6424 A.H.

TEN-TEC Century/21 solid state cw tvcr., model 574 (digital), as new, $475; Eddystone 880/2 Rx 30, band selectability full coverage (400 kHz to 30 MHz, 1 kHz readout), five position selectivity xtal, filters, $400; Nagara 5-band strapped vertical, as new, $100, or exchange it for IC7201 tvr with cash adjustment. Ralph VK5NDR, Regency Park Community College, Regency Park 5010, S.A. Ph. (08) 46 6260 anytime.

ICOM IC-22 2m FM Trx., mobile manual, monoband, PRT 2, 3, 4, 8, 10, Simpax 45, 60, Scalar 25/8 mobile antenna, $140. VK3Z2T Cesare, QTHR. Ph. (03) 51 9518 Bus., (03) 27 2023 A.H.

Morse Key, Wm. Nye, American type with switch, brand new in box, $14. VK3XU, QTHR. Ph. (03) 725 0824.

Uniden 2020 SSB Transceiver, 10-110m, 240V AC, 12V DC operation, with Uniden 8010 external VFO, matching Uniden speaker, microphone, fully selectable, suitable for novice and/or full call operation, $550 complete. VK2JO. Ph. (02) 36 7756 or (02) 399 0429.

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MFJ-1610ST Super Tuner, very compact ATU, 6 x 5 x 2½ in., rated at 200W, 10m to 160m, takes coax, twin or single feed, ideal for portable (or base) use, $55. VK3QJL, QTHR. Ph. (03) 32 3412.

Trig AR2002 Audio Sig. Gen., $100; Trig SG402 R/F sig. gen., $100; communications Rx, type RT223 (1-5.30 MHz), plus tuning and line up details, $100; Jonkoping VV230 converted to 50 MHz with circuit and photo handbook, $80. VK3B1W, QTHR. Ph. (03) 560 3513.

ICOM IC-22 FM Transceiver, mobile mount, ch. 50-155, manual and carton, ex. cond., $155; Elmac 2 x 7035/4X150D linear finals, 1 x 8621-4CX250F, also GE-06 RF amp, ammeter, $40. Reg Hardman VK4XH. Ph. (07) 341 2229.

UNIDEN 220 Transceiver, complete with mic., external VFO and matching ext. speaker; all units in mint cond., unmodified in any way and complete with manuals. Will not separate, $700 the lot. All offers considered. VK3ZAF, QTHR. Ph. (08) 702 5922.

10 AVT/W Vertical, $95; Yaeuu UD844 desk mike, $30; Delco RF550 AC-DC 8 db speech processor, $130. All as new. VK4ZT, QTHR.

Realistic AX 190 Communic. Rx, without faults and unmarked, amateur bands 80 to 10m and 15 MHz, 27 MHz, complete with 12V lead and Instruction book, $165. VK2DNT, QTHR. Ph. (02) 871 8394 A.H.

Phillips Colour VCR, model N150, VHF inout, video with original cartons, $125; JVC SV700E ½ in. B/W VTR, complete with conv. kit and instructions for colour conversion, Inc. h/book, $325; Philips ¼ in. VTR, LTR 1000 (5 ½ in. w/s w/shop manu., $225; Heathkit digital multimeter kit 1M-1202, $72; 3 x 1 In. Vicon camera tubes, $20 each, professional grade, $30 each, professional grade, flying spot scanner tube MC13-16, $25; Hewlett Packard freq. counter 5381A (7 digit), near new, $250. Scott Coke VK6VK, QTHR. Ph. Kelberrin 245, A.H. 302.

Power Transformers, 240V PRI 110-127V sec. at 16A (170W-2032W), ideal for high current power supply; a steal at $40 each. VK2DC. Ph. (04) 37 2792.

Toroids as on p. 581 of 1978 ARRL handbook, take legal power 3-30 MHz, $7.55 each, and p. 50c for one, $1 for two. VK3AFG, QTHR. Ph. (03) 379 6524.

FFV650 6 Transmitter, 195; Cutchca 5 el. beam, $59, both never used; crystals for IC22A, five anti-repeater, R3, R4, R5, R6, R8, $8 per set or $35 for the lot. VK2BBJ. Ph. (02) 84 7170 or Bus. (02) 631 7688.

FT620 50-54 MHz Transceiver with AM filter, $290; Hygain beams, 10-15m duo-bander, $125; 20m 4-eI, $204; 170; the in-bander, others. VK1YP, QTHR. Ph. (02) 48 5992 A.H.

T8020 AC-DC outboard VFO hand mike, $750. VK2ACC, QTHR. Ph. (02) 520 8659.

VF481 VFO, $130; SP400 speaker, $35; Heath HR-41 sweep generator, 3-220 MHz, with manual, $60; 4 TT22 valves, suitable 400W linear with GEC circuits and data, $20. VK2ZTHF, QTHR. Ph. (02) 631 1269.

3 GHz x 5 ft. 6 inch. Dish, fully steerable, with 24 DC motors, bearing 0-360 degrees and elevation 0-180 degrees, remotely using 50V Selsyns, waveguide feed, $250; 90-80 Lx Rx 4.5-5.0 GHz, complete, less dishes, tropicalized, new 240 V AC, 3 ch. RTTY duplex and 1 voice, $100 for two; 12 core cable x 50 ft., new with plugs, $8; 1 MHz vacuum mounted stnl, 1½, Doug VK3XU. Ph. (052) 21 2009 Shepparton.

The ideal present. A complete Novice Self novice kit, theory tests, questions, Morse tapes and text; ideal for budding Novices, only 15% posted. WIA (NSW) Education Service, PO Box 109, Toongabbie 2146.

Morse Tapes 860 Cassettes — specify more speed with order — only $2 posted. WIA (NSW) Education Service Tapes Officer, F. Santos, 8 Cooper Street, Blacktown 2148.

Ten 4-125A Valves (manf. by Siemens), unused in cartons, $15 each; four 10.2 MHz HY-Q xtal filters (OMF 10712), $12 each; model 15 TTY key-board with tape punch, $20. VK3KCC, QTHR. Ph. (02) 3363.

Kenwood TS520B Transceiver, 40 ft. telescopic tube, 10m and 15m doubler, co-ax. feeders and SWR3 meter, $600 ONO. VK5VE, QTHR. Ph. (02) 285 0700 A.H.

Alpha Radio January 1979 Page 45
SILENT KEYS

It is with deep regret that we record the passing of——

Mr. T. F. EVANS

Mr. G. D. KING

Mr. T. J. C. BROWN

Mr. G. P. LEE

Mr. RON HUGO

Mr. KEN (SNOWY) MILLBURN

(Prop. Ham Radio Suppliers)

OBITUARY

Mr. RONALD W. HUGO

VK6KW

It is with deep regret that we record the passing of another OT, Ronald William Stuart Hugo.

Ron passed away on September 15th, after being hospitalised some time previously as a result of a stroke.

He was licensed in 1937, and active till his passing. Always an active amateur, he was keen on working DX, and shared a friendship throughout the world by this means.

He was a friend of the RAEARE, AIF and, following house calls, took up the administration of Amateur Radio, through both the AWA and RSBA simultaneously. He was elected to Federal Council from 1952 till 1963.

In both bodies he was elected to Life Membership. For many years the VK6 Division received more attention and care than most would give of their leisure time. Many amateurs will remember Ron from his employment by Atkins (WA) Ltd. Often to be seen in his office near the front counter, a friendly nod, or a quiet greeting would be given when he saw you.

During all that time, he and his wife brought up a family of four, and it is to them that the members of this Division and Amateur Radio extend their sincere sympathy.

WILLIAM CARLYLE JOHNSTON

VK2CJ

The recent death of William Carlyle Johnston VK2CJ, of Sawtell, NSW marks the loss of one of Australia’s pioneers in Amateur Radio.

Carl became interested in radio in 1926, while at that time he lived at Grayton, NSW, where he set up his first station. He moved to Goffs Harbour in 1936 and then to Sawtell in 1947. Carl has been an active Radio Amateur for almost half a century, during which time he made radio friends throughout the world. Carl is survived by his wife, Eileen, two sons and two daughters.

John Gerard VK2ADN.

TREVOR EVANS

VK2NS

Trevor’s many friends throughout Australia and the world will be saddened by his passing at Bathurst, NSW, on Sunday, 29th October, 1978.

He was born around the turn of the century at Blayney, NSW. At a very early age he became interested in radio communications and in 1912 he experimented with a Spark Transmitter and a Coaxial Receiver. He was licensed in 1923 and from that time until the day of his death he was solely engaged in all aspects of amateur radio. He was an Immaculate CW and phone operator. His “Flat” and operating procedure was world renowned and an inspiration to all.

Many years ago he specialised in accurate frequency measurements and was one of the pioneers in hand gridding charts, having supplied these to broadcasting stations.

Apart from Radio, Trevor had many hobbies, one of which became interested in dirt track motor cycling. He was also an expert photographer. Model making was another hobby at which he excelled, constructing miniature blast furnaces for smelting iron ore, steam driven locomotives, turbines and stationary engines. He also built hot air and suction gas engines.

In 1931 Trevor won the British Empire Radio Union’s trophy in the inaugural contest and the trophy was presented to him in Sydney by the Lord Mayor, Alderman J. Jackson. Many of his associate amateurs attended.

VK2NS In 1926 founded the Rag Chews Club, which functioned for many years to encourage and improve the standard of CW operation. In 1957 he was a member (No. 575) of The Oldtimers’ Club and held the No. 1 50 Years Award.

For 55 years Trevor upheld the principles of the amateur radio code.

To his wife and family we extend our deepest sympathy.

VK2KO.

RAY OHRBOM

VK30C

And still another old-timer has left his bands for unband frequencies . . . Ray Ohrbom VK30C. He will be remembered by OTs as a keen member of the VIC WIA council and one of the Centenary Contest Committees in 1934. At WIA meetings we recall his somewhat terse and often controversial opinions following a drawn out debate which were invariably accepted. He was an active CW operator until the advent of black boxes and SSB, and he had his share of good DX. In the early days of the home brew era his transmitters and receivers were a delight to behold and very efficient were they. His “Loop modulation” was a gem. Ray leaves behind his two daughters Dawn and Judy with their young families. His wife Betty predeceased him by two years. Ray passed away on 30th October 1978.

(M. R. Campbell VK3MR)

ADVERTISERS’ INDEX

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It comes complete with a more effective noise blanker specified by, and exclusive to, Bail Electronic Services: R.F. Speech Processor, Calibrator, matching Yaesu Hand Microphone, eight pole SSB filter, 12v DC-DC converter as well as 234v AC operation with Australian approved 3 core cable and 3 pin plug, factory produced English language handbook (not a photo-copy!), spare plugs and connectors, etc.

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SPECIFICATIONS:
Transistors, 13; channel number, 3, on 28 MHz Citizens Band; transmitter frequency tolerance, ±0.05% per cent; RF input power, 1 Watt; tone call frequency, 2000 Hz; receiver type, super-heterodyne; receiver sensitivity, 0.7 μV at 10 dB S/N; selectivity, 45 dB at ±10 kHz; IF frequency, 455 kHz; audio output, 500 mW to external speaker jack; power supply, 8 UM-3 (penlite battery); current drain, transmitter — 120-220 mA, receiver — 20-130 mA; accessory, shoulder strap, battery UM-3, 8pcs, instruction manual.

$105 Pair — $59 each
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

CONGRATULATORY PLAQUE

On 24th February, 1978, Graham Baker VK8GB established a first. This was a two-way contact on 2 metres with Noriteru Tajiri JH6TEW, as reported in VHF-UHF Notes in AR April and May, 1978.

The Japan Amateur Radio League was so deeply impressed with this contact that they honoured JH6TEW at the annual assembly at Kagoshima on 21st May and simultaneously struck a plaque for VK8GB, which was sent to the Federal office in Toorak to arrange a suitable presentation. This task was passed to the President of the Darwin Amateur Radio Club to execute.

The presentation was made by Senator Ted Robertson at a dinner held at the Travelodge Terrace Lounge in Darwin on Saturday, 30th September, in the presence of 43 members and their families.

The picture shows Graham receiving the plaque from the Senator, with Barry Burns VK8DI and Dick Klose VK8DZK/N7K, President of the Club, as spectators.

Photo courtesy N.T. News Services Ltd. (see also page 42)
Federal President: Dr. D. A. Wardlaw VK3ADW
Federal Council:
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VK3 — Mr. J. Payne VK3AEI
VK4 — Mr. N. F. Wilson VK4N
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Staff: Mr. P. B. Dodd VK3CIF, Secretary.

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Secretary — Dr. G. L. Giels VK4ABG
Broadcasts — 1825, 3580, 7146 kHz, 21175 kHz, 2m (Ch. 42, 48): 09.00 EST.

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Secretary — Mr. C. M. Pearson VK5PE
Broadcasts — 1820, 3550, 7095 kHz, 28.56 (AM) kHz, 52.525 (FM) kHz, 144.1 (AM)
and 435 (FM) kHz 09.00 S.A.T.

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Secretary — Mr. P. Savage VK6NGP
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Secretary — Mr. M. Hennessy VK7MC
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Secretary — Mr. W. L. Giels VK4ABG
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SA.
President — Mr. T. I. Mills VK2ZTM
Secretary — Mr. P. D. Frith VK7PF
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Executive Office: P.O. Box 150, Toorak, Vic., 3142.

Postal Information:
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HO at West Thebarton Rd., Thebarton (Ph. 08).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

If there were no regulations controlling Radio Telecommunications inevitably a situation
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In Australia the Wireless Telegraphy Act and associated Radio Regulations, amongst
other things, provides for the organised use of the Radio Frequency spectrum, even
though some of their aspects are outdated.

The Amateur Service, like all other services in this country, is subject to this Act
and its regulations.

The last Australian Handbook for Operators of Radio Stations in the Amateur Service
was published twelve years ago, and has been reprinted on many occasions. It appears
that no further reprints are feasible. It is the Institute's view, which has received some
approval, that the reasons for certain inclusions.

Certains other conditions, such as what type of messages a particular service might
handle, are to some degree a matter of government policy.

In the framing of regulations for the Amateur Service the Institute feels strongly
that they must be in a form that indicates concisely what is required, are readily remem-
bered and in application uncomplicated.

This is particularly important as the newcomer must fully appreciate the regulations
and the reasons for certain inclusions.

Again it is the Institute's view, which has been conveyed to the Department, that the
Amateur Service should not be hamstrung by unnecessarily complicated regulations,
particularly when a much simpler means would produce the same result.

What are the reasons which prompt governments to over-regulate in any particular
area? We can all name many reasons, but in reference to the Amateur Service we believe
one reason might stand out — the irresponsible use of amateur radio by some operators.

Is it right that the shortcomings of the few — and the numbers are indeed small —
should penalise the many?

DAVID WARDLAW VK3ADW,
Federal President.
The appeal to non-members to donate something towards the WIA costs involved with WARC 79 is producing results. In addition to actual donations received a number requested membership forms to join the Institute. A similar appeal was published in the Electronics press. Donations from non-members will be acknowledged in due course.

It is encouraging to observe that many members included a WARC donation when paying their annual dues. A list will be published as soon as possible.

Over the holiday period the Executive office had been inundated with subscriptions payments. A preliminary survey indicates that compared with previous years a greater percentage of members are paying earlier. At the same time the number of individual payments are well in excess of previous years. This is to be expected having regard to the greatly increased membership.

IF YOU HAVE NOT YET PAID YOUR 1979 DUES, PLEASE DO SO NOW TO AVOID DISAPPOINTMENTS SUCH AS THE DISCONTINUANCE OF AR — THE COMPUTER IS QUITE IMPERSONAL.

Strength in numbers is a "must" in the world of negotiations. The discussions on the new Handbook for Amateur station operations proceeded briskly. A few days before Christmas a copy of the latest revision was handed to the WIA but it was marked not for publication". The attitude of the Department appears to indicate that publication means the date when it comes from the printer and is released for general sale. if, for any reason, there is a delay in printing it, the final edition could be amended even further if circumstances require.

There are numerous amendments and concessions granted in the latest revision compared with the draft originally discussed last November. It is important a document every word counts and members will be pleased to know that every word was "counted".

REPORTS OF MEETINGS
The Publications Committee meeting on 5th December noted with regret the passing of our printer, Eric McAdam of Equity Press, earlier the same day. Disposal of the extra 1000 run of the December issue was discussed. Awards for 1978 were agreed and details appear elsewhere in this issue. The dearth of front cover photos for AR was again discussed.

Meetings of the Project Assert Committee were held on 22nd November and 18th December under the chairmanship of Bob Arnold VK3ZBB. Slow but steady progress was reported but more interest was required. By the time this appears in print recording stations in MKT, VK3 and VK5 should be operational.

WICEN
The following is the text of letter RB53/2/1 recently received from the Department —

"In confirmation of our discussions on 22 November 1978 the following revised conditions for the operation of Emergency Amateur Networks and the requirements for the conduct of practice exercises have been notified to our

1. W2AU ANSULATOR
Unadilla/Reyco with built-in lightning arrester.
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- 20.00 Full
- 18.00 Associate
- 15.00 Student (proof required)
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- 11.50 Pensioner*
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- 11.50 Pensioner*
- 12.00 Student (proof required)
- 4.50 Family (no AR)

- 20.50 Full
- 19.50 Associate
- 12.50 Student (proof required)
- 12.50 Pensioner*
- 20.00 Full and Associate
- 10.00 Full (proof required)
- 10.00 Pensioner*
- 18.50 Associate
- 17.50 Student (proof required)
- 11.50 Pensioner*
- 12.00 Student (proof required)
- 4.50 Family (no AR)

- 20.50 Full
- 19.50 Associate
- 12.50 Student (proof required)
- 12.50 Pensioner*
- 20.00 Full and Associate
- 10.00 Full (proof required)
- 10.00 Pensioner*
- 18.50 Associate
- 17.50 Student (proof required)
- 11.50 Pensioner*
- 12.00 Student (proof required)
- 4.50 Family (no AR)

- 20.50 Full
- 19.50 Associate
- 12.50 Student (proof required)
- 12.50 Pensioner*
- 20.00 Full and Associate
- 10.00 Full (proof required)
- 10.00 Pensioner*
- 18.50 Associate
- 17.50 Student (proof required)
- 11.50 Pensioner*
- 12.00 Student (proof required)
- 4.50 Family (no AR)

1. With the approval of an authorised officer of the Department, the licensee of an amateur station may, as a member of an organisation of amateurs approved by the Department, participate in special amateur radio communications networks in times of civil emergency or disaster.

2. During a period of emergency, such networks, through a nominated co-ordinator and control station, may pass messages on behalf of the statutory authority responsible for the particular emergency (e.g. bush fire, flood, etc.). The log book of the control station shall have entered in it the name, rank, or position and telephone number of the officer of the statutory authority who requested the communications assistance, and the name and position of the Postal and Telecommunications Department officer who authorised the transmission of third party messages. (See Wireless Telegraphy Regulation 36 (3).)

3. During the period of the emergency, the licensee shall confine his transmission to those necessary for the exchange of essential traffic. Casual conversation or unnecessary calling or testing should be avoided. Any necessary testing should be conducted on a frequency separate from that used for emergency communications. Correct procedures as detailed in the Handbook should be adhered to during the emergency working.

4. Copies of messages handled by all stations in the emergency network should be retained for 12 months.

5. A licensee not participating in an actual emergency network once aware that an emergency exists should ensure any transmissions he makes do not cause interference to any stations involved in emergency communications.

6. Exercises by organisations mentioned in paragraph 1 above, to enable members to obtain practice in passing and recording messages, may be permitted, following written application to and approval by the Superintendent, Regulatory and Licensing. As a general rule the following conditions will be applied:

(a) Applications should reach the Superintendent at least two weeks prior to the exercise, indicating time, date, benefits expected, frequency, location, etc.;

(b) In any case where the exercise is to consist of providing communications for a group, the group must be either a statutory authority (fire, State emergency service, etc.) or a recognised community service group or charitable organisation (e.g. Apex, Rotary, Red Cross);

(c) The Amateur organisation should not be involved in press or media promotion;

(d) A report on the exercise as a message handling experience is to be provided to the Superintendent by the co-ordinator within two weeks, accompanied by a sample of message forms from the exercise;

(e) Log book of control station is to be submitted for Departmental inspection from time to time;

(f) Abbreviated call signs not permitted — full identification to be used by all participants; and

(g) The use of any specific frequency should not cause interference to other stations already in contact.

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**WIA 1979 SUBSCRIPTIONS**

These are the 1979 subscription rates:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Rate</th>
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<tr>
<td>VK1</td>
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<tr>
<td>VK5</td>
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**AR AWARDS**

The Publications Committee has pleasure in advising the names of the recipients of awards for the year 1978.

**HIGGINBOTHAM AWARD**
Mr. S. Voron VK2BV — For general amateur radio work for publications inclusive of contributions to AR. Worth $50.00 p.a.

**TECHNICAL AWARD**
Mr. Roy Hartkopf VK3AOH — Presented for the best adjudged technical contribution to AR. Worth $25.00 p.a.

**ASJA (AI Shawsmith Journalistic Award)**
Mr. P. Arriens VK1PA. Worth $15 p.a. and an engraved plaque for the best adjudged piece of amateur radio journalism in AR.

**QSP**

MEMBERSHIP CERTIFICATES

Members, especially new members, are asked to note that membership certificates are issued free by Divisions and are signed by Divisional Presidents. No grade of membership is shown on certificates and they are valid only as long as the member remains financial.

**MIDLAND ZONE CONVENTION**

Don't forget the Annual Convention of the Midland Zone to be held at the Stratfieldsay Hall (8 km from Bendigo, on the Eppalock Road), on Sunday 25.2.78, at 10:00 a.m.

Talk-in facilities 80m, 10m, Ch. 4 FM. Good range of equipment on display, competitions, good prizes, barbecue lunch supplied.
JOSTYKIT is Europe's leading manufacturer of electronic kits featuring attractively styled boxes of Scandinavian design and high quality electronic components which will satisfy the most demanding kit builder. JOSTYKIT's staff of qualified electronic engineers and educationalists supply up-to-the-minute, reliable electronic kits, designed around space-age solid state technology, but capable of construction without any great technical know-how or practical experience.

The JOSTYKIT instruction booklets supplied with each kit give clear, precise directions for assembly and testing. For those with special technical interests, each instruction booklet ends up by describing how the kit works. You'll always learn something when you construct a kit from JOSTYKIT.

### Audio

<table>
<thead>
<tr>
<th>Kit Code</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>AF300</td>
<td>AF300 AUDIO AMPLIFIER – 3 WATTS</td>
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<tr>
<td>AF340</td>
<td>40 WATT AUDIO AMPLIFIER MODULE</td>
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### FM Tuners

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<th>Kit Code</th>
<th>Description</th>
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<tr>
<td>HF325</td>
<td>QUALITY FM TUNER MODULE</td>
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<tr>
<td>HF810</td>
<td>FM RECEIVER</td>
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<tr>
<td>HF330</td>
<td>STEREO DECODER</td>
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### Pre-amps (RF)

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<tr>
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<tbody>
<tr>
<td>HF395</td>
<td>RF PREAMPLIFIER</td>
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<tr>
<td>HF385</td>
<td>VHF/UHF ANTENNA PREAMP</td>
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### Quick assembly kits

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<tr>
<td>JK01</td>
<td>GENERAL PURPOSE AMP 0.5w.</td>
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<tr>
<td>JK02</td>
<td>MICROPHONE AMPLIFIER</td>
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<td>SINE WAVE GENERATOR 20-20,000 Hz</td>
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<td>JK04</td>
<td>FM TUNER 88-108 MHz</td>
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<tr>
<td>JK05</td>
<td>27 MHz RECEIVER</td>
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<td>JK06</td>
<td>27 MHz TRANSMITTER</td>
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<td>JK07</td>
<td>DUAL TONE DECODER FOR R/C MODELS</td>
<td>$43.00</td>
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<td>JK08</td>
<td>240 Vac. LIGHT OPERATED RELAY</td>
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<td>JK09</td>
<td>SIREN KIT inc. SPEAKER</td>
<td>$19.00</td>
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<td>JK10</td>
<td>PHOTOGRAPHIC TIMBER 240 Vac.</td>
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<td>JK101</td>
<td>BURGAL AR ALARM KIT</td>
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### Light Shows

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<tr>
<td>AT465</td>
<td>LIGHT SHOW</td>
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<tr>
<td>AT466</td>
<td>4 CHANNEL LIGHT SHOW</td>
<td>$25.00</td>
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<tr>
<td>AT467</td>
<td>4 CHANNEL LIGHT SHOW</td>
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### FM Transmitter

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<tr>
<td>HF65</td>
<td>FM TRANSMITTER 60-148 MHz</td>
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### Ham Converter

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<tbody>
<tr>
<td>HF305</td>
<td>AMATEUR BAND 2m CONVERTER</td>
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</table>

### AM Receiver

<table>
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<th>Kit Code</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>HF61</td>
<td>MEDIUM WAVE RECEIVER</td>
<td>$19.00</td>
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### Power Supplies

<table>
<thead>
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<th>Kit Code</th>
<th>Description</th>
<th>Price</th>
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<tr>
<td>NT415</td>
<td>LAB POWER SUPPLY 0-30V</td>
<td>$128.00</td>
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<tr>
<td>NT300</td>
<td>LABORATORY POWER SUPPLY 2-30V</td>
<td></td>
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</tbody>
</table>

### Dealers being appointed in all areas

N.S.W.: Custom Communications, Orchardleigh Street, Yennora.
Vic.: Eastern Communications, 898 Riversdale Road, Camberwell.
CONVERTING AN HF LINEAR TO SIX METRE OPERATION

This project was brought about by the frustration of living hundreds of miles out from capital cities and being unable to alert stations occupying 6 metres of my presence.

Melbourne in particular has a very high "crud" level, generated by Channel O, with which operators have to contend; this noise tends to make intrastate communicating on 6 metres difficult to say the least. The extended ground wave paths on east-west circuits can be pushed out to over two hundred miles if good receiving equipment is used, with power levels above 100 watts to at least a four element yagi. So to those who consider any VHF power linear, please look to your receiving department first, as it is quite fruitless for an operator to read you 5x5 with your high power, if you have a "deaf" receiver.

There are several good low noise pre-amplifiers for both 6 and 2 metres which give an excellent lift to an ailing front end, also post converter amplifiers as featured in the early VK3 converters can add lift to the transceiver on the 10 metre band and provide a useful pre-amp. for 10 metres during non-six metre activity. At this QTH a 3N210 dual gate FET pre-amp. is incorporated into the transverter, with an RF gain facility adjusting the bias on one of the gates, whilst the post converter amplifier is a 3SK140. High power is not required for most summer sporadic E conditions. This article is for the serious long haul and back scatter, meteor scatter and forward scatter operators.

Well how do you modify a HF linear amp to the VHF 6 metre band? First, I guess, you obtain or have the necessary amplifier, which is now not so easy in Australia. I'm always being told that because the HF conditions are so good you don't need "boots" any more, so why not convert yours to 6 and convert it back when the sunspots die in a few years time? I decided to axe the station FL2100B after months of indecision, and I'll tell you after the first silver-plated capacitor is removed it doesn't hurt a bit. I found out a few truths about construction which are hidden by the green paint and tinsel, but that's another story.

The first things to go were the PA tank circuit components, valves, RF choke, bandswitch and coils; left are the two capacitors for load and tune. The removal of all these components was achieved with very little unsoldering and a small amount of unbolting. After removing the coil assembly the ten metre tank coil, which is a separate air wound inductor, was disconnected and put to one side. For those with queasy stomachs buy a foot of 3/16 in. copper tube. The new final tank coil is about four turns of above size the same diameter as the ten metre tank but with two turns air spaced instead of one. This can readily be achieved by expanding out the ten metre coil to twice its length (you can always squeeze it back again!).
Next the RF choke, which is also a mechanical support for the anode leads of the 572B triodes, was replaced. This requires duplicating mechanically the existing structure or remove the windings of the choke and rewind with suitable material to the correct dimensions. I used 30 turns of 18 gauge enamelled copper wire on a 3/8 in. ceramic or teflon former wound with one turn spacing over approximately 4 in. The existing choke is a pi wound multiband unit with a top frequency of 30 MHz. It will work in a sense but not for long. The ten metre section will overheat and become discoloured, then the insulation will break down — and 572Bs are $55 each. Enough said. The bypass capacitor, 1000 pF 3000 VDC, fitted below the cold end of the RFC, was retained.

The coupling capacitor can remain the same 1000 pF unit fitted to the end of the RFC. Two 470 pF give a slight improvement in performance because their reactance at 50 MHz is 6 ohms compared

---

**FIGURE 1: Modified FL2000/FL2100B Circuit**

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>FL2100B/6</th>
<th>Gain = 12 dB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class B Grounded Grid (RF)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Carrier</strong></td>
<td><strong>Two Tone</strong></td>
</tr>
<tr>
<td>2 x 572B/T160 Triodes</td>
<td></td>
</tr>
<tr>
<td>Va = 1500V* DC</td>
<td></td>
</tr>
<tr>
<td>Anode Current = (2 Tubes)</td>
<td></td>
</tr>
<tr>
<td>Power Input (DC)</td>
<td></td>
</tr>
<tr>
<td>Grid Current (including idle)</td>
<td></td>
</tr>
<tr>
<td>Volts Drive</td>
<td></td>
</tr>
<tr>
<td>RF Driver Output (approx.)</td>
<td></td>
</tr>
<tr>
<td>Anode Dissipation</td>
<td></td>
</tr>
<tr>
<td>Power Out (average)</td>
<td></td>
</tr>
<tr>
<td>Power Out (PEP), including Drive</td>
<td></td>
</tr>
<tr>
<td>Power In (PEP)</td>
<td></td>
</tr>
<tr>
<td>% Efficiency, including Drive</td>
<td></td>
</tr>
<tr>
<td>20W PEP</td>
<td>425 W PEP</td>
</tr>
<tr>
<td>750 watts†</td>
<td>350 mA</td>
</tr>
<tr>
<td>75 mA</td>
<td>50 mA</td>
</tr>
<tr>
<td>85 RMS</td>
<td>64 RMS</td>
</tr>
<tr>
<td>20 W PEP</td>
<td>25 W PEP</td>
</tr>
<tr>
<td>320 W</td>
<td>310 W</td>
</tr>
<tr>
<td>430 W</td>
<td>215 W</td>
</tr>
<tr>
<td>430 W</td>
<td>425 W PEP†</td>
</tr>
<tr>
<td>750 W PEP</td>
<td>735 W PEP</td>
</tr>
<tr>
<td>57.2%</td>
<td>57.5% *</td>
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* This figure due to reduction in duty cycle and regulation of anode voltage which fluctuates between 1700V no load to 1400V full load.

† These figures exceed those allowed by P. and T. regulations.—Editor.)
with about 24 for the 1000 pF unit, however since the PA runs in Class B Grounded Grid, it was not expected to have any regeneration in the circuit.

Unfortunately this was not to be; more on the reasons and remedies later.

The two 572B/T160 triodes were mounted back into the PA cage. A Grid Dip meter showed that the range of the tuning with the parallel tube configuration was 30-70 MHz, depending on the setting of the load and tune capacitors. The cathode circuitry was modified by removing all the bandswitching components and bypass capacitors to reveal the filament wiring and ALC circuitry.

It was found necessary to remove all of this circuitry. I did not do this initially and found that C203 of the original circuit introduced instability due to a positive feedback path through the ALC system. The driving stage should be carefully designed to minimise overdriving and distortion. The whole plate with all the HF coils was removed; all the capacitors whether soldered or bolted were also taken out. The filament wiring was removed due to its unbalanced configuration. A new loom was made up from heavy Insulated wire, twisted equal lengths, soldered to the socket pins and returned to the bifilar RFC filament feeds.

A four turns airspace coil wound over one inch was constructed of 18 gauge wire followed by the mounting of an Eddy-stone 100 pF silver-plated variable capacitor in the hole vacated by the bandswitch.

The coil was soldered into place and a 1000 pF coupling capacitor connected between the variable capacitor and the filament choke. See Fig. 1.

The frequency of resonance was checked with a GDO to see that it covered the required range. A fibreglass shaft coupled through to the front panel was fitted with the original band change knob. You cannot tell what changes are inside, that's for sure.

At this stage I did a little detailed reading on how to set up G-G linears and found out that you don't run drive without plate voltage applied so I left the matching of the driver till later. I fitted four capacitors from the original parts back into the cathode enclosure for bypassing the grid. Bias is applied for normal standing grid. Bias is applied for normal standing grid.

When the PA current_idle checked at about 60 mA. Slowly a little drive was applied and the output current showed a rise to 200 mA. A bit of a fiddle with the plate tuning showed a dip and some power In the watt meter connected to the output socket. The load control gave a rise in output but reached the clockwise stop; investigation showed minimum capacity but two sections in service. One lead was snipped off leaving 250 pF across the output of the PI. A further run up showed a better figure at mid-scale for maximum output and the rest is history. The darn thing tuned up like any HF linear and was giving about 200 watts of carrier into the watt meter. Adjusting the cathode tuning cum bandswitch control gave a very lazy increase, peaking about 2/3 scale (15 metre band).

Next some two tone was supplied to the transceiver and the output viewed on a scope. It was quite clean and showed about 200W PEP on the scale — not bad for the low tap.

The medium tap gave 1700 volts to the plates at an idle of 80 mA and this with drive gave the magic numbers at two tone application 400 watts PEP on six metres for about 500 mA at 1500 volts. The regulation of the power supplies in those so-called super linears is very poor and would cause a few linearity problems in a tetrode stage.

A check on the highest tap showed only a 50 per cent power increase but considerable extra heating of the final tubes. At 550 watts out the tubes were looking like the evening sun. On the 750 tap with a single tone at 400 mA with the lights out the tubes were black, and that looked good for continuous service.

So there it sits on the table, a small unobtrusive box about ¼ the size of the old 32AZ monstrosity with no noise and the magic numbers out on six metres.

The bandwidth of operation was good for the 500 kHz of the transceiver without retuning, which I think is a product of the low impedance cathode circuitry.

I found that 750 watts input could be achieved from 25 watts of excitation. Efficiency was 52 per cent after subtracting the drive power, and the transformer taps were 234V AC and 620V AC respectively. The maximum DC input power achieved was a little over 800 watts in the cherry red, so as to speak, so it is recommended that SSB modes only be used with this configuration.

I ran under test at 400 PEP for lengthy periods with no ill effects or overheating, and found out not just how much power it put out, but how clean it was.

The third order products on the analyser were the same as those of the transverter, approximately 30 dB down, which means the linear contributed nothing to degrade the products. Second harmonic was an expected 45 dB below. These tests were at full output. Remember to tune for maximum output and then reduce drive to keep within legality. Two tone tuning with a scope is the only way to correctly tune any linear amplifier, and this one is no exception. It is the only way to achieve correct loading conditions and clean operation. I have fitted a small pot to the transverter drive supply to accurately set for full 400 PEP performance and the results on air are very encouraging. The dip in PA current at peak output is very shallow and not readily noticed. Maximum output should occur at minimum plate current and, if you had a grid monitor, maximum grid current.

The antenna changeover relay leaves a lot to be desired. However, due to the facility of linear/barefoot operation at the flick of a switch, I am yet to find a suitable coaxial combination that would not be cumbersome and yet still do the trick.

All in all the project was successful and relatively cheap if you discount the cost of the linear amp. Any HF amp could be modified, it's only the layouts which present any problems. The SB200 and Dentron Superamp would also be suitable; however a bit more thought would have to go into converting the 4 tube FL200 using 6KD6s.

Eimac 8875 triodes are obviously the next choice, but after using and hearing the silence of the Yaesu fans, I would not ever tread the high speed blower path again.

If anyone blows up the tank circuit of their FL2100b I know someone who has a box of spares: see you on 6m.
All 2 metre FM users may use their transceivers to form the heart of a 70 cm FM transceiver. There are three main avenues to follow and these are discussed in turn.

**METHOD 1:**
**EXISTING 10 WATT 2 METRE TRANSCEIVER**
By preparing a case approximately the same size as the 2 metre rig a very pleasing mobile unit can be realized. All switching and control is done via a small plug in the rear of the existing 2 metre transceiver. All DC can be switched by a small relay of conventional design but the antenna must be switched by a coaxial relay. The general arrangement is shown in Fig. 1. The 435 MHz converter can be arranged to have its output on any convenient channel preferably one not frequently in use. Of course the transmit frequency will be 1/3rd of the desired 435 MHz frequency and the transmit crystal will have to be selected accordingly.

This system will provide approximately 4 to 6 watts at 435 MHz, depending on the varactor.

**METHOD 2:**
**EXISTING LOW POWER (HAND HELD) 2 METRE TRANSCEIVER**
The same method can be applied, remembering that for 1 to 3 watts on 2 metres only 1/3rd to 1½ watts will be obtained on 70 cm. One amateur using this system uses a three transistor amplifier to increase the ¾ watt output to 20 watts at 70 cm. The home-brewer could use the 2 watt exciter described in "Amateur Building Blocks" in AR October 1975.

**METHOD 3:**
**COMPLETE 435 MHz UNIT**
This entails some design and quite a bit of thought but is well within the ability of any avid home constructor. Frequency multiplication is particularly troublesome and up to 200 MHz MOSFET multipliers are suggested. Avoid joining PC boards of the transmitter with coax. The transmitter should be built as one unit and not an "add on" bits.

Low noise devices for the receiver front end are of course a must. The 3N210 is a good choice. Stripline tuned circuits are most satisfactory.

The ATV converter, at present very popular in Melbourne, works very well in FM service if fitted with a source injected mixer (2N5245, TIS88, etc.) and crystal oscillator injection chain.

This article has been kept as non-technical as possible so as not to overwhelm the newcomer to UHF. Incidentally, although only solid state systems have been discussed, a "retired" valve transceiver may usefully be pressed into service.
About four years ago when the bottom suddenly dropped out of the F layer, I decided something better than a G5RV was needed for consistent DX.

I turned to a rotatable 20 metre dipole. This gave better results as far as directivity was concerned but it left a lot to be desired in the way of gain. After a bit of snooping, on air and off, I decided that to attain my goal of consistent DX, beaming my signal at a low angle was essential and that either a yagi or quad was called for.

Goodness only knows how many other Hams have reached the same conclusion over the past 70 years, but so what, I wasn't around then and this I reckoned was what Amateur Radio is about today; doing something a little better for oneself, rather than thrashing off and buying an XYZ umpteen element dragpole.

Well, where to start? Quad or yagi? Aesthetically I favoured a yagi and despite strong opposition from Col VK3CO and Laury VK3AW, both fanatical quadlodites, a yagi arrangement was decided upon.

It seemed fairly straight forward, but not so. By this time, DX was beginning to reappear and according to Leonardo VK3NAC, our Oracle of the F layer, not only was 20 metres going to bust right open again, but 15 and 10 were going to become the playgrounds of Novice DXers in the not too distant future.

Well, 15 and 10 were still pretty crook so I decided to concentrate on a monoband job for 20. The design was pretty straightforward drawing on what every Ham learns before he gets his ticket, and so without much ado a design rolled off the roughly cleared space on my operating desk.

Looking good, but how to feed it? Coax and balun, T-match, Delta or any one of the even more elaborate systems? My tower is over 50 metres from the RF source. 50 times $2.00 for good low loss coax wouldn't register on my hip pocket nerve. Coax was a definite NO! What then?

Dare I remember what used to be in the dim dark days pre-coax? "Open Wire Tuned Feeders."

Cost — minimal. Line loss — minimal. Efficiency — plus. And, after all, the majority of high power transmitters still employ them.

It took about a week to get all the bits I needed together, aluminium, tube in various diameters, muffler clamps to suit, PVC insulation, nuts, bolts, and so on. Then one Saturday, after lunch, out came the hacksaw, drill, wrench and off to work. The whole job took that afternoon to complete, then up on to the pole and the last nut was tightened. Into the shack and on with the rig.

I made sure the audio was backed well off, I didn't want to hear my latest failure. Around went the aerial rotator indicator toward South America short path. This I felt would be the optimum test for my bright new home-brew two element close spaced full size 20 metre monobander because on previous wire aerials I had never even heard a South American station.

It didn't take long to find the answer. Yes! Not only did it receive well but it transmitted with equal success. Many good reports were received and exchanged over the next couple of months and bulk DX was worked. VSWR was a genuine 1:1 from 14.00 to 14.35. Naturally, I was running open wire line into a matching unit — a completely tuned system.

Not like a coax-balun set-up where you establish a centre frequency then accept fall off either side and consequent reduction of efficiency. The months rolled by and I became rather blase about the whole...
business of beaming signals. Although I was enjoying good DX when all the other wire antenna men were scratching to hear over the back fence, I felt there must be more to life than 20 metres.

Remembering what VK3NAC had predicted for 15 and 10 metres, I switched from 20 to 15 one evening to see if anything was happening. Much to my surprise, Len had been right (after all, some doubt could be expected, he had been predicting a rise in the K index for the last 18 months). Europe was coming in at S4. Not as strong as 20 metres but pretty good considering my system was tuned for 20.

Well, reckoned I, if I am running a tuned system why not tune it to 15 metres? That I did and in came Europe at S6. Not bad, but still not as good as 20 metres and the beam width was rather broad.

Next day at work I joined heads with Colin VK3LO on the subject and between us we decided the driven element was acting like an extended zepp on 15 metres and that any directivity on this band was not due to the 20 metre reflector which was too far back from the driven element. After a bit of snooping on 15 and hearing VK3NAC and his QRP novice mates working 15 metre DX at the same strength as my 300 watts I decided modification to the now semi-duo-bander was needed.

Up went a 15 metre reflector 0.15 of a wavelength from the driven element and up with it came the signal strength I was looking for. In fact, that night I worked two countries I had never heard on 20. If what Len had predicted for 15 was now materializing, how then was 10 metres going?

Just to make sure the beam was OK on 10 I arranged a sked with Laury VK3AW, who was running a full wave loop on 10. After extensive checks we decided the 15 metre reflector was close enough to the driven element to give me good forward gain and a very good front to back ratio but, alas, 10 was still in pretty poor shape.

So, now I had made what started out as a monobander into an extremely efficient tribander and at a great saving in legal tender. All up cost was only $45. It had very good forward gains on 20, 15 and 10, and a 1:1 VSWR right across each band.

Although this aerial is not really for those with a small flat, it does sound real sweet and when it’s about 15 metres in the air it doesn’t really look too bad — to a Ham anyway!

QUIETEN A MODEL 15 — ELECTRICALLY!

(Reprinted from AARTG RTTY Newsletter No. 8, May 1975)

Barry Ross VK6IF
42 Mayflower Cres., Craigie, 6035

If you were to ask most amateurs with Model 15s how to quieten one they probably say to take it as far away as possible, preferably down the bottom of the garden. But that is acoustic noise and if you know how to cure that many amateurs would like to know! A Model 15 with a governed motor also produces a lot of electrical noise too, capable of blotting out DX. This article is on how to reduce, if not eliminate, this noise.

The source of most noise is the governor contacts which are breaking the voltage to the motor. This causes a spark and if we can remove this spark then we remove the noise. If we replace the contacts with an SCR and use the governor contacts to gate the SCR using a low voltage then we eliminate the sparks!

The type of SCR is not important providing that it is of adequate ratings which are at least 125 volts at 1 amp. I used a C1068B1 and it is around this type of SCR the article is written. The gate resistor may need to be experimented with to get another type SCR to fire reliably.

It is necessary to remove the base bottom cover to gain access to the wiring and resistors leading to the motor. This can be awkward due to the weight of the Model 15 so remove the typing unit by unscrewing the 3 or 4 large flat headed screws on either side of the machine. This will allow you to turn the base upside down and remove the bottom cover.

In the middle of the base are two large resistors with 5 wires connected to them.
One of the wires going to the left side of the resistors goes to the middle motor contacts. Find this wire and remove it from the resistors and insulate it. Of the wires going to the right-hand side, one goes to the resistor/capacitor mounted on the rear deck next to the rear tagstrip. Locate this wire and also remove it from the resistors and insulate it. Those two wires were each one of a pair of wires connected to the large resistors so remove the other wires of the two pairs and join together. This should now leave only one wire connected to the resistors.

Now we have to connect the SCR. Locate the wire going to the extreme left-hand motor contact and unsolder it. To this motor contact solder the anode of the SCR and to the cathode of the SCR, solder the wire you just removed. The two large resistors are joined at one end and we are going to use them in series with a 20k resistor and a diode. The cathode of the diode is soldered to the gate of the SCR and the anode is soldered to the 20k resistor which then goes to the large resistors. Also add a 0.47 UF 250 volt capacitor from the gate to the cathode of the SCR to filter the gate line to prevent false firing.

The capacitors across the governor contacts will cause the SCR to fire continuously so disconnect them and also disconnect the light for the same reason! Make certain that the base of the Model 15 is earthed as this can also cause random firing and erratic motor control.

Well, that's the whole modification. It also works on Creed 7B, too, and stops most of the noise on that machine, too. It has worked for some time on both my machines with no trouble but, as already stated, the 20k resistor may need to be selected experimentally to get reliable firing of the SCR under load. The clatter of the machine you will just have to live with!!

TRY THIS
WITH THE TECHNICAL EDITORS

This circuit will interest those who have built up the "ST" series of RTTY terminals and others using the Mainline Floating Loop System. It permits use of a switch-controlled AFSKO as opposed to the "normal" voltage control, and provides hard copy of what is being sent.

It also has the advantage that the MARK/SPACE contacts in the keyboard switch are 10 volts at 5 mA, instead of 175 volts inductive at 60 mA.

This greatly increases contact life.

Keith Ayton VK3YHC.

FIG. 2: Modified Circuit Diagram of Teletype 15 Motor System

FIG. 1: Original Circuit Diagram of Teletype Motor System

FIG. 2: Modified Circuit Diagram of Teletype Motor System

Are you checking our bands for INTRUDERS AND REPORTING SAME TO THE INTRUDER WATCH CO-ORDINATOR?
ROYAL NAVAL AMATEUR RADIO SOCIETY

Don Walmsley G3HZL
153 Worple Road, Isleworth, Middx., TW7HT

SHORT HISTORY AND DETAILS OF OUR INVOLVEMENT WITH THE MUSEUM SHIP HMS BELFAST

The Royal Naval Amateur Radio Society (RNARS) was formed in 1960, mainly along the lines of the other service amateur radio societies but to attract the naval amateurs. The senior service was a little late on the scene, although the Navy had had many radio amateurs in its ranks, both before World War Two and after; all it needed was the driving force.

That was supplied by the few that gathered at HMS Mercury, the RN Signal School, in August 1960, prime movers being George Tagg G8IX, Mike Matthews G3JFF, John Pegler G3ENI, G3LIK, G3DOT, etc. Yours truly was not there, being unfit at the time, but on the Society’s inauguration in October 1960, I became number 12 on the books. There were only 58 of us in those days but with lots of hard work and many outside activities designed to attract members, we have grown until we have a strength around the 700 mark. Amongst our founder members was one Australian, VK3CDR, then Surgeon Captain, now Rear Admiral Jim Lloyd, reasonably well known, I believe, to the members of WIA.

The RNARS has been involved with many outside activities, in the early years mainly from the RSGB Amateur Radio Exhibitions held in London. These were always supported until lack of serving members and stringent cutback in public funds caused us to abandon them for the time being; one day we hope the climate improves and once again permits us to appear at these events. We also support Portsmouth Navy Days in August, run a mobile rally in June from HMS Mercury, support Jamboree on the Air from HMS Mercury and since 1973 we have operated a station on board HMS Belfast, the preserved cruiser, moored in the River Thames, between London bridge and Tower bridge. GB3RN is the call we try to use from all these locations and except for 1977 we have succeeded — our licensing authority suspended the use of GB calls throughout 1977.

The first involvement with HMS Belfast began in 1973, when it was decided to do something special for the RSGB’s Diamond Jubilee. We applied to the Trust that looks after the ship for permission to set up and operate an amateur radio station aboard the ship. This was granted, and in the first week of September we descended on the ship and established a station on the Admiral’s bridge. This was very much enjoyed by us and provided good publicity, so it was decided to repeat it again in 1974; the date was moved to August so that it would coincide with school holidays, but when we approached the ship’s authorities, they said that we could no longer use the Admiral’s bridge. Alternative accommodation for the station was suggested, we were shown a dark, dusty room on the same deck and this suited our purpose even better; they had shown us to the old bridge wireless office, much more roomy and a thousand times more suitable. Another very successful week’s operation took place and before we packed up, it was decided to call a meeting of the London membership to see if we could restore the office to something resembling its condition at the ship’s last refit in 1956. Work started on this chore in the winter of that year, much scrounging taking place to acquire equipment, painting, cleaning, rewiring and installing, being brought to a reasonable state by 1976. Our committee decided that the activity period should be moved to Easter of 1975, because we were trying to do too much during the summer months and this is now the fixed date, from Good Friday for ten days each year.

During the 1976 Easter activity, the BWO mainframe was installed, existing 90 ohm naval coax not being suitable for our purposes and except for the trap dipole which still enters via the original feed points. Some of the old naval whips are used for reception, and the VHF antennas are an excellent match on 144 and 432. We have installed transmissions take place on the trap dipole main, for 1.8 MHz (still looking for a VK or ZL to complete WAC on that band). Main transmitters take place on the trap dipole and a 12AVQ has been donated to us and it is hoped that this will be installed soon. This antenna should improve our ten metre performance.

Activity took place at Easter 1977 but we had to use G4EOK, G3HZL and G3XRN to cover our three operating positions, a bit disappointing not having GB3RN and...
rather a struggle to make contacts, but, hooray, in late 1977 the Home Office announced that GB calls would be available this year. So application put in early and there we were at Easter using the lovely call Great Britain 3 Royal Navy again.

The preparations for the event start in the middle of December when the first publicity letters start to be written, then down to the ones asking for volunteers and loan of gear, etc. Response this year was reasonable. On the 23rd the first volunteers start to come aboard, usually serving members who are going to stay aboard for the full ten day stint. No official accommodation aboard, but there are ten bunks that we can use in one of the old Petty Officers’ messes and full use are made of these during our activity. First signals were radiated exactly at midnight local time and the DX was soon rolling in and it continued to do so throughout the week, except for Monday, when conditions were rather disturbed and we concentrated on 80 metres. Over 2000 contacts were made during the period in 103 different countries, amongst them being many VKs and ZLs, plus H8C, VP8 (Signy), PJ, HI, JW, VU, SU, HP, YN, CSZ, PY, JA, CN8, HP, KZ5, YV, KH6, VP9, 9L1, EL, LU, HK, ZS, ZS3, 4X4, EP, ST, YB7, HM, 8P6, VP2V, CO, CX, 5Z4, VS6, OX, HZ, J3, 9N1, KP4, 9G1, ZD7, FM, TI, VP2L, most of the countries in the USSR and plenty in Europe; no deliberate attempt to return to the quarterdeck to greet Dr. Fred Horner, Director of the Appleton Laboratories (G3RAS is the club at that establishment and many of the VP6s heard from the rare Antarctic islands come from there), and Dr. Dain Evans, President of RSBG. After an hour or so inspecting the station and chatting to our members, the guests plus a number of us adjourned to the ship’s club bar (not on the public rounds) and had a few welcome wets. Many of the overseas amateurs who have met me on board have seen the inside of the club and they are usually made very welcome by the ship’s staff. The visit of these distinguished persons went off very well and we are hoping that conditions will be even better so allowing us to contact even more overseas stations.

Corporate membership of the RNARS is open to serving or past members of the RN, RM, RNLS, Reserves, Commonwealth Navies, RNXS, RFA service, Sea Cadet Corps or those connected with these services in a civilian capacity, or serving or past members of UK or Commonwealth Merchant Navies; yearly subscription is £2.00. Associate membership is open to serving or past members of foreign navies, including Merchant Marine or those connected with these services in a civilian capacity.

The Society also issues the Mercury award for working RNARS members; DX only needs 5 points, but the award will be endorsed for each extra 10 points gained, and there are band and mode endorsements, log data only, and £0.30 or its equivalent to G3HLL. The Hampshire County Award is also sponsored, the award is on a points basis – one point gained for each station contacted within the county boundaries, 2 points for G3BZU or any other sponsored RNARS special event station, as long as it is within Hampshire. This award is in three classes:
Class 1 — UK 50 points, EU 20 points, DX 15 points.
Class 2 — UK 30 points, EU 15 points, DX 10 points.
Class 3 — UK 20 points, EU 10 points, DX 5 points.

Log data to G2MG, cost as Mercury award. All contacts for both these awards must have taken place after the 1st October, 1960.

A Morse proficiency certificate is also issued for 100 per cent copy at 15, 20, 25, 30, 35 and 40 w.p.m. The transmissions take place on the first Tuesday of each month from G3BZU at 2000 local on 3515 (plus or minus QRM); trifles difficult for our Antipodean friends, but it is believed that our large group in ZL are planning something similar, negative late news on this one.

All enquiries regarding the Society to the Secretary, HQ Station, G3BZU, HMS Mercury, East Meon, Petersfield, Hampshire, GU32 1HE, or to the author, G3HLL, 153 Worple Road, Isleworth, Middlesex, TW7 7HT.
WOOMERA'S CONTRIBUTION TO THE 21st JAMBOREE-ON-THE-AIR

Woomera's participation in the 21st Scout and Guide Jamboree-on-the-air during October '78 was a highly successful event.

Although the number of contacts was not many, quality rather than quantity is the aim of this international activity.

Altogether nine Brownies, 12 Guides, nine Cubs and 11 Scouts, and a number of leaders and others spoke from 10.50 a.m. on Saturday to 6.30 p.m. on Sunday to 21 of many special jamboree amateur radio stations, with only a few hours off during a period when the bands went dead.

Many stations were heard, using young Scouters with CB experience as assistant operators, and their performance was of high standard.

In Woomera, the 40, 20 and 15-metre amateur bands were used, with a "listening watch" kept on 80 and 10 metres to see if contacts there were available.

The station used was that of Richard Ashton VK5DQ who for the past three years was the SA Scout HQ Commissioner for Radio and who briefly acted as Woomera Scout Leader earlier this year.

TXCR LOANED
A standby transceiver was loaned by the Woomera Amateur Radio Club in case of station equipment failure; fortunately this did not happen, but it was useful in a contact with a New Zealand station in which Woomera had to transmit on one frequency and receive on another due to so many other stations being on air.

The station was "open for business" for 22½ hours, of which about 13½ hours were spent talking to contacts at home and abroad, and the rest in looking for and waiting for stations the youngsters could understand.

Altogether three stations were contacted in New Zealand, Tasmania, Victoria, Australian Capital Territory, South Australia, Western Australia and Queensland contacts totalled 17, and also one at Umtali (Rhodesia) where the Scouts had originally intended to camp on the golf course but this was cancelled, owing to their vulnerability to terrorist attack.

Many Japanese and American stations were heard but as most were only wanting to swap contact cards and were not Jamboree stations, time was not wasted trying to contact them.

RHODESIA
A Rhodesian station was contacted after waiting half an hour while six other stations talked on non Jamboree business and when contact was finally made, band conditions deteriorated and forced a break off after only five minutes.

Interest was such that of the 41 young people who attended, a number came back as often as four times, making the actual attendance 64!

Some had taken part previously in regular Sunday morning contacts with two other Adelaide Scout radio stations, at Para Vista and Tea Tree Gully, and this activity will be continuing in preparation for next year's Jamboree-on-the-Air.
NOVICE NOTES

ADJUSTABLE TUNING OF “SKYBAND” 80 METRE WHIPS

Gordon J. A. Cassidy VK2NWC

The 80 metre helically-wound “Skyband” whips, 6 ft. long, available commercially in Sydney (VK2ZXL), have a bandwidth of about 50 kHz between points with SWR of 2.

It is possible to change the resonant frequency by loading the whip externally with a short piece of copper or aluminium tubing slipped over the upper part. The rough measurements I have carried out show that the resonant frequency can be set anywhere in the novice part of the band without noticeable change in the bandwidth or minimum SWR, by adjusting the distance of the loading sleeve down from the top of the whip. No measurements were made of the extra losses introduced, but these are not expected to be high.

In these tests, a piece of ½ inch copper light-gauge water supply tubing about 3 inches long was slipped over the top of the whip and held in position with a piece of 2 mm nylex sleeving looped through it.

Measurements were made at intervals of 20 kHz over the novice band, for several positions of the sleeve, and the SWR and reflection coefficient plotted. If the top of the sleeve is about 5 inches down from the top of the whip, the resonant frequency is unchanged, while moving it further down increases the frequency, a movement of about 15 inches being needed to move from one end of the novice band sector to the other. The minimum SWR was less than 1.1 in all positions.

It should be possible to construct a remotely tunable version by mounting nylon pulleys at the top and bottom of the whip and moving the sleeve with nylon fishing line.

RIP — LETHAL SEQUEL

I dreamed death came the other night
And Heaven’s gate swung wide
With kindly grace an angel came
And ushered me inside
And there to my astonishment
Stood folks I’d known on earth
Some I had judged until
And of very little worth
Indignant words rose on my lips
But never were set free . . .
For every face showed a stunned surprise
No one expected me.

Credits — ARNS Bulletin July 1978

CORROSIVE CRUNCH

Photos 1 and 2 show Kevin VK2BKG’s TA33 senior beam which was supported 70 ft. above the ground on a self-supporting tower, which found its way to the ground one windy night.

Take special note of the mounting plate which corroded away, the plate was aluminium and the bolts were stainless steel. The tower stayed in place, only the beam came down.

PHOTO No. 1

PHOTO No. 2

QSP

CHURCHILL FELLOWSHIPS

The Winston Churchill Memorial Trust will be calling for applications for Churchill Fellowships tenable in 1980. The closing date is 28-2-79. There are no prescribed qualifications for the award of a Fellowship, merit is the primary test, whether based on past achievement or demonstrated ability for future achievement. The value of an applicant’s work to the community and the extent to which it will be enhanced by the applicant’s overseas study project are important criteria in selecting Fellows.

Fellows are awarded a return economy class overseas air ticket and an overseas living allowance to enable them to undertake their approved overseas study project. Fifty-nine Churchill Fellowships were awarded for 1979 at a total cost of $300,000. The Trust was established in 1965 from the capital sum subscribed by the Australian community in memory of Sir Winston Churchill. Funds now stand at $57m. Australians over 18 years of age, from any walk of life, who wish to be considered for a 1980 Churchill Fellowship should write for a copy of the brochure and application forms to the Winston Churchill Memorial Trust, PO Box 478, Canberra City, ACT 2601.

NEW PREFIX 1979

To mark the celebrations of the 1,000th year of Tynwald — the Isle of Man Parliament — the prefix GT may be used by amateur operators on the Island from 3rd June to 8th July, 1979. Other UK prefix changes are, of course, GU for Guernsey and GJ for Jersey in the Channel Islands in place of the GC prefix.

REPEATER CHANNEL SPACING

“Despite considerable discussion” quotes Radio Communication of September 1978, the VHF Committee of the RSGB in relation to 2m repeaters, said: "it was agreed not to introduce 12.5 kHz spacing on repeaters yet, but builders of repeaters are being advised to use equipment capable of being converted to this standard in the future.”
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Bandwidth (6 dB down) | 2.5 kHz | 2.4 kHz | 3.75 kHz | 5.0 kHz | 12.0 kHz | 0.5 kHz | 0.5 kHz
Passband Ripple | < 1 dB | < 2 dB | < 2 dB | < 2 dB | < 1 dB | < 1 dB | < 0.5 dB
Insertion Loss | < 3 dB | < 3.5 dB | < 3.5 dB | < 3.5 dB | < 3.0 dB | < 5 dB | < 6.5 kHz
Input-Output | Zt | 500 Ω | 500 Ω | 500 Ω | 500 Ω | 1200 Ω | 500 Ω
Termination | Cc | 30 pF | 30 pF | 30 pF | 30 pF | 30 pF | 30 pF
Shape Factor | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6
Ultimate Attenuation | > 45 dB | > 100 dB | > 100 dB | > 100 dB | > 90 dB | > 90 dB | > 90 dB
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AMATEUR RADIO WEEK-END

The WIA Education Service, incorporating the Youth Radio Service, concluded another successful amateur radio week-end of fun and learning.

PHOTO No. 1
At the mike we have Rex Black VK2YA, founder of the YRCS in Australia, receiving a 160 metre call back. Next to Rex we have Br. Cyril Quinlan, the Co-ordinator of the amateur week-end concept, and next to him (holding the switch for the 1.8 MHz linear) is Mathew VK2NAI.

PHOTO No. 2
Steve Rowison at the controls of a mini-computer — one of the new popular additions to the amateur week-end activities.

PHOTO No. 3
Steve Rowison’s father having a nice time trying the do-it-yourself electronics training kit.

PHOTO No. 4
From right to left we have Bruce VK2NUT, Christ VK2NYA, Mathew VK2NAI, and Paul VK2NYO (holding the mike) manning the HF 160 to 10 metre station.

The cost for all accommodation and food at the Katoomba happening is $20 (or $12 if you are ten years old or younger). If you would like to get into the next week-end (beginners, students and licence holders are all welcome), please contact:—

Ken Jame VK2NWK, (02) 638 1687.
Cel Wyn Carlyle VK2NOK, (02) 827 3589.
Les Dickenson VK2NMY/YMY, (02) 47 3044, for further details.

FIELD TRIP TO HILLEND NEAR BATHURST, N.S.W.
The Amateur and Citizens Radio Club of NSW is organising an Amateur and CB radio week-end at Hillend, near Bathurst, on the week-end of the 17th February.

Any amateurs who would like to participate in demonstrating and discussing the ins and outs of the fun of amateur activities would be most welcome to attend.

A private bus is being hired to transport those leaving from Sydney if you require transport for you and your gear. The bus will be set up for all bands, so we will be able to work the world while "bus mobile".

All are welcome to attend and newcomers are especially welcome to come along. For details and reservations contact Max Lowe, 30 Frances Road, Putney, NSW 2122, or phone 807 6172, or call in on the club net on the first Saturday of each month on 3580 KHz plus/minus QRM or any Sunday at 8.30 p.m. on 28.5 MHz.

NOVICE NOTES

SOLID STATE RIGS
Whether you grieve for tube finals or not, Solid State finals are here to stay and will increase in the years ahead. The problems of making efficient transfer of the RF energy to antenna systems are more acute with solid state than with tube finals with their loading controls. Mobile operation in particular is demanding and ensuring a perfect match to the base of the antenna is imperative. Some of the problems you can have occur are: (1) High VSWR of around 3:1 will reduce useful power output. (2) RF voltages resulting from VSWR appear on the chassis and microphone and sets exhibit symptoms of RF feedback. Remember that broadband solid state finals have no loading controls to approximate optimum impedance of 50 ohms. Therefore we suggest that you take particular care in matching your feedline to the antenna. Mobile antennae have base impedances lower than 50 ohms and it is suggested that the impedance be checked with a bridge and resulting discrepancies be corrected with a base matching unit. Transceivers used in the shack should use a tuning unit if only to reduce tendencies for TVI. Beams, etc., may have a feedline impedance of 50 ohms, but don’t depend on it as variations in assembly and proximity to nearby objects may modify this.

POWER METERS AND HARMONICS
10 watts on your power meter may not be "watt" it seems! If you have harmonic output, the harmonics may combine with the fundamental to produce erroneous readings on some power meters. Fortunately most rigs have low harmonic output and the reading is accurate but watch out for this pitfall.

From VICOM Ham News.

THE KILLARNEY HEIGHTS NOVICE RADIO CLUB
160 METRE LOGGINGS FOR 1978
Equipment: A Forest phone FP-1, 160 metre transceiver crystal locked on 1.825, 10 watts, AM, AWA make, fully transistorised, McLeod ME58/11A, 160 metre transceiver crystal locked on 1.825, transmitting, variable on receive, 18.00 to 18.60 valve. Antenna: A 160 metre dipole, 125 feet.

VK1 — VK1RK.
VK2 — VK2HO, BIC, BVS, BGH, GE, IQ, B2K, LS, ACC, BAV, AAB, BDT, BWS, BRU, BSB, BJL, LH, OQ, BFR, WC, DJ, APQ, PA, BOJ, ARN, BGV, BPX, BYO, BJZ, BXX, DJ.
VK3 — VK3ALS, IM, BEX, AOS, ACA, AAB, AEI, DW, BIE, BI, AXE, DQ, LO, EV.
VK4 — VK4DJ, RJ, MR, MD, AFH, ZQ, AAL, AHO, RH, AJM.
TRIAL NOVICE EXAMINATION — OCTOBER 1978

INTRODUCTION

Following the custom started in 1975, Trial Novice Examinations were conducted on and about 28th October to suit the situations in various participating Clubs and courses. These tests provided the "last chance" for instructors and students to reinforce strengths and weaknesses of Radio Theory and Regulations knowledge and Morse Code skills prior to the official Novice examinations of the Post and Telecommunications Department, held on 21st November.

With immediate marking of candidates' Trial papers, there was time for instructors to revise and drill the weak points revealed by the Trial Novice "probing".

Letters were sent to as many NSW Radio Clubs as possible, inviting them to participate in the Trial Novice operation. Response was disappointing. However Examination Centres were organised at Bexley, Springwood, Buxton, Lithgow, Killarney Heights, Liverpool, Newcastle Technical College, Wagga, Westlakes, Pennant Hills, Noosa, Cranbourne.

ORGANISATION

Wherever possible Clubs were asked to nominate independent Examination Supervisors who received the examination papers and kept them in safe custody until the times for examination sessions.

Morse Code Receiving tests were put on to cassettes and distributed to Supervisors, who were required to secure the services of competent amateur operators to mark the tests and to administer Morse Sending examinations.

Candidates were able to take their question papers away from the Centres for discussion of their efforts with instructors and fellow candidates. In short, the papers became "Revision Syllabuses" in the three weeks between Trial and P/T examinations.

Examination results were returned to the Education Officer to permit the assessment of students and statistical information.

EXAMINER'S COMMENTS

CW Receiving

70 per cent of candidates passed in BOTH Receiving and Sending at 5 w.p.m. and reports indicate that a goodly number have read the Education Service's "Learning Morse Code" Course and the Practice Cassette system.

CW Sending

23 per cent of candidates failed or did not attempt the Sending Test.

Regulations

80 per cent of candidates passed in this subject, which was set on the P/T format of 30 multiple-choice questions. One prominent study candidate from Lithgow gained possible marks; the lowest mark was 4 out of 30.

Theory

The Departmental November Novice Examination in Theory would be the FIRST set to the newly-introduced P/T Novice Syllabus and to the WIA Novice Study Guide. Therefore, no previous P/T papers would offer adequate guidelines as to what our candidates might expect on 21st November. We had no means of knowing where the Departmental examiners might distribute their "probing" and what might be their "pet" topics. What emphasis they might place on certain aspects of the new Syllabus and the depth of knowledge they might require. It was considered necessary — or even urgent — to test the new Syllabus as widely as possible — even if it became necessary to change the timing and the format.

A disturbing trend was noticed with respect to the P/T Novice Examination last May. Some Novice students, having completed less than HALF of their Course, were able to pass their P/T testing and to gain 70 per cent of possible marks on elementary topics and some reasonably intelligently guessing of the multi-choice questions. Keeping in mind that a Novice licence is, in fact, a Transmitting Permit, there can be no justification in framing theory papers which make it possible for candidates to pass without adequate training and testing in the "transmitting" areas of the new Syllabus. For this reason, the Trial Theory paper was divided into three sections with the requirement that candidates must pass in all three sections. Furthermore, the section C was weighted to 50 per cent of the possible marks, emphasising the EXAM WORTHINESS of questions relating to transmission, propagation, aerials, transmitters, frequency measurement, TVI, BCI, harmonics in which areas Novice candidates should be well drilled, even if they are not taught and tested on "the composition of soldier" and similar unessentials.

There was a wide range of marks in this Theory area. Top mark was 84 per cent; lowest mark was 8 per cent. Average mark was 53. The results gave a reasonable approximation to a "normal distribution graph". In short, candidates who had been well taught and had made an adequate effort did quite well. Those who were ill-prepared or "looked it too cheaply" or "gave it a go just to please the instructor" did not achieve satisfactory levels.

NOVICE EXAM SYLLABUS

It seems that some instructors did not know of the existence of the new P/T Novice Syllabus and the WIA Novice Study Guide. Obviously, many candidates were similarly unaware of these guidelines.

After the first few batches of material came back from Examination Centres, I made up a PROGRESS ANALYSIS and distributed to Clubs and instructors to show the trends and weaknesses revealed. Some instructors made very good use of this information and "hammered" the weak topics — hopefully in time to meet the P/T Novice deadline. However, some candidates were so backlogged that it would have been impossible to "build them up" to satisfactory standard by 21st November.

Mr. Reg Stockman of Inverell has suggested that in the April Trial Novice there should be TWO Trial Theory papers set so that the first (a longer Diagnostic test covering the whole Syllabus) should be given about 4 or 5 weeks prior to the P/T Examination in May; the second should be JUST BEFORE the P/T Examination and should be in P/T format. Another suggestion is that Clubs should be allowed to choose whether to submit candidates for a simulated P/T Examination OR for a longer Diagnostic test which can then be used as a "final burst" Revision Syllabus.

However, I suggest that Club instructors would do well to follow the YRS Radio Certificate sequences, keeping in mind that Elementary (Stage 1) approximates to the "Basics" topics of the P/T Syllabus. Elementary (Stage 2) would take students through Receivers up to Superheterodyne Receivers. Also, the YRS Certificates in Radio Telephony and Wireless Telegraphy offer useful practical applications of much of the Theory topics.

An undue proportion of students failed in Sections A and B of the Theory paper. These related to topics that would have been covered in the early weeks of a Novice Course. One suspects that in some cases the Trial would have been the first time NSW students would have been tested during their training period.

It has been suggested that some candidates who "knew their Radio" were "thrown" by the use of question types that were other than multi-choice. I do not subscribe to this opinion. Assuming that instructors DID, in fact, conduct progress tests during the Course, it is improbable that ALL such tests were multi-choice. A casual look at the questions presented to him and is incapable of deriving an answer by other means looks like a rather unpromising future member of the Amateur Service!

I point out, too, that mature students are masters of the art of deluding instructors into assuming that they (students) have grasped the complex principles of Radio Theory. An instructor who accepts the nodding of heads as an indication of "grasping" is certainly deluding himself! ONLY complete and repetitive testing can assure him that the students have definitely understood and learned.

Some of the candidates' papers make one doubt whether they have ever seen an Amateur Radio Station; have even handled
a transmitter to tune and adjust it; have ever examined the "entrails" of a simple Superhet Receiver to locate the various stages. How many have ever used a Frequency Meter or a Wavemeter or seen a CRO display of over-modulation? In short, I think that many Novices are being let loose on the Amateur bands without adequate experience and background. How many have ever been "on the air" from an Amateur Station UNDER SUPERVISION? To achieve these desirable aims I suggest that Club members in general — those NOT undertaking the important, and unpopular, functions of instructing — might do well to contribute time and interest as members of Committees to provide the practical experience necessary to make GOOD CLUB NOVICES. In USSR, for example, there are Club Committees which provide such experience for candidates before the relevant Department issues transmitting licences. Our Australian Novices would benefit greatly from a similar setup.

WHAT LESSONS HAVE WE LEARNED FROM THE TRIAL NOVICE EXAMINATIONS?

(A) That the whole Trial Novice exercise should be FLEXIBLE to meet the needs of Clubs and Courses, each of which has a different set of situations to determine its needs;

(B) Clubs and Courses should arrange Trial Novice examinations with sufficient time between Trials and P/T examinations to permit thorough revision of weak topics;

(C) Novice Courses should be based on COMPLETE coverage of the P/T Novice Syllabus and the WIA Novice Study Guide;

(D) Instructors should be encouraged to use the advantages of the YRS Radio Certificate system to offer step-by-step incentives to students;

(E) Clubs and Courses should be conducted with provision for students to gain equipment handling experience relevant to topics taught;

(F) Trial Theory Examinations should be available in:

(i) P/T format and

(ii) other formats as may be considered more suitable for assessing candidates' knowledge of Syllabus topics;

(G) Trial Theory Examinations should be arranged on the "Three Sections" basis to obviate the chance of Inadequately prepared candidates gaining pass marks;

(H) All Instructors and Students should be encouraged to have P/T Syllabii and WIA Novice Study Guides in their possession;

(I) Radio Clubs and Courses should undertake the function of awarding prizes to their successful Trial Novice candidates;

(J) Arrangements should be made for Trial Novice Examinations AT ANY TIME as requested by Radio Clubs;

(K) Trial Novice Theory papers should give special attention to the important topics of TVI, BCI, interference in general and remedies;

(L) Instructors should conduct Morse Code instruction on the basis of NORMAL style, BUT sufficient practice should be given in the ITU mode to ensure that candidates at P/T Morse Tests will not be disconcerted by the different style of Morse used;

(M) The practice of awarding Intermediate and Junior Certificates on the present basis to Trial Novice candidates should be continued.

GERALDTON AMATEUR RADIO GROUP

For many years Geraldton sported only two hams, Jack VK6EJ and Noel VK6MF. During the past year membership has increased to include seven full calls, three limited calls, and three novice calls, including a YL, Moira VK6NDM, and our State's youngest ham, Glenn VK6NGK, who is twelve years old. We have a very active radio group, having established a Repeater from which pre-licensing tests have been most gratifying, with frequent contacts to Perth (400 km), Bunbury (500 km) and Cape Leeuwin (600 km).

We have organised two successful fox hunts and various social activities, enthusiastically supported by hams and their families — and this within twelve months.

Jack Cowles VK6EJ.

(see photos over page)
THE AMATEUR RADIO CLUB OF TONGA (ARCOT)

Just two years ago there were no hams in Tonga. When Bill Lang came from New Zealand to work at the Tonga Copra Board he brought his hobby along with him. The Tonga Telephone and Telegraph Commission (T&T) issued him a courtesy licence and he went on the air as A35WL. Not one to be satisfied to enjoy ham radio alone, Bill soon gathered a small group of interested Tongans and palangis which began meeting weekly as ARCOT.

Bill Rickertson began giving a course in radio fundamentals which Don Greer A35DE, a Peace Corps Volunteer working as a technician at T & T, later took over. After a term, when it became apparent that the facilities at the University of the South Pacific’s Nuku’alofa Center were inadequate, ARCOT found a new home at ‘Atenisi University. Don’s course continued to arouse a great deal of interest among ‘Atenisi students and the community at large and drew about 25 students. After one term at ‘Atenisi, four of the class’s members passed T & Ts 12 w.p.m. code test and the exam in electronics and radio law. Sione Maile A35SM, ‘Etuate Kavanga A35EK, Puuono Taufa’eteau A35PT and Harry Feldman A35HF were the first ever to be licensed in Tonga by examination.

More recently two other T & T employees, Viliami Vaka’uta and Sione Kava Alous, got the licences A35VV and A35SK. After the second term of Don’s course Sam Kolokihakaufisi got the licence A35SF.

Meanwhile, Don, Sione Maile, ‘Etuate, and Harry put together a shack in the back room of ‘Atenisi’s lab using an antique Eddystone model 750-x that T & T had lent us and a Knight T-60 that a friend in New Zealand donated. The Club station, A35FI, has been on the air since July and we have had many pleasant QSOs with our friends around the Pacific with the Eddystone, the T-60 and an inverted vee.

Early in 1978, Clark Richardson A35CR, became interested in forming a liaison between T & T and the amateur community that might result in some clarification of Tonga’s 1934 Radio Law. At the same time, T & T was taken aback by the unprecedented rush for licences. They were concerned that improperly trained amateurs might interfere with other services. The series of meetings that Clark organized with Henry Malu, Acting Superintendent of T & T, culminated in Henry’s approval of the Club. He was particularly interested in the potential of a group of self trained communicators for alternative communication in time of emergency. Dave Goddard A35DG was the first to communicate with the outside world during the destructive earthquake of June 1977.

In September and October of this year all the members met to approve our new constitution and to elect officers. Dave, as his last action as outgoing president, sent a copy of the constitution to the IARU as part of our application for membership. Our new president, Tavake Vi A35TV, is the very first Tongan ham. Don was elected vice-president, Viliami the secretary-treasurer, and Ric Berger A35RB, the property officer.

ARCOT has received recognition from Tonga’s Legislative Assembly as the official representative of amateur radio in the Kingdom. The Crown Prince, Tupouto’a, has shown an interest in the Club and has agreed to open A35FI officially.

Our plans for the future include continuing classes next year and starting a branch of the Club on the Northern Island group of Vava’u, with the aim of organizing an emergency communication network. We are also hoping to get a USAID grant to install solar powered transceivers in the medical dispensaries in outlying villages to give them an opportunity to consult with the main clinic in Nuku’alofa.

We should be able to make great progress toward our objectives if we can only overcome one or two little problems. One of these is the 1200 miles of Pacific that lie between us and our neighbourhood Radio Shack. Thus far we’ve been relying mostly on parts cannibalized from old transistor radios. We’d like to express our gratitude to Ric Bergaer, N4TN, W70Z, K6AGD, W4NBP, the North Shore ARC in New Zealand, the Flyweight DX Club, the Santa Clara County DX Club, and many others for their words of encouragement and offers of help.

N4TN is acting as QSL manager for A35s EK, FI, HF, PT, SF, SK, SM and VV. You can hear A35s EK, HF and SM operating A35FI between 7004 and 7017 kHz most days between 0800 and 1200Z. Other hams operating in Tonga are A35s CR, DE, RU, RB, TV and WL.
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RF Input Power: PEP nominal
IF Input Power: SSB — 250 watts PEP nominal
CW — 250 watts DC maximum
Transmitter: Antenna Impedance: 50 ohm, unbalanced
Carrier Suppression: Better than —45 dB
Side-Band Suppression: Better than —55 dB at 1000 Hz
Distortion Products: Better than —96 dB
AF Response: 500 to 2500 Hz
Spurious Radiation: Harmonics better than —45 dB below 30 MHz; better than —60 dB above 30 MHz
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Microphone: High impedance 3000 ohm
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Signal-to-Noise Ratio: Better than 10 dB S+N/N for 0.5 μV input
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THE WIA ROLE IN THE “SPECIAL PREPARATORY MEETING”

Michael J. Owen VK3KI

This report on the Special Preparatory Meeting (SPM) is of particular interest to Australian Amateurs. The paper submitted by Australia was based on the work of a number of Amateurs, in particular, Jack O'Shannassy VK3SP and Earl Russell VK3BER. Considerable support and assistance was afforded by officers of the Postal and Telecommunications Department. In addition, valuable suggestions and comments were afforded by a number of prominent overseas Amateurs. The Institute acknowledges their work with gratitude. The preparation of the paper was co-ordinated by Michael Owen VK3KI.

The WIA was asked to provide a Delegate with special responsibility for the Amateur Service on the Australian Delegation. David Wardlaw VK3ADW was a member of the Australian Delegation for the first two weeks of the SPM, and Michael Owen VK3KI for the remaining two weeks. The cost of their travel and accommodation was borne by the WIA.

In the second week of the SPM, the IARU held a reception for leaders of Delegations and members of Delegations who were also Amateurs. More than 150 Delegates attended this reception. Amongst these were many, from Asia and Africa, including representatives of the People’s Republic of China. This was the first occasion on which representatives of China attended an IARU function.

The recommendation of the SPM affecting the Amateur Service will provide an important basis for the Service’s position at the WARC.

However, and very importantly, the significance of the SPM conclusions should be kept in perspective. The SPM was confined to a consideration of technical matters—it was not a frequency allocation conference. In addition to technical matters, the WARC will be concerned with far wider considerations, including economic, political and social issues. But on the other hand, the first and essential step, the acceptance of the technical basis for the Amateur position, has been taken.

The SPM was an essential step in the ultimate resolution of the WARC, but cannot be regarded as an end in itself. The conflicting claims of different Services for radio spectrum will only be decided at the WARC. The needs and requirements of different countries and different Services for frequency are diverse and conflicting. The Amateur Service must continue to press its case strongly, though in a balanced and sensible way.

The WIA, therefore, faces a heavy and continuing commitment over the next year, both financially and in the allocation of its resources.

The response of clubs, members, non-members and industry to the Institute’s appeal for funds will determine how much more the Institute can do in fulfilling its fundamental responsibility to represent Australian Amateurs during this most important year.

SPECIAL PREPARATORY MEETING OF CCIR

Michael J. Owen VK3KI

Between the 23rd October and 17th November, 1978, the International Radio Consultative Committee (CCIR) held a Special Preparatory Meeting (SPM).
The task of the SPM, as defined by the Administrative Council of the International Telecommunications Union was to prepare a report based on texts approved by the XIVth Plenary Assembly of the CCIR, as well as on new contributions submitted to the SPM by Administrations and other participants. The report of the SPM was to be comprehensive and self-contained, and was to be presented in a form consistent with the various agenda items of the World Administrative Radio Conference 1979, and was to consist of technical information and conclusions considered by the SPM to be of importance to the work of the WARC. The report is being distributed as a document of the 1979 WARC and is not available to the public. It was not the task of the SPM to make specific proposals for revised or new allocations.

750 people (not including ITU representatives) participated in the Conference from 85 countries, 30 recognised operating agencies, 15 international organisations (including the International Amateur Radio Union), 10 scientific and industrial organisations, and three United Nations specialised agencies. Prior to the start of the SPM, some 400 documents were sent to the Delegates participating in the meeting.

Dr. J. A. Saxton of the United Kingdom was appointed Chairman of the SPM by the XIVth Plenary Assembly of the CCIR. The technical topics around which the work of the SPM was organised were as follows:—

A. Terminology and classification and designation of emissions. Chairman, Dr. M. Joachim (Czechoslovakia).

B. Terrestrial services up to 40 GHz, technical data for allocation and regulations. Chairman, Mr. C. Terzani (Italy).

C. Space services and space/terrestrial sharing up to 40 GHz, technical data for allocation and regulations. Chairman, Mr. E. Craig (Australia).

D. Monitoring and identification. Chairman, Mr. H. Kaji (Japan).

E. Services above 40 GHz, and optimum use of the spectrum. Chairman, Mr. H. Willenberg (Federal Republic of Germany).

F. Propagation. Chairman, Dr. F. Horner (United Kingdom).

G. Resolutions and Recommendations related to CCIR work. Chairman, Mr. T. de Haas (United States).

H. Drafting. Chairman, Mr. M. Thue (France).

368 new contributions were submitted by Administrations and four of these concerned new questions relating to the Amateur Service and the Amateur Satellite Service. Australia, Canada and the United States submitted new papers dealing with preferred bands for the Amateur Service and the United States also submitted a paper dealing with the Amateur Satellite Service.

The Australian contribution paid particular attention to the bands below 30 MHz. It was directed to investigating an optimum basis for the efficient allocation of spectrum to ensure the operational effectiveness of the Service. It examined the family of frequencies allocated to the Aeronautical Mobile (R) Service, the Broadcasting Service and the Maritime Mobile Service. It pointed out that the particular needs of these Services were met by the allocation of a suitable family of frequencies. It further pointed out that the allocation of harmonically related bands was formally recognised at the 1927 ITU Washington Conference. However, it argued that the need for harmonically related allocations no longer exist. It also argued that the wide spacing between successive bands had caused unacceptable crowding of these bands. Annexed to the Australian contribution was a computer study that illustrated the increase in communication capability over three particular paths if bands at 10, 18 and 24 MHz were allocated to the Amateur Service in addition to the existing allocations. The study took into account varying propagation and seasonal conditions. It illustrated that the provision of a new band at 10 MHz would provide a major improvement.

The Australian contribution also contained that sharing with radiolocation in the VHF and higher bands was feasible and desirable to provide access to wider and more useful bands, though it was desirable to preserve some exclusive allocations for particular Amateur experimentation throughout the spectrum.

The contribution of Canada referred to the extent of use of Amateur bands and also illustrated the improvement in reliability in communication on three east-west paths by the addition of a new band at 10 MHz and argued, as did the US paper, for an enlargement of the family of frequencies available for the Amateur Service in HF bands.

The Amateur Service and the Amateur Satellite Service were considered in Committees B and C. Initially the Conference was divided into a large number of sub-working groups and working groups which reported to the main Committees. The documents circulated to Delegates before the SPM were considered and subject papers produced, which were eventually considered by a Plenary Meeting. Each paper went through a three-stage process before finally appearing as a "pink" document. These documents, as approved by the SPM, will constitute the report of the SPM.

The IARU participated in the SPM as a full delegation, and actively took part in discussions involving the Amateur Service. The IARU Delegation included Merle Glunt W3OKN, Roy Stevens G2BVN, and David Sumner K1ZZ.

David Wardlaw VK3ADW and Michael Owen VK3KI served on the Australian Delegation with special responsibilities for Amateur Radio matters. In addition, there were more than 50 Radio Amateurs who formed part of national Delegations.

What were the important conclusions of the SPM affecting the Amateur Service? In the context of allocations of frequencies up to 30 MHz, the SPM referred to the fact that frequency dependent factors determine the effectiveness of radio communications in the Amateur Service, and also pointed out that Amateur station operators continue to contribute to the allocation of 30 MHz of radio propagation phenomena, as well as the development and demonstration of spectrum conservation techniques throughout the radio frequency spectrum. The SPM concluded that frequencies in the MF band are useful to allow investigation into, and use of, propagation peculiar to this band, particularly during a sunspot minimum when the MUF is below 3 MHz. The SPM also concluded that the communication capability of the Amateur Service would be significantly enhanced by a better distribution of the frequencies available to it below 30 MHz. A suitable family of frequencies with narrower spacing between successive bands than at present the case would have some technical advantage. The SPM also concluded, significantly, that it is not necessary to preserve a harmonic relationship between all of these bands. The SPM included in its report the computer study annexed to the Australian contribution, and the table annexed to the Canadian contribution.

The SPM also gave consideration to the allocation of frequencies above 30 MHz and in this part of its report the SPM referred to the definition of the Amateur Service in the Radio Regulations and also noted that "the number of Amateur stations, world-wide, is now more than 1,000,000 and is growing at an annual rate approaching 20 per cent". It suggested that international harmonisation of allocation to the three Regions are desirable. It also concluded that access to bands distributed throughout the spectrum is desirable to enable the Amateur to become experienced with those problems which are peculiar to different parts of the spectrum, such as the various modes of propagation, the problems of signal generation and detection, and antenna design. It again pointed out that Amateur bands no longer are required to be harmonically related. It also pointed out that it is desirable that bands allocated to the Amateur Service are sufficiently wide to permit experiments with wide-band techniques. It also concluded that the Amateur Service could share frequency bands with the Radiolocation Service, permitting broader band operation than would be possible with narrower exclusive allocations. The report of the SPM further said: "Such sharing would not require a Radiolocation Service to provide protection to the Amateur Service which would not be feasible, but even with this constraint, useful exploitation is possible by the Amateur Service."
Exclusive allocations, where possible, would help to meet particular needs of the Amateur Service." The SUM annexed a conclusion as to the feasibility of the Amateur Service. "The SPM further concluded: "Additionally, the one question that had previously been under consideration is CCI7 affecting the Amateur Satellite Service was the question of the technical feasibility of frequency sharing by that Service. The SPM referred to the existing CCIR reports on this topic and concluded it is technically feasible to use existing world-wide Amateur Service frequencies in the earth-space direction in the Amateur Satellite Service subject to the provision of 6362(1567A) of the Radio Regulations and also appropriate PFD limitations, it would appear to be feasible to use frequencies in the bands 1215-1300, 2300-2450, 5650-5670, and 10475-10500 MHz in the space-to-earth direction." Two other references to the Amateur Service that will be contained in the report of the SPM are of interest and indicate a real awareness of the particular nature of the Amateur Service. In the context of the chapter dealing with questions involving propagation, the observation is made that "it is assumed that there is little interest in circuits which provide effective communication for small percentages of the time, except possible by the Amateur Service, in which the use of relatively poor circuits presents an interesting challenge". In the context of frequency tolerances, the SPM reported "no tolerance values have been established for meteorological aids, nor for the Amateur Service. This matter can best be handled by national Regulations."

Writing to the IARU Region 1 Division WARC 1979 No. 10 (December, 1978), Roy Stevens said "After the SPM had concluded, it is possible to say that the meeting assumed an importance greater than was originally envisaged. Many Delegates at the SPM will also be present at the WARC and decisions taken at the SPM will have a considerable influence on the work of the WARC."
The light intensity transmitted is almost directly proportional to the current through the transmitting diode and the current generated in the receiving diode is almost directly proportional to the light falling on the receiving diode.

The physical theory of receiving and transmitting devices is explained at considerable depth in such texts as —


Circuits to drive the transmitting diodes have been published in simple books such as —


Circuits to amplify the received signals are given in most standard books on electronic circuits as well as in specialised well written books such as —


As a part of Electronic Design project work, Electronic Engineering third year students at Swinburne College of Technology in Hawthorn have designed, constructed and tested circuits which are small enough to fit into Single Lens Reflex camera bodies which have had photodiodes mounted on the optical axis at the focal plane at the back of the camera.

Parts for transmit and receive circuits, including suitable photodiodes, have cost less than $50. Two medium aperture 35 mm SLRs with defective shutters have cost less than $40. The test link at Swinburne cost less than $50. Two medium aperture 35 mm SLRs with defective shutters have cost less than $40. The test link across the two diodes in Fig. 1 should be omitted.

A SIMPLE AND ECONOMICAL SSB 80 METRE RECEIVER

Due to a technical fault, the PCB on page 24 of December AR did not reproduce properly. We have printed it again for those who may have run into trouble.

The transistor Q1 in Fig. 2 may be a 2N3691 or similar RF FET with good gain.

In Fig. 2 Q2 in the breadboard constructed by the author was a 2N3638. Any PNP RF amplifier should be suitable, particularly those with good high signal capability and low noise figure. Other suitable types include 2N4122, 2N4917, etc.

The author wishes to apologise most sincerely to those people who wrote requesting this information and were incorrectly given a list of NPN transistors, such as 2N3583, 2N3886, etc. Apparently the author suffered an attack of temporary imbecility.

The RFCS should be 1 mH or so. A single pi wound coil RFC of 1 mH has been available through various common component retailers. The reactance should be more than 500 ohms over the whole frequency range of interest.

When the circuit in Fig. 3 is set up, R must be adjusted so that Q2 draws a useful collector current. Voltages taken from one unit are as follows: Source of Q1 (the junction of the 820 and 8.2k ohm resistors connects to this), plus 2.5V. Source of Q3, plus 2.5V. Collector of Q2, plus 6.5V. All voltages were measured from ground with a 20k ohm per volt voltmeter. The voltage across R was 0.6V. R consisted of a 200 ohm potentiometer in series with a 100 ohm resistor. The supply voltage was varied from 10 to 15V — only a small effect on any of the above voltages was noted.

A tantalum capacitor of 4.7 uF or so may be necessary across the supply rail to prevent oscillation.

Note that if the gain is considered inadequate it may be increased by bypassing the 820 ohm resistor with a 0.1 uF capacitor. An RFC may also be placed in series with the 8.2k ohm resistor to increase the gain further.

The circuit is most successful with antennae less than 0.05 to 0.1 wavelength long at the highest frequency of use. A CB whip is too long except for frequencies less than say 10 MHz. An L network would be better for matching a CB whip.

Antennae 0.1 wavelength and longer will provide sufficient match to 50 ohm coax for the amplifier to be of marginal use. The presence of strong broadcast stations will also make the use of a longer antenna unwise as strong cross-modulated "birdies" will appear at the low end of the HF spectrum.

Beware of shunt capacitance — either due to layout or that inherent in some components. This will cause the gain to fall off rapidly at the higher frequencies.

QSP

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AMATEUR SATELLITES

Bob Arnold VK3ZBB

There has been a considerable fall-off in activity through satellites during the past few months possibly caused by some of the difficulties in communication such as high noise levels, fading and, for Oscar 8, the Doppler effect. This trend has become apparent since daylight saving commenced in the Eastern States; perhaps the generally late hour of satellite acquisition has something to do with the lack of activity.

OSCAR 7

AO7 is now in a serious condition. It is generally late hour of satellite acquisition and difficulties in communication such as few months possibly caused by some of the transponder or beacon in operation. The recharge mode, without either giving us good service, particularly on the Eastern States; perhaps the apparent since daylight saving commenced the ten Ni-Cad cells have shorted out and never make the down-link signal significant stronger than the beacon.

Due to the low voltage, which is now between nine and ten volts, the Mode B telemetry is sending meaningless figures but the Mode A telemetry is still operating. AO7 is now over four years old, and has given us good service, particularly on Mode B. With a little care it may be possible for the satellite to last the four years eight months life of AO8.

OSCAR 8

AO8 is in good condition and operating satisfactorily on both Modes A and J. Wednesday is the special experiment day and on these occasions it is possible to find AO8 in both Modes for some orbits. This can be observed from the telemetry — in Mode A, channel 8 normally indicates a Code 601 but when Mode J is also working a figure of 620 will be observed. In order to conserve AO8, operate on the minimum power to acquire the satellite and never make the down-link signal significantly stronger than the beacon.

RUSSIAN SATELLITES

I am sorry that the information given in the January edition of AR, particularly so far as the predictions were concerned, was way out, but as I indicated then, those notes were written only a few days after the satellite was launched when little was known of its parameters. Even today, a number of questions remain unanswered, but it would seem that we do have the orbit times under control and the predictions given in this issue should be a little more accurate.

The daily progression of the reference orbit is 4 minutes 42.6 seconds and 2.724 degrees to the West. These figures are a little greater than those previously published and give a rather unusual set of acquisition times, quite different from those applicable to the AMSAT satellites.

It is now confirmed that there are two satellites, the second one running fifteen minutes later than the first and 4 degrees further West. I will "stick my neck out" and give a few estimated acquisition times for RS.1 during February —

On Sunday, 4th February, Orbit 1206 should be heard 0128Z on Ascending Node 31. This will be a north-south orbit crossing the equator immediately above Australia at 226 degrees West.

On Saturday, 10th February (Sunday morning local time), the first orbit to be heard will be 1288 at 2201Z with an AN 350. Again, a north-south pass. At 1042Z Sunday we should hear a south-north pass.

On Saturday, 17th February (Sunday morning local time), the first pass to be heard will be 1372 at 2234Z on AN 10 N-S, and again we shall hear it on Sunday at 1110Z on AN 190 S-N.

From the information given above, you should be able to calculate the time and position of orbits subsequent to those given and also for other days of the week. The orbit is two hours approximately and the Westernly progression 30 degrees.

It is now confirmed that if the input power to the satellite is excessive it will automatically switch off, and it appears this is a quite common occurrence as only on rare occasions has the transponder been working. We have heard the beacon on many days but have only enjoyed working through the satellite three or four times when communication has been first class. Therefore, keep your power down to under 10 watts ERP and don't let Australia be the cause of switch off.

There is no sure way in knowing the status of the Russian satellites; all one can do is to listen to as many orbits as possible and hope the transponder is switched on. If you hear a U or a K being sent after each bit of telemetry you can be assured that it is not on, but if a W or O is heard it probably is switched on. I hope I may have some more information on the interpretation of telemetry data for our next edition.

PROJECT ASERT — PROGRESS REPORT

Bob Arnold VK3ZBB
Ken McCracken VK2CAX

In the September 1978 edition of "Amateur Radio" a report appeared indicating the Federal Executive's support for a scientific investigation of the propagation of VHF radio waves. This study has been named Project ASERT (Amateur Satellite Experiment in Radio Transmission) and a working group has been formed to initiate and co-ordinate the study. This Committee consists of Bob Arnold VK3ZBB as Coordinator, Ken McCracken VK2CAX Scientific Leader, Peter Wollenden VK3ZPA representing Federal Executive, with Les Janes VK3BKF and Greg Brown VK3YGB as hardware leaders.

The Committee decided to conduct this study in two phases, phase 1 being limited to monitoring a small number of transmission paths during the summer of 1978-79, and phase 2, a more detailed study of more paths, and involving additional receiving stations for a period of at least
twelve months from June 1979. Phase 2 is expected to cover the period of high sunspot activity now projected for early 1980. Phase 1 is now well under way and signals on the following routes are being recorded on a 24 hour basis: (a) Brian Yeoman VK7ZBY in Launceston is monitoring the VK3 and VK5 144 MHz beacons located in Melbourne and Adelaide respectively. (b) David Minchin VK5KK, at Wasleys, near Adelaide, is monitoring the ZL beacon on 52.5 MHz at Palmerston North and is ably assisted by Col Hurst VK5HI and Eric Jamieson VK5LP. (c) Ken McCracken (Sydney) is monitoring the VK5 beacon (52 MHz), and (d) a receiving system constructed by the ASERT Group and located at the QTH of Bruce Roberts VK3ZMR commenced monitoring the VK5 beacon (144 MHz) on New Year’s Day. The VK3 station has been designed to obtain experience with receiving equipment and specialised recording devices in preparation for phase 2. It is anticipated that this installation will be moved to a new and permanent QTH in Melbourne at the end of February.

The Committee is grateful for the interest shown by the amateurs mentioned above and for the co-operation that has been forthcoming from the Brisbane VHF Group and Selwyn Cathcart ZL2BJ0 of Massey University, New Zealand. It is anticipated that the assistance of these stations will be co-opted for Phase 2.

The Committee is currently deliberating on the standards which should be adopted for antennas, receivers and recording equipment and these will be determined in the near future to enable consistent standards to be maintained at all receiving stations.

THE FIRST RESULTS
Brian Yeoman VK7ZBY was the first ASERT station to become operational. His equipment is housed in the control tower at Launceston airport and uses a printing calculator as a data recorder.

Figure 1 displays data obtained from the Launceston receiver during the period 9-11 December 1978. It shows the fraction of each hour for which the beacon signal exceeded the recording threshold, which was set at 0.25 microvolt. The synoptic weather chart for 10 December is given in Figure 2. It can be seen that there were substantial 144 MHz openings over both paths throughout the period, presumably associated with the pressure high over Tasmania at the time (Figure 2). The VK5 to VK7 opening was longest on 10 December, while the VK3 to VK7 opening was longest on the following day, consistent with the eastward motion of the pressure high. Throughout the period, it can be seen that the openings tended to occur in the mornings.

THE FUTURE
It is very desirable that the investigation be extended to other Australasian paths, and to the TEP route to Asia, particularly on 144 MHz. Amateurs or groups of amateurs who wish to contribute to this investigation through the establishment and operation of receiving stations should contact the ASERT Co-ordinator, care of this magazine.

ARMY WIRELESS SETS OF WORLD WAR II
Compiled by Rodney Champness VK3UG Photos by Ken Reynolds VK3YCY

9. The No. 19 Mk. II is really two transceivers in the one case. It has a small super regenerative receiver and transmitter working on nominally 240 MHz which was used for intercommunications between nearby units, and the main transceiver which covers 2 to 8 MHz. In addition it has an intercom amplifier for communications within the vehicle. It is mounted. Until a few years ago these sets were still being used in army tanks. Probably they needed to be carried in a tank as they weigh 42 kilograms with power supply and base attached. The power supply is a 12 volt DC generator and the set's current drain on CW transmit is 12 amps and on receive 7.5 amps—a big user of power. The final PA valve is an 807 and could be expected to put out about 15 watts on CW.

The set is quite complicated and not easy to work, but must be rugged to withstand the pounding it would have got in a tank. They were moderately popular with amateurs in the USA but I don't know personally of any amateurs who used them—although some pirate types did a few years back. The No. 19 when coupled with
the RF amplifier No. 2 could run up to 60 watts output on CW and 30 watts AM. Quite a potent signal, and a very heavy drain on a 12 volt battery.

10. The AR8 receiver is the companion to the AT5 transmitter. It is a 6 band VLF, MF and HF receiver, covering from 140 kHz to 20 MHz with a small gap in the tuning range between 740 and 765 kHz. The IF frequency is 755 kHz. The receiver has two RF assemblies, one tuning from 140 kHz to 2 MHz and the other from 2 MHz to 20 MHz, and as a result of this, the receiver can be preset to two frequencies which are selectable by flicking one switch. In addition to its ordinary function as a communications receiver, it has direction finding facilities in the 140 kHz to 2 MHz range. This set was extremely popular and was used in aircraft, on land and in ships, altogether a versatile set. The set obtained power from 12 to 24 volt generators or from the Type S 240 volt AC power supply, which also powered the AT5 transmitter. The AR8 is not an easy set to service, and to work on many parts the various RF assemblies must be completely stripped out of the set — certainly not a job to be undertaken on the battlefield.

The AR8 also proved to be a very popular set with amateurs and many of these sets are still used by short wave listeners. Many modifications appeared in the various magazines to provide bandwidth and so forth on amateur bands. One of the most popular mods was to change the audio so that a speaker could be driven instead of headphones. The going price for these units in good order operating off AC power is still in the vicinity of $50, so they must still be good 30 to 35 years after they were made.

QSP
RFI AND POLICE SPEED TRAPS
In Radio ZS of June 78 there is a very interesting item concerning the vulnerability of police speed measuring devices to RF interference.

The equipment in question is of both the radar type and the ammeter type. After tests a speeding ticket was withdrawn as it was found in the tests that the various types of speed measuring equipment were affected by RF from a mobile transmitter in the car whose speed was being measured. The tests showed a wide variation in readings and resulted in the ticket being withdrawn.

The equipment used in ZS may be different to that used locally but if a similar susceptibility to RFI exists then there could be some interesting local cases.

RADAR THREAT TO 70 CM BAND
According to Ham Radio for August 1978 a potential radar interference threat to the 420-450 MHz band is being studied by both AMSAT and the ARRL.

The radar threat is from the US Air Force "PAVE PAWS" long range radar to be installed firstly at Cape Cod Massachusetts and later in California. This very long range radar has an Average ERP of 1 Billion watts approximately. This would result in a moon reflection of a 10-20 microvolt signal and have significant effects on both humans and equipment within quite a large radius of the antenna.

PHOTO No. 9

PHOTO No. 10

Have you checked your Call-Sign on the Address Label?

Are you checking our bands for INTRUDERS AND REPORTING SAME TO THE INTRUDER WATCH CO-ORDINATOR?
LETTERS TO
THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

The Editor,
Dear Sir,

The push-button tuneable AM car radio evolved over many years as a device which combines convenience (push-button selection, instantly reprogrammable) flexibility (continuous tuning), and above all, safety for the car driver. The present generation of mobile transceivers for 2-metre FM falls far short of all these requirements, being either inconvenient and therefore dangerous because of the time taken to select a new channel (synthesiser lags), or inflexible because of a limited number of fixed channels which can (sometimes) be reprogrammed at home.

I offer the following specifications for the 2m mobile, for I would like to buy — manufacturers please take note:

(a) 12 channels selectable by rotary switch (as on the IC225).
(b) Fixed channels to be reprogrammable with a non-volatile CMOS memory as in recent electronic calculators) simply by setting the channel selector switch and then pressing a “store” button. Simplex or repeater up/down operation to be Included in this programming so that these switches need only be used manually in the 12th synthesiser position of the channel selector switch, and of course for programming.
(c) Digital display showing the frequency in use on all 12 switch positions.
(d) Magnitude of repeater shift (normally 600 kHz) to be reprogrammable in a similar way.
(e) Continuous scanning of all 12 channels to be available.
(f) Digital display showing the frequency lock on the IC225.
(g) Transmitter output power to be 25W/5W.

In reply to the question asked by Mr. Chamness VK3UJ, in “Novice Notes”, AR September 1978, “Are They the First?”, not quite. Graeme and I received our Novice Station licence numbers, 52510 and 52511 (VK8NKR and VK8NSU) on 7 September 1978, having been successful in the first Novice novice exam. held in March 1976. The station receiver was a Lafayette KT-340 and 80 W transmitter “OM” brew, 10 watts, built entirely (power supply too) from an old TV. The antenna was a shortened vertical; 16 feet of dwelling hall-wire wound with about 130 feet of wire, mounted on the galvanised iron roof (the ground plane).

On 6 October 1976 Graeme obtained his full ticket, becoming VK3BGG, and I graduated to VK8SU a couple of months later. Possibly VK8NKR is the shortest lived novice (one month) A few people have asked what happened to him.

The station rapidly expanded; an FT101E made operating a lot easier for both ends of QSOs though we still both enjoy using the home brew. We have just returned from a holiday in the U.K. where we operated during our travels. The most pleasing contact for myself was with DL3CU in Essen on 80m using a home made solid state 10W Tx. DL3CU was using his 2m antenna and I was using a UHF TV antenna (aided by a splendid little transmatch, ARRL Handbook 1977: A Transmatch for ORP Rigs)...

Sue VK8SU — the shack now.

Despite the poor weather conditions an estimated 600 plus attended.
All the items for the Auction had been donated by the Dick Smith Group. Items included a wide range of shop sold lines, samples, etc., all of which were sold on the day.
$3,500 was raised and goes to the Institute to be used nationally in assisting the education of future members of the Amateur Radio Service.

Our thanks to your publication for the excellent publicity given in recent issues, which no doubt contributed to the attendance and success.

My own thanks also to the many helpers who assisted on the day and to Terry VK2TQ, who did an excellent job as the Auctioneer.

73 Tim Mills VK2ZTM, VK2 Division Secretary.

The Editor,
Dear Sir,

I refer to the “QSP” on page 36 of AR for January. Once again I draw your attention to the fact that the WIA in Australia has its own official DXCC organisation ably administered by Brian Austin VK5CA.

Therefore, it is unnecessary, and far too costly to forward QSL cards to the ARRL in U.S.A. for DXCC credits. Why not support our own DXCC Department!

A quick check of the last published DXCC list, in AR, shows at least a dozen VKS with over 300 countries confirmed, none of whom appear in the “QST” list for reasons outlined above.

Obviously the writer of this “QSP” has not done his homework, nor does he give us the facts.

We would be possible to have more frequent DXCC listings published please?

Sincerely,
Fred Lubach VK4RF

The Editor,
Dear Sir,

A footnote from you does not excuse the poor quality of the article about the “Wooley Bum Certificate of Achievement Award” in December AR.

I, for one, have reservations about accepting a “Wooley Bum” number, until truthful answers are given to the following questions—

Who is “David Ramsbotom”?
What does he do for a living?
Does he often pirate on 27.355?
Has he ever pirated on 28.570?
How many “Wooley Bums” has he pirated on 2 metres?

The name of the club is of an extremely low standard, so is the layout of the certificate, e.g. the dog urinating on the seal. I’m sure on these two points I do not stand alone.

If answers are given truthfully and all is revealed about the somewhat dubious character and activities of the club, my reservations may be removed. Until then . . .

VK2NUN

Editor’s NOTE: Perhaps “David Ramsbotom”, whoever he may be, would care to write to me with answers to the above — (VK3UV)

The Editor,
Dear Sir,

Ladies and gentlemen of Amateur Radio Operators of the Darling Downs Radio Club at the Toowoomba 80m. DX contest, will change frequency and re-programme if the above intelligence is true. This is not a competition, but a hobby. The contest will be held this Saturday, 2nd December, 1978, from Channel 44 repeater to Repeater Channel 74 (Input: 147.7 MHz, output 147.1 MHz). The change has been approved by Post and Telecommunications Department.

The reason for the change is to eliminate interference problems caused by the allocation of the same repeater channel (44) in adjacent areas, viz. Bundaberg, Toowoomba and Lismore where operators in some locations can access two and some

The Editor, Dear Sir,

The Auction Sale conducted for the Institute by the NSW Division on Saturday, 28th October, was very successful both in terms of the volume of goods for sale and the money raised.
The Editor,

Dear Sir,

I refer to page 37 of December, 1978, Issue reporting the formation of the “Wooley Bum” Club and the Introduction of Its so-called “achievement award.”

Those of us who hold the Amateur Service in esteem, based on its long and worthwhile record of public benefit and its fostering of “the amateur spirit,” must feel dismayed at the Invasion of our Amateur Radio situation. I shall be pleasantly surprised if it is not a rough contest, as one Year later than it should have been. Rule 10 parts (c) and (d) were listed as part (b) in three places. The current time period is very restrictive when the 'average' operator, if such a being, can operate throughout the whole 24 hrs. due to the various conditions, e.g. weather, etc.

I expect that the WIA at Federal level will give up the floor and resist vigorously similar attempts by this second wave of invadors. STRONG, adequately staffed and resourced for this event, we can overcome all the operators since the inception of the Novice scheme. However, under no circumstances do I condone the widespread and unnecessary knowledge needed to determine the sub-standard mental processes of the drags of the CB movement.

To find that your — OUR — Amateur Radio publication gives support and publicity to this “success” is disturbing — disgusting — in the extreme.

I have supported the upgrading of CB users to Amateur status and, in fact, have performed in the one minute operation of my operator since the inception of the Novice scheme. However, under no circumstances do I condone the widespread and unnecessary knowledge needed to determine the sub-standard mental processes of the drags of the CB movement.

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Why is it that AR does not publish a DX column? A question I asked myself and got: what I suppose was a reasonable reply — no one has offered to write one. So here goes! I do not suggest that I am the best that is available, but I appear to be the only one obtainable!

How does one tackle the numerous problems facing a DX column writer? The main one, of course, is being up to date. With copy required well in advance, often a DXpedition will have come and gone without any advance publicity being given. If you believe you would like a DX column then your help is required. Any advance information on any DX activity would be most welcome.

Secondly, what is DX? To some it may be the thrill of working a large building in New York (you haven’t worked 4U1UN yet?). To others there is the pleasure of a QSO with anyone outside this island continent and to others there is the kick from working QRP.

Thirdly, how does one tie in the differing propagation conditions between East and West coasts? This writer does not suggest he has the answers to these problems but in the ensuing months I hope to present something that may be acceptable. Any column is only as good as its readers, comments good or bad, information, photographs are all welcomed and appreciated.

Yes, I do call myself a DXer.

Yes, I do chase DX on all the HF bands.

Well, 1978 has gone and for some it has been a good year. Clipperton finally showed, there was activity from South Sandwich, Iraq and Somalia. Here’s hoping that 1979 will bring Bouvet, Burma and China. You never know.

Rumour has it that a group of VKs or ZLs are going to activate Spratly during 1979. How about some more information on this one?

Bouvet should have shown by December 24th. I hope all those who needed it made it. For the CW bulls, LU3ZY is active from South Sandwich on the odd occasions, usually around 14025 kHz.

At the time of writing (late December) there was still no word from the ARRL whether and when DESECHEO will count. Could this be one that got away?

Don’t forget to keep your ears open for 601FG if you missed out last time. This one should be re-activated in early 1979.

Rumour has it that there could be activity from Peter Island (71 South, 90 East) sometime in February.

Finally, don’t forget those long path openings on 10 and 15 metres especially during February and March. Ten metres has produced some pleasant DX surprises just before the band closes up for the evening.

Happy hunting.

QTHs you may have missed:

DE9BD via G3RWU, YI1BGD P.O. Box 5864, Baghdad, 601FG via G1MGP

STOP PRESS

BOUVET ISLAND
Ship fouled propellor and was towed back to Cape Town. Rumour has it that it should return to Bouvet at end of January and operations will commence by 14160 and 21600 until mid-February. Frequencies to watch are SSB 14300, 21600, 28600; CW 14030, 21030, 28020.

EDITOR’S NOTE: We welcome Mike’s offer as DX contributor and trust that our readers will give him as much assistance as possible by forwarding your DX comments direct to him.

QSP

SPECIAL CALL SIGN
To mark the 150th anniversary of the University of Cape Town, founded in 1829, the SARL will be setting up a special station at the University, with the call sign ZS1UCT, from 17th February to 4th March, 1979. Operations will be all modes on the 10 to 40m bands and an award will be issued — details available from SARL Awards Manager, Box 5100, Cape Town 8000, RSA.

Masaaki Saito JA8IE/VJDI operates from Minami-Tori-Shima. QSLs via JA8JL.

Masaaki Saito JA8IE/VJDI operates from Minami-Tori-Shima. QSLs via JA8JL.

LEFT: LUDEK OK1HAS.

ABOVE: DAS OK1DL.
15. When applying for membership, neither QSL cards nor detailed logs are required, simply a list of contacts claimed showing date, duration in local time, band and mode employed.

16. Three contacts at random from the list supplied by the applicant will be checked in writing by a committee member.

17. The committee initially to consist of the ten charter members in Australia, plus overseas charter members as they join.

(b) Thereafter, the committee to be elected annually by a simple majority of club members eligible to vote.

18. All decisions affecting the Club to be made by a majority of committee members active at that time.

19. Twenty percent of Club members in writing shall be a sufficient number for a matter to be put to a general vote, the outcome of which shall be binding upon the Club, the number of votes required being a simple majority of all members eligible to vote.

20. Club nets, competitions, awards and constitutional amendments to be decided upon by a simple majority vote of those eligible.

21. The interim net active now is 3565 KHz at and from 1400GMT (Fridays date) Saturday morning local time.

22. Contacts (for qualification) count as from 0100 local time July First 1978.

23. Allocation of membership number and initial award(s) may be effected by any one committee member after consultation with as many of the committee members as may be readily contactable. (Mail/Phone/Club Net).

24. The decisions of the committee shall be final and binding upon all club members unless challenged and overturned by a general vote.

25. A committee decision must be challenged within one month in writing if such a challenge is intended.

26. The basic award shall consist of a bannerette and certificate, with an optional extra of a Mopoke statuette or key chain also envisaged for the future.

27. Subsequent awards and/or endorsements to be endorsed by general vote of those eligible club members.

28. An inactive member may restore voting rights by compliance for one month with the requirements for active membership.

29. The Club can be run as a non profit organisation, except that funds may be accrued for routine overheads and for such purposes as decided by a general vote from time to time.

30. Any funds at all times to remain the property of the Club and to remain under the control of the committee.

31. A formal constitution to be adopted if possible at the First Annual General Meeting.

NOTE: Cost (including packaging and posting) of membership, certificate and bannerette $5 Australian. (May alter as time goes by to keep up with costs). Information from R. J. Whitehead VK3NHA.

QSP

EDITOR'S NOTE: Contributions from Old Timers on their activities in the years approx. 1925-1935 would be most welcome, as there is much information hidden away in log books etc. which will otherwise not be brought to light. (VK3UV)
communications will face considerable disruption.

WHERE? HAPPENED SINCE suffers Interference, whilst point to point HF excerpts are Feb. 1978 64.4, July 78 89.5, Oct. 78 432.400 VK4RBB -- Brisbane 145.300 ZL3VHF - - Chrlttchurch 145.250 ZL2VHP - -Palmerston North 145.150 ZL1VHW-- Waikato 145.000 VK6RTV --Perth 144.900 VK7RTX -- Ulverstone 144.101 VK2WI — Sydney 50.100 5W1AB — Samoa 50.013 WB6KAP — California 52.400 VK7RNT- — Launceiton 52.300 VK8VF — Darwin 52.500 3D2AA — 50.110 KG6JDX -— Guam 53.000 VK5VF — Mt. Lofty 50.088 VE1SIX - -New Brunswick 50.050 WA1ENX —  Malm...
of the ASERTS groups in each State. Some people will be surprised to see the list! Please note: although we have included IC202 stations, it is not necessary when you have two call signs in the one shack!

TWO METRES AND ABOVE

David VK5KK continues: "29-78: 1308Z VK7ZAH 144.1 5 x 5 on aurora. VK7DA heard.

22-11: VK6 opening. 144 MHz and 432 MHz both 5 x 9 and VK5NY and VK6KK hearing VK6WG on 1296 MHz. Call signs on lower freq. VK6WG and VK6XX.

"20-12: Sporadic E opening on 2 metres to VK2. VK2ZTH 5 x 9 + 0650Z and VK2YDF 5 x 3 at 27-12. VK2YDF heard on 2 metres but not a very strong signal.

The last letter from Graham VK6BG was dated 24-11 shortly before he went on holidays. Note for the period 17-10 to 23-11 only one contact on 144 MHz was made in VK6BG in rather indicates as a expected off in 2 m re activity during the Es season. JAs on 6 metres however were not far off the mark it was indicated by the storm activity in Darwin also has a restricting influence! With so much information this time, some prong has had to be done to all letters received.

Tony VK6BV worked here on 20-12 from his new QTH at Northam from the temporary shack. He worked OA2Z and many others on 20-11. Suffers from heavy power line noise from north at times.

Gerry VK2ZGF wrote to say the contacts by VK3AXV with VK6BG in October were preceded by contacts by Gerry and at least two other N.S.W. stations with KH6EOI on 22-10. Other 144 MHz contacts have been made with all contacts later on into W, VE and other call areas because of this 2 MHz separation.

The comprehensive nature of David's report will allow those who live in other areas of Australia to compare with their own notes, and see what opens when and where, and how often.

MORSE SUCCESS

Pleasing to note Graham VK2ZV is doing something very useful during his holidays and going about the task of installing a beacon there with the call sign J88PV and operating on 51.999 MHz, and which it is hoped will be able to continue to operate on a 24 hour basis. 10 watts output. The beacon at time of writing has been heard in most States so far, after commencing operations October 1st. VK6GL and VK6GD have sent a report KGDX had worked a VE7 on 50 MHz!

Jas seem to have favoured the southern States during the past two months. NoteHal VK4OO had a number of strong 50 MHz contacts.

Many openings, into VK7 too, but VK3 seems to be missing out a bit, or else no one is on. From VK4OOH confirms the Ch 6 transmitter is just south of Traralgon, about 200 miles north of Townsville, and runs 500 watts. Great place to put a Ch 0 TV station, right in the heart of spartic E and TEP territory!

Vladstock TV on 49.75 a good pointer to likely opening on 144 MHz. Heard Tom VK7OY working when in shack doing nothing. 10-12: Aub VK6XY said boys in Carnarvon working through the Ch. 8 repeater with VK3AXV, and apparently a lot of people had that opening, so a strong south path does exist there at times. Did hear the same day about a 10 GHz contact in VK3AXV, who had a SWR problem and had it fixed. VK7OY has written! 16-12: FK8AA worked by VKJOT, VK3 AMK and VK3AXK. 15-12: VK5 to 30DCM 5 x 3, only one contact was logged. FK8AA to 3 element, distance to V5 over 2700 miles. 27-12: FK8AB and FK8AX to VK2ZBD and others.

For OQLs to FK8 write care of Box 779, Noumea. 1-10-79. VK2YDF in VK2.

Congratulations to you, Rod, for your effort, you can now move into the records for a 432 MHz contact from VK2 over the greatest distance, for the first time to another country on 432 MHz. You worked VK2 over the greatest distance and I feel as a rule 2 metres in either SSB or CW is the only answer and taking note of the opening. VK7DA heard. VK2 on 144 MHz. SSB must be extinct and we would be doing a lot more if we could operate 3 element, distance 10 V5 over 2700 miles. 144.1 5 x 5 on aurora. VK7DA heard.

27-12: FK8AB and FK8AX to VK2ZBD and others. For OQLs to FK8 write care of Box 779, Noumea. 1-10-79. VK2YDF in VK2.

Great excitement prevailed on the east coast of Australia from Sunday 7-1 through to at least Wednesday 10-1 when many stations in VK2 and VK4 were able to work to New Zealand on 2 metres. First news came to me from Rod VK2BGJ in Southland via a telephone call that he first became aware of the opening about 1400Z on Sunday 7-1, when he opened on 2 metres. VK2BGJ was peaking to a 5 x 9! Rod worked 12 stations at that time, with ZLTAB, ZL1AV and ZL1NB on SSB. Others were worked either via New Zealand or directly. The main problem is that ZL repeaters work 700 kHz down in frequency with 12.5 kHz deviation. Unless you have a good DX score you will have some problems working through their repeaters! VK2YDJ was reported as having worked up to 80 ZLs via repeaters. Appears there are a few stations who may not have been made aware of the time to be essential for good contacts. Still continuing through to Tuesday 9-1 a.m. local time.

A further message received on Wednesday 10-1 may now move into the records for a 432 MHz contact from VK2 over the greatest distance, for the first time to another country on 432 MHz. Rod was able to work VK2YDJ on this occasion but was unable to copy Rod.

Phone call from Martin VK4ZIL on the Gold Coast, 60 miles south of Brisbane, indicated they had been in on the conditions as well. At the time of phoning he had contact with VK7DA with running 10 watts at 4 x 1. Also worked ZL1TPY, first heard via the Gold Coast repeater on Ch. 2 that morning. Both on 700 kHz. Martin mentioned it appeared signals were somewhat stronger in Brisbane, where some stations had apparently been worked on 144.1 SSB.

432 MHZ ACROSS THE TASMAN

A further message from Rod VK5BOJ indicated he had been successful in bridging the space between Australia and New Zealand for the first two way contacts, a 432 MHz and a 144 MHz contact. Rod had been successful in bridging the space between Australia and New Zealand for the first two way contacts, a 432 MHz and a 144 MHz contact. VK6GC heard a strong signal from VK3 in frequency with 12.5 kHz deviation. Unless you have a good DX score you will have some problems working through their repeaters! VK2YDJ was reported as having worked up to 80 ZLs via repeaters. Appears there are a few stations who may not have been made aware of the time to be essential for good contacts. Still continuing through to Tuesday 9-1 a.m. local time.

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State on 144 MHz. Obvious method would be to ask the
 AMSR to make the call, or for best results SSB or CW on 144. Incidentally, Bill VK6GU built the cavities for the repeater, and
 had VK6CA and Geoff VK6GF were Involved in
 the general construction. Antenna is presently 50
 feet high.

I'VE BEEN INVESTIGATED
That's right, an officer of P & T requested per-
motion to come to my shack early In December 1978, and 5 days later I was
operating with illegal contacts on 50 MHz. Appar-
ently P & T had read In an overseas publication where I lead my ship with VK6GU on 144 MHz. On 14th
April 1978 on 50.053 MHz. Disappointingly for the
Department, I did work JEHYR and several other QTHs that day, but all on 50.5 MHz which is shown in the
 regulations but 50 MHz contacts either. The investigating officer was very pleasant, and I have no axois to grind over the interview, particularly as things started off so well before he travelled the 40 km to my shack.

I asked for a copy of the alleged report and was advised it would need to be obtained from Central Offices in Melbourne. Typically, so far it has not arrived. But I have followed up the mat-
ter myself and with the aid of a good friend In Melbourne we did work the officer, and I think prob-
cing the interest at P & T level. It comes from the June 1978 issue of the Japanese 200 magazine which has printed a whole table of stations and frequencies for the 50 and 52 MHz bands.

On 16th April 1978 there was a tremendous opening opportunity. Some stations were on 52 MHz and others on 50 MHz. In a like manner. Even some concessions to non-licensed operators using CB type equipment. That's exactly what this large listing of stations and frequencies for 50 and 52 MHz is. Strange indeed. The

In the 28 MHz band and on 146 MHz are getting
operation on 50 MHz either!


Australia-New Zealand Two Metre Opening — January 1979
The opening commenced in the early afternoon of Sunday 7th of January and continued till Thurs-
day, 11th January. During the course of the opening an almost stationary high pressure with widely spaced isobaric lines whose centre was in the centre of the Tasman and stretched over the East Coast of Australia, the North Island of New Zea-
land, the South Island of New Zealand, and the New Hebrides. During this period, both Australia and New Zealand were experiencing above normal tempera-
tures.
The opening commenced in the early afternoon of Sunday 7th of January and continued till Thurs-
day, 11th January.

One of the first stations to discover the opening was John VK2AYC who, when he attempted to make contact, was treated with disbelief.

For those of you who have worked Japanese stations and received their QSLs will note that many stations send a pre-printed card with 50 MHz on it, even though contacts are made on 50 MHz. Others will call the band 50 MHz in line with their allocation. Some will say 52 MHz band operators, will give a spacially 52 MHz frequency. That's exactly what this large listing of stations has done, there are 50 MHz, and 52 MHz band contacts, also specific frequencies listed on 50 MHz for U.S.A. and specific frequencies on 52 MHz to Australian stations.

The actual investigation doesn't worry me, par-
ticularly as my nose was clean! What I am con-
cerned about are the ramifications of the illegal operate, is it something I could have done or 2 months before I was operating with illegal contacts on 50 MHz. In a like manner. Even some concessions to non-licensed operators using CB type equipment. I have no bones to pick with responsible CB


BACK ISSUES OF AIR
are normally available from March 1972 onwards although there are gaps here and there where certain issues are comple-
tely out of stock.
Please enquire for specific requirements.

Each

<table>
<thead>
<tr>
<th>Issue</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>March-May 1972</td>
<td>30c</td>
</tr>
<tr>
<td>June 72-December 73</td>
<td>30c</td>
</tr>
<tr>
<td>January-October 74</td>
<td>50c</td>
</tr>
<tr>
<td>Nov. 74-Aug. 75</td>
<td>70c</td>
</tr>
<tr>
<td>September 75-omar 90c</td>
<td>90c</td>
</tr>
</tbody>
</table>

POSTAGE: Please add, on average weight 120g per copy.

WRITE TO: Box 150, Toorak, Vic. 3142

Amateur Radio February 1979 Page 45
Trans-Equatorial Propagation

Tests have been carried out between Southern Africa and the Mediterranean Region of Europe on both 50 MHz and 144 MHz. The results have been encouraging particularly on 144 MHz where several contacts have taken place.

Transmitter powers of 100 watts to 250 watts have been used with antennas of from 9 to 48 elements. Tests are continuing particularly during the equinoxes and contacts between 2EZJV in Rhodesia and 5B4WR in Cyprus and SV1AB, SV1CS and SV1DH in Greece have taken place.

Six metre tests are hampered by the non-availability of 50 MHz in Europe. Some preliminary moves have been made to obtain a segment and listening tests are being carried out.

This information has been extracted from a very interesting article in Short Wave Magazine for August 1978.

Serge F8SH with the 50 MHz array used in TEP and Trans-Atlantic tests. From Lannion, France.

JARL plaque presented to VK8GB — see Cover photo.
SOME NEW YEAR SPECIALS
FROM BAIL ELECTRONIC SERVICES

Please note that some items are in limited quantity, so—don’t delay, they won’t last forever!

FT-101E AC-DC HF Transceiver $845
FT-101E AC HF Transceiver $795
101E DC-DC Conv. Kit $60

N.B.: Our 101E Transceivers still include the superb “B” Model adjustable Noise Blanker PB 1292, exclusive to us! The N.B. that really does work. And for those with the PB 1582 N.B. we can supply the 1292 at $42, plus postage $1.50.

FT-101 W/S Maintenance Manuals $27 plus P.P. $2.00
FT-901DE HF Transceiver (four only) $995
FT-7 HF Transceiver $389 (Yes, fair dinkum!)
FT-227R 2m FM Digital $339
LFC-2A Selective SSB filter for FRG-7 $20
YC-7B Dig. adaptor for FT-7B $125
AM filters for FT-101 and FR-101 $45
FRG-7 Receiver $349
Battery holder for FRG-7 $10
YC-500S Counter 500 MHz $499
YC-500E Counter 500 MHz $656
YP-150 Dummy load/power meter $112
SP-101B Ext. speaker for 101E $49
CW filters for FT-101 $59
FT-301 series CW, AM, RF Proc. filters each $45
FRG-7000 Dig. Receiver $645
QTR-24 World Clock $35
YP-150 Dummy load/power meter $112
SP-101B Ext. speaker for 101E $49
CW filters for FT-101 $59
FT-301 series CW, AM, RF Proc. filters each $45
FRG-7000 Dig. Receiver $645
QTR-24 World Clock $35

The above list is not complete. There are many more items available. Contact us for your requirements.

Above prices (R.R.) inc. S.T. Freight is extra. Prices and specs. subject to change. 90 day warranty on sets, excluding power valves and power transistors. Full service facilities and comprehensive range of spares.

All items new, ex stock except FT-7 and FT-227, which are due into store approx. mid-February.

bail
60 Shannon Street.
Box Hill North, Vic. 3129
Phone: 89 2213
FRED BAIL VK3YS
JIM BAIL VK3ABA

60 Shannon Street.
Box Hill North, Vic. 3129
Phone: 89 2213
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Address ....................................

........................................ Postcode ...........
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WE’VE GOT THE GEAR

**SPECIALS**

Many reduced to below cost!

Hurry - only while limited stock lasts!

**ER6m PREAMPS**: $32.50
**EX6m CONVTR**: $25.00

**HUSTLER ANTENNAS**...

Look at these prices:

- **48TV**: $109.00
- **MO-1 mast**: $19.50
- **RM-90**: $14.50
- **RM40**: $9.50
- **RM20**: $9.50
- **RM 15**: $9.50
- **RM11**: $4.50
- **SM2 mount**: $8.50
- **Cowl mount**: $2.50

**TRANSCIVERS**:

- **TR-7200**: $119.00
- **TR-2000**: $99.00

**GORE HILL STORE ONLY**: One only TS-820 with data readout: Incredible value at $999.50!

 Dick Smith’s Oscilloscope Tables

Full basic details on OSCAR, prediction tables, standard orbits and tracking details.

Totally practical. Cat. B-3482 

$1.50

Antennas

**YAESU**

Incredibly popular mobile antennas

- **RSE-M2 gutter grip** Cat. D-4101
- **RSE-2A 2m 1/2wave stub** Cat. D-4102
- **RSL-3.5 80m mobile whip** Cat. D-4110
- **RSL-7 40m mobile whip** Cat. D-4112
- **RSL-14 20m mobile whip** Cat. D-4114
- **RSL-21 15m mobile whip** Cat. D-4116
- **RSL-28 10m mobile whip** Cat. D-4118
- **HY-GAIN 18AVT 80-10m trapped vertical** Cat. D-4302
- **TH3JR 3 element triband beam** Cat. D-4304
- **TH3MK3 large 3 element beam** Cat. D-4306
- **TH6DXX 6 element thunderbird** Cat. D-4308
- **BN86 balun** Cat. D-4300

**VHF Equipment**

- **18AVT**: $135.00
- **TH3JR**: $199.00
- **TH3MK3**: $299.00
- **TH6DXX**: $399.00
- **BN86 balun**: $19.50

**Morse Code**

- **Economy key - value** Cat. D-7105
- **Quality key - precision built** Cat. D-7101

**VHF Equipment**

- **18AVT**: $135.00
- **TH3JR**: $199.00
- **TH3MK3**: $299.00
- **TH6DXX**: $399.00
- **BN86 balun**: $19.50

**Accessories**

- **Shinwa 500W L.P. filter** Cat. D-7800
- **Viking 5kW L.P. filter** Cat. D-7096
- **Type 101 rugged coax relay** Cat. D-5210

**Note**: All units on special are sold WITHOUT WARRANTY.
Sorry to have to announce an increase in our KENWOOD accessories prices, which took effect already in December last year. Due to the long lead time for advertisement texts we could not include those in our last two ads. However, we can still sell the TS-520-S and TS-820-S transceivers at the old prices and really consider them now by far the best values for your money.

All HY-GAIN antenna models mentioned below are available ex-stock. In the last three months of 1978 we have imported $100,000 worth of HY-GAIN antennas and in this way can obtain price breaks and pass the benefit on to our customers, to whom at least we do not have to explain and justify a price drop of from $399 to $299 for the TH6DXX! We also continue to supply ALMINOX anti corrosion chemical with our antennas.

### HY-GAIN ANTENNAS:
- 18-AVT/WB 10-80M vertical 23’ tall .............. $125
- TH6-DXX 10-15-20M senior 6 el. Yagi 24’ boom ........ $300
- TH3-MK3 10-15-20M senior 3 el. Yagi 14’ boom ....... $240
- TH3-JR 10-15-20M junior 3 el. Yagi 12’ boom ........ $175
- 204-8A 20M 4 el. Tiger Array 26’ boom .......... $230
- HY-QUAD 10-15-20M full size Cubical Quad ... $260
- 2M 5 el Yagi with balun 6’3” boom ............... $25
- 2M 8 el Yagi with balun 12’6” boom .............. $30
- 2M 14 el Yagi with balun 15’6” boom .......... $40
- BN-86 Balun for HY-GAIN beam buyers only .... $20
- BU-5 Balun suitable for 10M beams ......... $40

### KENWOOD PRODUCTS:
- TS-520S 10-160M SSB/CW transceiver 240V AC .... $700
- TS-820S 10-160M SSB/CW w/Digital readout ... $1100
- TL-922 10-160M Linear Amplifier ................ $1200
- TS-700SP 2M all-mode transceiver ............... $850
- TR-740A 2M transceiver .................. $500
- TR-7500 2M transceiver .................. $350
- DQ-5 Digital display for TS-520S ............... $250
- TV-506 6M transverter .......... $250
- TV-502 2M transverter ............... $300
- AT-200 Antenna matchbox .......... $175
- DS-1A DC-DC converter ............... $75
- DK-520 adaptor for DG-5 to TS-520 use .......... $20
- LF-30A low pass anti-TVI filter .......... $30
- VFO-820 external VFO for TS-820S .......... $185
- VFO-520S external VFO for TS-520S .... $160
- SP-80 external speaker for TS-820S ........ $60
- SP-520 external speaker for TS-520S .......... $30
- YG-86C CW filter for TS-820S ........ $55
- YG-339SC CW filter for TS-820S ........ $55
- MC-10 hand held microphone ............... $20
- MC-50 desk microphone ............... $45
- HC-2 Ham clock .................. $35
- SM-220 Station monitor ............... POA
- BS-5 (TS-520S) & BS-8 (TS-820S) pan adaptors for SM-220 .............. $65
- TS-120V 12V DC mobile transceiver with NB, VOX, IF Shift & digital readout, 30W PEP .... $600

### NOVICE SPECIALS:
(available at these low prices)
- Transceivers for 10M coverage, AM/USB, 15W PEP:
  - SIDEBAND SE-502 240V AC/12V DC w/inbuilt SWR/RF meter 28.3-28.6 MHz .......... $150
  - UNIVERSE 224M 12V DC transceiver 28.480-28.595 in 5 KHz steps Clarifier operates on both transmit & receive .......... $125

Set of Crystals for Amateur license holders for converting 23 ch. 27MHz CB units to 28Mhz, suitable SIDEBAND, UNIVERSE, KRACO, HY-GAIN etc.
- Sets of 8 crystals converts to 28.480-28.595MHz .......... $40

### SUNDRIES:
- FRG-7 .5-30MHz General coverage receiver .......... $350
- FT-7 10-80M 12V DC transceiver .......... $525
- ICOM IC-202 2M SSB portable transceiver .......... $175
IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC

FROM WESTERN AUSTRALIA:
- Better than 50% of the month, but not everyday.
- Less than 50% of the month.

FROM EASTERN AUSTRALIA:
- Less than 50% of the month.

PREDICTIONS COURTESY IPS SYDNEY

MAGPUBS

Members interested in overseas publications should please note constant changes in prices which are of course also affected by exchange rates. Overseas magazines are always posted direct to you from suppliers, so please allow about 3 months for transit delays.

<table>
<thead>
<tr>
<th>Magazine</th>
<th>1 yr.</th>
<th>$A</th>
</tr>
</thead>
<tbody>
<tr>
<td>CQ</td>
<td>13.90</td>
<td></td>
</tr>
<tr>
<td>Ham Radio</td>
<td>8.00</td>
<td></td>
</tr>
<tr>
<td>Radio Communications</td>
<td>14.25</td>
<td></td>
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<tr>
<td>CQ-TV*</td>
<td>4.50</td>
<td></td>
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<tr>
<td>Break-In</td>
<td>11.00</td>
<td></td>
</tr>
<tr>
<td>VHF Communications</td>
<td>7.20</td>
<td>(Air Mail $10.40)</td>
</tr>
</tbody>
</table>

Please ask for membership form beforehand.

- BACK ISSUES of VHF Communications are normally available from stock except 1969 issues which are out of print. Single copies are $1.10 each to 1974, $1.40 each from 1975, $1.70 for 1977 and $1.80 for 1978 (average weight of each is 90g); VHF Communications binders to take 12 issues are $2.75 each and weigh 250g.
- BACK ISSUES of other magazines are not available but sometimes can be obtained against special order.
- BACK ISSUES of Amateur Radio are available to members. Some issues are out of print however. Issues March to May 1972 at 50c each, June '73 to Dec. '74 at 10c each, Jan-Oc. '74 at 50c each, Nov. 74-Aug. '75 at 70c each, Sept. '75 onwards at 90c each. Calculate average weight as 120g per issue.
- AMATEUR RADIO is available on overseas subscription at $10.80 for 1979. It is also available at this rate for libraries and organisations such as Government Departments, Schools, etc. All these are post paid by surface mail. For overseas subscriptions, please enquire about extra cost for air mail. As an indication of rates — extra for Air Mail to PNG is $10.00 for a full year.
- Recruiting leaflets "8000" are supplied free of charge.
- OTHER ITEMS are also normally available from stock. These include —
  - Membership Badges $2.00* (specify full or associate, lapel or stick-pin)
  - Overseas DX & USA Call Books, NZART Call Books, and many, many other interesting items — please send for lists.
  *Post Paid.

Except for magazine subscriptions all other items are normally available from YOUR DIVISION. To save on postages and packing, it is better to enquire there first if you live in capital cities.

Always please add extra for postage and packing except on current magazine subscriptions or where prices are stated as including postage.

MAGPUBS

A WIA MEMBERSHIP SERVICE
P.O. BOX 150, TOORAK, VIC. 3142

Amateur Radio February 1979 Page 51
AWARDS COLUMN

Brian Austin, VK5CA
P.O. Box 7A, Craters 5A, 5152

CURRENT MEMBERSHIP OF THE AUSTRALIAN DXCC AS AT 31.12.78:

<table>
<thead>
<tr>
<th>Callsign</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>VK6RU</td>
<td>Barry Ross VK6IF, G3HZL, Don Walmsley, 153 Worple Road, Isleworth, TW7 7HT, England. Certified log data only, no QSLs required.</td>
</tr>
<tr>
<td>8CW</td>
<td>G3BZU, GB3RN, GB3RM, GB3FAA, GB3HMS, GB3GUX, GB3RNR.</td>
</tr>
<tr>
<td>4US</td>
<td>Award available to SWLs.</td>
</tr>
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</table>

PHONE

<table>
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<th>Name</th>
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<tr>
<td>VK6RU</td>
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</tr>
<tr>
<td>4US</td>
<td>Award available to SWLs.</td>
</tr>
</tbody>
</table>

The first group of figures represents the total number of current countries, the second includes those countries worked directly.

The order is determined by the number of current countries worked; if two stations have the same number worked, then it goes on the second

- 0 points; CLASS ONE — 1 point, not available to UK stations; CLASS TWO — 10 points, not available to UK stations; CLASS THREE — 5 points, not available to UK or Europe. Endorsements for
<...>

The authors deserve credit for tackling the task. The book consists of 1000 questions of the multiple choice type complete with

1. Contacts with all WA amateurs with either Full or "Z" calls are permitted.
2. The only mode permitted is RTTY.
3. Only one (1) contact per WA station is allowed to count towards the Award.

The Western Keybasher's Award of Perseverance is offered to all QSOs, including QSOs with special stations, G3BZU, GB2RN, GB3RN, GB3FAA, GB3HMS, GB3GUX, GB3RNR.

The book is intended to give intending amateurs an idea of the sort of questions which they will encounter in the exam. This is very necessary and must be met by a book such as this one because P&O do not provide old exam papers.

The book contains a long way to meeting the needs of novice candidates and their instructors for a ready source of typical questions. Indeed the compilation and presentation of information is a daunting task. The authors deserve credit for tackling the job and carrying it out so well.

There are some typographical and other errors but they are a very small percentage and say a lot for the care and hard work that has gone into the book.

Those novice candidates and novice course instructors requiring a copy or copies should write to:

WIA NSW Education Service
PO Box 109
Toongabbie NSW 2146

The price is $3 each with special arrangements to

Also available from the above address are a range of texts and Morse tapes at very attractive prices so send an SASE for details.

FROM THE OVERSEAS AIDS

The new lines are all falling in line with the American FCC requirements and all 10 meters seems to have but all disappeared since the linear band switch.

Dent have a new DTR2000U using an Elma 8877 var and covering 160 metres to 15 metres. A nice looking unit. Henry Hayden have brought out their 1KDS which uses the Elmac 3-500Z triode. This model is more compatible with American operators and lower power limits. Also 10 metres is included on their export models.
EXCHANGE
Call, 10X number, ARRL section and name.

CLASSES
Single operator, multi operator and ORP. Max. 20 watts PEP output.

SCORING
DX contacts 2 points, add 1 point if with 10X number. ORP 2 points plus 2 points with 10X number.

Certificate will be awarded to Australian winner. Logs from members only. To: Robert C. Mughelini, W1AKS, P.O. Box 169, Randolph, Mass., 02368. (Full rules from FCM with SASE).

AUSTRALIAN SCORES
23 VK4AX 2029 79 VK3MR 981
27 VK2GW 3060 80 VK8NT 960
24 VK7R0 2473 81 VK5GF 950
25 VK3AK 2259 84 VK5G 860
29 VK7CH 2340 88 VK5MD 820
20 VK3MJ 2321 91 VK5WSV 755
42 VK6S 2215 91 VK7OJ 754
26 VK6AQ 1985 93 VK3YD 735
56 VK3RJ 1735 95 VK2BDU 735
61 VK7UB 1735 100 VK7DR 730
50 VK2AQF 1525 109 VK4UR 405
50 VK3QX 1525 112 VK2BLJ 366
61 VK5ED 1511 113 VK6K 298
67 VK3KS 1240 116 VK5NLC 150
75 VK5BO 1058 119 VK7ZO 115

Single band entries among the above were:
3.5 MHz VK5NLG Overseas leader, VK7Z0
7 MHz VK3M Overseas leader
14 MHz VK3MR Overseas leader, VK8NT, VK3YD, VK4XJ.

COMMONWEALTH CONTEST 1979 "BERU" — RULES

TIME:
1200 GMT Saturday 10th March to 1200 GMT Sunday 11th March.

MODE:
CW only 3.5 to 28 MHz. Call Is QR BERU.
Eligible entrants are radio amateurs licensed to operate in British Commonwealth call areas. In our region, Lord Howe VK2, Willis VK9, Christmas VKS, Coocos VK8, Norfolk VK9, Heard VK0, Macquarie VK0, and Australian Antarctica VK0 as well as VK1-VK8 are all separate call area.

SCORING:
5 points per contact exchange (RST 001 etc.); 20 bonus points for 1st, 2nd and 3rd contact with each call area other than one’s own. On each band. There are 111 areas in all, with G, GW, GD etc. counting as a single area.

LOGS:
Separate logs are required for each band showing columns:
1. Date and time GMT.
2. Station worked.
3. No. sent.
4. No. received.
5. Band.
7. Contact points claimed.
8. Bonus points.

Each band log should be separately totalled and include at the end a check list showing areas.

 Entries may be single or multiple band. Single band entries should claim contacts on one band only.

 Entries should be addressed to:
D. J. Andrews G3MXJ, 18 Downsvlew Crescent, Uckfield, East Sussex, England, TN22 1UB.

 Closing date: 14th May 1979 (by airmail, please).

CONTESTS
Wally Watkins VK2ZWN/NCU
Box 1065, Orange 2800

COMMONWEALTH CONTEST 1978 — RESULTS

The following is extracted from the RSGB results of the 1978 Contest:
points
1 ZL3GO 6677
2 VE7CC 5821
3 VEXK 5687
4 VESRG 5477
5 SHIEL 5395
6 VEEAGK 5249
23 VK4AX 3295

RECEIVING SECTION
6 Eric Treblelock BCRS 195 2405 points.

AUSTRALIAN AWARDS
The Silver Medallion for the leading VK entrant was won by Russ Colston VK4XA, while the middle placing Bronze Medallion was won by "BO" Williams VK3BO. How the leaders made their scores — Scoring details, QSOs/Bonus areas per band 60 to 10:
ZL3GO 36/29 95/40 20/55 150/44 53/37
VE7CC 29/27 150/28 150/50 150/44 20/33
VEXK 18/17 91/36 155/50 155/35 96/23
VK4XA 0/0 34/26 119/49 37/27 13/12
VK3QX 8/6 63/44 20/0 9/9

VK4XA was unfortunately in that, having set the Sunday night for 80 metres, his power blow up with a few hours to go. The above figures and band conditions in VK as compared with VE and ZL.

RSGB COMMENTS
The long-awaited improvement in band conditions at last appeared during this contest, bringing with it higher scores and QSO totals, and an increase in overall entries. Especially pleasing were the 28 MHz openings and, for Europe, the long 7 MHz opening to the Canadian west coast.
The top two positions this year go to the same stations as in 1977, although Peter Watson ZL3GO, including this contest with a score that put him well ahead of the field. There were many comments from all areas on his outstanding and consistent performance. A second place of London radio farm, with its own band, was also blown up with a few hours to go. The above figures and band conditions in VK as compared with VE and ZL.

The only band to attract many single-band entries was 17 MHz. Here, as in recent years, Stuart Jesson GC4NY was the leading UK station. He made 142 QSOs using a T44/K/R4C combination and a 2 el. The oversea leader on 14 MHz was M. Campbell VK3MR who had a total of 90 QSOs.
The HF Contests Committee was disappointed to see the continued disappearance of RSGB entries to the receiving section and would welcome suggestions on how this could be improved. The small minority, however, in no way detracted from the win by Ron Thomas BR51582, who managed to double his score of last year and, in so doing, put an end to the long-standing winning run of Eric Treblelock BCRS195, who has to be content with second place this year.
Many stations will notice that in the tabulation they have suffered a reduction in their claimed scores, a common occurrence. The Commonwealth Contest is subject to detailed log checking. Especially damaging to a score can be an error in callsign, which loses all points (QSO and any bonus) to both sides of the QSO. Even worse are unmarked duplicate contacts, of which the committee takes a very poor view, and de
ducts up to three times the number of points claimed. Other errors — mistakes in reports or serial numbers — lose a proportion of the points claimed. The implications for care during the contest and checking of the entry should be obvious.

The committee was pleased to receive comments and suggestions with the logs and these will be considered in due course. Suggested changes to the rules included additional bonus ducts up to three times the number of points by many log comments. It is hoped that the rise will be considered in due course.

Suggested with Greenwich Mean Time, the zone suffix system can be followed by a lime zone suffix letter and can be first two being the date and the final four the hour which is 9½ hours ahead of GMT would become 1500JK, or 0530Z.

The committee was pleased to receive comments and suggestions with the logs and these will be considered in due course. Suggested changes to the rules included additional bonus ducts up to three times the number of points by many log comments. It is hoped that the rise will be considered in due course.

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1103MXX, Extra Extra Heavy Duty ....................................... $395.
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103 Mast Clamp ............................................................... $22.
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DS-1A DC Converter TS-520-820 ........................................ $74.
DS-5 Pan Adapter for TS-520S ............................................ $60.
DS-5 Pan Adapter for TS-820S ............................................ $60.
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Optional crystal filters ...................................................... $54.
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MC-50 Base Mike HI and LO ............................................. $52.
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YO-148, Dynamic Desk Mic. ................................................ $49.
QT2-24, 24 hr. World Clock ................................................ $33.
YVC-500, 500 Mhz. Frequency Counter ................................. $530.
FV-301, M.T.M. Transmitter ................................................ $329.
SP-301, Matching External Speaker for FT-101E ....................... $53.
Yo-301, Digital readout Adaptor for FT-101E ......................... $270.
Yo-301, Antenna Tuning unit inc. SWR, Watt meter .................. $219.
Yo-148, Dynamic Desk Mic. ................................................ $49.
Optional Crystal Filters ..................................................... $59.
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TH3-JR 10-15-20M junior 3 el. yagi 12' boom ................................ $175
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2M 14 el. Yagi w/balun 15'6" boom ........................................... $40
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CLR 5/8 wave vert. w/4 radials 22'9½ 11M ................................ $50
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ROTORATORS AND CABLE
KEN KR-400 rotator medium duty 28V-AC .................................... $125
CDE HAM L11 rotator heavy duty ............................................. $175
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RG-58U Coax ................................................................. 30c per yard
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CRYSTAL FILTER, 9 MHz, similar to FT-200 ones. With carrier crystals .............................................. $39

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SKY 80 six feet long 3.5 MHz ................................................. $28
SKY 40 six feet long 7.060 ..................................................... $26
SKY 20 six feet long 14.150 .................................................... $26
SKY 15 six feet long 21.100 .................................................... $25
SKY 10 six feet long 28.500 .................................................... $24

COAX CABLE CONNECTORS
PL-259
SO-239 Chassi Mount ......................................................... Male to male joiner
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SWR 50A 3.5 - 150Mhz SWR meter ........................................... $26
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5M RG 58-U w/PL-259 one end .............................................. $3
Bumper mount c/with 3/8" 24-thread ant. mount ......................... $7
Gutter mount c/with 3/8" 24-thread ant. mount ......................... $4.50

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YAESU AMATEUR EQUIPMENT

1. SP-901 Extension Speaker for FT-901
2. FT-901DM All HF Band Transceiver with Everything!!
3. FV-901DM VFO with Scanner & memory for FT-901DM
4. FC-901 Antenna tuner for FT-901
5. FRG-7000 Full band HF Receiver with Digital Clock
6. FP-301 25 amp 13.5V Power Supply with Speaker
7. FT-301 All HF Band Transceiver
8. FT-301D All HF Band Transceiver
9. FP-301D 25 amp 13.5V deluxe Power Supply with Digital Clock, Speaker & I.D. facility
10. YD-844A Base Microphone
11. YP-150 Dummy Load
12. SP-101 Extension Speaker for FT-101E
13. FT-101E HF Transceiver
14. YC-601B Digital Counter for FT-101E
15. YC-500S Frequency Counter
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17. FT-7 HF mobile Novice Transceiver
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Flexibility in frequency control; PLL synthesis in 100 Hz steps; auto scan mode, which will search the band for a signal, manual mode which scan at one of three rates while you activate lever switches. Memory bank for up to 40 frequencies and clarifier for fine tuning between the 100 Hz steps, etc.

FC-901 Antenna Coupler
Efficient, compact antenna tuner for FT-901DM series. Features in-line wattmeter, SWR meter, and provision for selection of three coax-fed antennas and one single wire antenna. Presents a 50 ohm load to your FT-901 DM, all across the band.

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Integrate your FT-901DM station with the SP-901P combination hybrid phone patch/speaker. Styling, size and interconnections match the FT-901 series of transceivers.

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High-performance oscilloscope, twotone generator and an optional band scope (panadaptor) for instant determination of band conditions and activity. Monitors both received and transmitted signals. Convenient interconnecting jacks for 901 series.

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KK 1607 QI 553 AVQ 261
SN 1570 BDB 396 JK 127
BO 1510 NMO 390 TL 37
MY 1107 BSNJ 370
ALC 584 IP 343

VKS CW

VK7 OPEN

VKS CW

VKS PHONE

VK6 CW

VK7 PHONE

VK7 OPEN

RECEIVING

Bryan Gard L1003 3476
Ron Whitford S. Aust. 2363
Graham Mutton L70107 1992
Gregory Cooke Vic. 1765
F. H. Price L60030 1707
June Greenaway W. Aust. 1662
John Breerton L50257 1593
David Pedder L30740 803
L. J. Harper L70151 1104
Eric Treblicock L30042 824
Stephen Pall L30201 758
John O’Brien N.S.W. 723
Mark Stephenhson L30484 669
H. J. Charles L70126 651
M. Davidson Qid. 608
Robert Chester L50876 476
George Edmeades L50122 345
George Clark L60336 316
Robert Hodges L40724 233
Daryll Boyle L50668 140
Tim Hamilton L50298 107
S. E. Madigan Tas. 45
David Warrington S. Aust. 35

OVERSEAS CHECK LOGS

P29LS Ph 3432 ZL2GJ P 1279
ZL1GQ O 2578 P29GA P 328
ZL1AFE O 1972 ZL4IJ P 311
ZL4AE O 1754 ZL1AQO P 311
ZL4HA CW 1664 ZL1TB P 283
ZL3S P 1433 ZL3TX P 199
P29NKV P 1385 ZL1HV CW —
P29EJ O 1305

COMMENTS FROM CONTEST MANAGER

The general standard of log presentation was shocking. A large number of logs did NOT have a cover sheet giving the details required in the rules, others were not scored. and in one case no call-sign or name appeared. In every size, shape and quality of paper was used and one log was even held together by solder! The worst Division for errors was VK2, over 50 per cent of the logs were totalled wrongly making hundreds of points of difference.

These matters make the job of the contest manager more difficult and this being my first one has stunned me somewhat. Consideration must seriously be given in the future to disqualify without question any logs that do not meet the simple instructions laid down in each contest for presentation.

So much for the brickbats — now for some bouquets: Eric Treblicock, Receiving Section CW

The following Novices for excellent scores:

VK1NAT 621 VK2APS 705
VK2G 1199 VK4NEK 705
VK5NTB 566 VK6BNU 1994
VK7CW 626

Alan VK2BAX and Pierce VK2APO for the best presented logs.

QSP & HF CROSS PATCHING

The Postal and Telecommunications Department has advised that they are concerned with the cross-patching of Amateur stations from VHF to HF and vice-versa. This system is employed regularly by some clubs during their club nets. The Department has stressed that it is contrary to the regulations for a Novice's transmission to be relayed to any band which Novices are not permitted to use, and similarly, Limited calls must not be relayed to any band which they are not permitted to use.

Members of the Department have apparently observed through-patching of Novices to VHF and Limiteds to HF without even the appropriate identifications being announced.

From VK2 Mini Bulletin, Dec. '78.
Yaesu FGR7 Rx in mint condition, $200. VK8BW, QTHR. Ph. (02) 27 6423 (bus.) or (02) 49219 (AH).

Heathkit HW101 80 thru 10, excellent performer, heavy duty power supply, mic., spkr., $350. VK8BAF, QTHR. Ph. (03) 546 497.

Complete Drake Station, mint condition, T4XC TX, 240V AC 12V DC, 500 extras, $1450. Ken KP202 2m FM Tcvr in "as new" cond., P/S, $50. Peter VK3NRP, QTHR. Ph. (03) 560 9215.

Linear using pair of 3.5002 in parallel, built to Heathkit SB circuit, power supply, complete range of some 2000-5000V. All parts imported from US, 2 only new 3-500Z as spares. Power supply 20-300V 4th side CT - 10A with 64 rectifiers, electro condensers and 3055 to make two 10-A - 12V. Matching transformers for both. H. G. Wilson VK4AGO, QTHR. Ph. (07) 27 4101.

Yaesu FT-620B Tcvr with VC-75 voice controller, and handbook, as new, 24V SB, CW, AM, FM, SSB, 160-10m, all final protection, $155. VK2ZMA. Ph. (02) 634 2451.

Eddystone Model EC10 solid state communications recs., 50 to 30 MHz, excellent condition, $160. Ross TR-1083-2, QTHR. Ph. (02) 238 5267.

Yaesu FT101, 10-160m, $550; FL2000 complete with original cradle, xtls for all bands. All in excellent condition, $750, or sell separate. Galaxy Ham Radio Ltd, Eddystone 770R VHF Rx, $195; Heathkit IM-18 kit receiver, 0.5 to 30 MHz continuous coverage, $650; Kenwood FT-202 2m SSB Tcvr, $300; EA Deltahet Inc. freight. Smaller lots sim. rate, Army HF gear, $250. Brian VK2BVH. Ph. (03) 90 6424.

Yaesu FTDX560 Tcvr (similar to FTDX401), 560W output, 1418 channels, 2 selectable filters, FSK obtainable by making minor modification, mint condition, $850. VK2NOK. Ph. (02) 452 1932.

Yaesu FT75BS and DC7SBS power supply, 240V 300W and 12V charging, $325. Peter VK3NRP. QTHR. Ph. (03) 560 9215.

Yaesu FT7100G, 0.5 to 30 MHz continuous coverage rec. Latest model with fine tuning, as new, plus professionally built 2m moxfet converter, $250; but no morse novice, $320. ONO. Ph. (03) 91 4041.


Complete Drake Station, comprising TR4C Tcvr, 350W output, $140; Yaesu FM-1500B 2m FM base transceiver, box M42, $42; and matching unit MN4, $115; wattmeter, W4, $49; cables and mike included. All mint condition. Look for CQ013-010 area who will take complete station. Offers invited. VK2AOV, QTHR. Ph. (02) 499 3538.

Complete Yaesu Station, comprising FT101 Tcvr, FT102 FM Tcvr, FL3002SB and FR100B, $150; FL503, $35; HF Rec. 7/15 MHz Ex DCA, $30. EA Deltahet Inc. freight. Smaller lots sim. rate, $50; remote VFO FFV101, $105; external spkr. box SP101, $32; cables and mike included. All mint cond. Look for VK2BYX ex VK2AH area who will take complete station. Offers invited. VK2AOV, QTHR. Ph. (02) 499 3538.

Bits and pieces from deceased estate, Tequipment service scope, $50; advance sig. gen., $40; variable tuning instrument, $50; Heathkit AC/DC model CW filter, in as new condition, $85; Heath Cantenna HK12, $25; Swan tenna model 45, 10-80m mobile ant. with base, $155; Yaesu 100W 110V power supply, $50; Yaesu FT4000D 2m base loaded s/swell antenna, as new, $15; Q-criull SWR/PRW bridge, $25; Omega TET-01 antenna booster, $32, VK2AOV, QTHR. Ph. (02) 499 3538.

Icom IC202 2m SBw/CS Transceiver, Oscar crystal plus 12W linear, complete with cox leads, $750. Full set of Hustler mobiles, complete with base and spring, $100. VKLTH. QTHR. Ph. (02) 456 2027.

Yaesu FL-200B TX and FR100B RX, spare set new. FL-200B includes Yaesu cables and mike, $350. Swan Tcvr, 40-80m AC, and 12V DC power supplies, $150. Yaesu 6m converter etc., 11m band. Gamtronics GTX320, $321. Bruce Hood VK5NBA, Booloogong, via Naracoorte, 5271. Ph. (08) 674 455.

Yaesu FGR7 RX in mint condition, $280. VK8BW, QTHR. Ph. (02) 27 6423 (bus.) or (02) 49219 (AH).

Yaesu FT202B Transceiver, 240V AC 12V DC, 24 ch., 28.3/28.6 MHz, clarifier Rxtx, SWR/RF meter, speaker, claxons, as new, $400. VK8BAF, QTHR. Ph. (03) 452 2025.

Yaesu FM-1200 2m FM SSB Tcvr, $200; Drake noise blanker NB4 for R4C RX, new, $75; Drake FT-4100 2m FM Tcvr, $40; Drake noise blanker, $20. MFJ SSB selectivity filter, $20, VK3LCE, QTHR. Ph. (03) 509 2556.

Treloar VK2BPZ, QTHR. Ph. (02) 239 8167.

Icom IC202 2m SBw/CS Transceiver, Oscar crystal plus 12W linear, complete with cox leads, $750. Full set of Hustler mobiles, complete with base and spring, $100. VKLTH. QTHR. Ph. (02) 456 2027.

Yaesu FT202B Transceiver, 240V AC 12V DC, 24 ch., 28.3/28.6 MHz, clarifier Rxtx, SWR/RF meter, speaker, claxons, as new, $400. VK8BAF, QTHR. Ph. (03) 452 2025.

Yaesu FM-1200 2m FM SSB Tcvr, $200; Drake noise blanker NB4 for R4C RX, new, $75; Drake FT-4100 2m FM Tcvr, $40; Drake noise blanker, $20. MFJ SSB selectivity filter, $20, VK3LCE, QTHR. Ph. (03) 509 2556.

Treloar VK2BPZ, QTHR. Ph. (02) 239 8167.
LEN WORRALL VK4WL

Len passed away suddenly, after an illness-free life, due to a heart attack, with only eighteen months of retirement.

Len obtained his licence at about 18 years of age in Sydney and was active in Cairns, with the late Doctor Hewitt on CW before World War 2, after which he remained inactive until 1973.

CW remained his great interest.

Len was survived by his wife Rose, a married son and a married daughter.

By Peter Brown VK4JP

WILLIAM GEORGE CLARK VK3FY

Bill passed away suddenly on 19th November 1978, after suffering a heart attack. Radio amateurs of the Bendigo area will greatly miss Bill, who was a valued friend of all. He was very active in WIA Midland Zone, having been both President and Secretary.

Bill served in a Beaufighter Squadron in the RAAF in World War 2, and later at Foggia Air Force Base. He obtained his licence post war, and since coming to Bendigo in 1952 had been active in many local activities. His hobby other than electronics, was a love of music. Bill was a church organist, and choral society member, and always assisted local schools, scouts. In fact many, many people.

Bill's vocation was insurance, he was Assistant Manager of a large local office, and his ability and friendliness were well known.

He will be sadly missed by all of those who knew him, for he really was a fine man. To his wife Daphne and his family, we extend our deepest sympathy.

H. Stillwell VK3ACN.

K. E. GODBER VK2ABO

K. E. Godber VK2ABO was a real character and brought a lot of fun to our group.

He was one of the first amateurs in Albury district, from which he operated at all times, except for a few times mobile. Noel was active in early radio club activities, furthering the interest of amateur radio by training younger aspirants.

He was a Life Member of the Quarter Century Wireless Association, New York.

To Noel's wife and family we extend our deepest sympathy.

Jack VK2AY

TOD ISAACS VK2ABO

It was with deep regret that I learned of the passing of Ted Isaacs VK2ABO.

I remember him for being honest and friendly, but above all for his generous nature. He would readily give assistance, regardless of any personal inconvenience. Amateur radio is the poorer for his loss, and the absence of "apples, bananas, and oranges" will leave an empty spot on the dial — Vale Ted.

N. A. Latman VK2APL

MR. CLAUS DURNS VK4CB

Claus Durns' VK4CB callsign was, who was born in Maryborough in 1893 had been an active amateur radio operator for over 54 years and in fact was active on the air up to within a few days of his death.

His first transmission was in 1924 from Rundells after obtaining his code and his first amateur radio operator's licence was issued at Kingaroy in 1927 and his first call sign was A4CB. This call sign was later changed to VK2AY. If this was the case which will now be so badly missed on the air waves.

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. W. G. CLARK VK3FY

Mr. R. OHRBOM VK3OC

Mr. C. MALONEY VK3NDE

Mr. W. J. BRENNER VK3WZ

Mr. R. A. ISAAC VK3ZAI

Mr. W. H. WILSON VK2YW

Mr. N. ARNOLD VK2OJ

Mr. R. SATCHELL VK2BZS

Mr. A. O'BRIEN VK3MO

Mr. A. H. TODD VK4HT

Mr. L. A. WORRALL VK4WL

Mr. C. E. J. BURNS VK4ZY

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Mr. R. A. ISAAC VK3ZAI

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Mr. A. O'BRIEN VK3MO

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Mr. R. OHRBOM VK3OC

Mr. C. MALONEY VK3NDE

Mr. W. J. BRENNER VK3WZ

Mr. R. A. ISAAC VK3ZAI

Mr. W. H. WILSON VK2YW

Mr. N. ARNOLD VK2OJ

Mr. R. SATCHELL VK2BZS

Mr. A. O'BRIEN VK3MO

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Sorry, we are not a massive bulk-buying supermarket! We cannot help you with screws, bolts and toilet seats! You can get them in a bulky buy shop! WE ARE SPECIALIZING ONLY IN HIGH QUALITY AND MOST SOPHISTICATED RADIO COMMUNICATION EQUIPMENT FOR AMATEUR AND PROFESSIONAL USE! We also don't challenge anybody, since we don't have a personality problem. We do not run down other dealers, as we believe in free enterprise. Nor do we run down their products — our products sell themselves! All our products are brand new, top-quality, factory-tested, backed up by full warranty and after-sales service, by highly qualified technical staff. AND WHAT IS MOST IMPORTANT — OUR PRICES ARE THE CHEAPEST IN AUSTRALIA! How much longer will you tolerate the incredible insult on your intelligence by those smooth, massive bulk-buying, rip-off operators? Just read their advertisement and compare the prices AND WATCH THEM SHUDDER WHEN YOU TELL THEM OUR PRICES!!

HF EQUIPMENT

National
RX10111D Transceiver .......................... $1900
RX-S1011 Speaker Unit .......................... POA
RX-S2011 Radio Unit ............................ POA
RF4080/DR60 Receiver .......................... $466

Yaesu
FT1011E Transceiver ............................ $899
FT301 Transceiver ............................... $890
FT1011 Transceiver ............................ $1099
FP-301 AC Power Supply ........................ $178
FRG-71 .......................... $329
FTV-650 6 metre Transverter .................. $249
FTV-7000 Receiver ............................. $639

Alda
Alda 103 HF Transceiver ........................ $495
Microphone .......................... $30
PS115 15A Power Supply ........................ POA
PS130 30A Power Supply ........................ POA

Kenwood
TS-2050 HF Transceiver AC only ................ $700
TS-8050 FT Digital Transceiver AC only ................ POA
SP-520 Matching Speaker for TS-2050 ................ POA
SP-820 Matching Speaker for TS-8050 ................ POA
HF-500 Transverter .......................... $594
SM-2953 TNC-1 Tuner Kenwood Series ............. $92
DG-5 Digital Display for TS-2050 ................ $355
DS-5 Pan Adapter for TS-520S .................... $245
DS-8 Pan Adapter for TS-820S .................... $121
AT-200 Matching Antenna Tuner Power Meter ....... POA
Optional Crystal Filters ........................ POA
MC-35 Hand Mic HI .......................... POA
MC-50 Base Mike HI and LO ........................ POA
TS-120 80-10m Mobile Digital Display 30W PEPE .......... POA

Dentron
DTR-1 HF Transceiver .......................... POA
MLA200 Linear Amplifier ....................... $1190
CLIPPER 40-Watt Amplifiers ........................ $775
JR. Monitor ........................................ $104
MT300A Antenna Tuner .......................... $447
MT200A Antenna Tuner .......................... $270
160/150/40/20 Super Tuner ................... $175
80/10/40 Tunn .......................... $95
W-2 Wattmeter ............................. $145
Big Dummy Load ............................... $143
DTR-2000L Linear Amplifier .................. $1380
Super Tuner plus ................................ $206

Wawasee Products
JB1012314 Coupler/Meter/Wattmeter ............... $225
JB1005/M/Clock/Wattmeter/SWR .................. $135
JB1001/SPM7 Scope/Meter/SWR/Counter .......... $379
JB2000 Coupler .................................. $75
JB1000S/M Scope/Wattmeter/SWR Bridge .......... $310

Electrocom
"Series 400" Shift Converter .................. $990

Info-tech
MODEL 15 RTTY to Video Converter .............. $448
MODEL 420 RTTY Keyboard ........................ $407
M-200E Morse, RTTY & ASCII to Video Conv. .... $668
M-300 Morse, RTTY & ASCII Keyboard ........... $564

Robot
Scan Converter .......................... $898
12 in. Video Monitor AVM-090 ........................ $269
ASA 500 Video Camera ........................ $270

Mizuhu
SX-1 Preselector .......................... $86
DX-5550 Counter Generator w/Preselector .......... $220
KX-1 MX-10 Mark .............................. $69

Oskerblock
Swr-300 Power Meter ........................ $111
Sbw-300 Power Meter ........................ $144
Couplers 6m and 2m ........................ $30
Couplers 0.7m ................................ $27

Lunar
HF-V100 2 Linear Amplifier ........................ $215
Bi-LINEar VHF Models ........................ $259
26-432 MHz Low Noise Preamp ........................ $42
Oscarbox J, UHF Down Converter ........................ $166
PA-508, VHF Inline Preamp, Low Noise (6m) ........ $54
PA-144B, VHF Inline Preamp, Low Noise (2m) .... $54
PA-26, VHF Inline Preamp, Low Noise (10m) .... $54

B & W Products
Model 333 Dummy Load Wattmeter ................ $122
Model 324 Dummy Load Wattmeter ................ $221
Model 374 Dummy Load Wattmeter ................ $265

Coaxial Antenna Switches (B & W)
Model 376, 5 Positions ........................ $39.50
Model 585, 6 positions ........................ $29.50
Model 550A, 5 Positions ........................ $33
Model 550A2, 2 Positions ........................ $27

Rotators
Commander FU400 Rotator ........................ $117
Rotator Power Supply ........................ $22
Stay Bearings .................................... $35
6-core Rotator Cable ........................ $0.75/m
Mast Clamps .......................... $11 (set x 2)
Coaxial Cable RG 8/U Low Loss ......... $1.30/m

Wilson Antennas
SY-1 4-4m, on 20, 15 & 5-elem. on 10m ........ $339
SY-2 3-4m, on 20, 15 & 10m .................. $268

Hustler Antennas
4-BTV w/80m Resonator (10-80m Vertical) ........ $105
RM-10 Mobile Resonator ........................ $19
RM-15 Resonator .............................. $19
RM-20 Resonator .............................. $19
QO-1 Quick Disconnect ........................ $19
RSS-2 Resonator Spring ........................ $9
RM-40 Resonator .............................. $22
RM-80 Resonator .............................. $23
MC-1 Bumper Mounting Mast .................. $17
BM-1 Bumper Mount ............................ $17
BMT-144A 2m 5.2 dB Gain Trunk-lip Mount Antenna .... $40
GBT-144 2m 5.2 dB Gain Trunk-lip Mount Antenna .... $70

Oskerblock
SWR-300 Power Meter ........................ $111
SWR-300 Power Meter ........................ $407
Couplers 6m and 2m ........................ $30
Couplers 0.7m ................................ $39

Electronic Keys
EK-121 Katsu1i Keys .......................... $65
Nye Viking Code Practice Set ................. $29.90
Nye Viking Standard Key w/Navy Knob .... $16.50
Hamkey HK1 Dual-lever Squeeze Paddle ........................ $43
Hamkey HK3 Deluxe Squeeze Key ................ $25
Trac CMOS Electronic Keyer .................. $40
Trac Twin Paddle Squeeze Key ................ $36

Frequency Counter
NACL Type BC275 ............................. $99.50

Microphones
Shure 444 .......................... $55
Kenwood MC 50 .............................. $45
Kenwood MC 35 .............................. $25
Kenwood MC 10 .............................. $20

Baluns
Kaulman .......................... $23
Hy-Gain B.N. .............................. $25

VHF Equipment

FDK Products
Type-1 2m/FM SSB CW PLL Mobile/Base ........ $894
Type-2 2m/FM PLL Mobile Transceiver .......... $375
Multi-PALM 11 2m/FM 6 ch. Pocket Transc. .... $229
Multi-800 2m/FM PLL 800 ch. Mobile .......... $418
Multi-2700 2m/SSB-CW-AM Base Trans. .......... $744
Leather Case (for Multi-palm 2) ............... $11.50
Battery Charger (Multi-palm 2) ............... $9
Crystals (for Multi-palm 2) .................. $3

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IC 701 HF transceiver

ICOM’s superior LSI technology takes the lead in Amateur HF. The extremely compact IC-701 delivers 100 watts output from a completely solid state, no tune (broad band design) final, on all modes and all bands, from 160 to 10M. With single knob frequency selection and built-in dual VFO’s, the LSI controlled IC-701 is the choice in computer compatible, multi-mode Amateur HF transceivers.

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Full band coverage of all six HF bands, and continuously variable bandwidth on filter widths for SSB, RTTY, and even SSTV, help to make the IC-701 the very best HF transceiver ever made. IC-701 includes two CW widths, all of this standard at no extra cost.

Sold complete with the high quality electret condenser base mic (SM-2), IC-701 is loaded with many ICOM quality standard features. Standard in every IC-701 are two independently selectable, digitally synthesized VFO’s at no extra cost. Also standard are a double-balanced schottky diode 1st mixer for excellent receiver IMD, and RF speech processors, separate, drop-in time for voice and CW VOX, optionally continuous RIT, fast/slow AGC, efficient IF noise blanker, fast break-in CW, and full metering capability.

Price $1,380 (AC power supply extra).

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5V/2m 5Wm 2 m, 7.8dBd gain, length 1.6m 43.00
8V/2m 5Wm 2 m, 9.5dBd gain, length 2.5m 58.00
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10X/2m 10Wm 2 m, cross yagi, 11.3dBd 64.00
DR7/60m twin, 70cm, 12.4dBd gain, 1.1m 71.00
PRM17/80 16Wm, 70cm, 14.9dBd gain, length 2.8m 71.00
MBM4870 48Wm, 70cm, 15.7dBd gain, length 1.3m 83.00
MBMR870 88Wm, 70cm, 18.5dBd gain, length 1.2m 102.00
PMH/2C Phasing harness 18.00

Antenna Couplers

CWA217 DAIWA incl SWR/PWR, direct reading, 200W 199.00
CWA417 DAIWA incl SWR/PWR, direct reading, 500W 245.00
MF901 Matches everything 1.8-30 MHz 112.00
MF16010 Random wire tuner 160-10m 79.00
MF941A 160-10m, 300W incl SWR/PWR 139.00

Rotators

DR7600S Heavy duty controller with mast clamps 289.00
DR7500S Medium duty controller & mast clamps 199.00
6 CORE Cable for above (200m rolls) 1.00/m

SWR Bridges

VC-2 Twin meters, 1-350 MHz
SWR200 Oskerblock 2-300 MHz, 2/200/2000W 86.00
SW210A DAIWA 1.8 thru 150 MHz 20/120w, direct reading 99.00
SW410A DAIWA 140-500 MHz, direct reading 129.00
SWX777 DAIWA professional 1.8-30 MHz, direct reading 131.00
CN620 DAIWA cross-needle, 1.8-150 MHz, direct reading 99.00

Misc.

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CS201 2 position, high pwr, up to 500 MHz 26.00
CS401 4 position, high pwr, up to 500 MHz 61.00

COAXIAL CHANGE OVER RELAYS (DAIWA)
CX-2L 1.8 thru 170 MHz, 100w max gain 48.00
CX-2H 1.8 thru 450 MHz, 200w max gain 69.00

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FD30M 32 MHz Fc, 2 stages, quality 39.00
FD30LS 32 MHz Fc, 200W, 3 stages 20.00

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RF440 Phasing type processor, ac/dc, 6 dB gain 136.00
RF550 Filter type processor, ac/dc, 6 dB gain 184.00
MC330 Speech compressor ac/dc 99.00

Plus optics more l

DEALER ENQUIRIES INVITED
FEATURED IN THIS ISSUE:

★ SOLID STATE SWITCHES FOR VIDEO AND RF
★ LINEAR AMPLIFIER FOR THE IC202 AND IC502
★ MODEL 15 TELETYPING INFORMATION
★ WIA AWARD UPDATES
★ RED COSS MURRAY RIVER CANOE MARATHON
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Owing to the passing of Mr. KEN MILLBOURN, this business is offered for sale by tender as a going concern.

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MELBOURNE (03) 781 5431

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MODEL MC-310 TRANSCEIVER

SPECIFICATIONS:
Transistor, 13; channel number, 3, on 26 MHz Citizens Band; transmitter frequency tolerance, ±0.005 per cent; RF input power, 1 Watt; tone call frequency, 2000 Hz; receiver type, super-heterodyne; receiver sensitivity, 0.7 µV at 10 dB S/N; selectivity, 45 dB at ±10 kHz; IF frequency, 455 kHz; audio output, 500 mW to external speaker jack; power supply, 8 UM-3 (penlite battery); current drain, transmitter — 120-220 mA, receiver — 20-130 mA; accessory, shoulder strap, battery UM-3, 8pcs, instruction manual.$105 Pair — $55 each Postage $2.80

POWER POINT SAFETY TESTER
PRICE $3.70 Postage 50c

SPEAKER CLOTH
36" wide — Brown and Black.
PRICE $8.50 METRE

BRAND NEW GARRARD MODEL 82 TURN TABLES
4 Pole Synchronous 240 Volt Motor, 3 Speed — 33 r.p.m. — 45 r.p.m. — 78 r.p.m. Auto and Manual Operation. Anti-Skate — No Cartridge — Adaptable to any cartridge.
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SPECIAL
9" x 6" SPEAKERS — brand new in cartons — 4 ohm Impedance — Ideal for car cassettes, radios, etc.
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BRAND NEW UR S7 CO-AXIAL CABLE.
75 ohm, V2" Diameter.
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5" x 3" 8ohm, Ideal for small extension

AMATEUR LOG BOOK — $2.00

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20,000 Ohms per Volt DC, 8,000 Ohms per Volt AC.
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240 POWER SUPPLY KIT
13.8V DC out, at 3 amps.
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(All you need is a box to put it in.)

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PRIMO UD 844
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ELECTRO-MAGNETIC ROCKING
ARMATURE INSERTS
2,000 Ohms, Type 192.
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KR65 METERS
10V, 20V, 30V, 31V In. x 2½ In, M/hole 2½ ft., DC.
PRICE $12.50 — Postage $1.00

KR65
10A, 20A, 30A. DC.
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1-8 Copper Brand, Tin coated with Corrosive Resin.
PRICE $2.20

C12 PX SPEAKERS
8 ohm, Twin Cone, 30 watts RMS 12".
PRICE $30.00 each — $50.00 pair

6" 4 WATT 8 OHM SPEAKERS
PRICE $10.00 PAIR

SPEAKER CLOTH
36" wide — Brown and Black.
PRICE $8.50 METRE

THE RADIO FOR WORLD-WIDE LISTENING
AT ITS BEST — 0.5-29.9 MHz COVERAGE
SYNTHESIZED COMMUNICATION RECEIVER

The model FRG-7 is a precision built high performance communication receiver designed to cover the band from 0.5-29.9 MHz. Its state of the art technology offers an unprecedented level of versatility. The Wadley Loop System (drift cancellation circuit) coupled with a triple conversion super heterodyne system guarantees an extremely high sensitivity and excellent stability. It provides complete satisfaction to amateurs as well as BCV with superb performance and many features such as RF attenuator, selectable tone, and automatic noise suppression circuit.

PRICE $385.00

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**COVER PHOTO**

You can't start them too young. Tom Dexter, three-year-old son of Tony Dexter VK5DL, tunes 20 metres on the station receiver — a Hallicrafters SX100.
Well, here we are already three months into 1979, the year of the WARC. Of course matters concerning this most important conference are uppermost in our minds at present.

And while this is naturally understandable, we must not forget the institute and its wellbeing.

As you know, the prime object of the WIA is to look after the interests of its members, Australian Amateurs. It is funded by the members, and these members elect their governing council and its executive.

The annual meeting of the council, “The Federal Convention”, is this year being held during April as provided for under the Constitution. In 1976 Bob Arnold presented a report on the organisation of the WIA together with a number of suggestions."

The Federal Council of the day, in deciding to retain the existing organisation, however did accept many of the suggestions that did not involve organisational changes.

Since the initial introduction of the Arnold Report, there have been changes in the climate of amateur radio in several areas. It would therefore be well to give this report further thought, bearing in mind that we should attempt to make the most efficient use of our resources, both personnel and funds.

With the Federal Convention coming up, it is for the members of the Divisions themselves to provide guidance for their Federal Councillor in order that the Council may as a whole, after due consideration, reach decisions that will best serve the Institute.

I am looking forward to a Convention that will set the Institute well on the post-WARC road.

D. A. WARDLAW VK3ADW

Federal President.
Meet the Professionals

Alpha 78 — Three 8874s. 2.4 KVA Hipersii Xtmr. No tune up. And full QSK.
Alpha 76A — Two 8874 tubes Hipersii Xtmr.
Alpha 76A — Three 8874 tubes. Hipersii Xtmr.
Alpha 76CA — Three 8874 tubes. Hipersii Xtmr.

Alpha 77DX — One 8877 Tube Two Thousand Watts PEP.
Alpha 77SX — Two 8877 Tubes /Commercial or direct Export Only.

Alpha 374A — Two 8874 tubes. No Tune Up. Broadband version of the 76A.

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AUSTRALIAN SOUND AND SIGNAL RESEARCH
11 Edgecliff Road, Bondi Junction, N.S.W. 2022

CAR, TRUCK, CARAVAN OR TRAILER
THERE’S ONLY ONE WHIP...
SCALAR

Scalar M25 made specially for Ham Ams. Puts on a special 2 metre performance. Scalar M25 is a 3dB mobile designed for use in the 140-175 MHz band. And what a band of callers! A 5/8 wavelength whip with integral loading coil in resilient fiberglass. Stop looking for a better whip than Scalar... there ain’t any!!

3 MORE WAYS TO SCREW ON A SCALAR

MAGNABASE — a magnetic base, scratch-free. Instant or permanent grip on any flat metal surface

TRUNK MOUNT — special bracket holds it rock firm around the boot

GUTTERGRIP — screws on solid anywhere around the gutter of any vehicle.

Noise-free Scalar M25 in black or white with standard MB base.

John Payne VK3AED, Federal Councillor of the Victorian Division, accompanied by VK3 Council member Col Fisher VK3YII, attended the Executive meeting held on 25th January. Much of the time was devoted to discussions about the Channel 5A report submitted to Executive from the Victorian Division’s special sub-committee.

It appears that lobbying in the political arena last year, coupled with other important factors relating to other frequency users of the Channel 5A spectrum allocation, has led to a reappraisal of the use of this non-standard channel.

The Channel 5A report will now be considered by the VHFAC, under the chairmanship of Peter Wolfenden VK3ZPA, to determine how best to prepare a suitable presentation for the attention of the Minister.

50 cm BAND

During the same meeting the opportunity was taken to hold a considerable discussion on the temporary allocation of the 50 cm band to the amateur service. This is a unique allocation with no counterpart elsewhere. It was made a temporary substitute for 70 cm after WARC 59, when the 70 cm band could not be allocated for amateur use because it was being used in Australia for other purposes. The 70 cm band was an amateur international allocation elsewhere in the world at that stage and, of course, still is to a greater or lesser degree in different regions.

Since, however, Government has not published any plans relating to UHF television and since the amateur service is very keen to foster UHF television in Australia to remove pressures in the VHF region, little is likely to be achieved by any action at
this time. It is considered most important to secure the best possible allocation relating to the 6 metre band and the earliest possible removal of the Channel 5A allocation.

Those who have made a close study of frequency management concepts will understand the enormous number of problems to be resolved, with or without the influence of WARC 79.

1979 CALL BOOK

DO WE HAVE YOUR ACCURATE INFORMATION FOR THE 1979 CALL BOOK?

Members can check the accuracy of the Call Book data by looking at their AR address labels. Any differences should be advised to Box 150, Toorak, as early as possible.

The real problem area is information about licensed non-members. Monthly lists of new calls, changes of address and cancellations used to come from the P. & T. Department even though these always contained inaccuracies. Now, however, there have not been any since April last year which makes it very difficult to produce a comprehensive Call Book. If any member would care to assist by asking non-members to send in their details to Box 150, Toorak, this would be greatly appreciated. We have over 2000 non-members listed on the computer file but when the request for donations towards the costs of WARC 79 were mailed to them last October approximately 10 per cent were "returned to sender" by the Post Office as "left address", "unknown", etc.

WARC 79 APPEAL

Notwithstanding this setback, donations towards the expenses of WARC 79 have been coming in very satisfactorily. Over $1500 has been donated in the last few months and a listing of donations from members will be published as soon as space in AR permits.

MEETINGS

The Executive Meeting on 25th January also discussed the Ron Wilkinson Achievement Award, WICEN training exercise requirements, the appointment of Bill Verrall VK5WV as the new Federal Awards Manager, and thanks to Brian Austin VK5CA, presently hospitalised, for his work in this area. Ideas about the proper use of the $3500 donations for Federal Education and a number of other items.

PROJECT ASERT

A meeting of Project Asert on 18th January reviewed the latest situation for a report in AR and proposed standards for receiving equipment.

THE RON WILKINSON ACHIEVEMENT AWARD FOR 1978

Details of this estimable annual Award were set out on page 17 of AR for March 1978. The Award is funded from interest received from a most generous donation received from Mrs. Mary Wilkinson, widow of the late Ron Wilkinson VK5AKC.

For the year 1978 two names were considered by Executive, and after considerable thought, both were recommended to receive the Award jointly.

The President of the Tasmanian Division, Ian Nichols VK7ZZ, submitted and recommended the name of Winston Nichols VK7EM, of Penguin. His recommendation received the support of the Tasmanian Division Council.

VK7EM receives the Award for his outstanding work over many years for VHF and Amateur Television signals on 70 cm. He still holds a distance record for a successful two-way ATV contact on 70 cm with VK3 and hopes to extend this by contacting a VK5 as early as possible.

The other recipient is well known to almost every Australian amateur for his persistent and continuous work over many years in the field of Intruder Watching. He is none other than Alf Chandler VK3LC. Alf's devotion to his task, despite every conceivable difficulty, has ensured the continuance of this most important activity. Without him there might have been no Intruder Watch service.

His overseas contacts and close liaison with IARUMS ensures that Australia is represented in the international area. He is also the Intruder Watch Co-ordinator for IARU Region 3. If he could not obtain satisfaction through the local channels for reports, he certainly obtained several successes through the good offices of his friends abroad.

Congratulations to VK7EM and VK3LC for their well-deserved recognition.

WANTED

Qualified accountant with amateur call sign to advise the Federal body on financial matters in particular. Work load is barest minimum, no book-keeping. One meeting each month on the average and possibly only an hour or two extra to study accounts. Would suit any qualified volunteer in Melbourne area wishing to donate a few hours of his time to the WIA.

Please ring Executive office 24 8652.

A SHORT COURSE IN PUBLIC RELATIONS

The 6 most important words:  
"I admit I made a mistake".

The 5 most important words:  
"You did a good job".

The 4 most important words:  
"What is your opinion".

The 3 most important words:  
"If you please".

The 2 most important words:  
"Thank you".

The least important word:  
"I".
SOLID STATE SWITCHES
FOR VIDEO AND RF

For switching low level RF and video signals (in the order of 1V p-p), a fully electronic switch will do the job much faster and more reliably than a relay. The cost will be about the same or less than a medium quality standard relay, depending on the type chosen. There are other additional advantages: better cross-channel isolation, impedance buffering between input and output lines and also a low current control line.

The need to switch high frequency, low level signals at coaxial line impedance often arises, particularly when TV video signals are being handled. Whilst a commercial toggle switch will often suffice, it is not capable of being remotely actuated. Also, since these devices are not intended for switching RF, radiation and crosstalk signals are being handled. Whilst a commercial toggle switch will often suffice, it is not capable of being remotely actuated. Also, since these devices are not intended for switching RF, radiation and crosstalk problems (in a changeover application) may ensue. A standard relay will enable remote operation, but these two problems may still be present. The ideal answer is to use a good quality coaxial relay, but of course these devices are not cheap. If you have the need to switch high level RF signals, the coaxial relay is probably the best choice, especially if transmission line impedance discontinuities are to be avoided.

Two designs for solid state video switches are presented. The first (Type 1) employs a pair of 4016 CMOS quad bilateral switches, and the other (Type 2) uses all-discrete circuitry. The capabilities of both configurations are broadly similar, with the IC design having generally superior performance for most parameters. Of course, the discrete design may do all that you require at a lower cost. The following comments apply equally to both circuits, after which the operation of each type will be discussed separately.

Both switches are intended to perform a changeover function for standard CCIR TV video waveforms, which have an amplitude of 1.0V p-p. The circuits are designed to drive 75 ohm coaxial cable, although they would drive 50 ohms lines with a small deterioration in signal handling capabilities and high frequency performance. The input and output lines of both switches are AC coupled, with the time constants being such that no frame tilt is detectable on a transmitted CCIR TV waveform. This good low frequency characteristic (together with the HF response figure) makes the switch circuits more than adequate for high quality audio signals, if you have a requirement in this direction. If a low output impedance is not required, the emitter follower stage may be omitted in both designs. This will greatly reduce current consumption and also lower the total cost.

The input impedance for each channel of the Type 1 (IC) switch is about 900 ohms, and about 9k ohms for the Type 2 (discrete) switch. Depending on the circuitry feeding the switches, it may be necessary to terminate the inputs with a resistive load, in order to correctly match the characteristics impedance of their respective coaxial cables. In this respect, the switches presented have the advantage over a relay that a very low output impedance is achieved without imposing any significant loading on the input line. Therefore, the input may be arranged to perform a “bridging” function, if necessary.

The outputs from the switches may be terminated or not, according to your requirements. Remember that coaxial cable is a transmission line, and that long lengths should be terminated in their characteristic impedance, in order to prevent mis-matching and consequent reflections.

Both switches are designed to operate from a +12V supply rail, and consume between 25 and 45 mA of current, depending on the type used and also which channel is selected. The control voltage states are 0V for channel 1 out, and +12V for channel 2 out. The “low” state should be less than +0.5V, and the “high” state should be greater than +11V. The control line resistance is about 30k ohms in the case of the Type 1 switch, and about half that value for the Type 2.

**CIRCUIT DESCRIPTION — TYPE 1**

Heart of this switch is the 4016 integrated circuit, which contains four separate CMOS bilateral switches. These may be considered as “electronic relays”, but they have an “on” resistance of a few hundred ohms. Hence, if we are going to use them in a low impedance switching application, some form of current driver will be required after the switch. Also, if they are wired for a simple SPST function, the stray shunt capacity existing across each switch in its “off” state will give rise to crosstalk at high frequencies from the channel which is supposed to be switched off. This shortcoming is remedied by using six switches (three for each channel), wired in the configuration shown in Figs. 1(a) and 1(b).

In this manner, signal passed via the “carry-through” capacitance of the first series switch in each channel is shorted to ground when that channel is “off”. The two series switches prevent the shunt switch from shorting either the input or the output lines.

DC operating bias for the output emitter follower is provided by a passive divider network at the input of each channel. When the system changes over, bias is supplied from the network associated with whichever channel is selected. The AC input signals are capacitively coupled on to this fixed bias voltage, and thus either signal can appear (together with the bias) at the output of the switch, which is then applied to the base of an emitter follower.

The output line is capacitively coupled from the emitter of this stage. The bias level at this point is about +1.65V DC, which implies an output drive amplitude capability for a symmetrical signal of 3.30V p-p (unterminated) or 1.65V p-p (terminated in 75 ohms). Note that the broad-band gain of the switch does not alter significantly when it is terminated; the drive capability drops to half its value, i.e. you can only apply a maximum of 1.65V p-p to the inputs. This is more than adequate for a standard CCIR TV signal (1V p-p). The 10k ohm resistor across the output line prevents the build-up of a DC potential due to the leakage resistance of the 1000 uF electrolytic coupling capacitor when the switch is running unterminated.

**PERFORMANCE — TYPE 1**

The broad-band insertion loss of this switch is 0.36 dB (unterminated) and 0.73 dB (terminated — 75 ohms). The response (referred to 1 MHz) at 30 MHz is —1.6 dB (unterminated) and —5.3 dB (terminated — 75 ohms). The crosstalk (measured at 5 MHz) is better than 60 dB down, but note that these figures can be spoiled by poor circuit layout. These and other parameters...
Circuit Description — Type 2

This switch operates on an entirely different principle to that employed in Type 1. Here, the configuration consists of two common-emitter amplifier stages sharing the same collector load resistor. Each stage is provided with operating bias upon which the signal to be switched is superimposed. Now, each emitter load is returned to earth via the collector-emitter junction of a switching transistor. The control signal is applied to the base of the switching transistor associated with channel 2, but the switching transistor for channel 1 is supplied with an inverted version of the control signal. Thus, only one channel can be activated at any particular time. Since the bias networks for each channel are identical, the DC conditions of the switch remain unchanged whilst the AC information changes over from channel 1 to channel 2 when the control line is taken to +12V.

Since excess current gain is available, frequency compensation is employed in the phase inverting stage by means of Cc, which lifts the gain at high frequencies as its capacitance reactance falls. For normal video bandwidths (5-6 MHz) the inclusion of this component is unnecessary. However, if the optimum bandwidth is required, the value of Cc should be 47 pF if the output stage is to run unterminated. The —6 dB bandwidth under these conditions will be approximately 22 MHz. If the output is to be terminated in 75 ohms, Cc should be made 56 pF. Then the —6 dB bandwidth will be about 19 MHz. Note that the above compensation capacitor values are for optimum square wave response, i.e. the frequency vs. amplitude characteristic does not exhibit a positive slope at any point. The cross-talk figure (~—32 dB at 5 MHz) is not as impressive as that for the Type 1 switch, but it is quite adequate for normal video use.

Constructional Details — Types 1 and 2

For the Type 1 circuit, PC card would prove the most suitable method of construction, due to the presence of two ICs. A piece of either DIL experimental card or VEROBOARD would be the most expedient. The Type 2 switch circuitry is more amenable to hard wiring techniques, but a specially laid out PC pattern with plenty of earth area would be the ideal method for both designs.

All resistors may be ±5% tolerance, and all electrolytics are "tag" tantalums, with the exception of the 1000 μF output coupling capacitors which are etched aluminium foil types. All the 150 pF "speed-up" capacitors may be ceramics, and the frequency compensation capacitor in the Type 2 switch may be a silvered mica or NPO ceramic type. The BC109 transistors have been used because of their high current gain, and substituting with minimum current gains of less than 200 should not be used. Similarly, the 2N3638A in the Type 2 circuit has been chosen for its current gain, and should not be replaced with a 2N3638.

Although the dissipations of the output emitter followers are within the 300 mW limit for the BC109 (228 mW and 267 mW for Types 1 and 2 respectively), BC549s have been specified for these positions as their higher dissipation rating (500 mW) should ensure better long-term reliability.
Even so, the output drivers run at a fairly high temperature, and arrangements for adequate convection cooling should be made.

In connection with bypassing, it should be noted that the supply rails to both 4016s in the Type 1 switch should be bypassed at the chip by means of 22 uF, 16V "tag" electrolytics. Also, the 220 ohm series base resistor and the 22 uF, 16V "tag" bypass at the collector of the output emitter follower stages are important anti-oscillation measures, and should not be omitted. The bypass capacitor should be situated as close to the collector as possible.

If you intend to put either of these switches to use in applications where their extended low frequency response is not required (e.g. for switching over a pair of HF VFOs), it would be prudent to replace the Input and output electrolytic coupling capacitors with smaller value ceramics. As well as saving both space and money, you will circumvent any possible problems which may arise at HF due to inductive effects within the output coupling capacitor.

On a final note, it may have occurred to some readers that one of the unused 4016 sections in the Type 1 switch could have been used as the control line inverter. The reason why I did not do this is that I preferred to keep the control and switching functions apart as far as possible, in order to avoid interaction effects when the circuit is handling signals near its upper frequency limit, i.e. about 30 MHz. However, if you would like to try this method, it is performed in the following manner. Ground the output of the 4016 section, and connect the input to the +12V rail via a 2.2k ohm resistor. Connect the control pin for this section to the master control line, and then an inverted version of the control signal will appear at the input. The low point of this swing will be higher than that from the BC109 inverter stage due to the "on" resistance of the 4016, but it will adequately switch the other 4016 sections. Under these conditions, the master control line resistance will be very high (all CMOS), which may prove advantageous to you. Also, the current drawn from the +12V rail will remain at 25 mA irrespective of the channel selected.

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>TYPE 1</th>
<th>TYPE 2</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SUPPLY VOLTAGE</strong></td>
<td>+12</td>
<td>+12</td>
<td>V</td>
</tr>
<tr>
<td><strong>SUPPLY CURRENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel 1 selected</td>
<td>25</td>
<td>40</td>
<td>mA</td>
</tr>
<tr>
<td>Channel 2 selected</td>
<td>30</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td><strong>CONTROL LINE LOGIC LEVELS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To select channel 1</td>
<td>Between 0 and +0.5</td>
<td>Between 0 and +0.5</td>
<td>V</td>
</tr>
<tr>
<td>To select channel 2</td>
<td>Between +11.0 and +12.0</td>
<td>Between +11.0 and +12.0</td>
<td>V</td>
</tr>
<tr>
<td><strong>CONTROL LINE CURRENT</strong></td>
<td></td>
<td></td>
<td>uA</td>
</tr>
<tr>
<td>0V (channel 1 selected)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>+12V (channel 2 selected)</td>
<td>420</td>
<td>840</td>
<td></td>
</tr>
<tr>
<td><strong>INPUT IMPEDANCE</strong></td>
<td></td>
<td></td>
<td>k ohm</td>
</tr>
<tr>
<td>Channel 1</td>
<td>0.87 (min.)</td>
<td>9.3 (min.)</td>
<td></td>
</tr>
<tr>
<td>Channel 2</td>
<td>0.87 (min.)</td>
<td>9.3 (min.)</td>
<td></td>
</tr>
<tr>
<td><strong>OUTPUT IMPEDANCE</strong></td>
<td></td>
<td></td>
<td>ohm</td>
</tr>
<tr>
<td>To drive 75 ohm or 50 ohm (see text)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Output Voltage Swing (for a symmetrical input waveform)</td>
<td>3.30</td>
<td>4.0</td>
<td>V p-p</td>
</tr>
<tr>
<td>Output unterminated</td>
<td>1.65</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Output terminated — 75 ohm</td>
<td>-0.73</td>
<td>+0.67</td>
<td>dB</td>
</tr>
<tr>
<td>Broad-Band Insertion Loss or Gain (measured at 1 MHz)</td>
<td>-0.73</td>
<td>+0.18</td>
<td></td>
</tr>
<tr>
<td>Output unterminated</td>
<td>-0.73</td>
<td>+0.67</td>
<td>dB</td>
</tr>
<tr>
<td>Output terminated — 75 ohm</td>
<td>-5.3 dB at 30 MHz</td>
<td>-6 dB at 22.4 MHz (Cc = 47 pF)</td>
<td></td>
</tr>
<tr>
<td>Hf Response (relative to 1 MHz)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output unterminated</td>
<td>-1.6 dB at 30 MHz</td>
<td>-6 dB at 19.25 MHz (Cc = 56 pF)</td>
<td></td>
</tr>
<tr>
<td>Output terminated — 75 ohm</td>
<td>-5.3 dB at 30 MHz</td>
<td>-6 dB at 22.4 MHz (Cc = 47 pF)</td>
<td></td>
</tr>
<tr>
<td>CROSSTALK</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conditions:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Measured at 5 MHz. (2) 1V p-p input to Ch. 1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Ch. 2 input shorted. (4) Ch. 2 selected.</td>
<td>-60</td>
<td>-32</td>
<td>dB</td>
</tr>
<tr>
<td>(5) Output terminated. (6) Output measured with respect to Ch. 1 input.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternate Channel Output Offset Voltage (measured at 100 kHz)</td>
<td>50 (typ.)</td>
<td>100 (typ.)</td>
<td>mV</td>
</tr>
<tr>
<td>Switching Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conditions:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Measured at 100 kHz. (2) Control voltage swing 0V-10V.</td>
<td>0.5 us</td>
<td>2.0 us</td>
<td></td>
</tr>
</tbody>
</table>
The IC202 and the IC502 are great portable rigs and quite adequate for local contacts from the home QTH — they do however lack power for DX openings or pile-ups. The amplifier described uses the ubiquitous QQE06/40 to give that extra bit of "oomph".

The QQE06/40 is a rugged valve which was used for many years in commercial VHF base stations. It was also a favourite final in AM rigs used by VHF amateurs. Many readers will, like the author, have at least one somewhere in the shack gathering dust.

The circuit is shown in Fig. 1. It is a conventional amplifier with fixed bias stabilised by zener diodes. The correct tube idle current is set by adjusting the voltage of the series strings of zeners. The power supply must provide a reasonably stable screen voltage but is not critical otherwise. The author used the old AM rig's supply. The screen used the driver supply which once ran at 100 mA and hence has adequate regulation in this application. You only have to look at a commercial transceiver circuit to see what you can get away with.

Coil data is given for both bands but you should check the circuits, with the valve inserted, by means of a GDO to see that resonance occurs. Circuit layout can cause minor variations. The 2 metre grid coil is self resonant with the QQE06/40's input capacitance.

Parasitic chokes were found to be necessary on 6 metres. The grid swamping resistor was found to be useful in stabilising the load on the driver and for sopping up some excess drive.

The amplifier must be built with absolutely minimum length leads to maintain stability. The cathode bypass is made by paralleling several disc ceramics to obtain a low impedance bypass. The tube should be mounted so that the metal disc inside the valve is level with the chassis. This is a requirement for tube shielding and self neutralising.

Fig. 2 shows the circuit for the relay driver. Alternative interfacing methods are shown in Figs. 3 and 4.

The IC202 and IC502 provide a DC output voltage on the coaxial output con-
nector’s inner conductor during the receive condition and zero on transmit.* This is part of the send-receive diode antenna switching control system. This voltage is used in the scheme shown in Fig. 4 to control the linear amplifier via the relay driver shown in Fig. 2.

An alternative is to connect the microphone to the IC202 (or IC502) via the amplifier and so access the PTT line. This is a simple scheme but to avoid upsetting the PTT circuitry in the transceiver the same relay driver should be used. See Figs. 2 and 3.

The author used coaxial relays for antenna change-over but any low RF loss switching relay can be used. Remember, especially on two metres, to take care here as losses will reduce receiver sensitivity. You can’t work the DX if you can’t hear it!

On two metres a low noise preamplifier is a worthwhile inclusion as the IC202 noise figure whilst adequate is not the lowest available. If a preamplifier is used “bare-foot” operation becomes inconvenient without more switching. On six metres the IC502 would suffer severe cross-modulation in channel 0 areas if a receive preamplifier were used.

The prototypes of both amplifiers were built using printed circuit laminate soldered together to form a combined box and chassis. This is an easy method of construction and provides readily solderable earth planes. Earth leads can be kept very short and shielding is easy, important factors in maintaining stability. The board used was the cheap surplus “moulded mud” variety as the dielectric properties are unimportant.

"The IC502 requires a modification to short out a DC blocking capacitor in series with the antenna connector. — Tech. Ed.

**FOX HUNTING — MANUAL GAIN CONTROL FOR THE IC202**

Gil Sones VK3AUI
30 Moore St., Box Hill South, 3128

Foxhunts require a manual gain control to reduce receiver sensitivity as the hidden transmitter is approached. The IC202 is a very compact rig and can, if necessary, be carried overland (or water if on some foxhunts... Ed.).

This very compactness makes the provision of a manual gain control a problem. Many owners are not prepared to drill holes in the case anyway. Salvation is at hand because the PTT line, available at the microphone socket, is connected to the control transistors supplying the major gain stages of the receiver. All that is required is a potentiometer connected between the PTT line and ground.

The manual gain control may be mounted as a plug-in module or built into the microphone case.

The circuit is shown in Fig. 1. The nominal 150 ohm resistor R1 should be adjusted so as to make the minimum gain setting just above the point where the IC202 PTT is activated (150-300 ohms). There is a range of adjustment between the minimum gain point and the point where the transmitter is actuated. The maximum gain is set by the maximum value of the potentiometer so any value which gives maximum sensitivity can be used. The author found that 10k ohms was sufficient. Higher values such as 15k or 20k could be used if these are in the junk box.

*The IC502 requires a modification to short out a DC blocking capacitor in series with the antenna connector. — Tech. Ed.*
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<tr>
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</tr>
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<tbody>
<tr>
<td>TS820S</td>
<td>$139</td>
<td>$139</td>
</tr>
<tr>
<td>TS520S</td>
<td>$89</td>
<td>$89</td>
</tr>
<tr>
<td>ICOM IC701</td>
<td>$169</td>
<td>$169</td>
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</tbody>
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Transceive frequency range 2 MHz in 244-148 kHz, Transceive channels 6, channels antenna impedance 90 ohms, balanced, BNC connector, power supply requirement 13.8V DC (negative grounded), Power Consumption maximum 300 mA, receive 100 mA standby 25 mA, size 68 mm (2.54 in.) wide, 154 mm (6-1/16 in.) high, 24 in. (1-6/6 in.) deep, weight 470 g (1.06 lbs.). Receiver offset +600 kHz modulation variable reactance phase modulation, maximum deviation +5 kHz microphone condenser, microphone receiver, double conversion superhet (1st IF, 16.9 MHz, 455 kHz). Sensitivity -1 dBu NQ 2000/10 MHz, 1500/10 MHz, 1000/10 MHz. Attachment rubber ducky antenna. Nicad battery pack, DC cable with cigarette lighter plug. Carrying strap.

$299

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A microprocessor controlled keyboard that generates Morse, RTTY and ASCII. Write or call for further specifications.

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2m FM PLL SYNTHESIZED MOBILE TRANSCEIVER

- 144-148 MHz. PLL digital synthesizer system (800 channels) • A large-sized LED. digital display system, range display up to six figures • Easy-operating separate and selectable mechanism designed by the factory unit for wider operation • Transmitting output: 25W/1W, two-step selector switch • Pre-amp nominal 10 dB • External preamp input: +10 dBm • External preamp output: -5 dBm • S meter indicator.

$898

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- 144-148 MHz. PLL digital synthesizer system, FM: 800 channels (5 kHz step), SSB: 400 channels (10 kHz step), plus VXO system (1 kHz step) • AC 127V/230V, DC 13.8V, two-step power supply • Digital display system fading a large-sized LED providing a two-step power supply • Digital display system fading a large-sized LED providing external preamp input: +10 dBm • External preamp output: -5 dBm • External preamp input: +10 dBm • External preamp output: -5 dBm • S meter indicator.

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FT101E: AC-DC

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Wilson SY-2

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MAIL ORDERS: Box K21, Haymarket NSW, 2000, Australia
WRITE, PHONE OR CALL IN!
In the short period that has elapsed since RTTY groups have been established, the availability of machines has been on the increase, particularly in two major brands. This article deals with one of them.

The Model 15 Teletype (and its various offshoots equipped with paper punchers and readers) is an old and reliable model. Although it suffers from antiquity, it is nonetheless a very easy machine to set up.

In the following paragraphs are some bits and pieces which the author hopes will help those who have recently acquired one of these machines.

CIRCUITS
These are divided into three groups: the baseplate which is primarily the motor and its speed regulator, the transmitter, and the typehead (receiver). If your machine is intact, your circuits will be as shown in the diagrams. It must be noted, however, that some Model 15 machines could be ex-PMG, and certain facilities not required by the Department may be omitted.

The motor speed regulator is a centrifugal type fitted at the rear end of the motor in a drum. Contacts and RF chokes are included in this unit. A rear plate carries a double brush contact arrangement to carry power to this section. Speed is checked by observing strobe marks painted on the periphery of the rotating member. The use of ordinary 50 Hz lighting for this is not, strictly speaking, applicable as the shaft revolves at 2308.5 r.p.m. for 50 Baud rate, or 2098.5 r.p.m. for 45.45. If one is prepared to paint 3 equally spaced marks around the drum periphery, the motor speed will have a 3.4 per cent error at 45.45 Bauds using a 50 Hz lamp (for a stationary pattern, exactly 46,995 Bauds is the setting).

The transmitter consists of a cam unit operating 6 sets of parallel connected contacts, and is provided with the necessary network for operating on DC lines. For AFSK, this network may cause problems and should be disconnected if operation directly from these contacts is anticipated. A contact “debouncing” circuit should also be considered. When series connecting the transmitter and typehead to produce local copy this network may be needed. It is a good idea to run the transmitter contacts into the AFSK modulator, and obtain local copy by demodulation. In this way a constant check on the MODEM (modulator-demodulator) system can be had while...
transmitting or punching a tape; while playing a tape or receiving, the demodulator only is used.

The typehead consists of a pair of coils whose total resistance is about 210 ohms, and requires 60 mA for proper operation. When connected as the receiver on a long telegraph line, it is usually preceded by a correction network to correct for line waveform distortion of the ideal square form. For amateur use, the coils are driven directly. Low impedance drive tends to be rather sluggish when operating in the constant voltage modes.

Ideally, the typehead magnet should be driven from a high voltage source via a high resistance. At the lowest possible voltage, the time constant will be L/R, where R = 210 ohms, and L is the coil inductance (a constant). If the supply voltage is, say, 150 volts (current 60 mA), the series resistance would be 2500 ohms. When substituted into the above formula, it is easy to see that the apparent magnet speed will be about 12 times faster. We can also make the release time just as fast by quenching the back EMF via the same resistor through a catching diode across this series combination—not just across the coil. This would be required to protect a keyer transistor from reverse Vce breakdown in any case. Dissipation of the resistor is about 9 watts, and can be handled either by a single 10 watt unit or ten 250 ohm 1 or 2 watt units in series.

POWER SUPPLY
As the motor of the machine operates from 110V AC, a suitable stepdown transformer must be used. This can, with a bridge rectifier and capacitor of 100 uF or so also provide 150V DC nominal voltage for the typehead magnet/resistor circuit by grounding one side. Although it leaves the motor circuit "up in the air" when connected to the same transformer secondary, there shouldn't be too many problems of hash experienced with suitably filtering around the motor governor circuit. The author used an old TV power transformer normally used in a voltage doubling HT supply, furnishing 105V RMS and 6.3V heater. Under load, the motor was quite happy with the slight voltage difference. The heater winding was operated with a voltage doubler and gave sufficient input to drive a 12V three terminal regulator to supply the Modem.

SOME THINGS TO TRY
Remembering Department "mods", certain facilities may or may not be included on your machine.

Motor Stop: If the letter "H" or "J" in the FIGS selection immediately follows the blank (without space), the motor will stop. The typehead magnet must be de-energised to allow various levers to close the series motor control contacts to start the motor. The contacts are located on the lower front portion of the typehead basket assembly. If you want to disable this section, go to it!

Signal Bell: It is wise to retain this faculty, as it can be used at the commencement of a transmission. It is designated on the typing keys in FIGS as a bell symbol or the letters "BL". In telegraph hookup, it is used to set other teleprinters into operation that may be in standby mode, and to wake up the sleeping operators (as if they couldn't hear a Model 15 making its noise!). It is also handy to make sure that the machine is operating properly, thereby eliminating the risk of printing garble.

Keyboard Lockout: If two blank signals are received consecutively without any other character or spacing breaking the sequence, a handle marked "SEND-RECEIVE" will move to receive position. This closes a pair of contacts which short out the keyboard transmitter bank. The handle must be manually moved to SEND to transmit from the keyboard.

ADJUSTMENTS
To optimise the machine for receiving, it is important that the decoding cam in the typing system is in step with the transmitter of a second machine. The letters "RY" are used in continuous fashion while adjusting a quadrant lever at the LH side of the machine. Unlock and move this lever while noting the scale position where the machine prints garble. Move the other way for the same effect and set midway between the two. This assumes that the motor speed is set to amateur Baud rate of 45.45.

The motor speed is set by adjusting the spring tension pulling against a centrifugal weight fixed to a pair of contacts inside the drum fitted to the rear shaft section of the motor. Two levers skim a rubber tyred wheel fitted to an adjustment screw in the drum, and either increases or decreases tension appropriately. With a little inspection, these levers are easy to find. One is situated between the drum and the rear cover of the motor on top of the bearing, while the other is fixed to a large spring at the back. This system may appear archaic, but it is the basis of the XYL's Sunbeam Mixmaster food mixer, or the motor governor in the majority of cheap type (and some exotic) cassette recorders!

There may be other characteristics not listed here, and the author apologises for any missed. How about sending in your pet RTTY gimmick for all to share?

73s. Goodnight.

COMMERCIAL KINKS
RON FISHER VK3OM

This month we return to the Yaesu FRG-7 receiver. Arthur Solomon VK3LJ has come up with some simple tricks which no doubt increase the pleasure of using this fine receiver.

Over to Arthur.

"Recently I purchased an FRG7 and am delighted in general with it. After experiencing the many shortcomings of other receivers in the moderate price range, I consider the acquisition of the FRG7 a definite step forward.

Nevertheless, I do have some criticisms (rather obvious ones, perhaps) and some simple modifications which may be of interest to you and to your readers in AR. I offer them for what they may be worth.

(1) I wired in a miniature 12 volt lamp for the S meter as suggested in June AR but with a slight alteration. The miniature lamp I bought was supplied with a rubber grommet, which I trimmed as indicated in Figure 1. I cemented the grommet, rather than the lamp itself, above the S meter, and then pushed the lamp through the grommet. This makes replacement of the lamp a very simple matter. (The leads to the lamp are taken, as you suggested, to the three lug strip above the chassis to the rear of the main dial.)

(2) An annoying feature of the FRG7 is the dial set knob which protrudes barely a millimetre or two through the front panel. Now, it is obvious that continual use of this knob is certain to cause wear of the panel surface at this point, not to mention disfigurement, if not obliteration, of the lettering above it. A simple solution is to take a black plastic LED socket, file its interior to fit the metal knob of the dial set, and cement it in place. It offers a firm purchase for the fingers, is not obtrusive and blends perfectly with the design of the front panel (Figure 2).

(3) Another criticism of the FRG7 concerns the main dial itself. The cursor is set forward at least one cm from the dial itself and this introduces a serious parallax error. A simple solution would be to fit a highly polished thin metal band just above the dial markings. There are many ways,
of course, of providing such a mirror backing, but after trying several, I settled for what I think is a very simple method. I bought a packet of "silver" tinsel, the kind that is used in Christmas decorations. The tinsel is only about 2 to 3 mm wide and is highly reflective. The tinsel is wound around the main dial drum at a height of about 1 mm above the figures on the dial and is secured at strategic points with transparent cellulose tape. Its use is simple: the crystal calibrator is switched on and the receiver is tuned for maximum S meter reading (on AM) or zero beat (on SSB) and the dial set adjusted until the cursor is lined up with its image in the tinsel.

This procedure of superimposing the cursor on its image is repeated when setting or reading frequencies on the dial.

The mirror scale harmonizes well with the general appearance of the receiver and the modification itself can be removed in seconds without leaving a mark.

(4) A deficiency in the FRG7 is the absence of an inbuilt crystal calibrator. Such a facility is essential in any serious communication receiver and can be provided for the FRG7 by means of a quite simple modification — provided one is willing to relinquish the rather doubtful advantage of being able to operate the FRG7 from dry cells! (This is to me a rather pointless facility: most amateurs or SWLS wishing to operate this receiver portable would surely have access to either the mains or to a car battery). The LIGHT switch on the front panel is only a necessity if you wish to operate the FRG7 from dry cells, and if you are willing to forgo that facility, then you can use the LIGHT switch to operate an inbuilt crystal calibrator.

The modification is as follows:

(i) Remove the two wires from the LIGHT switch, solder them together and tape the join. The LIGHT switch is now available for the calibrator.

(ii) Remove the plastic dry-cell compartment on the sliding carriage at the rear of the receiver, first unsoldering the red and black leads from the white socket on the back panel of the carriage. Mount your calibrator circuit board and crystal on the sliding carriage as shown in Figure 4.

red and black leads from the white socket are connected to the board as shown.

(iii) Trace the red and black leads from the white plug to their termination on the lug strip near the DC input jack under the chassis and disconnect them. These leads and their plugs are now available to supply voltage to the calibrator (Figure 5).

(iv) Supply voltage for the calibrator can be taken from the 10V terminal on the three lug strip to the rear of the main dial. This is the same source that was used for the 12V miniature lamp used to illuminate the S meter. Wire a 100 mF 25V electrolytic across this point, otherwise you will hear a quite impressive hum on the calibrator signal. Also add the circuit shown in diagram 4 in order to transform the 10V source into a 9V regulated supply. (You could simply use the 9V regulated supply of the FRG7 itself but I found that with this arrangement, the incoming signal tended to drop whenever the calibrator was switched on.) The LIGHT switch should be connected as shown.

The modification is now complete and provides the FRG7 with a crystal calibrator controlled from the front panel. This simple modification does not deface the receiver in any way, does not deprive the operator of any essential facility and, in the event of subsequent disposal of the FRG7, restoration to the receiver's original state can be accomplished in but a few minutes.

A 100 kHz crystal would be the ideal choice for the calibrator but even a 500 kHz or 1 MHz crystal would be adequate. I use a 500 kHz crystal taken from a defunct No. 10 Crystal Calibrator. This is a rather sluggish crystal and therefore I used the circuit shown in Figure 6. This was designed by G30GK and published in the RSGB "Amateur Radio Techniques" (1972 ed.). This little unit draws 1.5 mA and provides a better than S9 calibrator signal over the entire range of the receiver.

The output of the calibrator was taken by the most direct route to the SW antenna terminal.

(5) My last point consists simply of two comments:

(a) The Record socket on the front panel has an additional use easily overlooked: it is not only an output socket but also an input one. You cannot only record from the FRG7 through this jack, you can also play back through it and make use of the audio stage of this receiver.

(b) The FRG7 as supplied to me was far too generous in its S meter readings. The S meter sensitivity, of course, can be adjusted by means of VR401 on PBI528. Since one of the many purposes for which I use the FRG7 is to monitor the amateur bands, I considered that it would be a considerable advantage if its readings could be made to correspond with those given by my FT101E. Thus I simply tuned the FRG7 and the FT101 to a strong signal on the 20m band and adjusted VR401 until the two S metres agreed. Strangely enough, this correspondence holds closely across all the amateur bands. (Incidentally, since the inclusion of the crystal calibrator, I can locate a signal on the FT101 within 2 to 3 kHz of that indicated on the FRG7.)

Next month, a few interesting modifications to the Realistic DX 160 receiver.
Perhaps one of the most fascinating aspects of radio is the eternal question, “Is anyone else out there?” Out there meaning the vast, limitless depths of interstellar space.

From time to time there appears short and frustrating bylines in the world’s press that such and such a group of scientists in so and so a country has definite proof of the reception of intelligent radio signals from the cosmos. Like quicksilver these startling announcements suddenly appear and disappear, never to be heard of again. Russia and the United States are the chief sources of these singular revelations and it is in these two countries that the ominous cloak of secret military classification effectively silences further references to them.

**OPTICAL LIMITS**

Optical astronomy has almost reached its workable limits unless an observatory can be erected on the moon, free of the distorting effects of the earth’s atmosphere. Even if this fantastic achievement was ever completed it would only increase optical penetration of the universe to another boundary. The only effective way we have today for a survey of the real depths of space is by radio astronomy. Space probes have and are being used as well, but these are almost exclusively confined to our solar system, but radio observations know no such confining limits.

The search for extraterrestrial life began as far back as 1892 when Nikola Tesla and Gugliemo Marconi both began to speculate on strange morse signals they received on their primitive wireless apparatus. Again in 1920 Marconi heard unidentified signals when he was engaged in reception experiments and these aroused so much interest in scientific circles in the US that on August 21st, 1924, all American commercial stations, including the high powered Navy transmitters, were silent for a period of five minutes each hour for eight hours. It was hoped this silent period would enable various listening posts to pinpoint the strange signals. The results were inconclusive owing to the very broad spark signals emitted by European transmitters who were not signatories to the American silence period.

**MILKY WAY**

It was not until 1939 that Grote Reber, an amateur located in Chicago, built to his own design a 10 metre metal dish and found that the entire milky way was a source of natural radio noise with several areas of very intense emission.

After World War 2 the search was taken up by Cocconi and Morrison of Cornell University who together wrote many papers on the subject, but were hampered by lack of search gear. They tried to involve Sir Bernard Lovell with the Jodrell Bank radio telescope in their enthusiastic plan, but in true British tradition he dismissed the idea as “frivolous”. He was later to accept the challenge in principle, but was not prepared to divert the Jodrell Bank radio telescope from its planned survey of flares and magnetic stars to undertake such speculative work.

In recent years there have been worthwhile attempts with radio astronomy to delve into the questions of life on other planets. Project Ozma undertaken by the United States was the biggest attempt of this nature and took place at Green Bank, West Virginia. Again several conflicting statements were issued at the conclusion of the tests, rather of a negative nature. The object of these activities is not an attempt to communicate with other worlds, but to listen to intelligent radio signals that may emanate from some far distant planet. It may be worthwhile at this stage to make clear two opposing views on the use of radio astronomy. The more staid, conservative school uses radio telescopes to listen to the natural radio noise that emanates from far distant galaxies. In this way deductions can be made to determine the nature of the awesome processes at work on newly formed or exploding nebulae and stars. Jupiter, in our solar system, is an excellent source of radio noise. The other school of radio astronomy is the one that concerns us. It is the use of radio telescopes to listen for intelligent transmissions in space. The equipment used in both cases is identical and comprises a large metal dish mounted on adjustable bearings that can be tracked to any point in the sky.

**RADAR ECHOES**

The giant telescopes of the world, such as Jodrell Bank and a newly completed one of immense size in the United States, are used almost exclusively by the first school, the staid conservatives. These installations are used to probe stars and constellations far out in space. By listening on various wavelengths (hydrogen gas has a frequency of 21 centimetres) innumerable deductions can be made regarding temperature, composition of atmosphere, etc. Even radar plays a part in these researches, but only with limited distances. For instance Venus is never seen, only the thick atmospheric cloud cover is visible, effectively hiding the surface of the planet. By means of radar this cover was penetrated enabling the planet’s rotation period to be calculated together with its surface topography. This was accomplished in March 1961 using a wavelength of 2,388 mcs and a power of 12,600 watts and took place at the Deep Space Instrumentation Facility in America, the echo from Venus taking 6.5 minutes to return to earth. A further triumph was the first radar echo from the sun and later from Mercury. It was a scientist named van de Hulst who made the discovery that clouds of hydrogen gas emitted radio signals at 21 centimetres. It was the use of this wavelength that enabled scientists to map out the spiral arms of our galaxy which were invisible to conventional telescopes because of the massive dust clouds that intervened.

Returning to the subject of possible life on other worlds, it can be safely predicted that our own solar system is devoid of intelligent life capable of communicating with us. Our search must therefore expand to other constellations, the most suitable being Tau Ceti and Epsilon Eridani which might or might not have planets capable of supporting life as we know it.
The size and nature of their suns is used as a guide or yardstick to ascertain very roughly the conditions that might exist on their planets. As both these constellations are 11 light years away from us and as radio signals travel at 300,000 km per second, it would take (providing we had established there was a civilization able to converse with us) 11 years for our message to reach them and another 11 years for their reply to return. A total of 22 years for the complete message! A sobering thought indeed!

Another possible obstacle to our search is the stage of development reached by any alien civilization. Assuming there is an inhabited planet in a certain constellation with similar conditions to our own earth, for us to listen to their radio signals and later to communicate with them, they must be at a stage of development similar to us. If they were a thousand years ahead of us in development, it can safely be assumed that they would use some form of communication such as superior mental telepathy, ESP or perhaps a very advanced form of scientific visual communication. A thousand years behind us would mean they had just come out from the bow and arrow stage. Two or three hundred years would be nearer the mark, even then the balance would be critical. Consider our own scientific advances during the past one hundred years as a guide.

Another point worth considering is that assuming they were capable of monitoring our own radio spectrum and eavesdropping on our broadcasts from around the world, one can visualize their council of elders declaring "Leave well alone!" Going on our past and present record of international strife and bickering, could you blame them? Planet earth is not exactly an attractive proposition!

We now come to the last and, possibly, the most important aspect in our quest for life out there. It is the vast, incomprehensible distances involved in which time plays a decisive part. When one looks up at the stars at night, one is actually looking at the past. The light seen actually left many of those stars and constellations tens, hundreds and thousands of years ago and in fact, many of those stars no longer exist. The incredible distances involved are so great that it is difficult to grasp mentally. For example, the nearest star to us called Alpha Centauri and Proxima Centauri (it is in fact a double star) whose light takes four and a half years to reach the earth, is a mere stone's throw away in astronomical distances. For comparison assume the sun is one metre away from us. Then this nearest star, Proxima Centauri, is 200 km away from us! The same applies to radio signals which also travel at the speed of light. It is almost impossible to hear an intelligent series of radio messages, the chances are that the transmission originated on a planet a hundred or so light years away. It is possible that its parent sun had exploded and become a supernova during the time the signal took to reach us. That particular civilization could have equally well died out or declimated itself with an atomic holocaust during this period of time. In plain language we could be listening to something that did not any longer exist!

The prospect is not exactly encouraging. The best we can possibly accomplish at our present stage of scientific development is to listen and keep on listening. If we can prove beyond reasonable doubt that we have heard from an unknown source an intelligent radio transmission, we will know, once and for all, that we are not alone and that there are others out in the cosmos, even if we are unable to communicate with them. It will also mean the adaptation of beliefs and dogmas of large sections of the world's population and a lot of scientific noses would be put out of joint!

The Russians are far ahead in this search. In 1973 the Soviet newspaper, "Tass", announced that the director of the Gorki Radio Research Institute had received signals of an unusual nature and did not resemble in any way the natural radio emissions from far distant stars. Other USSR scientists, among them Dr. Kardashev and Professor E. Troitsky, are pioneering the search for intelligent transmissions. They too have received signals which they describe as being of regular character and in groups lasting from two to ten minutes in duration. In 1975 the Ural Research station also claimed to have received transmissions which are not natural but artificial in origin and sent by sophisticated radio equipment. It is high in these Ural mountains that the Russians are or have constructed a giant radio telescope about twice the size of the installation at Jodrell Bank. It is indeed a great pity that news and information of this kind cannot be pooled and shared among the scientific circles of the world. The United States are just as guilty in suppressing vital news of this nature and the press often omit news items dealing with the subject as of being of no consequence. Again the ugly word "military and secret classification" keeps a lot of information locked away. The lack of any information on UFOs is another case in point.

Another fascinating radio sideshow has been the perplexing echoes received from our own regular radio transmissions. These were first noticed during 1927 in Holland. A replica echo from a test broadcast which took from three to twenty seconds was noticed at irregular intervals over a period of several years. The normal rebound of a signal from the ionosphere takes about a fraction of a second depending on the wavelength used. What reflected these odd echoes? The Dutch transmissions were broadcast on 150 and, subsequently, on 31 metres and the echo times were identical. How did the signals penetrate the ionosphere and more strangely still, how did they return again through the reflective layers? This phenomenon has been observed at odd intervals through the years, the last reports being in 1963 from Germany and Austria.

Even VHF and UHF have their quota of mysteries as illustrated by the following occurrence. During 1953 some UK television viewers were startled to see on their screens the identification card of TV station KLEE during a BBC church service. The image was strong enough to override the normal picture and remained visible long enough to be photographed by several people. The BBC engineers dismissed the whole episode as freak long distance pick-up from the United States until someone did their homework and discovered TV station KLEE went off the air permanently in 1950 and in fact the station had been dismantled when it was bought out by a rival network!

"Pirates" screamed the engineers when they learnt of this new development, until someone came up with some very disturbing facts. If indeed it was a pirate station how was it viewed in various areas from one end of England to the other? TV signal propagation is limited to roughly a line of sight so how was this widespread coverage accomplished? It would require at least fifteen very powerful stations to cover the areas involved. The image lasted just over four minutes and was never repeated in spite of careful monitoring by the engineers, so the idea of pirates can be dismissed. Is it possible the United States were involved? What caused this odd occurrence? One of the photographs of the card as it appeared was sent to the Federal Communications Commission in America who handle the licencing of TV stations and it was compared to the original from defunct station KLEE. It was identical in every respect, even to a slight blenheim in one corner!

How was this picture received on British television screens three years after the last transmission from Texas? Why was this particular low powered TV station chosen? Why was it only received in certain areas in England where a different type of transmission is used? Why was it seen only once and never again?

In conclusion, let me quote the chief engineer of the BBC when asked for his explanation of the mystery. "We are confronted with circumstances which are at variance with all accepted facts of television transmission. It is unthinkable that these signals could have been circling the earth for the period since that station last transmitted them. It is physically impossible that they could have been reflected by any celestial body in space at such extremes of distance and recovered by such power: Power far beyond the limits of the original station. This leaves us with one remaining possibility, however bizarre, that this television signal was transmitted to us with intelligence and with a purpose, from a source and with an object presently unknown."

From Radio ZS November 1977.
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Morse keys

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<td>HK702</td>
<td>Deluxe key with marble base</td>
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<td>23.00</td>
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THE MAN BEHIND THE MICROPHONE

David Thompson VK2BDT, President of the Goulburn Amateur Radio Club. David's QTH is just outside Goulburn. His tower was originally used at the old Goulburn Fire Station.

Photos courtesy of the Goulburn Evening Post.

WIA QSL BUREAU INFORMATION FOR NEWCOMERS — AND OTHERS!

Fred Lubach VK4RF
Qld. Div. Outwards QSL Officer for past 8 years

To take full advantage of QSL bureaux certain rules should be observed. Some States have both an Inwards QSL Officer, and an Outwards QSL Officer, as in Queensland. The Inwards section handles incoming cards from both interstate, and overseas, and these are sorted, and eventually handed out to members at WIA meetings, etc., or, in the case of Country Members, posted by ordinary parcel post. Country members should ensure that they have stamps, or stamped addressed envelopes lodged with the QSL Bureau to cover cost of postage.

QSL cards are proof of contact and should contain all relevant information, such as Date, Time, Band, Mode, Signal strength, etc., and all times quoted should be in GMT (UTC) and the month written in words. This is because in USA 2-6-78 means 6th February 1978! Preferably cards should be small enough to fit an ordinary letter-size envelope, and on thin card-board.

The call sign of station worked should be CLEARLY printed after the words “To Radio, ...”. Some newcomers are writing Christian names in this space, causing QSL officers to tear their hair out! Always pre-sort cards alphabetically, according to country prefix, with the exception of Australia and USA, when they should be sorted numerically according to States. Note: USA has eleven QSL bureaux.

If the station worked has a QSL manager handling his cards, please write his call in a prominent position, preferably in a different colour. Remember, your cards are handled by several persons en route. Postal authorities allow us to send cards in bulk at a special rate, but require that no more than five words be used in the remarks section.

Remember, bundles of cards that have not been pre-sorted, or are back-to-front, or upside down, are NOT appreciated by your voluntary QSL Officer who usually sorts thousands of cards at a time. In VK4 each outgoing QSL card must bear a 1 cent QSL sticker, available from the WIA (Qld. Division) Secretary.
On Boxing Day 1978, having installed both the VHF (Kyokuto) and HF (TS520) in the car, I headed north-east from Adelaide, making for Kerang in northern Victoria, via Blanchetown, Renmark, Mildura and Swan Hill. Conditions for 20 metre mobile were excellent with short skip to VK2 and 3 and good contacts with friends in VK6. This allowed me to while away the driving time meanwhile, including contacts through both the Mildura and Swan Hill repeaters whilst in their service areas, with a promise to call in and see Ray 3BRB and Joan 3BJB to share a cuppa on the way back. A good test of the 60 watt 2 metre amplifier was provided by working Alex VK5CCT cross-band 2 metres/80 metres when approaching Kerang. Upon arrival at Kerang I found that Alex had everything well organised with four wheel drive Land Cruiser and trailer packed with absolutely all necessities, plus luxury such as 12V/240V car refrigerator to keep the important items cold. A quick transfer of my radio equipment (as back-up gear) and other personal necessities (spare pair of socks) to the Land Cruiser, a short visit to Alex father's home for refreshments and then we were away, headed further east to Yarrawonga and the starting place for the marathon canoe race.

This race, which is the longest canoe race in the world over 403 km (about 250 miles), has been run for the last nine years in aid of the Red Cross Society. Each year the VK3 Wireless Institute Civil Emergency Network provide communications support for this event, and it was for this reason I had travelled the 910 km (approximately) to both observe, learn and assist where possible in this operation. Arriving at the starting point where all the officials, canoeists, support groups and about 30 amateurs were camped on a local sporting oval, I was confronted by myriads of tents of all descriptions, hundreds of vehicles, and met with a cordial welcome by the VK3 group, immediately renewing old friendships and meeting new faces as well.

Night had by this time fallen and, following the usual social chatter commonplace amongst amateurs, a most comprehensive briefing by gaslight was conducted by John Payne VK3AED. As I was not the only newcomer to the group, John went to some considerable trouble in extending the briefing with an extra special section for those such as I who were not completely familiar with the organisation of the race and the radio nets so necessary to the safety and smooth running of the event. A little further social chat ensued and then it was sleeping bags ready and bed down for the night. Half expecting a rough shake and a "Wakey, Wakey, Rise and Shine" call in the morning I was pleasantly surprised to hear amid the twittering of the birds and, believe it, the...
call of a kookaburra exhorting us to bestir ourselves at a fairly early hour, the strains of the song “Morning Has Broken” coming out over an amplifying system, and growing louder as the public address vehicle approached our portion of the camp. Such a romantic way to be awakened, camped next to the Murray River in a small Victorian country town. I might add that by the morning of the fifth day, after several late nights and early risings, “Morning Has Broken” had, however, lost a certain amount of appeal. Anyway, now for my first lesson in WICEN operation, Canoe Marathon Style.

At this point I feel I should explain how the organisation, nets, etc., were comprised and operated, together by necessity with some details of the canoe race itself. The race itself is divided into 5 daily periods with stages covered by the canoeists as follows: Day 1, 92 km; Day 2, 96 km; Day 3, 77 km; Day 4, 62 km; and Day 5, 76 km. The actual starting and finishing points are: Day 1, Yarrawonga to Tocumwal; Day 2, Tocumwal to Picnic Point; Day 3, Picnic Point to Echuca; Day 4, Echuca to Torrumbarry, then a portage section to Murrabit; Day 5 being from Murrabit to Swan Hill and finishing on New Year’s Eve. Between the starting point (S—Sierra) and the finish (F—Foxtrot) up to four land based check points are set up at the river’s edge, these being designated points A — Alpha, B — Bravo, C — Charlie, and D — Delta. At all these points are located stations with both HF (3.6 MHz) and VHF (146.0 MHz) capability. Most, if not all stations, erect wire dipoles for HF and where possible gain antennas (beams, co-linears, etc.), for VHF. At each of the check points Race Marshalls and First Aid personnel are also present.

The station at the start of the race is usually first to set up with the other operators proceeding by road to their nominated check points and coming on air as soon as possible. Up until such time as the station at the finish is operational the station at S—Sierra acts as Net Control, finally handing over an established net and Control to VK3AWI at F—Foxtrot where the Race Information Centre (RIC) is also established. As well as these stations, others operating only on VHF are installed on power boats which take up position on the river approximately midway between each of the land check points. Thus a power boat mid-way between check points Sierra and Alpha is designated as being at Sierra/Alpha 5. The “5” indicates that the boat is approximately 0.5 of the distance between A and B, and should it move further downstream can indicate its estimated position as for example, Sierra/Alpha 9, i.e. 0.9 of the distance between S and A.

Each of the boats carries at least a complement of three, namely radio operator, First Aider and of course the skipper. Thus there is always someone in good position to both observe the canoeists, provide assistance where any is necessary and obtain help quickly where any is needed, and the safety of all participants is well assured. A further three stations are also involved. First of all, forward survey is carried out each day by members of the Land Rovers Owners Club (LROC) to ensure access to the check points along the river for the following day. A mobile station equipped with at least HF capability accompanies this group. Secondly, it can be definitely stated that communications at points along the course can at times be difficult, particularly on VHF, due to vagaries of propagation, high river banks, dense foliage, etc. To this end a mobile station with both HF and VHF capability designated “Boat Relay” travels parallel with the river course keeping pace where possible with the main areas of activity so as to provide a “fill in” point for communications. The third station referred to is a Land Rover vehicle fitted out to provide service as a medical evacuation unit and designated Medivac 1. This vehicle also maintains its position in the area of major canoe concentration, however, being fitted with radio it can be
called upon at a moment’s notice in the case of emergency. Thus the nets and stations are set up. Messages passed by the networks are varied in nature and typically may take the following forms.

1. Service Messages. These are messages originated by the participating stations and dealing only with operation of the net, station status, etc.
2. Urgent Messages. Matters of safety, first aid requirements, etc.
3. Routine Messages. Details of canoes started, numbers passed particular check points, withdrawals, etc.

The finish station (F), as mentioned before, is set up in conjunction with the Race Information Centre and normally located in the back of a large van. As the canoes, which totalled up to 365, numbered, to each canoe is a check point along the river. The marshal at the check point makes out a message detailing the canoe numbers concerned and hands it to the check point station for transmission to the control station and RIC. Such messages usually contain up to 25 numbers and were passed during the marathon with rapidity and accuracy. Experience in Contest operation would certainly be useful here. At the RIC a large board showing all canoe numbers and race sections is displayed. A golf tee placed opposite a canoe number beneath a check point number indicates the position of each canoe when last reported. Thus for interested spectator members of the public, supporters and land crews associated with the canoeists an almost immediate picture of canoe progress is provided, and organisers can keep themselves comprehensively informed as to which is going on. In case of the boats, should any canoeist appear to be experiencing difficulties, such as favouring a shoulder, suffering from exhaustion or any other appropriate action taken. The importance of the radio facilities provided can easily be seen and the contribution to the safety of all concerned be understood.

Now for a few more of my own personal observations and experiences.

THE CANOEISTS

Sometimes quite a sight both on the water and out of their canoes. Faces covered with zinc cream, a weird assortment of hats, towelling covering their necks and paddling in such non-constructive garments as pyjamas. In the showers at night despite the noise and sometimes apparently painful red raw rear ends, and some blissfully appreciating the luxury of a shower after many long hours of paddling, seemingly unaware of the foam paddling still taped to upholster the said rear ends. A sight to behold indeed. Generally, however, quite cheerful and exchanging comments about conditions and how they are going.

THE OFFICIALS

The Marshals obviously well aware of their jobs and very well organised. There were various categories of Marshalls such as Traffic, Check Point and Camp Marshalls. One thing amongst many did, however, impress me. At each of the stopping places each night, the whole entourage, approximately 4000 people in all, camped at the local football oval or show grounds. Upon entering the said camping area we were greeted at the entrance by a camp marshall, directed to our particular area within the grounds and handed a large green plastic gar-bag within which to place our accumulated rubbish. The next morning after the camp was cleared these marshalls further ensured the tidiness and cleanliness of the area by collection of the gar-bags and any other litter left behind. Thus a most responsible approach to the local environment was generated.

ORGANISERS

These officials were most courteous and helpful and seemed well informed as to the whole operation. Questions were answered with no difficulty and in the main immediately.

RED CROSS

Meals were provided for supporting officials on payment of a small fee. However I had no need to avail myself of this facility as Alex VK5CC had arranged to carry with his set-up enough provisions to my way of thinking to feed a small army anyway. Canoeists and their land support groups had, however, to fend for themselves comprehensively. In the case of the boats, should any canoeist appear to be experiencing difficulties, such as favouring a shoulder, suffering from exhaustion or any other appropriate action taken. The importance of the radio facilities provided can easily be seen and the contribution to the safety of all concerned be understood.

For this alone they are to be congratulated apart from the excellent job they did however, apart from displaying their skill and versatility on the technical side, such as Traffic, Check Point and Camp Marshalls. One thing amongst many did, however, impress me. At each of the stopping places each night, the whole entourage, approximately 4000 people in all, camped at the local football oval or show grounds. Upon entering the said camping area we were greeted at the entrance by a camp marshall, directed to our particular area within the grounds and handed a large green plastic gar-bag within which to place our accumulated rubbish. The next morning after the camp was cleared these marshalls further ensured the tidiness and cleanliness of the area by collection of the gar-bags and any other litter left behind. Thus a most responsible approach to the local environment was generated.

THE WICEN OPERATORS

Certainly a most self-reliant and versatile group. Setting up camp sites, repairing equipment, both whilst on the move and dealing only with operation of the net, station status, etc. Experience in Contest operation would certainly be useful here. At the RIC a large board showing all canoe numbers and race sections is displayed. A golf tee placed opposite a canoe number beneath a check point number indicates the position of each canoe when last reported. Thus for interested spectator members of the public, supporters and land crews associated with the canoeists an almost immediate picture of canoe progress is provided, and organisers can keep themselves comprehensively informed as to which is going on. In case of the boats, should any canoeist appear to be experiencing difficulties, such as favouring a shoulder, suffering from exhaustion or any other appropriate action taken. Thus the importance of the radio facilities provided can easily be seen and the contribution to the safety of all concerned be understood.

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and out of the way. We had our own satisfaction, however, in seeing one fall off after one tangle and another one of the bikes blow up its engine. Most un sporting of the three, but maybe, that's human nature on our part. The antenna still worked well after repair, too. Alex VK5CCT had as his installation an FT301 HF transceiver and Asahi centre loaded whip, Kyokuto 2 metre FM rig with a co-linear antenna bumper mounted, plus an assortment of antennas which could be strung up by various means. This equipment functioned well throughout both at fixed check points and also while mobile. 240 volt mains were found at times in the most unusual places along the river, however the 2.5 kVA generator did sterling work from time to time. The TS520 and back-up Kyokuto with 60 watt amplifier were pressed into service as control station on several occasions and worked well. Headphones were used quite often to obviate problems of local acoustic noise, noise between operators working side by side and to maintain a certain amount of privacy from the public where discretion was necessary or messages would appear to be of a sensitive nature.

A group of elderly fishermen provided some interest. Apart from a pleasant chat it was most interesting to see their "goldmine". Layers of bank notes and newspapers spread on the ground. Yes, one of them had fallen into the river with all their fishing trip money and I came along as they were drying the money out. They were keeping a careful watch on it, however.

**FINDING A CHECK-POINT**

This can also be most interesting. Some of the check points are at almost inaccessible places and a network of un signposted dirt tracks, if they can be called even that, can cause you to go in the wrong direction for a while. From Tocumwal to Check Point Bravo for Day 2 should have meant a distance of perhaps 50 kilometres. A tour through the southern Riverina area, eventually via Deniliquin and Mathoura close to where the day's run was to finish, then beating back through the scrub up river to the check point, to cover a total distance of about 17 kilometres, proved most interesting to us. Dusty though! We still made it before the canoes arrived. Better maps for this particular area would of course be helpful if they were available. I think they chose Alex for this one especially as he had a four wheel drive.

**THE FINAL DAY (AND NIGHT) —AND FUNNY SIGHTS**

The last day of the Marathon found Alex and myself at a scenic spot on the river near the bridge at Murrabit. This time a smaller borrowed generator was used to power the TS520, the larger unit being loaned out for one of the other stations. The problem of a missing adaptor to suit the main lead to the Japanese generator was solved by a call on VHF to one of the other operators passing nearby in his vehicle, thus obviating the need to plug in with bare wire and find a place with match sticks. The problem of the transceiver not transmitting and receiving on the same frequency plus FMing of signals on receive was solved by running the generator to provide 240V 60 Hz, with the 50/60 Hz switch in the 60 Hz position and not the 50 Hz position for 60 Hz supply. A most unusual fault, as on receive in particular the current drain would have been very low. Has anyone an explanation? The weather continued good, and Alex's list of canoes despatched to inform us also that it created a race record for the number of canoes to start on the fifth day. His opinion was that the excellent weather experienced was the reason. The really hot weather had not begun at this stage and competitors were finding conditions much to their liking.

Activities at the start having wound up, we enjoyed a pleasant chat with a Novice operator from the nearby New South Wales town of Barham who had heard the strong signals we were putting out and came to investigate. This area being the local stamping ground for 5CCT, we then travelled leisurely to visit some friends of his nearby and were treated to Christmas cake and rich milk coffee made with milk provided freshly from their own cow. Following this pleasant morning tea interlude we then travelled in convoy to Swan Hill, myself ferrying a vehicle for one of the operators whose duty for the day was on one of the power boats. Upon arrival at Swan Hill we proceeded to the Control Station at the finish line to which we had handed over the net somewhat earlier. I then proceeded to operate assisting while Alex set up camp at the Swan Hill showgrounds and then went back up river to provide another check point. Fortunately for me I had no duties to perform as the first of the canoes to cross the finishing line appeared around the island upstream of the finish. Whilst first across the line does not necessarily mean that canoe is the winner, as it is a timed event and six different canoe categories apply, I imagine that line honours do still mean something. The first two canoes to appear were Double Canadian types. Even after the last day's distance of 76 km, these two canoes crossed the line with the two paddlers in each paddling like crazy and with no more than about two feet separating them at the finish mark. Needless to say, the substantial crowd appreciated the battle waged and clapped and cheered for all they were worth. To make the finish more spectacular and exciting the official starter placed an upturned empty beer can. This applied even to the vehicle broadcast antennas, and you can just imagine what a sight this presented. The radio amateur section of the camp with two occupants, but you probably wouldn't believe me! The last competitors arrived at the finish at approximately 7 p.m., following which the whole network finally closed down after a most successful five days of operation. This, however, was not the end of the event, as it was, after all, New Year's Eve that evening the competitors gathered in the centre of the beautifully grassed Swan Hill showgrounds to witness the presentation of medallions to the placgetters in each section and category, including the handing of perpetual trophies to the winners of each class. Then the New Year's Eve celebrations really began. Leading up to, through and just after midnight was marked by the booming reception of the 10 MHz timing stations WWV and JUY from the loudspeakers in one of the amateur operator's vehicles. By 0200 hours on New Year's Day I was observing one of the strangest sights I had seen in years. On every antenna on almost every vehicle crammed into the showgrounds between the myriads of tents and other equipment scattered about was placed an upturned empty beer can. This applied even to the vehicle broadcast antennas, and you can just imagine what a sight this presented. The radio amateur section of the camp with six antennas on a vehicle. I might add that later in the night I removed the beer cans from the antennas on our vehicle and replaced them with a soft drink can on the roof the Land Cruiser to indicate to all that Alex and I were of the sober gentlemen type.

New Year's Day was then spent with Alex and his family at Kerang, meanwhile sorting out all the equipment and reinstalling my mobile gear for the trip home. A most pleasant journey was begun early the following morning and with the sun behind me for most of the journey I returned along the picturesque Hume Valley Highway, operating again 20 metre and 2 metre mobile. By the way, I did call in for that promised cuppa at Mildura and spent a pleasant two hours with the husband and wife team of Ray and Joan 3BRB/35JB.

Before closing I would like to say that I enjoyed very much the company and friendliness extended to a visiting VK5 operator by the VK3 WICEN Group on the Murray River Canoe Marathon. I learned much and had a most interesting experience overall. So, if you enjoy a challenge and are looking for adventure maybe you should talk to John Payne VK3AED and find out about assisting WICEN and joining in this and other like activities when they are held.
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DEALERS WANTED IN ALL STATES!

Championship performance! That’s what is in a Swan transceiver. Engineered completely by Americans to be a top performer, for less cost-per-watt. Swan transceivers are designed to let you have all the punch and performance needed.

ICOM & SWAN ALSO DISTRIBUTED BY SIDEBAND ELECTRONICS SALES CROWS NEST PHONE: 438 4191 FOR SWAN IN W.A PERTH CONTACT WILLIS TRADING PHONE: 321 7609
SOLDERING HINT

With the Scope soldering iron wire a 6.3 volt dial lamp across the secondary of the Scope transformer. You'll know that good contact is being made inside the iron and it is heating up by noting that ring. The effect is due to the voltage drop which occurs when the iron loads up the transformer. If the globe doesn't lose brightness then don't wait too long finding out that it wasn't heating. The tip thread is probably dirty and needs to be screwed in and out a few times.

Before soldering, clean the surfaces, wires, etc., with scouring pad rather than steel wool. The scouring pad is non-conducting and broken-off pieces won’t create short circuits in wiring later on. (From Zero Beat, September 1978.)

80 Mx ACTIVITY

Stations heard on Saturday p.m. 6/1/79 from Riddell’s Creek (north of Sunbury) on 80m. Samples taken every five minutes from 8.15 p.m. until 9.45 p.m. Band divided into 3 segments, 3.500-3.525, 3.525-3.625, and 3.625-3.700.

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PIRATES ON TEN METRES

As you may already be aware, several suppliers have a range of crystals for the 27 MHz Marine transceivers which are called “Hi-side” crystals.

These are specially made receive crystals which are higher in frequency than the transmit crystal. The receive crystals are normally on the low side of the transmit crystal, which puts the receiver’s image frequency right into the 27 MHz chook band channels, causing no end of interference.

In order to help the poor 27 MHz Marine user, receive crystals for the high side of the transmit frequency are available, which puts the image out of the way of the chooks . . . and straight into the kilowatt alley section of ten metres. (But that’s our problem, isn’t it?)

Anyway, we now have a transmitter operating on or about 27880 kHz with a high-side receive crystal on or about 28335 kHz.

But then you take a second look at the frequencies in use for the crystals and you ask yourself: What if I reversed the crystals in the set so that the receive local oscillator is on 27880 and the transmitter on 28335, then I’d have a 28 MHz set operating on 28335. With the other crystals available, I could have 28345, 28355 and 28365 also.

I ask you then: What Is to stop the pirate Hfer buying these crystals and doing just what I have suggested. The answer is nothing, nothing at all. While these crystals are really only suited for AM equipment, the chook that “wanted to get away from It all” cheaply and simply could do so with them.

Perhaps it will never happen that way. Perhaps, too, it would be a good idea to scan through the above frequencies to keep an eye on what activity springs to life. (You may even be so lucky to catch my wife VK2NID on 28335 using her hand-held rig.)

So there is an idea for amateurs to get on ten metres AM with old chook band sets, and maybe the above frequencies could become a sort of standard channel arrangement for this type of equipment. If there is enough legitimate activity on those channels, then let the pirate beware.

(Note: If you were on 28335 and required some assistance in a hurry and had no reply on that frequency, you could reverse the crystals and call on 27880. Another useful feature of the system.)

VK2ANF in QUA, Hornsby and Districts ARC, Vol 1, No. 4.

EGG CARTON STORAGE

What to do with that old egg carton. One suggestion is use it as a temporary component holder, helps to keep the workbench a little tidier.

In order to help the poor 27 MHz Marine user, receive crystals for the high side of the transmit frequency are available, which puts the image out of the way of the chooks . . . and straight into the kilowatt alley section of ten metres. (But that’s our problem, isn’t it?)

Anyway, we now have a transmitter operating on or about 27880 kHz with a high-side receive crystal on or about 28335 kHz.

But then you take a second look at the frequencies in use for the crystals and you ask yourself: What if I reversed the crystals in the set so that the receive local oscillator is on 27880 and the transmitter on 28335, then I’d have a 28 MHz set operating on 28335. With the other crystals available, I could have 28345, 28355 and 28365 also.

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VK2ANF in QUA, Hornsby and Districts ARC, Vol 1, No. 4.

(From “SWARS”, Dec. ’78)

HOME-BREW QSL

Stephen Garner VK2AXM
69 Macmillan Street, Seaford, 3912

Here is one method of home-brew QSL that may Interest those who operate QRF (low finance).

The heart of the system lies in the fact that most “plain paper” photo-copying machines will accept lightweight cardboard as well as paper.
The paper size the photo-copier at work will accept is such that six cards can be produced with every print. So my master copy has six cards on it, each one an individual.

The master copy can undoubtedly be as intricate as one desires. Mine was fairly straightforward, the basic information was typed on, and my call sign was made out of letters cut from the afternoon papers. Rather along the lines of the ransom notes seen in the movies.

The cardboard I used is lighter than that found in most QSL cards, which probably pleases the Bureau. I was lucky enough to find a large pile of it in our attic, so there is no money outlaid there.

The quality of the card produced by this method is not "world shattering", but it makes a useful stopgap if one is anticipating a change of licence, e.g., novice to full call, which is why I originally used this system.

To Radio Confirming QSO with

VK2AXM

on at GMT

Freq. MHz
Report, R S T
Rx/Tx, Watts In.
Power, Antenna,

Stephen Garner
65-69 Kent Street,
Sydney, NSW, 2000
Australia
Pae/Tnx, QSL, 73's

PORTABLE ARMY WIRELESS SETS OF WORLD WAR II

11. The AT5 transmitter is the companion to the AR8 communications receiver. In 8 frequency bands it covers 140 kHz to 500 kHz and 2 MHz to 20 MHz. It is VFO controlled on LF and MF and either crystal or VFO controlled on HF. The AT5 is designed to transmit AM/CW/MCW or pulse, with an output power of nominally 50 watts. Like its companion receiver it was used in aeroplanes, ships and on land, an extremely versatile transmitter. The output stage of the transmitter consists of 2 — 807 in parallel, which are grid modulated for AM and MCW. Not an easy set to service but patience and a copy of the handbook made the job possible. The set obtained power from 12 or 24 volt generators or from the type S 240 volt AC power supply. The current drain on 12 volts is of the order of 35 amps with the
The AT5 proved to be a very popular transmitter with amateurs after the war of 1939-45. It had many modifications done to it, such as plate and screen modulation, operation on 160 metres, and so forth. They were used in the Antarctic and as a basis for many base stations in modified form. There are probably not many left operating now, but at one time were probably the most popular amateur home station transmitter in Australia.

12. Aerial Coupling Unit for AT5. This is used with the AT5 to match the transmitter to a rather wide range of aerials over a very wide range of frequencies. Like the transmitter it is arranged into two sections one section for MF and the other for HF so that things didn't become too complicated inside the unit. On the MF ranges the unit will match aerials which exhibit a resistive component of between 5 and 100 ohms and 95 and 500 pF reactive. On HF the unit will match end aerials much shorter than a quarter wavelength to considerably over a wavelength. A well designed unit of moderate efficiency. Not greatly used by amateurs as its features were not suited for most amateur aerials.

EDITORS NOTE:- This now completes the series in portable army wireless sets of WW II. Many thanks to Rodney VK3USG in collating the series and to Ken VK3UCY for the photography.

**AMATEUR SATELLITES**

Bob Arnold VK3ZBB

**AMSAT NEWSLETTER**

I hear that the AMSAT Newsletter for December was delayed and therefore not completed until the end of January. This news letter may be sent by sea mail; if this is so receipt may not be expected before April. If you have any complaints regarding the delivery of the AMSAT News Letter please refer them direct to AMSAT.

**OSCAR 7**

The battery power of OSCAR 7 has now deteriorated to such a degree that all telemetry is unintelligible. As this satellite is now, unfortunately, unlikely to be worked again, no further predictions will be given.

**OSCAR 8**

This satellite is working well on both Modes and will probably remain our only reliable guide of communication until Phase 3 is launched later this year.

From time to time A08 has operated on Modes A and J concurrently, having been programmed to do so for special purposes such as DX operations and special educational studies on Wednesday evenings.

**RUSSIAN SATELLITES**

Apparently both RS 1 and RS 2 continue to be in proper orbit although it has been noted that RS 2 is falling further behind RS 1 as each week passes.

As at the end of January, RS 2 was thirty minutes behind RS 1 and 5° further West at acquisition.

We still have little information on these satellites although the orbit predictions do seem to be reasonably accurate. The transponders are rarely operating although VK4ZIL does report communication on late night passes (South to North).

On many days during January, neither the transponder nor telemetry was heard but the reason for this complete close-down was not known. One can only hope that by diligent listening, it may be possible to find one or more satellites in working condition.

As indicated last month I am pleased to provide information on the telemetry system of the R.S. Satellites. This information is produced by courtesy of QST of January 1979. As previously mentioned the telemetry information can be in the form of 7, 15 or 30 channels, each being in the form of 1, 2 digits and a concluding letter, e.g. C18U. The Information given below will permit interpretation of the telemetry.

**ORBIT PREDICTIONS — APRIL 1979**

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RS.2 is 30 mins. later.

For the photography.

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Page 32 Amateur Radio March 1979
AUSTRALIAN VHF CENTURY CLUB AWARD

Rules as amended 1.1.79.

OBJECTS
1.1 This Award has been created in order to stimulate interest in the VHF bands in Australia, and to give successful applicants some tangible recognition of their achievements.
1.2 This Award, to be known as the “VHF Century Club Award”, will be issued to any Australian Amateur who satisfies the following conditions.
1.3 Certificate of the Award will be issued to the applicants who show proof of having made one hundred contacts on the VHF bands, and will be endorsed as necessary for contacts made using only one type of emission.

REQUIREMENTS
2.1 Contacts must be made in the VHF bands, and will be endorsed as necessary for contacts made using only one type of emission.
2.2 In the case of the authorised bands between 30 and 100 MHz, verifications are required from one hundred different stations, at least seventy of which must be Australian. The Amateur Bands 50 to 54 MHz and 56 to 60 MHz will be counted as one band for the purposes of the Award.
2.3 In the case of the authorised Amateur Band between 100 and 200 MHz, verification from one hundred different stations are required.
2.4 It is possible under these rules for one applicant to receive two certificates, one for each of the authorised Amateur Bands nominated in Rules 2.2 and 2.3.
2.5 The commencing date for the Award is 1st June, 1948. All contacts made on or after this date may be included.

OPERATION
3.1 All contacts must be two-way contacts on the same band, and crossband contacts will not be allowed.
3.2 Contacts may be made using any authorised type of emission for the band concerned.
3.3 Fixed stations may contact portable/mobile stations and vice versa, but portable/mobile station applicants must make their contacts from within the same call area.
3.4 Applicants, when operating either portable/mobile or fixed, may contact the same station licensee, but may not include both contacts for the same type of endorsement.
3.5 Applicants may only count one contact for a station worked as a limited licensee with a Z or Y call sign who is subsequently contacted as a full AOC holder.
3.6 All stations must be contacted from the same call area by the applicant (except as below), although if the applicant’s call sign is subsequently changed, contacts will be allowed under the same call area.
3.7 All contacts must be made when operating in accordance with the Regulations laid down in the “Handbook for the Guidance of Operators of Amateur Wireless Stations” or its successor.

VERIFICATIONS
4.1 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.
4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.
4.3 Each verification submitted must show the call sign of the station worked, the date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.
4.4 A check list must accompany every application setting out the following details:
4.4.1 Applicant’s name and call sign, and whether a member of the WIA or not.
4.4.2 Band for which application is made, and whether special endorsement is involved.
4.4.3 Where applicable, the date of change of call sign and previous call sign.
4.4.4 Details of each contact as required by Rule 4.3.
4.4.5 The applicant’s location at the time of each contact if portable/mobile operation is involved.
4.4.6 Any relevant details of any contact about which some doubt might exist.
4.5 In lieu of forwarding QSL cards or other written evidence as set out in Rules 4.1 to 4.4 above, a list giving the 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, should accompany each application for membership or adjustment of verified country totals.

APPLICATIONS
5.1 Applications for membership shall be addressed to the Federal Awards Manager of the Wireless Institute of Australia, accompanied by the verifications and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.
5.2 A nominal charge of $1, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members of the Wireless Institute of Australia.
5.3 Successful applicants will be listed periodically in “Amateur Radio”. Members of the VHFC wishing to have their verified totals, over and above the one hundred necessary for membership, listed will notify these totals to the Federal Awards Manager.
5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive of the WIA in the interpretation and application of these Rules shall be final and binding.
5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the WIA reserves the right to amend them when necessary.

WORKED ALL VK CALL AREAS (VHF) AWARD

Rules as amended 1.1.79.

OBJECTS
1.1 This Award has been created in order to stimulate interest in sustained long distance working in the VHF bands in Australia, and to give successful applicants some tangible recognition of their achievements.
1.2 This Award, to be known as the “WAVKCA (VHF) Award”, will be issued to any Amateur who satisfies the following conditions.
1.3 Certificates of the Award will be issued to the applicants who show proof of having made contacts with Australian Amateur Stations in the areas shown in the attached Appendix. The number of contacts required in each area is also shown.

REQUIREMENTS
2.1 Contacts must be made in the VHF Band (Band 8) which extends from 30 to 300 MHz, but such contacts...
must only be made in the authorised Amateur Bands in Band 8.

2.2 Verifications are required from all of the call areas in accordance with the details given in the Appendix. A total of 22 confirmations will be required.

2.3 The commencing date for the Award is 1st January, 1958. All contacts made on or after this date may be included.

OPERATION

3.1 All contacts must be two-way contacts on the same band and cross-band contacts will not be allowed.

3.2 Contacts may be made using any authorised type of emission for the band concerned.

3.3 Fixed stations may contact land portable/land mobile stations and vice versa, but land portable/land mobile stations applicants must make their contacts from within the same call area.

3.4 Applicants, when operating either land portable/land mobile or fixed, may contact the same station licensee but may not include both contacts in the one application.

3.5 Contacts made with ship or aircraft stations or contacts made with the aid of repeaters or translators of any kind will not be allowed.

3.6 Applicants may only count one contact for a station worked as a Limited Licensee with a Y or Z three-letter call sign, who is subsequently contacted as a full AOCGP holder.

3.7 All stations must be contacted from the same call area by the applicant (except as below), although if the applicant's call sign is subsequently changed, contacts will be allowed under the new call sign providing the applicant is still in the same call area.

3.8 All contacts must be made when operating in accordance with the Regulations laid down in the “Handbook for the Guidance of Operators of Amateur Wireless Stations” or its successor.

VERIFICATIONS

4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or written evidence showing that two-way contacts have taken place.

4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.

4.3 Each verification submitted must show the date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.

4.4 A check list must accompany every application setting out the following details:

4.4.1 Applicant's name and call sign and whether a member of the WIA or not.

4.4.2 Band for which application is made.

4.4.3 Where applicable, the date of change of call sign(s) and previous call sign(s).

4.4.4 Details of each contact as required by Rule 4.3.

4.4.5 The applicant's location at the time of each contact if land portable/land mobile operation is involved.

4.4.6 The call sign of the station worked.

4.4.7 Any relevant details of any contact about which some doubt might exist.

4.5 In lieu of forwarding QSL cards or other written evidence as set out in Rules 4.1 to 4.4 above, a list giving the 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.

APPLICATIONS

5.1 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.

5.2 A nominal charge of $1, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members of the Wireless Institute of Australia.

5.3 Successful applicants will be listed periodically in “Amateur Radio”.

5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive of the WIA in the interpretation and application of these Rules shall be final and binding.

5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the WIA reserves the right to amend them when necessary.

NOTES

1. In areas above, where more than one confirmation is required, contact may be made with any or all of the Territories grouped together.

2. Where a Territory is no longer under Australian jurisdiction, contacts up to the date of independence will be accepted.

APPENDIX

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HEARD ALL VK CALL AREAS (HAVKCA) AWARD

Rules as amended 1.1.79.

OBJECTS

1.1 This Award was created in order to stimulate interest in the logging, by both Australia and overseas Short Wave Listeners, of the various call areas of the Commonwealth of Australia, to give recognition of their achievements. The闻 award will be issued by the Wireless Institute of Australia to any Short Wave Listener in the world who is a member of an affiliated society of the IARU who satisfies the following conditions. An SWL resident in Australia or its Territories may be eligible for the Award.

- Band of operation: Any.
- Station type: Any.
- Call area: Any.
- Verification: QSL card or written evidence.
- Number of contacts: Minimum 22.
- Application: Addressed to the Federal Awards Manager of the WIA.
A certificate of the Award will be issued to the applicants who show proof of having logged stations in all the Australian call areas as listed in the Appendix. No endorsements are available.

**REQUIREMENTS**

2.1 Verifications are required from all the call areas of Australia and its Territories as shown in the Appendix. In all, 22 verifications are necessary.

2.2 The commencing date of the Award is 1st January, 1946. All loggings made on or after this date may be included.

**OPERATION**

3.1 Loggings may be made of Australian stations using any authorised frequency band or type of emission permitted to Australian amateurs.

3.2 Credit may only be claimed for logging stations using regularly assigned Government call signs.

3.3 Logging of ship or aircraft stations in Australia or Australian Territories will not be eligible, but land-mobile or portable stations may be claimed provided their specific location at the time of logging is clearly shown on the verification.

**VERIFICATIONS**

4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that specific loggings have been made.

4.2 Each verification submitted must be exactly as received from the station logged, and altered or forged verifications will lead to the disallowance of those items and may lead to the disqualification of the applicant.

4.3 Each verification submitted must show the date and time of transmission, type of emission and frequency band used and the location or address of the station at the time of logging.

4.4 A check list must accompany every application setting out the following details:

4.4.1 Applicant's name, SWL number, if any, and address.

4.4.2 Name of affiliated Society (see Rule 1.2).

4.4.3 Details of each logging as required by Rule 4.3.

4.5 In lieu of forwarding QSL cards or other written evidence as set out in Rules 4.1 to 4.4 above, a list giving the details set out in Rule 4.3, certified by the Awards Manager, Secretary or Council Member of an affiliated Society, or two licensed amateurs known to the applicant, should accompany each application.

**APPLICATIONS**

5.1 Applications for membership shall be addressed to the Federal Executive Manager, accompanied by the verification cards and the check list (Rule 4.4). Sufficient postage (International Reply Coupons are required from overseas applicants) must be enclosed to cover return postage of the cards to the applicant.

5.2 Applications will be examined by the Federal Manager, who will arrange for the Award to be forwarded direct or through the applicant's Society as required.

5.3 In all cases of disputes, the decision of the Federal Awards Manager and two officers of the Federal Executive of the WIA in the interpretation and application of these Rules shall be final and binding.

5.4 Notwithstanding anything to the contrary in these Rules, the Federal Council of the WIA reserves the right to amend them as necessary.

**NOTES**

1. In areas above, where more than one confirmation is required, contacts may be made with any or all of the Territories grouped together.

2. VK9: Where a Territory is no longer under Australian jurisdiction, contacts up to the date of independence will be accepted.

---

**WORKED ALL VK CALL AREAS (WAVKCA) AWARD**

Rules as amended 1.1.79.

**OBJECTS**

1.1 This Award, to be known as the WAVKCA Award, is offered by the Wireless Institute of Australia as tangible evidence of the proficiency of overseas Amateurs in making contacts with the various call areas of the Commonwealth of Australia.

1.2 The Award may be claimed by any Amateur in the world who is a member of an affiliated Society of the IARU, but no Australian Amateur will be eligible.

**REQUIREMENTS**

2.1 A handsome Certificate will be awarded to any applicant who makes contacts with Australian Amateur Stations in the areas shown in the attached Appendix. The number of contacts required in each area is also shown, a total of 22.

**OPERATION**

3.1 Contacts between overseas stations and Australian stations must have been made on or after the 1st January 1946.

3.2 Contacts may be made using any authorised frequency band or type of emission permitted to Australian Amateurs, but crossband contacts will not be allowed.

3.3 No contacts made with ship or aircraft stations in Australian territories will be eligible, but land-mobile or portable stations may be contacted provided the location at the time of contact is shown on the confirmation.

**VERIFICATIONS**

4.1 The applicant must submit documentary proof, in the form of QSL cards or other written evidence, confirming that two-way contacts have taken place. Such verification must show the date and time of contact, the call sign of the station worked, type of emission and frequency used, signal reports and location (in the case of portable or land-mobile operation) of the stations contacted.

4.2 Verification must be submitted exactly as received, and forged or altered evidence may result in the disqualification of the station concerned.

4.3 A list, in accordance with the details required in Rule 4.1, must be submitted with the application for the Award.

**APPLICATIONS**

5.1 All claims for the WAVKCA Award must be made by the submission of

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**APPENDIX**

<table>
<thead>
<tr>
<th>Territory</th>
<th>Call Area</th>
<th>QSLs required</th>
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<tbody>
<tr>
<td>Australian Antarctica</td>
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<td>Heard Island</td>
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<td>Macquarie Island</td>
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<td>Papua Territory</td>
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the confirmation (Rule 2.1), together with the list (Rule 4.3) direct to the Federal Awards Manager. Sufficient International Reply Coupons must be enclosed to cover return postage of the confirmations to the applicant.

5.2 Where a reciprocal agreement exists between the WIA and the applicant's Society, the appointed officer of that Society will carry out the check, and if correct, will forward a written application for the Award on behalf of the applicant, together with the list (Rule 4.3).

5.3 Applications will be examined by the Federal Awards Manager, who will arrange for the Award to be forwarded either direct or through the applicant's Society. The Federal Awards Manager's decision on the application and interpretation of these Rules will be final and binding.

5.4 Notwithstanding anything in the Rules to the contrary, the Federal Council of the WIA reserves the right to amend these Rules as necessary.

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<td>Papua Island</td>
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</tbody>
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NOTES

1. In areas above, where more than one confirmation is required, contacts may be made with any or all of the Territories grouped together.

2. VK9: Where a Territory is no longer under Australian jurisdiction, contacts up to the date of independence will be accepted.

WORKED ALL STATES
(AUSTRALIA) AWARD

Rules as amended 1.1.79.

OBJECTS

1.1 This Award has been created in order to stimulate interest in the VHF/UHF bands and is of a high standard to further proclaim the proficiency of the recipients on their achievements.

1.2 This Award, to be known as the "Worked All States (Australia) Award", will be issued to any amateur in Australia or overseas who satisfies the conditions following.

1.3 A certificate of the Award will be issued to applicants who show proof of having made two-way contact with the specified areas of the Commonwealth of Australia. Additional credit will be given for proof of contact with overseas countries, viz., New Zealand or Papua New Guinea. Countries, for the purposes of this Award, are set out in the Australian DXCC Countries List.

REQUIREMENTS

2.1 Contacts must be made on the VHF/UHF bands 52 MHz and above (Bands 8 and 9). Contacts made on 50-52 MHz prior to 1/4/64 will count towards the 52 MHz Certificate.

2.2 One verification from each of the following areas of the Commonwealth of Australia is required —
   (a) Australian Capital Territory.
   (b) New South Wales.
   (c) Victoria.
   (d) Queensland.
   (e) South Australia.
   (f) Western Australia.
   (g) Tasmania.
   (h) Northern Territory.

In all, eight verifications are required.

2.3 It is possible under these rules for one applicant to receive one Award for each of the authorised bands between 30 and 3,000 MHz.

OPERATION

3.1 All contacts must be two-way contacts on the same band and crossband contacts will not be allowed.

3.2 Contacts may be made using any authorised type of emission for the band concerned.

3.3 Portable operation will be permitted provided that the portable location shall be in the State in which the licence was granted and in the call area in which the licence was granted in the case of overseas operation.

3.4 All contacts must be made in accordance with the Regulations laid down in the "Handbook for Operators of Radio Stations in the Amateur Service" or its successor for Australian stations, or in accordance with those Regulations applying in the country of the applicant in the case of overseas stations.

VERIFICATIONS

4.1 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.

4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will lead to the disqualification of the applicant.

4.3 Each verification submitted must show the call sign of the station, date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.

4.4 A check list must accompany every application setting out the details for each claimed station in accordance with Rule 4.3. If any contacts were made whilst portable, this must be stated and the portable location given. The applicant must also state whether or not they are a member of the WIA.

4.5 In lieu of forwarding QSL cards or other written evidence as set out in Rules 4.1 to 4.4 above, a list giving the details set out in Rule 4.3, certified by the Awards Manager, Secretary or Council Member of an affiliated Society, or two licensed amateurs known to the applicant, should accompany each application.

APPLICATIONS

5.1 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.

5.2 A nominal charge of $1, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members.

5.3 Successful applicants will be listed periodically in "Amateur Radio". Members wishing to have their verified country totals listed over and above those submitted at the time of application for membership, will notify these details, in writing, to the Federal Awards Manager.

5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive WIA in the interpretation and application of these Rules shall be final and binding.

5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the WIA reserves the right to amend them when necessary.
AMATEUR RADIO INTRUDERS

Following a more direct approach by your Intruder Watch Co-ordinator to our Administration they are becoming more sensitive and co-operative to our reporting.

Letters pointing out specific cases of persistent harmful interference to Amateur operators by intruding commercial stations have been sent, with the result that our official monitoring stations are looking into the intrusions and our Administration will file official complaints to the countries concerned.

Specific cases reported are as hereunder designated, but although such are in the limelights more reports would be appreciated —

Radio Tirana, broadcasting on 14330 kHz (now moved to 14320 kHz) at 0500 and 1100 GMT.

The A0 F1 signal on 14016 kHz which changes call signs almost daily, the latest being four letter with “2” inserted — e.g. “NTG2”, “WU2H”. This station is allegedly in the USSR but more reports are necessary.

The “Piccolo” signal on 21040 kHz needs more observations, as does a comparatively new one on 14080 kHz — VRQ. UMS an F1 signal on 21032 kHz transmits news and propaganda in English and other languages. MH22 an A1 on 21155 kHz has been a regular for many years. These all need further reports, bearing traffic content, etc.

An excellent method of making the country indulging in broadcasting and putting out harmonics in the 28 MHz band aware of the harmful GRM that they cause has been alerted to me. It brings instant results, and is a direct method that does not involve any official channels. After identifying the harmonic either by direct identification or by comparing it with the fundamental signal a QSL is made out on your normal QSL card, but crossing out “QSO” and inserting “Confirming your harmonic kHz heard here at_ _ _ _ _ _ _ _ (date) at ___________ (time) on a frequency of ______ kHz. An excellent program causing harmful interference to amateur operators. Could you possibly remove the harmonic?”

The second harmonic of Radio Paris on 14270 kHz was observed and a QSL sent. The result was a letter, a copy of which is hereunder reproduced. This is a translation from the French —

“Monsier,

I thank you for your letter regarding the frequency 14270, harmonic of the transmission on 7135. The power of the transmission on 14270 is very weak but we are doing what is necessary to eliminate the annoyance. I hope to hear from you again, best wishes,

Chief of Broadcasting Services.”

A QSL was also sent to Radio Peking which resulted in the recipient receiving a lovely 1979 calendar. Thus, as well as official complaints there are other more direct methods that get results, so GO TO IT, and good hunting.

Harmonics already identified are Radio Moscow on 28280, 28350, 28605, 28710; Radio Peking on 28308.

Alf Chandler VK3LC, Federal IW Co-ordinator.

TECHNICAL CORRESPONDENCE

The Editor,

Dear Sir,

I refer to “Practical Hints”, page 58 of December 1978 AR.

May I tactfully suggest that all aerial removal tests are inaccurate, misleading, and in case their staff’s credibility suffered, were banned by the Victorian Radio Branch (PMG) way back in 1942.

Originally there were two such tests. Yours appears to be a combination of each. All suffer from pre-suppositional weaknesses, and would have died a natural death years ago if the users had understood electrical interference propagation. Because of this, I will very briefly explain.

The first of the two tests (paragraph 3) used to determine if the complainant had a faulty receiver or not “fell flat” when we discovered many receivers had noise producing faults, the noise from which ceased when we removed the aerial.

We, in the Radio Branch, considered the pointless second test, so beloved by “Mains Filter” manufacturers, “Noise Reducing Antenna” salesmen, and some “Technical Editors”, to be very amusing. The manufacturer’s uncorrected misleading advertisements advised noise potential customers to first disconnect their aerials.

If the noise ceased, the interference was being received by the antenna, if the noise continued then it was mains-borne, etc.

I grinned every time I read them. The joke is that nearly all electrical interference is mains-borne, the odds against it being otherwise would be about one hundred thousand to one (100,000 — 1). To carry

the joke further, all mains-borne interference (including TV line oscillator interference) ceases when the antenna is removed. If the noise continues you almost certainly have a faulty set. (Glad you almost agree with us.—Ed.)

Obiously, the noise has to get from the mains into the aerial system. Most of it enters your home via the SEC service wires. It is then induced from your house wiring into your aerial system. Understanding mains-borne interference, or to give it its original name, “Radio Inductive Interference”, enabled us not only to find and fix the 40 per cent audible noise heard at the complainant’s premises, but the 60 per cent which we never heard. This was standard practice, every man was expected to use this simple system.

Noise investigation, as many people imagine, is not a perpetual series of “Fox Hunts”. Like water flowing through a pipe, noise propagation is predictable. By phasing transposition, low voltage noise can be diverted from a complainant’s premises. Indeed officers of the SEC did this for me at least one hundred times, after unsuccessfully dealing with disagreeable owners of B & W TV sets, causing line oscillator interference. Noise generated in any phase of a three phase low voltage supply will normally confine itself to its own phase and will not “pass through” the transformer to which the three phases are connected. I know of one exception to this rule but I believe it, the device, died an evolutionary death.

If you have an outdoor antenna in the noise induction field of a HV line (usually 22 kV) the noise will not only be induced into your antenna, but will be in your house wiring as well. Listeners connected to all three low voltage phases will be affected, but remember that the actual HV noise source need not be nearby.

In Victoria (22 kV) this noise source might be up to seventy metallic miles away from a complaining B/C listener (case history). Luckily, because of harmonic attenuation, few amateurs, unless on 160 metres, would hear it at that distance. Noise from a HV fault has no boundaries. Although, in the true sense of the word, it does not radiate, it will, unlike a normal low voltage noise, “pass through” transformers, annoying people connected to all associated three phase low voltage reticulation.

Years ago, before most telephone lines were placed underground, it was not uncommon for a noise voltage, generated by a serious 22 kV HV fault, to be induced into adjacent telephone trunk lines. If these telephone lines were diverted across country eventually to run parallel to another HV line even 10 miles away from the first HV line, the original noise would then be induced into HV line number two. (Never underestimate a 600 ohm line.)

Cliff Manning VK3CJ
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$289.00

YC-5005 500Mhz counter Cat. D-2892

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30 Grove Street, PARRAMATTA. Ph. 683-1333

MELBOURNE 399 Lonsdale Street, MELBOURNE Ph. 67-9834

556 Bridge Road, RICHMOND. Ph. 42-1614

166 Logan Road, BURANDA. Ph. 391-6233

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**CHECK ALL THESE FEATURES**

- Compatible with all 901 accessories
- 180 W, dc input-6146B
- 1.8-30 MHz.
- IF shift using dual 8 pole filters
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- RF Speech processor (not audio clipping as other brands use)

Optional dc-dc Converter
Optional microphone of your choice
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**Special offer on FT-7**

Limited quantity only.

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DIGITAL READOUT COMMUNICATIONS RECEIVER.
FEATURES 25-30mHz CONTINUOUS.
DIGITAL DISPLAY AM,SSB,CW
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Mic, Compressors and RF Speech Processors.
Ideal for low power transceivers.
Get that extra talk power.
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- SWR-200. Large dual meter SWR............$78.
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Yaesu Y0-101 Monitorscope.
New model.

Built in two tone osc.
Can be used as normal CRO too !!!. $379.

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- IC-701 HF 160-10M Transceiver..................$129.
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- IC-701PS, Power Supply.......................$275.

**DIAGRAM**

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"Using the TS-520S I would advise that in 1977 I won outright for all Australia, the "Remembrance Day Novice Award" for the most contacts on the Novice bands — beating even many Full Calls who could use 40 metres, 20 metres, 16 metres & VHF.

The TS-520S is nearly 18 months old, is used for at least 4 to 5 hours per day. During this period the equipment has performed faultlessly — not the slightest problem has been experienced."

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AMATEUR RADIO LICENCING IN CANADA

In Canada there are three levels of licence:
1. Amateur Radio Operator’s Certificate,
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EXAMINATIONS

Candidates for the Amateur Radio Operator’s Certificate, Amateur Radio Operator’s Advanced Certificate or the Amateur Digital Radio Operator’s Certificate are required to qualify in various sections as shown in Table 1.

The holder of an Amateur Radio Operator’s Advanced Certificate may obtain an Amateur Digital Radio Operator’s Certificate by qualifying in Section 2, Part IV, of that certificate.

The holder of an Amateur Digital Radio Operator’s Certificate may obtain an Amateur Radio Operator’s Advanced Certificate by qualifying in Section 3 of that certificate.

STUDY GUIDES

The following publications are suggested for the guidance of candidates preparing for examinations and may be obtained direct from the publishers or from book stores, except where otherwise indicated.

FOR AMATEUR AND ADVANCED AMATEUR


“Ham Handbook for Beginners” — ARTA Publishing Co., 270 Albert Street, K1A OC8, or from any district office.

“Radio Act — General Radio Regulations, Parts I and II”, obtainable from:
Department of Supply and Services, Printing and Publishing Division, 270 Albert Street, Ottawa, Ontario, K1A 0S9.


“Comment Devenir Amateur”, par — Guy Cadieux VE2BTG, 4585 10e rue, Laval Ouest, Laval, (Quebec), H7V 2V9.


FOR AMATEUR DIGITAL


“An Introduction to Microcomputer — Volume 0 — The Beginner’s Book”, by Adam Osborne — Adam Osborne & Associates, PO Box 2036, Berkeley, CA, USA, 94702.


“Home Computer Primer” — Dilithium Press, PO Box 92, Forest Grove, OR 97116, USA.

“Microcomputer Primer” — Howard W. Sams & Co., 4300 West 62nd Street, Indianapolis, IN 46260, USA.

“An Introduction to Microcomputers — Volume I” — Adam Osborne & Assoc., PO Box 2036, Berkeley, CA 94702, USA.

MAGAZINES AND JOURNALS


AROUND THE TRADE

VICOM EXPANDS PROFESSIONAL DIVISION

Vicom International Pty. Limited has appointed Mr. Max Pietruschka to head up its expanding Professional Products Division.

The Division handles high quality specialist communications and security equipment together with a wide range of test instrumentation for defence and other governmental agencies.

QSP

USA CB SERVICE AT 900 MHz?

Yes, this is under consideration by the FCC in replacement of the possible re-allocation of 220 MHz to the CB service according to a report in OST December 1978.
**AVAILABLE SOON**

**PALOMAR PTR-130K**

**RECOMMENDED FOR AMATEUR USE**

“We’ve brought space communications technology down to Earth.”

The Palomar PTR-130K incorporates features from the outer perimeters of logic technology to become one of the most outstanding communications systems ever introduced to the communications market! Never before has any communications transceiver approached the capabilities of the Palomar PTR-130K! It’s the first completely multi-functional transceiver ever made available to the public.

Palomar’s PTR-130K is a miniaturized mobile transceiver capable of operating in 100 cycle resolution from 100 kHz to 30 MHz in all modes of transmission and reception. Instant frequency selection is available with the touch of a finger. Palomar’s PTR-130K... space technology, at a down-to-earth price.

- **Digital Readout of Signal Strength in dB Above the Noise Floor of Receiver.**
- **Total 100 Hz Frequency Synthesizer with 5 kHz Reference (does NOT use D-A Converter as some amateur rigs claiming 100 Hz synthesis).**
- **6 Digit Frequency Readout.**
- **Diode Ring Mixer with Broadband Load to Optimum Intermodulation Performance.**
- **2100 Hz CW Filter.**
- **Size: 6½” x 2½” x 8½”.**
- **58 ICs, including 7 LSI Circuits.**
- **Watch this space next month for price.**

**SL-55 AUDIO ACTIVE NOTCH FILTER DESIGNED FOR THE FT101E**

Here is the Receiver Audio Active Filter that makes all others obsolete. The Electronic Research Corporation America Model SL-55 Audio Active Filter adds unequalled versatility in receiver audio processing for SSB and CW. This filter was designed, produced and made available to the amateur community only after painstaking research and field testing of its effectiveness in minimizing QRM.

Check these features:

- Continuously tunable bandpass filter (not lowpass) so that the passband may be positioned anywhere from 300 to 1400 Hz.
- 3 dB bandwidth is continuously adjustable from 300 to 2100 Hz (20 dB bandwidth from 140 to 2100 Hz)
- Audio input and output impedance is eight ohms with one output capability.
- Dimensions: 5.5 x 7.5 x 3.5 inches.
- In grey to match FT101E.

**BAY CITY ELECTRONICS PTY. LTD.**

SHOP 11, STATION STREET, FRANKSTON 3199, PHONE 783 9212

**BANKCARD WELCOME**

**SCARCITY VALUE OF THE SPECTRUM**

QST December 1978 contains articles relating to a possible new USA Federal Communications Act to replace the 1934 Act. One aspect of the new proposals relates to the possibilities of assessing licence fees on users of the spectrum in two ways:

1. The cost of processing the licence, and
2. The scarcity value of the spectrum being assigned.

It is said that non-commercial radio services would be exempt from the “scarcity value” provisions of the licence fee.

**NEW CALL SIGNS**

The following call sign series have been allocated provisionally by the ITU according to IARU R1 Newsletter, January 1979 — T2A to T2Z Tuvalu, Y2A to Y92 German Dem. Republic.

**AWARDS COLUMN**

Brian Austin, VK5CA

P.O. Box 7A, Crafers SA, 5152

Allen Smith VK2AIR has sent me a copy of the “Canadian Amateur Radio Awards Directory”. This is a very useful aid to any award hunter, and I can thoroughly recommend it. Copies are available from VE3HLL, E. S. Walden, Gowanstown, Ontario, Canada, for $3 Australian currency. I am including details of two Canadian awards herewith:

**TRANS-CANADA AWARD**

Open Canadian and US Contest.

Requirements: Work each of the 8 VE call areas with 5 contacts in each area (total of 40 contacts). Also work 5 stations in V01 and V02, any combination. Also work 1 VE0 maritime mobile station. Of the 5 VE8 contacts one must be in the Yukon Territory and one must be on an offshore Island of the North-West Territories. Stations must work and confirm a total of 46 contacts as outlined above to qualify.

Application: Send log data and $1 to Canadian DX Assn., PO Box 717, Station O, Toronto, Ontario, MAT 2NS.

**CALGARY AMATEUR RADIO ASSN.: STAMPEDE CITY CERTIFICATE**

Requirements: Work any ten Calgary, Alberta, stations.

Application: No charge. Send log data only to Calgary Amateur Radio Assn., Box 592, Calgary, Alberta, T2E 2C7.

Allen Smith VK2AIR of 111 Northcott Road, Seven Hills, N.S.W. 2147, has been appointed Secretary-Treasurer-Custodian-Editor of CHC Chapter (66) Australia, replacing Jack Gutcher VK3APU. Any enquiries should be directed to Allen.

**THE DARWIN AWARD**

The Darwin DX Working Group announce the introduction of “The Darwin Award”. This award is available to amateur operators with radio stations in the Greater Darwin area after 1-1-78.

Requirements: DX stations, work/hear 5 stations in the Greater area of Darwin. Any band or mode may be used.

VK and ZL stations work/hear 8 stations in the Greater Darwin area. Any band or mode may be used.

VK stations in Greater Darwin work 20 stations looking for the award or 15 VH contacts with other Darwin stations.

Applications for this award to be sent (GCR) to The Darwin Awards Manager, PO Box 40986, Casuarina, NT 5792, Australia, with 5 IRCs to cover cost of postage.

This is my last contribution to AR as Federal Awards Manager. I hope that in the last five years I have provided some items of interest to you and that some of you, at least, have acquired some wallpaper as a result of the notes.

Your new Federal Awards Manager is Bill Verrall VK5SW, whose address is 7 Lilac Avenue, Flinders Park, SA, 5025.

Please forward all correspondence to him.

Good hunting.

**BOOK REVIEW**

"HOW TO IDENTIFY AND RESOLVE RADIO-TV INTERFERENCE PROBLEMS" (Published by the FCC — available via MACPUBS.)

This booklet is aimed at informing television viewers, broadcast listeners, radio servicemen and amateur radio and CB operators of the various types of interference encountered by receivers in common use.

The first four pages are devoted to showing television viewers what the various types of interference look like on their TV screens.

The next four pages deal with the elimination of interference. Audio equipment and telephone interference is then dealt with.

Pages 10-20 deal with various remedies open to amateur and CB operators who have interference problems.

The last half of the booklet is an appendix listing the sources for assistance in resolving interference problems available in the USA. These sources are not necessarily available in Australia.

Interference to television and radio reception is handled in Australia by the Postal and Telecommunications Department whose addresses and telephone numbers are listed in capital city telephone directories.
AMATEUR BAND BEACONS

145.400 ZL4VHF-- Dunedin
145.150 ZL1VHW -— Walkato
145.100 ZL1VMF-- Auckland

• New beacon according to Bill Tynan of QST.

VKSRO reported weak signals on 50 MHz all day on 15-1 from JA and YJ8. David VKSK reported similar conditions on many of the following days, but the main strong signals would be found on 50.110 more. It seems likely such conditions will prevail until March when TEP type conditions should return, and it is hoped continental USA will be worked from VK once more. I would expect many outstanding contacts to be made from Australia during March, April and May, but we will not be helping the situation by having an E antenna wrong side of mast for VK.

The sporadic E (Es) season has been and gone to a large degree. The season was a relatively short one this year, but Barry ZL4IP, Bill ZL4LT and Keith ZL4AI only able to work us on 48.7 and 49.75 finally culminating in the first carrier being noted from Japan on 50.072 at 0328Z weakly, but worked on 50.100 later at 0428Z at 5 x 2 at this QTH. This again shows how the band can often be open up to 50 MHz and slightly above but not reaching 52 MHz at all. So the main signals would be found on 50.110 and above and signals from northern hemisphere working, as outlined in the next paragraph.

JAPAN/AMERICA 6 METRE ARRANGEMENTS

From QST "During his November trip to Japan, WB6NMI discussed with several prominent and active JA six metre operators the question of increased number of long distance openings to Japan and other Pacific areas. As was outlined in much detail in previous reports there was a fair amount of activity from various States of the Commonwealth, although H4DXQ from Guadalcanal seems to have been rather difficult to work, and although a good opening of some 4 hours to ZL from VKS occurred on 14-1-79 with ZL1, 2 and 3 mainly being worked between 0800 and 1030Z, with signals to 5 x 4. The NZ2LZ contacts followed a rising MUF the day before when very strong FM signals were observed on the PRC10 on 36.3, 36.8, 39.3, 40.5, 41.1, 41.5 and 41.7 in the form of the usual connection of 145.075 and 145.125. At 2100Z the MUF started rising again slowly and by 0000Z the following day the band was closed.

VK5RO reported weak signals on 50 MHz all day on 15-1 from JA and YJ8. David VKSK reported similar conditions on many of the following days, but the main strong signals would be found on 50.110 more. It seems likely such conditions will prevail until March when TEP type conditions should return, and it is hoped continental USA will be worked from VK once more. I would expect many outstanding contacts to be made from Australia during March, April and May, but we will not be helping the situation by having an E antenna wrong side of mast for VK.

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There have been many false rumours about the 432 MHz contacts we made, so for the record, here are the details for everyone to read:
Contact was arranged via Ch. 6 Newcastle. He had heard me running carrier on his nominated frequency, both went to SSB. Contact started 051Z, concluded 1½ hours later. Reports were 9 + at both, Ray copied me better than I could, but I had my LO's. Have 10 minutes on tape, noise free at times.
ZL1TAB used Belcom Liner 70A with MA501 masthead pre-em, and a 15 element log periodic yagi, about 15 watts SSB. The 70A has 10 MHz 10 x 1 MHz tuneable all mode 432-422 MHz device. VK2BQJ used a 432 MHz Microwave Modules transverter running 9¾ watts to 11 over 11 MHz dish at Dapto should be shifted to the new territory which will not interfere with television viewers. It is any indication. Those purchasing such an instrument cannot be permitted on a non-interference basis. Only if the Ham does not have additional equipment with which to continue to operate on the limited scale they do at present, but at least would be permitted to have QSOs outside television hours, and let's face it past experience with the TEP situation as the peak of the present cycle approaches. Such an arrangement could well suffice for the time being whilst the total implications are studied by P. and T. and others. It will help to keep all contacts fully legal whilst permitting VK stations to participate in the world wide VHF net.

The PARC0 RECEIVER
The paragraph recently on the ex-Army 38 MHz Post Office transceiver type PARC0 has caused quite a degree of interest. If the number of interstake phone calls I have received for further information is any indication, then this amateur instrument to monitor the MUF may be interested in the socket connections for feeding power into the unit. These are connected as follows: A and B: 1.5 volts; C is earth; D 155 volts; E 67.5 volts; F not connected; H and J which are connected to earth, but A—should be isolated in your power supply for switching purposes. 135 volts is used for the transmitter and receiver stages, while the receiver trans-

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You and DX

Mike Bazley VK6HD
8 James Road, Kalamunda, W.A. 6067

The "art" of DX is a declining one. Like everything else, it is becoming easier to be instant. The emphasis seems to be on power (look at the advertisements in this Journal, those big lines must be selling) and the subscription to a DX Bulletin that tells you if you are on such and such a day on such and such a frequency then AB 12 ZZ will be waiting for you.

Once upon a time you had to hear them to work them! This is now not necessarily true! If you do DX you find that many hams suggest you listen to some of the DX nets (not all) and some of the DX operations controlled by an MC. In these cases first the "DXar's" call is put across and then he is asked "did he get his 5 and 9 report!!!?" All he has to say is yes and send the OSL with the necessary "green stamp". Perhaps the above view is being a little bit cynical. This writer can never understand why someone will pay $1000 plus for an amplifier, when with a little bit of patience and know-how a very efficient radiating system can be made at a fraction of that price, with the added advantage of being able to hear the DX!!

January DX

Stations mentioned below as being heard were all heard or worked from VK during the month of January.

FR7ZL, Guy, told this writer that he would be on Tromelin, FR7ZLT, from the 2-7 to 4-7. Guy hopes to be active on both 15 and 20 CW and on Tromelin, FR7ZL/T, from the 2-2-79 to 4-4-79.

STORK, operator Hans, is still active from around 14025 14051 SSB 14205 14282 kHz. STORK, operator Hans, is still active from around 14025 14051 SSB 14205 14282 kHz. It is suggested that you contact him in this period.

Bovet, BOUVET

What has happened to the Bouvet DXpedition? Lots of stations have been heard calling them, a few working them, but this writer hasn't heard of any QSOs with the genuine article by a VK station. Yes, this one has been piped extensively on CW and it is believed that up to January 24th there had been no CW activity. Rumour also has it that the operators have not been able to be very active because of their heavy work load. (It is suggested that it be credited as expedition!!)"

Do you get confused with these USA calls that start with AE, AG, AH, KB, or Guam stations that also sign as K6 or KH2? You do? Well join the club. Personally if anyone has a complete list of prefixes and the countries they represent could it be forwarded to me and we will get it printed in the column. Thanks.

Laccadives

Those chasing the new five band WAZ should note that UADYY is very active on 10 and 15 CW worked on 15 at 1200Z and is happy to move up to SSB on request. Viad uses 75 watts to a Grid-Plane.

Notes from the West Coast DX Bulletin

DC4GS should be active from S9, SAO THOME from approximately March 1. HB9TL will be active from the Maldives for one week-end only, either 2/4, 10/10 or 17/18. CW on 14020, 21020, 18020 and SSB on 14195, 21295, 28595 kHz.

This writer does not believe that a list of exotic DX calls signs worked is of much value to the reader unless it contains information that details the operating habits of a particular station. To compile such a list will involve the cooperation of readers. If you feel that it of value to you please let me know. For example under the heading of 15m metres G3/GW, 25, 1930, 2 would indicate that G3/GW was worked on 1825 at 1930Z from N.S.W.

Well that's it for this month, remember communications: good, bad or indifferent are welcomed. This is your column so if you want it to be...

QTHs YOU MAY HAVE MISSED

V6F8I — Box 541, Hong Kong.
V6F8Q — Box 336, Taipei.
V9S8I — Box 431, Taiwa.
VJ7IWL/SU — Via the WZ Bureau.
TA49D — Via YU0D.
SUIER — Via YU0D.
SUIER — Via YU10F.
W5DAJEU/SU — Via N5RM.
K7CA/K1C — Paris 1070 Ouito.

Stop Press

601QG operational hopefully 10th February to 15th March CW 14025 14061 SSB 14025 14282 kHz. YV1AA Aves Island 7th to 14th April usual DX frequencies.

News from the Brisbane VHF Group

Further to the many enquiries received concerning the Group's range of YAGt antennae, this article lists:—

<table>
<thead>
<tr>
<th>Bandwidth MHz</th>
<th>Boom length (metres)</th>
<th>Gain (dBd)</th>
<th>Price ($)</th>
<th>Price ($crossed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2m/5</td>
<td>7</td>
<td>8</td>
<td>92</td>
<td>20</td>
</tr>
<tr>
<td>2m/7</td>
<td>3</td>
<td>10</td>
<td>17</td>
<td>25</td>
</tr>
<tr>
<td>2m/12</td>
<td>2</td>
<td>4</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>70cm/12</td>
<td>6</td>
<td>7</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>70cm/15</td>
<td>4</td>
<td>3</td>
<td>14</td>
<td>25</td>
</tr>
</tbody>
</table>

Further to the above range, a number of combination antennae can be ordered. For example—

2m/5 and 70cm/12

3.7

2m/7 and 70cm/15

3.1

From "QTC" February 1979 (VK4 AR Insert).
**MML 144/100 Watt Linear Power Amplifier**

- 80 watts minimum RMS output 100 watts RMS typical.
- Fully protected against poor load VSWR overheating and excessive or reverse supply rails.
- Equipped with RF VOX and manual override.
- Frequency bandwidth 144 — 148 MHz at — 0.5 dB.
- 10 watts nominal for 80 watts output.

**PRICE AMATEUR NETT: $265.00**

---

**100 Watt 432MHz Linear Power Amplifier**

- 100 watts minimum output 10 dB minimum gain.
- Fully protected against poor load VSWR, overheating and excessive or reverse rail.
- Equipped with RF VOX and manual override.
- Frequency Bandwidth 435 MHz — 15 MHz @ -1 dB.
- 10 watts nominal input for 100 watts output.

**PRICE AMATEUR NETT: $395.00**

---

**Tronsverter Model MMT 432/144’S**

**UTILIZING an IF of 144MHz * 10 WATTS DRIVE of ½WATT * VOX OPERATED, TWO SELECTABLE RANGES 432 - 434/434 - 436 MHz. FEATURES EXTENDED COVERAGE FOR OSCAR 8**

**FEATURES:**
- High quality double-sided glass fibre printed board
- Highly stable zener controlled oscillator stages
- PIN diode aerial changeover relay with less than 0.2 dB through loss
- extremely low noise receiver converter, typical 3 dB
- Separate receiver converter output gives independent receiver facility
- Built-in Automatic RF VOX with override facility
- Built-in 10 watt 144 MHz termination, selectable attenuator for ½ watt
- Use of the latest state of the art Power Amplifier transistors provide reliable 10 watts continuous output.

**MODEL MMT 432/144’S** | **Price Amateur Nett:** $265

---

**Tronsverter Model MMT 432/28’S**

**FEATURES EXTENDED COVERAGE FOR OSCAR 8**

Second Crystal Oscillator gives two ranges: Low 432 — 434 MHz — High 434 — 436 MHz programming available to either Transmit/receive both Low, both High, or a mixture of the two. Adjustable Drive Level is now provided by an input potentiometer. Optional RF VOX.

- Power Output 10 watts minimum * 28 MHz IF * Drive 1 mW to 500 mW * Aerial Changeover by PIN diode switch * Modern Microstrip Techniques
- Power requirements 12 volt nominal at 150 mA 2.5 amp peak * Case size 187 x 120 x 53 cm * Spare 432 input socket.

**MODEL MMT 432/28’S** | **Price Amateur Nett:** $245

**MODEL MMT 144/28** | **Price Amateur Nett:** $185

---

**NEW READY-TO-OPERATE MODULES AVAILABLE IN THE SALES PROGRAM OF VHF COMMUNICATIONS.**

All modules are enclosed in black cast-aluminium cases of 13cm by 6cm by 13cm and are fitted with BNC connectors. Input and output impedance is 50 ohms. Completely professional technology, manufacture, and alignment. Extremely suitable for operation via satellite or for normal VHF/UHF communications.

**10 METRE MOSFET CONVERTER:** Input frequency range 28 - 30 MHz * IF output frequency 144 — 146 MHz * Overall gain 15 dB min * Overall noise fig. 1.8 dB * DC Power requirements 11 – 13.8V at 50 mA. **PRICE AMATEUR NETT:** $45.00

**6 METRE MOSFET CONVERTER:** Featuring 24 MHz local oscillator output for transverter use. Input frequency 28-30 MHz. Typical gain 30 dB. Noise figure 2.5 dB. Typical image rejection 65 dB. Crystal Oscillator frequency 24 MHz.

- Power requirements 12 volt ± 25% at 35 mA, **MODEL MMC52/28LO PRICE AMATEUR NETT:** $49.00
- 2 METER MOSFET CONVERTER; Noise figure typ. 2.8 dB. Overall gain typ. 30 dB. IF: 28-30 MHz. 9-15 V 20 mA. **PRICE AMATEUR NETT:** $45.00

**DUAL RANGE 432 — 434 MHz & 434 — 436 MHz Converter. Type MMC 432/28 ‘S’ & MMC 432/144 ‘S’ Input frequency ranges 432-434 MHz (low), 434-436 MHz (high). I.F. output frequency 28-30 MHz or 144/146 MHz. Typical gain 30 dB. Noise figure 3 dB maximum, D.C. Power requirements 11 - 2.6 volts, 12.5V nominal. Current consumption 50 mA maximum. **PRICE AMATEUR NETT:** $67.00

**1296 MHz CONVERTER; Microstrip, Schottky diode mixer. IF: 26-30 MHz or 144-146 MHz. Noise figure: typ. 8.5 dB. Overall gain 25dB, Power requirements; 12 volts DC ± 25% at 50 mA. **PRICE AMATEUR NETT:** $65.00

**VARACTOR TRIPLEX 432/1296. Max. input at 432 MHz; 24 W (FM,CW) — 12 W (AM). Max. output at 1296 MHz, 14 W. **PRICE AMATEUR NETT:** $74.00

**500 MHz COUNTER Model MMD050/500 PRICE AMATEUR NETT:** $175.00

**BNC CONNECTORS — Excellent quality, fully imported from U.K. U.S. Mil. No. UG88E/U. **PRICE AMATEUR NETT:** $1.35 each.

---

**CONVERTERS PACK & POST $2.00**

**AMATEUR ELECTRONIC IMPORTS IS THE EXCLUSIVE AUSTRALIAN DISTRIBUTORS FOR THESE PRECISION BRITISH MADE UNITS FROM MICROWAVE MODULES LTD.**

All prices subject to change without notice. Onwards forwarding please add sufficient for freight or postage. Excess will be refunded.
SOME NEW YEAR SPECIALS
FROM BAIL ELECTRONIC SERVICES

Please note that some items are in limited quantity, so—don’t delay, they won’t last forever!

FT-101E AC-DC HF Transceiver .................. $795
FT-101E AC HF Transceiver .................. $745
101E DC-DC Conv. Kit .................. $60

N.B.: Our 101E Transceivers still include the superb "B" Model adjustable Noise Blanker PB 1292, exclusive to us! The N.B. that really does work. And for those with the PB 1582 N.B. we can supply the 1292 at $42, plus postage $1.50.

FT-101 W/S Maintenance Manuals .................. $27 plus P.P. $2.00
FT-7 HF Transceiver .................. $389 (Yes, fair dinkum!)
FT-227R 2m FM Digital .................. $339
FL-2100B linear .................. $579
YC-7B Dig. adaptor for FT-7B .................. $125
FRG-7 Receiver .................. $349
Battery holder for FRG-7 .................. $10
LFC-2A Selective SSB filter for FRG-7 .................. $20
YC-500S Counter 500 MHz .................. $499
YC-500E Counter 500 MHz .................. $556
YP-150 Dummy load/power meter .................. $112
SP-101B Ext. speaker for 101E .................. $49
CW filters for FT-101 .................. $59
FT-301 series CW, AM, RF Proc. filters each .................. $45
FRG-7000 Dig. Receiver .................. $645
QTR-24 World Clock .................. $35
YP-55 Yaesu Headphones, 8 ohm .................. $19
YD-844 and YD-148 dual impedance desk mics., 600 ohm/50 ohms .................. $49
YO-301 Monitorscope, three only .................. $299
RS Series Yaesu HF Gutter mount mobile Antennas — RSM2 base, Inc. RSE2A stub mast, with Co-ax. cable attached .................. $29.90
Resonators — RSL-3.5 $22, RSL-7 $21, RSL-14 $20, RSL-21 $19, RSL-28 $19, RSL-145 (5/8 2m) $24.
6JS6C P.A. Valve FT-101 .................. $11
Other Yaesu valves also available.
SRC-146A Standard (Japan) 2m hand-held 5 chan. 2W FM transceiver, built-in mic., spkr., "S" meter, inc. carrying base and crystals, to clear .................. $199

70 T.V. Transverter 430 MHz (two only) .................. $299
Base adaptor .................. $23
Also available Rubber ant., optional hand mic., mobile adaptor, Nicad batteries.

ROTATORS:
103 LBX $185, 502 CXX $255, 1103 MXX $410, 201 AX $179, 1102 MXX $379.

MAST CLAMPS:
For 103 $18, 502 $29.50, 1102 and 1103 $45.

L.P. FILTERS:

ANTENNAS:

Hy-Gain BN-86 balun .................. $28
Lightning Arrestors .................. $4.95

ANT. COUPLERS:
HC-75 $65, HC-250 $89, HC-500A $119, HC-2500 $199. Yaesu Couplers also stocked.

SWR METERS:

MORSE KEYS:

The above list is not complete. There are many more items available. Contact us for your requirements.

Above prices (R.R.) inc. S.T. Freight is extra. Prices and specs. subject to change. 90 day warranty on sets, excluding power valves and power transistors. Full service facilities and comprehensive range of spares.

All items new, ex stock except FT-7 and FT-227, which are due into store approx. mid-February.

60 Shannon Street, Box Hill North, Vic. 3129
Phone: 89 2213
Agents in all States and A.C.T.

FRED BAIL VK3YS
JIM BAIL VK3ABA
Model HK-808. Heavy duty commercial hand key with full ball race pivots, heavy marble base and dust cover. The ultimate hand key. Price $85.00

Model HK-710. Heavy Duty De Luxe Hand Key, fully adjustable, ball bearing shaft, plastic protective cover. Mounted on heavy non-skid poly marble base. Base dimensions 168mm x 103mm. Price $45.00

Model HK-707. Economy hand key in all black ABS resin, metal parts protected by moulded ABS resin cover. $19.50

Model HK-708. Similar to HK-707 but without cover and with smart chromium plated keying mechanism and flat American style knob. Price $14.99

Prices incl. ST/Freight and Ins. extra/Prices and specifications subject to change.

Model TC-701. Morse practice oscillator with built in key and speaker. Including battery and earphone. Copy of morse code on case. Two can be wired together to form a practice communication set. Price $19.50

Model MK-701. Manipulator (side swiper) for an electronic keyer. Accurate and restful keying operation are assured owing to a heavy metal plate and a frictional rubber belt beneath the periphery of the main base. $39.00

Model BK-100. Semi-automatic (bug) key, with standard adjustments, wide speed range, protective plastic cover, on heavy non-skid base, beautifully finished. Base dimensions 175mm x 75 mm. Price $49.00

a decade of research in HF transceivers brings you the FT-101Z series ... at $799 basic price it's a steal!!

Today's technology, backed by a proud tradition, is yours to enjoy in the all-new FT-101Z (and FT-101ZD) high-performance HF transceiver from YAESU and BAIL. A host of new features are teamed with the FT-101 heritage to bring top dollar value.

Rcvr includes variable IF bandwidth with two 8-pole crystal filters and a highly effective all-new NB circuit with front panel blanking level control. Also included are 10 and 20 dB attenuators, and offset tuning for transmit and receive. Trans. section uses two 6146 final tubes with RF neg. feedback. An RF speech processor is built in. Available options include DC-DC converter, cooling fan, dig. display/counter unit (for FT-101Z), hand or desk mic., and CW filter. CW filter may be used in addition to SSB filter in CW mode. Write for our full colour brochure today.

Prices quoted are recommended retail and include 90-day warranty except power valves and semi-conductors. As the authorised Yaesu agent and factory representative since 1963, we provide complete after sales service and spares.

Bail Electronic Services, 60 Shannon St., Box Hill Nth, Vic. 3129. Tel. (03) 89 2213
Branches in all States and A.C.T.

FRED BAIL VK3YS
JIM BAIL VK3ABA
Only three months ago in our December 1978 advertisement we gave a bouquet which has all too quickly wilted and faded!

KENWOOD AUSTRALIA has meanwhile raised their prices to the level of or above the equivalent retail prices in JAPAN at the present 1 February 1979 YEN-Dollar exchange rate. Replacement cost of our stock of TS-520S and TS-820S transceivers is now higher than we still have been selling them for! Talking about bargains?

Further, AUDIO-TELEX, the local branch of TELEX INC. U.S.A. who last year took over HY-GAIN ELECTRONICS CORP. is now offering Hy-Gain antennas to dealers at higher prices than we are selling them for. Again, talking about bargains? We have no secrets and don't sell at a loss but of course this cannot last. We are actually gambling on an improvement of the YEN-Dollar exchange rate for future KENWOOD supplies.

HY-GAIN ANTENNAS:

- 18-AVT/WB 10-80M vertical 23' tall .......................... $125
- TH6-XX 10-15-20M senior 6 el. Yagi 24' boom ............. $300
- TH3-JR 10-15-20M junior 3 el. Yagi 12' boom .......... $175
- 204-BA 20M 4 el. Tiger Array 26' boom ................. $230
- HY-QUAD 10-15-20M full size Cubical Quad ............... $260
- 2M 5 el Yagi with balun 6'3" boom ....................... $25
- 2M 8 el Yagi with balun 12'6" boom ..................... $30
- 2M 14 el Yagi with 15'6" boom ......................... $40
- BN-86 Balun for HY-GAIN beam buyers only ........ $20
- BU-5 Balun suitable for 10M beams ........................ $14

ANTENNAS SUITABLE FOR 10M:

- 11M 5 el. Yagi 17' boom ................................ $70
- 11M G.P. with 3 radials ................................ $20
- CLR-2 11M ¾ wave vertical w/3 radials 19’10" ........ $40
- CLR 11M ¾ wave vertical w/4 radials 22’9½" ....... $50

ACCESSORIES & COAX CONNECTORS:

- SWR-50A Twin meter 3.5-150MHz 1KW .................. $26
- Bumper Mount with 3/4" 24 thread antenna mount .... $7
- Gutter Mount with 3/4" ................................... $4.50
- 24 thread antenna mount ................................ $3.50
- 5M length RG-58U with PL-259 one end ............... $1
- M-ring body mount ......................................... $3
- GLP Right angle RG-58U to SO-239 ..................... $3.50
- w/lock nut & weatherproof cap ......................... $3.05
- MLS Right angle RG-58U to PL-259 .................... $0.90
- PL-259 standard & solderless, RG-8U & RG-58U ........ $0.75
- In-line splice RG-8U & RG-58U ........................... $0.75
- SO-239 chassis connector 2 & 4 hole mounting .... $0.75
- Right angles & T-connectors ............................. $1.50
- Double female connectors ................................. $0.80
- Mic. sockets, chassis & in-line, 3 & 4 pin .......... $0.85
- 3 circuit microphone jacks ............................... $0.85
- Crystals for QUARTZ-16 2M transceiver:
  - Channel 51 T/R 146.55 — pair ....................... $5
  - Channel 64 T/R 147.20 — pair ....................... $5

ROTATORS & CABLES:

- KEN KR-400 rotator with 28V AC control box .......... $125
- CDR HAM III rotator with 28V AC control box ....... $175
- No. 14 hard drawn copper wire — per meter .......... 10c
- ¾” H.D. foam coax extra low loss — per foot ........ $1
- Type RG-8U foam coax cable — per yard ............. 80c
- Type RG-58U coax cable — per yard ................... 30c
- 8 core rotator cable — per yard ....................... 65c

KENWOOD PRODUCTS:

- TS-520S 10-160M SSB/CW transceiver 240V AC .......... $700
- TS-820S 10-160M SSB/CW w/Digital readout .......... $1100
- TL-922 10-160M Linear Amplifier ...................... $1200
- TS-700SP 2M all-mode transceiver .................... $850
- TR-7400A 2M transceiver ................................ $500
- TR-7500 2M transceiver ................................ $350
- DG-5 Digital display for TS-520S ...................... $250
- TV-506 6M transverter .................................. $250
- TV-502 2M transverter .................................. $300
- AT-200 Antenna matchbox ............................... $175
- DS-1A DC-DC converter ................................ $75
- DK-520 adaptor for DG-5 to TS-520 use .............. $20
- LF-30A low pass anti-TVI filter ......................... $30
- VFO-820 external VFO for TS-820S ..................... $185
- VFO-520S external VFO for TS-520S ................. $160
- SP-820 external speaker for TS-820S ................. $60
- SP-520 external speaker for TS-520S ................. $30
- YG-88C CW filter for TS-820S ........................ $55
- YG-3395C CW filter for TS-520S ...................... $55
- MC-10 hand held microphone ............................ $20
- MC-50 desk microphone ................................. $45
- HC-2 Ham clock ........................................... $35
- BS-5 (TS-520S) & BS-8 (TS-820S) pan adapters for SM-220 .................................................. $65
- TS-120V 12V DC mobile transceiver with NB, VOX, IF Shift & digital readout, 30W PEP ...................... $600

NOVICE SPECIALS: Still available at these low prices

Transceivers for 10M coverage, AM/USB, 15W PEP:

(a) SIDEBAND SE-502 240V AC/12V DC w/inbuilt SWR/Rf meter 28.3-28.6 MHz ............................... $150
(b) UNIVERSE 224M 12V DC 24 ch. 28.480-28.595 in 5 KHz steps Clarifier operates on both transmit & receive .................................................. $125

Set of Crystals for Amateur license holders for converting 23 ch. 27MHz CB units to 28MHz, suitable SIDEBAND, UNIVERSE, KRACO, HY-GAIN etc. SSB/AM units:

- Sets of 8 crystals converts to 28.480-28.595MHz .................................................. $40

SUNDRIES:

- FRG-7 5-30MHz General coverage receiver ............ $350
- FT-T 10-80M 12V DC transceiver ....................... $475
- ICOM IC-202 2M SSB portable transceiver ........... $175

All prices quoted are net, ex Springwood NSW. cash with order, subject to change without prior notice. All risk insurance is free: freight by air, road, rail or post at cost. All orders cleared on a 24 hour basis after receipt with payment.

Arie Bles (VK2AVA) Proprietor  
Roy Lopez (VK2BRL) Manager
In a recent issue in this column I included the outline of a WICEN training course and one of the topics was formal message writing. This was included because WICEN operators need to be able to do it to assist and guide their clients, the SES, the police or other emergency official. This month I am including a reproduction of a message form with a text to guide the reader in its compilation. In a later issue I will describe how to send the formal message by radio.

The pre-printed message form is not essential, but it is a very valuable guide to make sure you do not forget some important piece of information.

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**MESSAGE FORM**

**HOW TO WRITE A MESSAGE**

1. **THE PRECEDENCE INDICATES THE DRAFTER'S DESIRED URGENCY FOR MESSAGE TRANSMISSION — CHOICES ARE FLASH, IMMEDIATE, PRIORITY, ROUTINE, DEFERRED. THE FIRST TWO ARE RARELY USED.**

2. **DATE TIME GROUP IS DATE IN TWO DIGITS PLUS 2 TIME (GMT) WITH MONTH AND YEAR OPTIONAL.**

3. **CONFIDENTIAL, RESTRICTED, UNCLASSIFIED, PROBABLY ONLY THE LAST TWO WILL BE SEEN BY WICEN.**

4. **ORIG NO IS THE ORIGINATOR'S UNIQUE NUMBER, OFTEN ALPHA NUMERIC, EG WICEN 3 ABOVE.**

5. **FROM IS THE ORIGINATOR'S NAME.**

6. **TO IS ADDRESSEE(S) NAME(S).**

7. **INFO CAN BE USED BEFORE INFORMATION, NOT ACTION, ADDRESSES.**

8. **TEXT IS USUALLY WRITTEN OR PRINTED TELEGRAM STYLE IN PARAGRAPHS.**

9. **ORIGINATORS SHOULD SIGN MESSAGE TO AUTHORIZE RELEASE THE SIGNATURE IS NOT TRANSMITTED.**

---

**ROUTE INDICATORS**

FROM: WICEN FEDERAL CO-ORDINATOR

TO: ALL INTERESTED AGENTS

**INFO FEDERAL EXECUTIVE**

**DATE - TIME GROUP**

050130ZDEC78

**MESSAGE INSTRUCTIONS**

**SECURITY CLASSIFICATION AND SPECIAL HANDLING INSTRUCTIONS**

UNCLASSIFIED

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**PAGE NO**

**DRAFTER'S NAME AND TITLE**

**PHONE NO**

**REF FILE NO**

1

R. HENDERSON, FED COORD

663145

AR FEB 79

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**INTERNATIONAL NEWS**

What is the standing of amateur radio internationally? Here is the text of an address by Mr. M. Mill, the Secretary-General of the ITU to the IARU's Region 26th triennial conference held in Panama City, Panama 8th September, 1978. The report is reprinted from IARU Region 2 News of November 1978.

"May I begin by offering, on behalf of the International Telecommunication Union, my warmest congratulations and sincerest wishes for a prosperous future to the International Amateur Radio Union which is celebrating its fifty-third anniversary this year.

You can now look back on more than fifty years of intense activity which, through disinterested research and sound scientific studies embracing the entire radio frequency spectrum, has made an appreciable contribution to the progress of radio communication.

This half-century of international co-operation has forged a chain of human brotherhood between all those who, by inclination or through dedication, have devoted or are devoting the greater part of their leisure time to seeking human contact over continents and seas, and beyond differences of language, nationality, religion and political systems.

The millions of chance contacts which have occurred during this period have been instrumental in saving many lives, thus making the International Amateur Radio Union one of the most useful and dynamic organizations when it comes to helping to save individual lives or the lives of many in natural disasters and catastrophes.

You will, therefore, readily understand, Mr. Chairman, how much I, as Secretary-General of the ITU, appreciate the pleasure and honour of taking part with you today in this closing meeting of your triennial Convention."

Ladies and Gentlemen,

It is hardly necessary to remind you that the amateur service is one of the oldest radio services, for there have been radio amateurs since the very beginnings of radio. In 1925, amateur radio was organized as a service in connection with the first regular sound programme broadcasts, at a time when the use of radio links for the Maritime Mobile Service was already widespread.

Thus considering the very special place which the amateur service enjoys in the general body of radio services recognized by the ITU, the pleasure I feel at being among you is perfectly understandable.

Your amateur service is defined in the Radio Regulations as a service of self-training, intercommunication and technical investigations carried on by amateurs, that is, by duly authorized persons interested in radio techniques solely with a personal aim and without pecuniary interest.

This service is, hence, recognized as having two lofty missions:

First, to instruct, that is to say to take part in the training of those who, in any capacity, bear responsibility for the operation of radio services.

Second, to engage in disinterested research, in order to deepen our knowledge of such matters as the mechanisms of wave propagation.

It is therefore with the greatest satisfaction that we acknowledge the fact — and a most important fact — that radio amateurs have followed very closely the various developments brought about by the use of every higher frequencies or by new techniques, such as space communications. Several thousand amateur radio enthusiasts have already made use of satellites (in particular, OSCAR 6 and OSCAR 7) and their observations will undoubtedly help to enhance our knowledge of the phenomena involved.

I will mention briefly, since it is well known (I would even say it is perhaps the aspect best known..."
to the general public), the part played by radio amateurs in emergency control of nature, or in the event of natural disasters or catastrophes; the use of high frequencies in this sphere is so much a matter of common knowledge that there is much to which we need to dwell upon it.

But the role of amateurs in technical training seems to be little known for all its great importance. Since 1959 to deal with the radio frequency separation for the World Administrative Radio Conference to be held in 1979. We cannot, in my view, have a world-wide gathering of amateur radio fans.

I would like then to suggest if at all possible that at least half the transmission put to air be in ITU Morse. 

Yours faithfully,

Peter Dor.

12 Bailey Street,
Bainsdale 3875.

Dear Sir,

I am writing to correct certain rumours about production of the Atlas 350XL Amateur Band Transceiver. One of our so-called reputable dealers for multifarious brands of equipment has seen fit to state that the 350XL has been withdrawn from production. As an Atlas dealer I must state that this is simply not true. Earlier this month I received two 350XLs from California and by the time this print they will be in their owners hands. Atlas are, however, concentrating on production of a new, third, and cheaper model and, being a Small company, have delayed production of the Atlas 350XL while building up stocks of the small new model. All three models will continue to be available in future.

Another matter deserves clearing up. There is no sole Australian distributor for Atlas. The company has appointed only dealers in Australia all with similar buying rights.

It is notable that this misleading and deceptive publicity did not appear in “Amateur Radio” magazine.

Yours sincerely,

Edwin R. Rooms, B.Comm. (Melb.) VK3NRR/Z??, Yachtmaster, Dealer for Atlas Radio


P.O. Box 173,
/she Tiller Avenue,
Bairnsdale 3875.

Dear Sir,

I am a regular listener to the nightly CW transmission to further my knowledge to obtain the NOACP.

I would like to thank the people who make this possible and the effort they put into this.

However, in short, I would like to make a suggestion. Like myself, many others have now passed their previous exams and have failed because of ITU Morse being used, as the nightly Morse is meant for the learners.

I would like then to suggest if at all possible that at least half the transmission put to air be in ITU Morse.

Yours faithfully,

Frank Robinson VK3NHH.

13 Bowler Street,
Hobbrook, N.S.W. 2644.
22/12/78.

The Editor,

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22/12/78.
IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC

CONTESTS

Wally Walkins VK2ZNW/NGU
Box 1065, Orange 2800

March:
3/4 ARRL DX PHONE CONTEST
10/11 COMMONWEALTH WEALTH CONTEST
17/18 ARRL DX CW CONTEST
24/25 CQ WW WPX SSB CONTEST
24/25 BARTG RTTY CONTEST

April:
7/8 POLISH "SP" CW CONTEST
21/28 POLISH "SP" SSB CONTEST
28/29 DUTCH "PACC" CONTEST
28/29 SWISS "H 26" CONTEST

HELVETIA 26 CONTEST
April 28-20, 1500-1700 UT.

Rules: All bands 1.8-28 MHz. CW or phone. Exchange: RS(T) + serial from 001. Swiss stations add the Canton abbreviation, e.g. 57(9) 001 ZH.

Score: Each contact with a HB station counts 3 points. Each station can be worked once per band, either on CW or phone. The multiplier is the sum of the Swiss Cantons worked on each band, making a possible of 26 per band.

Logs to: TM USKA K. BINDSCHEDLER, HB8MX, Strahlwegweg 28 8400 Winterthur, Switzerland, postmarked not later than 30 days after the contest.

1979 CALL BOOK

The next issue of the WIA Amateur Call Book is now under consideration. Up to date information of the various clubs are required urgently. Kindly forward details to the Editor (Call Book), P.O. Box 2611W, Melbourne 3001, by 30th April 1979.

HAMADS

- Eight lines free to all WIA members.
- Copy In typescript please or In block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

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EASTERN AND MOUNTAIN DISTRICT RADIO CLUB WARC DONATION

David Wardlaw VK3ADW(L), the WIA Federal President, scarcely believes his eyes when receiving a cheque for $1000 from Tony King VK2KQO, President of the EM & DRC. It is pleasing to record this most generous donation, and note the Club's recognition of the WIA effort at the conference.

Photo by Bill Rose VK3ZMI.
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ONE OF THE KEYS TO AMATEUR PARTICIPATION IN THE WARC

The WIA, mindful of the proximity of the WARC, has launched, in addition to members of the Institute and individual non-member amateurs, an appeal to those suppliers of amateur equipment advertising in "Amateur Radio", asking them to give us assistance towards bearing the financial burden of the Amateur Service WARC expenses.

The WIA has urged its members to support our advertisers. We are now asking them to support the Amateur Service's WARC effort. An effort aimed at preserving a future viable Amateur Service.

We are sure that direct representation at the Conference itself, and at all the preparatory meetings, is the most effective way to support the cause of Amateur Radio, and as a consequence have been deeply involved.

From experience I know that no matter how favourably disposed, and how well meaning any administration is, there is no substitute for an actual representative being present. He can make sure the position as agreed by the Administration is pursued and extolled to the utmost.

I know that you as members of the WIA agree as can be seen by your financial backing and also your messages of support.

Again, it is this presence at the Conference, at meetings before the Conference, and probably at meetings after the Conference, that is the single most important factor in providing support for the Amateur Service.

Expenses have already been incurred with the participation of amateurs as members of the Australian delegation to the Special Preparatory Meeting of the CCIR.

It has been said that if Australia had not presented a paper, and if no amateur had been a member of its delegation, the satisfactory result obtained might well have been different.

It is therefore heartening to be able to report in this issue the early generous support of five of our advertisers.

Each month for the next twelve months, an updated list of our commercial advertising "WIA WARC Fund Supporters" will be published in "Amateur Radio".

I would also like to thank the Eastern and Mountain District Radio Club of Melbourne for their magnificent donation of $1000 to WARC funds, made at their annual general meeting early in March.

It is support like this that makes those involved in preparations for the Conference feel that all those hours of work are being appreciated.

David Wardlaw VK3ADW

Federal President.
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Mr. J. J. L. Martin VK3ZJC.
Mr. K. L. Phillips VK3AUQ.
Mr. W. M. Rice VK3ABP.
WIANews

The meetings of Executive during February were taken up largely on 1979 Federal Convention business.

The following Agenda Items (reported very briefly) for this Convention had been received up to the time of writing this —

FROM VK4
1. Executive to report on progress of negotiations for official morse tests at higher than 10 w.p.m.
2. Executive to ask P. and T. for 2 monthly morse code exams for all grades.
3. Executive to ask P. and T. lor 3 monthly theory and Regs exams for all grades.
4. Executive to ask P. and T. for "out of hours" exams if the need arises.
5. Executive to report on TV Ch. 5A and 0 situations.

FROM EXECUTIVE
1. Discuss draft regulations for affiliation of Australia-wide amateur organisations.
2. Discuss a standardised membership proposal form.
3. Discuss best methods of disbursing or using the $3500 proceeds from Dick Smith’s sale.
4. Discussions on WARC 79 progress and IARU matters.
5. Discuss 10 metre beacon situation.
6. Outstanding repeater items.
8. Discuss "Handbook" revision.

The Executive decided to invite the Minister for P. and T., Mr. A. A. Staley, to address the Convention. It was also decided to invite Mr. Ron Henderson VK1RH, the Federal WICEN Coordinator, to attend the Convention as part of the Executive group.

CHANNEL 5A
Letters from the Minister of P. and T. to other Parliamentarians towards the end of last year indicate that TV Ch. 5A “is currently allocated to four television stations and seven translators throughout Australia”. He recognises that the use of this channel does not accord with international practice but its more extensive use in recent years was due to increasing demand for TV services and re-allocation arising out of FM broadcasting.

As far as the Institute is concerned this is 4 stations and 7 translators too many. The point was made by the Minister that interference to amateur radio operations had been able to be resolved by means of special technical arrangements. Nothing was said about the reverse situation and it is this point which is exercising the VHFA C as well as the post WARC 79 situation.

In his opening speech for the Queensland 1978 Convention in mid-October, Mr. D. Jull, M.P., Member for Bowman and Secretary of the Communication Committee in Federal Parliament, is reported as saying that the decision for Ch. 5A to be used in metropolitan areas has been completely shelved and won’t happen. He is also reported as saying that a Departmental investigation is under way to eliminate those areas using Ch. 5A for translators too many. The point was made by the Minister that a Departmental investigation is under way to eliminate those areas using Ch. 5A for translators too many. The point was made by the Minister that Melbourne Ch. 0 will soon be going to Ch. 10 and a similar announcement about Brisbane 0 was also expected. The former has now been verified correct.

Nothing was known about the use of UHF for TV except for ethnic television as set out in the Media Release 78/18 of 20th September, 1978.

For us it is fortunate that Ch. 5A affects some other services, not only the amateur service.

JOINT COMMITTEE
A meeting of the Joint P. and T./WIA Committee was held on 21st February. An AOCP Theory exam syllabus was announced as ready for discussion with the Institute.

If this is to be adopted early, the expectation was that the August AOCP Theory exam would be multi-choice.

Revised sample papers of the multi-choice Regulations Exam and the Novice Theory exam were ready for incorporation in the new Handbook. Copies were handed to the WIA.

Clarification was given about corrections made in amateur morse sending exams. A total of 10 seconds extra is granted where a candidate properly corrects any errors. Indications are that there were some problems associated with the Novice morse exam in February.

The introduction of a lower licence fee for pensioners is still held up in Canberra. A review is to be undertaken of the Amateur Advisory Committee service. An examination of the input material for the Call Book is being made. The WIA proposal for longer term (and it is hoped cheaper pro rata) amateur licences is still held up awaiting the new Radio Act which might possibly see the light of day later this year.

According to reports, the refusal to permit amateurs to use the 50-52 MHz portion of the 6m band outside Channel 0 areas stems directly from the broadcasting service.

Nothing further appears to have happened about the suggestion of controls over the acquisition by anyone of transmitting equipment although this question is understood to be in the hands of the Department of Business and Consumer Affairs which relates to the Trade Practices Commission. Without a visit by Royalty no consideration will be given to the use of the “AX” suffix by VK6s during their 150th anniversary celebrations.

SAA
The Institute is now represented by Mr. K. C. Seddon for the WIA, on the Draft Standard for Public Review DR78102 meetings. This relates to the sitting of radiocommunication equipment.

WARC 79 DONATIONS
A panel elsewhere in this issue commences the list of donations most gratefully received.

LIFE MEMBERS
It is with great pleasure that news of Dr. David Wardlaw’s Hon. Life Membership of the Victorian Division was received. Another very hard worker for the amateur cause was likewise deservedly honoured — Mr. Keith Roget.

MEETINGS
EXECUTIVE
On 8th February — almost wholly on Federal Convention matters. EXECUTIVE, again on 22nd February — noted apology advertisement in local newspaper, discussions on Federal Treasurer vacancy, appeal for WARC79 donations from commerce, Convention Agenda Items, Joint Committee and Handbook matters, 1979 RD Contest opening address by President of IARU, CCIR Seminar in Sydney, inability to express an opinion without members’ views on sale of alpha membership computer records, inserts into AR by mailing service.

PUBLICATIONS COMMITTEE
On 6th February — continuing dearth of photographs, especially front cover photographs, discussions on production of Great Circle Maps, WIA stickers, new Log Books and other routine matters.

PROJECT ALERT
Proceeding satisfactorily as reported elsewhere. Meetings held 18th January and 7th February.
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Listed is our well-known series of 9 MHz crystal filters for SSB, AM, FM and CW applications.

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<table>
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<th>Filter Type</th>
<th>XF-9A</th>
<th>XF-9B</th>
<th>XF-9C</th>
<th>XF-9D</th>
<th>XF-9E</th>
<th>XF-9M</th>
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<td>5.0 kHz</td>
<td>12.0 kHz</td>
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<td>&lt;2 dB</td>
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<td>&lt;3.5 dB</td>
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<td>500</td>
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<td>$59</td>
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<td>$41</td>
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In order to simplify matching, the input and output of the filters comprise tuned differential transformers with the “common” connections internally connected to the metal case.

Registration Fee: $3.00; Air Mail: 3½¢ per ½ oz. Shipping weights: Filters 2 oz. ea. Crystals ½ oz. ea. All Prices in U.S. Dollars.

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- XF902 LSB 9001-5 kHz $4.75
- XF903 BFO 8999-0 kHz $4.75
- F-06 Crystal Socket (HC25/u) $50

Matching FM Crystals
- XD-90-01 -5 kHz -40 mV/kHz $27.80
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- XD-90-03 -12 kHz -50 mV/kHz $27.80

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GETTING ON TO 160 METRES

Remember the saying, "We will stick them on 200 metres and below — they will never get out of their backyards with that".

Well, that was in the early era of amateur radio — sometime around the 1910s — an era when amateurs were able to use the entire unwanted range of frequencies called the medium and short waves.

Here only 60 kHz remains on the only Medium Frequency allocation available to amateurs in Australia today. From 1.8 to 1.860 MHz — the lowest frequency available for amateur exploration — it’s still possible to experience the thrills and conditions which many of our original amateurs encountered in days gone by.

THE UNIQUE CHARACTERISTICS OF 160 METRES

Being the lowest frequency available for amateur use, the 1.8 MHz band is least affected by the ups and downs of the 11-year sunspot cycle which is responsible for the extensive variability common at higher frequencies.

Occasionally, when solar activity is particularly low, it may not be possible to contact stations within several hundred kilometres during the evening or nighttime hours on the 80 metre band.

During such times, when skip zones exist on 80 metres, 160 metres becomes the only band available to maintain short-skip nighttime contacts say between Sydney and Canberra.

1.8 MHz has been known to provide more effective communications within limestone caves than any other amateur band.

One of the unique day-time aspects of 160 metres is the excellent groundwave coverage which can be achieved using fairly low power. In the United Kingdom, even though power is restricted to 10 watts on AM and 26 2/3rd watts PEP on SSB, 160 metres (or "top band" as it’s known) has become as popular for local day-time communicating as is the 2 metre band here in Australia.

A coverage up to 150 miles can be obtained with significantly less mobile flutter than one would experience on 2 metres VHF (direct). Groundwave coverage on 80 metres (i.e. the useful range of waves following earth’s curvature) is only around 90 miles.

160 METRES OR AROUND THE WORLD

In Australia, we are lucky in that there exists no power restriction on 160 metres.

But we are unlucky in that we only have use of 60 kilohertz, whereas countries such as the United Kingdom and the United States have the use of 200 kHz from 1.8 MHz right up to 2 MHz.

New Zealanders only have 35 kHz from 1.803 to 1.813 MHz and from 1.875 to 1.900 MHz.

Would you believe the Japanese have just 5 kHz from 1.9075 to 1.9125 MHz?

Yes,— once you get involved in 160 metres — it is easy to understand why amateurs around the world are keen to retain even a few valuable kilohertz in this part of the radio spectrum.

WHAT'S DIFFERENT ON 160M FROM THE OTHER BANDS?

Home-made equipment for one. Yes, on 160m it’s possible to take your old mantel radio apart and build up your own transmitter and adjust your broadcast radio receiver to work on 160 metres.

AM for another. This reflects the sprinkling of home-made sets which operate on this band.

In Sydney small transistor radios are often modified to allow people to tune into the regular WIA 160 metre news broadcasts which can be heard twice each Sunday at 11 a.m. and 7.30 p.m. on 1.825 MHz. AM — so Short Wave, or should we say Medium Wave, listening is another aspect of the 160 metre scene.

The challenge of making up small 4 or 6 foot mobile antennas for 160 metres or trying to fit a 250 foot half-wave dipole in your backyard is another.

Facing the DX challenge as did Marconi — you’ll have fun trying to work the United States in the early evenings or the Europeans just before sunrise.

How often do you find home-brewing, AM, active SWLing, challenging DX existing today as it did in years gone by?

In many ways 160 is a fascinating remnant whose history goes back to the beginning of our hobby. When you get on to 160 you’ll soon sense through your contacts as well as in the various overseas magazines that dedication which 160 metre enthusiasts share the world over.

WHAT GEAR TO USE ON 160 METRES

Several multiband transceivers only cover 80 through to 10 metres. How can 160 metres be added?

For the mobile explorer where can one get a 12V transistorized 160m transceiver?

For the novice who just got his or her full amateur licence, what’s the easiest way to get on to 160?

The answer...

MODIFY THE DICK SMITH 80 METRE TRANSVERTER ON TO 160 METRES

The Dick Smith transverter was designed to be connected on to any CB radio, allowing the new novice an inexpensive way of getting on to the 80 metre band.

The transverter, which comes in the form of a kit, can be built up in a few hours and allows you to transmit or receive on 3.5 MHz with the use of any 27 MHz transceiver. Power output is 10 watts AM and 30 watts on SSB.

Lots of novices now have upgraded to a commercial multiband transceiver and are wondering what to do with that transverter? Easy, modify it for 160.

Need a mobile for 160? Build up the transverter.

Want to add 160 to your home station? Then you’ll find that the transverter will work just as well from 10 metres as it does using an 11 metre source (simply change the crystal in the transverter).

HOW DOES THE TRANSVERTER WORK?

As well as modifying this transverter for the 160 metre band, novices who have just got their full licence should be able to experiment with capacitor and coil values to add 40 and 20 metres.

Novices wanting some gear for 15 metres can likewise experiment to come up with an inexpensive set-up on that band.

Those wanting a small mobile on any of the HF bands may also find this information suggests possibilities.

The ultimate, one would imagine, would be to work all HF bands using this transverter to a simple CB unit — this would surely be the most inexpensive multiband transceiver out! Adding a VFO to the CB unit would make it comparable to commercial tuneable systems. Maybe homebrewing can still be an economic proposition!
THE 80 METRE RECEIVER SECTION OF THE TRANSVERTER

In the mixer stage (see Fig. 1) (3.555 is added to 23.570 to produce the signal at 27.125 MHz). In this way it is possible to receive on 2.5 MHz by selecting different channels on the CB radio.

THE 80 METRE TRANSMITTER SECTION OF THE TRANSVERTER

In the mixer stage (see Fig. 2) (27.125 is subtracted from 23.570 MHz to produce 3.555 MHz). In this way it is possible to transmit on 80 metre frequencies by selecting different channels on the CB radio.

MODIFICATION DETAILS FOR 160m

To get the transverter on to 160 metres we must first change the crystal in the local oscillator.

The new crystal required is 25.3 MHz if you are using a CB transceiver.

On Receive
1.825 + 25.3 produces 27.125 MHz.

On Transmit
27.125 — 25.3 produces 1.825 MHz.

The crystal required is 26.635 MHz if you are using a 23 channel 10 metre or multi band 80 to 10m transceiver on the 10 metre band tuned to 28.460 MHz.

On Receive
1.825 + 26.635 produces 28.460 MHz.

On transmit
28.460 — 26.635 produces 1.825 MHz.

The 5 channels obtained on 160 using CB or 10 metre channelized sets are:

<table>
<thead>
<tr>
<th>Channel</th>
<th>Australian CB</th>
<th>Frequency (MHz)</th>
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<tr>
<td>12</td>
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<td>13</td>
<td>9</td>
<td>1.815</td>
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<td>14</td>
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<td>15</td>
<td>11</td>
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<tr>
<td>16</td>
<td>12</td>
<td>1.855</td>
</tr>
</tbody>
</table>

This channel system is centred on 1825 kHz which is where most of the WIA broadcasts are conducted as well as being a popular listening and calling channel.

The transverter kit contains two printed circuit boards — the exciter/receiver board and the power amplifier board.

MODIFYING THE EXCITER/RECEIVER FOR 160 METRES

(1) You have replaced the crystal. Tune oscillator coil L5. One or two coil turns can be removed if this is found necessary. (See Fig. 3.)

FIG. 3: Location of L5 in the Oscillator Circuit of the 80m Transverter.

(2) Add 300 pF across the existing 330 pF capacitor which is part of the 0.0022 uF divider network located at the input of L2 and the MPF121 (TR1) mixer. (See Fig. 4.)

FIG. 4: Existing 330 pF Capacitor In the 80m transverter.

Set your receiver to 1825 kHz and, with a signal generator tuned to that frequency, adjust L2 and L1 (the 27 or 28 MHz receiver output coil) for maximum reading on your strength meter.

TUNING THE EXCITER

(3) You should be able to adjust coils L4 and L3 for maximum power output as indicated by the current panel meter on the transverter. (See Fig. 5.)

No change was found necessary to the 470 pF capacitor associated with L3 or to the 330 pF capacitor associated with L4. These could be increased in value if your coils do not peak fully.

FIG. 5: Capacitors referred to above as located in the 80m transverter.
MODIFYING THE POWER AMPLIFIER FOR 160 METRES

(4) Add one more turn to the primary of coil T4 (i.e. 7 turns instead of 6). This is the PA output toroid. (See Fig. 6.)

FIG. 6: Location of Coll TA in the 80 metre transverter.

USING THE TRANSVERTER ON BOTH 80 AND 160 METRES

The modifications above will still permit you to operate on 80 metres.

An on-off switch with several rows of three contacts can be added to the front panel of the transverter just next to the manual transmit-receive switch.

With a flick of this switch you can switch in your new 160 metre local oscillator crystal, coil L2 and coil L3 both peaked for maximum performance on 160 metres. (See Fig. 7.) Both these coils can be mounted on tag strips just next to the original coils L2 and L3, which are tuned to 80 metres.

One end of each pair of coils and crystals is connected together. The other connections go to each end of the multi-contact switch. The common connection goes to the centre position on the switch.

Now you can operate on either 80 or 160 metres at the flick of a switch.

FIG. 7: Connecting Coils L2, L3 and Crystals to allow Switch selection of either 160 or 80 metre operation.

Coil L4 can be tuned for maximum output on 160 metres. The output on 80 metres should be quite reasonable.

RESULTS

For about a year I have been using a 23 channel Hygain V on 11 metres feeding the Dick Smith transverter modified on to 160 metres to relay the WIA broadcast around Sydney in the mornings and interstate in the evenings on AM.

It is certainly quite a reliable and exciting type of set-up. It is great not to have to say "the rig here is a 101 into a . . . etc." I can always be assured of interesting contact on 160 when I say "the rig here is a modified CB set".

ANTENNAS

It is easy to put up an antenna on 160 metres! What! You say you can't fit a half wave 250 foot length of wire in your backyard!

Well, that's what I thought, but when I made my first QSO with Queensland using an 80m dipole I thought "I wonder — if I only had a 1.8 MHz dipole — I wonder".

Make up the dipole and run it up and down trees, along your fence, don't worry about having ninety degree bends or turning sharply. My antenna is full of all of...
these! It's only an average of 12 feet off the ground and lots of it lies on my house roof (actually 6 inches above it).

The results. Would you believe $6 in Canberra and Victoria and Queensland using only ½ a watt PEP! That is my consistent report at different times with different stations. And on full power it is an S9 (no worries!).

So I have discovered the secret why even though 160m is the only band in the UK with a severe power restriction it is so popular. It's a matter of low power into a decent antenna equating excellent coverage.

To adjust the SWR just take a foot at a time off both ends of the dipole. Using no balun I have consistently bettered 1.5 to 1.

160 METRES AND TVI
There is no TVI or other problems. In fact using the TV isolation transformer in the December 1977 issue of AR on my TV set, I find that 160m is about the only band which won't give me any TVI problems (even driving my linear to 400 watts PEP).

Whereas, using the same set-up on 80m, I get TVI with only 5 watts of RF!

If you want to get away from TVI—

1. Try the AR isolation transformer.
2. Move as far away from the TV frequencies as you can.
3. Avoid the frequencies which resonate with the wire length interconnecting stereo gear.
4. Join us down on 160m. It is as low as you can get riding that giant 160 metre long wave.

See you on the Medium Waves!

FOR MORE INFORMATION
See the article entitled “A solid state 27/3.5 MHz transverter” in Electronics Australia, April 1976.

QSP

DIGITAL

"The mere mention of the word in promotional literature for a piece of gear suggests state of the art and associated high sales. Unfortunately, digital readout offers only greater precision as opposed to analog readout systems. The accuracy of a readout is determined by the scheme used for the measurement and the quality of the measurement equipment, not by the medium (digital or analog) itself. What good are five digits of readout if the accuracy is low enough that the last two digits don't mean anything?

If a highly accurate means of measuring is employed in a digital readout system, a totally different situation exists. Full advantage of the greater readout precision can be taken, and readings "down to a gnat's eyebrow" are possible, with far greater ease than with an analog system."

—From QST September 1976.

YU PREFIXES

According to Rl News of October the Yugoslav Administration has allocated YU and YT for regular use by amateurs and YZ, 4N and 40 for special occasions. YU1 is the prefix for the Serbian Soc. Republic, YU2 for Croatia, YU3 for Slovenia, YU4 for Bosnia and Herzegovina, YU5 for Macedonia and YU6 for Montenegro. YU0 is allocated for SRJ (the amateur radio society) HQ and special stations. The autonomous provinces of Vojvodina and Kosovo use the YU1 prefix. Up till 1974 foreign visitors were allocated call signs in the YU7 series with three letter suffixes, commencing with the letter L. Now, foreign visitors use their own call signs with the addition of the prefix of the Republic in which they are operating. Suffixes AAA-KZZ are allocated to club stations.

THE Q CODE

Reading a short article in July 1978 QST triggered the thought of how we amateurs use the Q code. Yes, we do use many of the Q signals to indicate a condition rather than strict adherence to the rule book, which says that QRP means "Shall I decrease power" and QRP simply means "Decrease power." To use QRP means low power and QRO high power. In much the same way that we have adapted the Q code for our own use in such examples as QRM meaning interference, QRN static and other noise pollution, QSO being a contact, QTH a location, QSP a message, QRT closing down, QSY frequency change, ORZ call again, and so on. These are the day to day practical applications of the Q code which you could hear on any band from anywhere, but such answers might not get you many marks in an exam question.
A 10/11 METRE DIRECTION-FINDING LOOP AERIAL

The DF loop is a reasonably simple antenna system which exhibits a figure of eight pattern in the horizontal plane together with vertical polarisation. For receiving purposes it is not necessary to match the very low radiation resistance of the loop. The induced signal voltage is the principal interest and this may be maximised by resonating the loop and feeding the receiver via a high impedance amplifier.

The loop shown in Fig. 1 uses an FET push-pull amplifier, whose output is passed through push-pull emitter followers and a small ferrite balun. During early experiments a dual source FET stage was used, but this was discarded due to its inherent instability under certain tuning conditions. The output of this DF loop is very little less than for a full quarter wave whip.

The loop is constructed from a piece of PT29 75 ohm coaxial cable. The shield of the cable is split in the middle so as NOT to form a shorted turn. The shield forms a Faraday Screen as well as performing as a balanced tuning capacitor. Using 75 ohm coax with its lower capacitance as compared to 50 ohm coax enables a larger loop to be made.

The PT29 is %in. OD and is self supporting. To make the loop a length of 3 feet or 1 metre is obtained. The outer jacket is cut back %in. to %in. at each end and a 1 in. length is removed from the centre of the cable. This 1 in. piece must be symmetrical about the middle of the length. Tin the exposed braid, taking care not to melt the insulation. When cool cut away the last inch of tinned braid and polythene insulation from each end of the cable, thus exposing the inner conductor. Rotate the cable under the knife when cutting so as to get a clean even cut. Mark the exact centre of the cable and cut around the circumference so as to remove the centre 1/16 in. of the braid. As the braid has been tinned a hacksaw may be used. Be careful not to cut too deeply into the insulation.

A piece of Insulating tubing should be slid over the centre and taped in place so as to exclude moisture from the break in the sheath. The loop is now formed into a circle and put aside until the amplifier and its housing have been completed.

The amplifier may be built on either a printed circuit board or a scrap of vero-board or matrix board. The layout should be reasonably symmetrical as the device depends on symmetry to work well.

The loop is tuned by the electrostatic screen and a small trimmer capacitance to give a convenient peaking adjustment. Trimpot R3 in the source circuits of the push-pull amplifier is used to balance the operating point of the two FETs. Earlier versions used twin balanced FETs but the present system is more convenient. Adjust the drain voltages to equality.

The balun is relatively non-critical and a trifilar winding of 7 turns on a small Q2 toroid has been found to be satisfactory.

The amplifier must be mounted in a small metal or plastic box to protect it from the weather. Small plastic soap boxes, diecast boxes or plastic electrical junction boxes are all suitable. The loop is passed through two holes in opposite sides of the case, secured and connected to the amplifier.

When power is applied it should be possible to tune up on receiver noise or on a signal.

In use an attenuator between the loop and receiver is useful as it is necessary to reduce the signal considerably in the final stages of a hunt. Both RF and IF gain controls in the receiver will be found extremely useful.

A simple field strength meter can be connected to the loop for use on the final pedestrian part of a hidden transmitter hunt.

A protractor may be used for direction readout and should be mounted as accurately as possible. An accuracy of better than 5 degrees is possible — much better than is usually possible on 2 metres.

To obtain sense information and thus remove the ambiguity of the loop bearings a sense whip should be connected as shown in Fig. 2. This scheme is rather touchy on this frequency and the pattern tends to vary somewhat. The author prefers to take several bearings from different spots and plot them on a map.

![FIGURE 1](image_url)

![FIG. 2: Sense Coupling](image_url)
AN INEXPENSIVE AMSAT OSCAR 8 MODE ‘J’ RECEIVER PRE-AMPLIFIER

Many users of OSCAR 8 are discovering that their receiving converters lack sufficient sensitivity (have poor noise figures) to hear the Mode J signals. Most of this deficiency can be overcome with a low-noise pre-amplifier added ahead of the existing receiving converter. Such a unit, which is inexpensive, easy to build and will compete quite favourably with more expensive devices and circuits will be described herein.

PRE-AMPLIFIER DESCRIPTION
This article will not dwell on the AMSAT-OSCAR 8 Mode J output, etc. Suffice it to say that a reasonable 435 MHz antenna gain of 10-15 dB, a feedline loss of 2-3 dB maximum, and a noise figure of less than 3 dB should be sufficient for most operation. A lower noise figure will further improve performance, but a point will be reached when it will no longer be “cost-effective”.

The pre-amplifier to be described is an inexpensive version of the “Ultra Low-noise UHF Pre-amplifier” (Ref. 1), a unit which has been used world-wide, especially on 70 cm EME. The original circuit used a $46.00 transistor which is no longer available but yielded a 1.25 dB typical noise figure with 15-16 dB gain. By making a few small circuit changes, a less expensive transistor can be used. The Motorola MRF 904 costs approximately $2.00 and in the modified circuit will yield a typical gain of 12 dB with a noise figure of 1.75 dB. The Motorola MRF 901 (and probably the BFR 91) now cost approximately $1.50 and will yield a typical gain of 14 dB with a similar noise figure. The latter device used to cost between $6.00 and $9.00.

Looking at the circuit in Fig. 1, you will note the similarity to the original circuit; the zener diode and biasing, hot carrier diode input protection and the simple matching. The MRF 901 and MRF 904 transistors did not require any input inductor for noise figure matching. By using an output network as shown, the gain on these devices was increased and the frequency response was shaped for a broad (350-450 MHz) peak response, but with essentially a flat response at 20-450 MHz.

As in the original article, the pre-amplifier should be constructed with the components as shown. Failure to use the hot carrier diode (do not substitute germanium or silicon switching diodes) limiter will increase the noise figure and could lead to destruction from stray RF or electrical discharge. A simplified RF choke is also shown. The 5.0 pF output capacitor is tailored with the 20 ohm resistor and L2 for peak performance at 420-450 MHz and substitution of other values is not recommended if adequate gain and stability are to be attained.

Note the lead configuration on the MRF 901 and 904. Do not ground these devices with extremely short leads. The extra lead inductance as shown will improve stability and input VSWR and will be described in detail in a forthcoming article. Other transistors may be used, but the author will not guarantee similar performance. Don’t forget the 0.1 MF bypass on the +12 volt line since it bypasses any stray RF (such as a local HF kW transmitter) which could lead to catastrophic burnout.

INEXPENSIVE 70 cm LOW-NOISE PRE-AMP WITH MRF901 OR MRF904
Gain: 12-14 dB typical.
Noise figure: 1.75 ± 0.25 dB.
C1 — 50 pF dipped Mica.
R2 — 20 ohm, ¥ watt.
C2 — 5.0 pF dipped Mica.
CR1 — Hewlett Packard 5082-2810 or equivalent.
L1 — Deleted.
L2 — 3T No. 24 on 1/10 in. ID Space Wire diameter.

RFC 1 — 0.47 uH Nytronics decoupler or 157 No. 32 AWG enamel covered copper wire on 1/10 in. ID Spaced Wire diameter.

Notes:
1. Mount transistor as shown in Fig. A with leads just touching PC board (see text).

Reproduced from the “AMSAT Newsletter” June 1978.
WICEN OPERATIONS IN SOUTH AUSTRALIA

Ian J. Hunt VK5QX
Vice-President/Federal Councillor,
South Australian Division

The VK5 Division has, in common with the other States, for quite a number of years supported and encouraged the activities of the Wireless Institute Civil Emergency Network (WICEN).

This organisation is made up of volunteers who are prepared to make available both their equipment and operating expertise for assistance in any emergency requiring radio communication which may arise in the community.

Needless to say, in implementing a scheme such as this a fair amount of organisation and training of members of the WICEN group is necessary if such a group is to be really useful. To this end training classes in such subjects as message handling procedures, map reading, observation, etc., are carried out from time to time. Regular weekly nets or "call-backs" are also instituted both on high frequency and very-high-frequency channels to keep members in touch and pass on items of interest.

EXERCISES
Some operations within the WICEN group are carried out from home stations, however when considering the nature of emergencies which are likely to arise it becomes immediately evident that in many cases the requirement exists for portable and mobile operation.

To supplement the previously mentioned training field exercises are arranged as convenient.

Such exercises may take the form of simulated message handling, some times in conjunction with a State Emergency Service (SES) exercise, however it has been found, at least in this State, that members of WICEN react more favourably and feel that they are pursuing a more useful role if the exercise can be allied to a definite purpose.

To this end it has been possible to obtain permission from the authorities within the Postal and Telecommunications Department to conduct exercises as communications support for other deserving community activities such as "The Walk Against Want" and the "Good Neighbour Council" Australia Day Fair which occur annually.

FOREST CAR RALLY
One major event for which we have been able to obtain permission to assist with communications as an exercise over the last two years is a "Forest Car Rally". This event, which covers an extremely large area, provides by its very nature probably the most valuable type of exercise which we can undertake as a WICEN exercise.

This Rally is organised and controlled in the motoring aspects by volunteers from a number of car club enthusiasts around Adelaide, and has come to be recognised as a major event on the sporting car calendar by the motoring public, including in it such well known competitors as Colin Bond, Peter Brock and other leading Australian Rally drivers, plus some overseas competitors. Although the event does receive some sponsorship from commercial organisations it is run on a non-profit basis, costs are kept to a minimum and in fact expenses in staging the events are usually only just covered by the sponsorship obtained. Thus we feel we can still assist such an activity and retain the recognized status of Amateur Radio as not becoming associated with a commercial venture.

The main reasons for the preparation of this article is, however, to describe for your interest the amateur radio activities associated with the support of the Forest Rally as the major item of WICEN exercises held in South Australia. However, at this stage a general description of the event is called for.

The Rally for 1978 covered three distinct stages or Divisions. Division 1, held on the Saturday during daylight hours, comprised a run for the competitors from the marshalling point at the Torrens Parade Ground in Adelaide through the north-eastern suburbs to the Mount Crawford Forest area approximately 50 kilometres north-east of the city. The distances actually travelled were of course greatly in excess of this. Once in the Forest area some extremely tricky and at times even hazardous road conditions were met by the competitors. Thus, whilst the main basis of the exercise was message handling practice by the passing of scoring information, it also provided a readily available communications network should some aspect of safety, accidents, etc., arise during the event. This year conditions were made extremely difficult due to some heavy falls of rain on the days preceding the Rally, resulting in slippery dirt roads, washaways, bogs and surface water on the competitors' route.

Upon completion of Division 1, the cars, such as were able, returned to the Torrens Parade Ground to then attempt the Second Division to be run throughout the night. This section covered a distance south from Adelaide down through the hills and valleys of the Fleurieu Peninsula, where the cars again ran into extremely difficult conditions.

Division 3 of the Rally, which took place during the daylight hours of the Sunday, was virtually a repeat of Division 1 so as to "sort out" such of the competitors who may have made it through the first two Divisions without loss of points. This time through such an approach probably wasn't necessary as none of the competitors could possibly have managed such a feat in the prevailing conditions.

So much for the automobile aspects of this event.

COMMUNICATIONS NETWORK
It can be seen, however, that an event such as this made various demands on the WICEN organisation.

Firstly a communications network had to be set up to cover fairly large distances overall and thus requiring the use of both high-frequency and very-high-frequency stations. Secondly the commitment had to be made to operations extending continuously over a period well in excess of 24 hours. Both these requirements comprise an ideal situation for a major exercise. In some cases installation of equipment at control stations began on the Friday evening, and in the case of the Forest Control Station the operators

In caravan, Steve VK5ZSD at TTY machine. Note paper behind TTY.
camped on site for the whole of the weekend.

Now for a description of the networks involved.

Along the route, as is normal with this type of event, were various check points. On Division 1 there were 10 major check points at which radio communication was required. At these check points operators were stationed equipped with VHF mobile and portable radio to communicate with the net control station located in the Mount Crawford Forest.

The network control station was also equipped with HF radio to provide both a voice and radio-tele-type link back to the main organising centre at the Torrens Parade Ground in Adelaide. Included amongst the equipment at this net control station were a Model 14 keyboard re-perforator plus Model 15 page-printer for tape preparation, Model 15 page-printer, Model 14 transmitter-distributor, home brew ST6 demodulator with built-in CRO monitor and UART generator, TS520 transceiver with external VFO, and SB200 linear amplifier.

Rain, Cars, Dirt Roads
The operation worked smoothly with particularly excellent results on the RTTY link, nevertheless something adverse always seems to crop up despite the amount of organisation put in beforehand. This time it was not equipment failure, poor communication paths or anything like that. It was also nobody's fault either.

Due to the prior rain, the roads or tracks as they could more properly be called, began to show the effects of the many cars travelling over them. This resulted in many vehicles sliding out of control, becoming bogged and encountering many difficulties, with sections of the course eventually becoming absolutely impassable. One car on one of the TV sections actually turned over completely in the air, landed on its wheels and then kept going, apparently losing almost no time whatsoever. The navigator of said vehicle was heard later to claim that whilst in the air the driver apologised to him, "Sorry about this", and then went to change down in gear before they landed back down on their wheels again. Needless to say, the TV station people seemed delighted with that portion of coverage and replayed that incident time and time again.

The end result of all the problems caused by the wet conditions was to really test the flexibility of the WICEN network and operators. Routes had to be changed, sections closed, check points relocated and the whole system re-established, meantime continuing to provide coverage for the cars still moving. If you had really studied your map reading such capability became most useful during this turn of events.

The southern section of the rally comprised a network of 10 control points manned by radio with their control station also set up for both HF RTTY and VHF FM back to the Parade Ground. In this particular instance some HF communications problems were encountered and the major part of the traffic was conducted on VHF.

This particular case showed up the advisability of using the best possible available antenna when participating in such an exercise. In other words, a full sized HF dipole is much to be preferred to using a compromise antenna such as a loaded whip. It is with this type of incident we learn such things in practice which points up the fact that exercises such as this provide most important training aspects for personnel involved. Nevertheless in this instance flexibility, availability of alternative equipments and frequencies saved the day and the network achieved its purpose in impeccable fashion whilst dealing also with very similar problems due to the road conditions as experienced during Division 1, plus of course the fact that they had to do this throughout the hours of darkness.

Division 3 on the Sunday seemed to be virtually a repeat of Division 1, so not much more is left to be said on that subject, although the network was kept extremely busy with a very large volume of traffic being passed back through the Forest Control station.

Antennae
The antennas used were dipoles for 40 and 80 metres with a half-wave vertical antenna on top of one of the masts for 2 metre FM operation. This station was housed in a caravan provided at the site by the rally organisers. The tape preparation equipment was set up in the back of a "Land Cruiser" owned by one of the operators. Power for the station was provided by a 3.5 kVA petrol generator.

Sections of the Rally in Divisions 1 and 3 were to be televised. So as to coordinate the movement of competitors through the televised sections a special "TV" net was set up, with all stations using 2 metres FM. This net worked independently of other operations and utilized about five stations with their own co-ordinating control.

Scores from the checkpoints in the main Forest Net were relayed on VHF to the control station from each outlying point and passed by RTTY to the Torrens Parade Ground and in written form to the local Forest Scoreboard, whilst scores for the TV stages were hand carried to the control station for transmission and also to the local scoreboard.
repeaterers on each day by net control stations for the purpose of directing operators to their check point positions and establishing the simplex nets. Adelaide Channel 8 repeater was also used throughout the night for the passing of scoring information for Division 2 back to the city.

All in all a large amount of message handling exercise was carried out and the operators obtained most valuable practice in this network operation and discipline and other general field operations which inevitably occur in an such event as this.

**SUPERIOR COMMUNICATIONS**

Whilst it may not be considered particularly "good form" to mention this fact, we were informed later by the Rally organisers that the communications provided by WICEN were definitely superior to the SEANET regular Big John Van Lear the Radio Amateur Society in Thailand the following year. This was organised by this part of the world.

emergency communications throughout the world are given an opportunity to be on time for your turn.

Because the main purpose of the annual meeting is to give participants a chance for eyeball QSO — 4th in Manila, 5th In Kuala Lumpur, 6th in Jakarta, 7th in Bangkok and once again it is the turn of the Singapore Amateur Radio Transmitting Society to play host to amateurs not only from this region but also from all over the world.

SEANET — THE SOUTH-EAST ASIA AMATEUR RADIO NETWORK

The South-East Asia Radio Amateur Radio Network started in 1964 as an informal gathering on the air of amateur radio enthusiasts in the South-East Asia region for the camaraderie of talking with each other. Meeting daily on 14.320 MHz at 1200 GMT daily, the numbers of amateurs checking into the Net Control Station (NCS) range from Hawaii to Australia.

After the South-East Asian amateurs have checked in with the NCS, amateurs throughout the world are given an opportunity to identify themselves to the NCS. Usually there are at least a few from the United States, South America or Europe checking in depending on propagation conditions. And the number of amateurs meeting on the net may range up to 150.

In addition to the ties of friendship fostered by meeting on the network, it also provides a means of testing equipment, contacting friends and if ever needed, emergency communications throughout this part of the world.

The first SEANET convention was initiated by that most indefatiguable SEANET regular Big John Van Lear (9M2IR) with his letter of October 21, 1971, inviting the then-Net Controller Paddy Gunsekera (4S7PB) to a meeting in Penang. Some 36 amateurs and guests attended the relaxed informal affair on December 30-31, 1971 — January 1, 1972.

The affair was such a success that it was decided to hold another in Bangkok the following year. This was organised by the Radio Amateur Society in Thailand and the number of attendees grew to nearly 100. And the third convention was held in Singapore in 1973 and hosted by the Singapore Amateur Radio Transmitting Society.

The amateur radio societies in the South-East Asia region have since taken turns to host this annual eyeball QSO — 4th in Manila, 5th In Kuala Lumpur, 6th in Jakarta, 7th in Bangkok and once again it is the turn of the Singapore Amateur Radio Transmitting Society to play host to amateurs not only from this region but also from all over the world.

Because the main purpose of the annual meeting is to give participants a chance for eyeball QSOs, the programme is usually informal. New developments in communication systems, specific topics related to amateur radio, the communication needs of the region and the place of the amateur in meeting these needs are some of the topics on the agenda.

**SEANET GUIDELINES**

Here are some of the ways in which you, as a SEANET member, can assist the Net Control Station (NCS):

- **NOT** tuning up on net frequency after the net has been called to order, and until the net closes and the channel becomes free.
- **REFRAINING** from checking in under "emergency, medical, urgent or priority traffic" unless a situation really exists. Please do not check in at this time merely to make a contact with another station unless you have a very good reason to do so.
- **NOT** breaking in out of turn. Please wait for your turn and if it has passed, then wait for "late station or late traffic". This does not apply to any emergency traffic you may have; then call "Break" or "Break, Break" for dire emergency. If you want to call a station that has just checked in, then call "Contact".
- **TRYING** to be on time for your turn. The order of check-ins can vary depending on the NCS and his or her location, but there is usually a set pattern.
- **RESTRICTING** your transmission to essentials only on the net frequency, such as RS, QRU, QRV or traffic as the case may be.
- **ANNOUNCING** at your check-in time if you wish to leave the frequency before the net closes.
- **CHECKING** back into the net if you fail to make contact with your assigned station on the assigned frequency. Then call "Check back".
- **CHECKING** back into the net and releasing the assigned frequency to NCS when your traffic is cleared. Say "333 clear", etc.
- **CALLING** "Relay" followed by your call sign to prevent doubling when relaying becomes necessary.
- **REFRAINING** from asking the NCS to hold your traffic for another day.
- **TRYING** to make all contacts on the net during net time with the help of the NCS only.

To do this he will need to understand:

1. Operate legally.
2. Tune a rig.
3. Carry on a QSO.
4. Put together a simple station.
5. Show an understanding of common terminology and equipment common to radio.
6. Have some basic familiarity with terminology and equipment common to radio.

To do this he will need to understand:

1. Frequency bands.
2. Frequency versus wavelength.
3. Power.
4. Power relationship with W, I.
5. Definitions of control operator, etc.
6. Definitions of prohibited practices,

3. International Morse Code.
4. Propagation.
5. Key clicks and cures.
6. Chirp.
7. Block diagram of rigs.
8. Ohm's Law.
10. Resistors, capacitors, etc.

Submitted by Graeme Scott VK3ZR, Federal Education Co-ordinator, from ARRL Club and Training Department.

Ten Commandments of Electronic Safety

1. Beware of the lightning which lurks in undischarged capacitors, lest it cause thee to be bound upon thy backside in an ungentlemanly manner.
2. Cause thou the switch which supplies large quantities of electrons to be opened and tagged, that thy days may be long on earth.
3. Prove to thyself that all circuits that radiate and upon which thou workest are grounded, lest they lift thee up to a high-frequency potential and cause thee to radiate also.
4. Take care that thou use the proper method when thou takest the measure of high voltage, that it doth not incinerate both thee and the meter; for verily, thou hast no account number and can be replaced easily, the meter doth not have such, and shall bring great woe upon the supply department.
5. Tarry not amongst those that engage in intentional shocks, for they are surely non-believers and shall not be long in this world.
6. Take care that thou tamperest not with interlocks and safety equipment, for this shall incur the wrath of thy seniors, and unleash the fury of the safety officer upon thy head and shoulders.
7. Workest thou not with energised equipment; for if thou dost, thy mates shall surely be buying beers without thee, and thy place at the bar shall be filled by another.
8. Verily, verily, I say unto you: never service high voltage equipment alone, for electric cooking is a slothful process, and thou mightest sizzle in thine own fat for many hours until thy maker seeth fit to end thy misery and draw thee into HIS fold.
9. Trifle not with radioactive tubes and substances, lest thou commence to glow in the instruction books; they give the straight blurb and steer thee away from error.
10. Commit thou the words of the prophets to memory, which are written in the instructions books; they give the straight blurb and steer thee away from error.

From Zero Beat September 1978.

LOOK BEFORE YOU LEAP

"Murphy" traps another when converting a CB transceiver to 10 metres!

Recently I decided to convert a Gemtronics 3325 CB transceiver down to 10 metres.

Being in the usual bit of a hurry, I consulted the rather scrappy instruction manual which provided a just readable circuit diagram, together with a comprehensive list of the crystal frequencies used.

The Gemtronics 3325 along with many of the older CB units is not a PLL system, it uses the frequency synthesising mixing system as described in the previous articles in AR of August and September 1978.

A perusal of the crystal frequency chart in the instruction leaflet enabled one to calculate the frequency of the new crystals that would be required.

Altogether I decided to replace the 6 x 11 MHz mixing crystals.

The frequencies listed are 11.000 MHz to 11.250 MHz in 50 kHz steps. These beat with 8 other crystals ranging from 8.1635 MHz to 8.2085 MHz to arrive at the respective CB channels after taking into account the 7.8 MHz filter.

It was a rather simple matter to calculate the required crystal frequency to increase the operation to 10 metres.

A crystal of 12.335 MHz was ordered to replace the existing 11.000 MHz crystal as listed.

I calculated this would allow operation on 28.300, 28.310, 28.320 and 28.340 MHz.

The new crystal duly arrived (at a cost of $9.00) and was inserted into the relevant socket.

Then Murphy struck! — I had expected the crystal just removed to read 11.000 MHz — but it didn't. It read 11.705 MHz.

The manufacturers had done it again! For reasons best known to themselves they had increased all of the 11 MHz mixing crystal frequencies by 705 kHz from that published.

Likewise, the 8 other mixing crystals had been reduced by the same amount. Naturally, the amendments were never altered in the instruction book!

A sure trap for young players — and the not so young as it appears.

I only have myself to blame.

This item is published to bring awareness to others of the mischief that may befall you If you don't physically check the frequencies of the crystals in some of these CB sets before ordering new crystals.

The story has an almost happy ending in that I guess "Murphy" also worked in the reverse for me — I only ordered one (1) of the required crystals instead of 6.

Does anybody want to swap a 12.335 MHz crystal for one of 13.040 MHz?

B. Bathols VK3UV

LOOKING BACK

Ern Rogers Rockdale, NSW

In 1933 on a visit to the home of a workmate I spied in a corner of his workshop a strange wireless set in an aluminium case, I knew it was a wireless set because three valves could plainly be seen. A vacant socket was also discernable. I knew it was a wireless set because of the fortunes of the misfortune that may befall you If you don't physically check the frequencies of the crystals in some of these CB sets before ordering new crystals.

The story has an almost happy ending in that I guess "Murphy" also worked in the reverse for me — I only ordered one (1) of the required crystals instead of 6.

In the next few weeks when wireless set was constantly on my mind. I could not help wondering what a shortwave set it was and how it worked. Why couldn't my friend get the valve he needed? Had he really tried? In these few weeks my mate had been on holidays and as the time...
approached for his return I found myself getting excited. I couldn't work out what happened to me. I didn't realise it then, but the bug had bitten me.

On the first night back I met George at the door. I didn't even ask him about his holiday. "Did you ever get a valve for that shortwave set?" I asked him.

"No," he replied, "they're unobtainable. You couldn't find one in all Sydney." "Why don't you sell it then?" I said. He looked at me in disbelief. "Who would buy the blank blank thing?" he asked. "I would," I answered rather too eagerly, "I'll give your a fiver for it."

And so the big deal was made. He agreed to drive over with it at the weekend. But I couldn't wait. I knocked at his door early next day, fiver in hand. He asked me how I was going to get the set home. I said I would carry it. "You must be joking," said George. "Have a look at it." I spotted the little receiver on the bench, all cleaned up and shining brightly. I was puzzled by the weird contraption beside it. "That's the power supply," I was told. "It weighs a ton!" And I reckon it did. It consisted of a Philips B eliminator and a 4 volt filament transformer. I decided to let George bring it over at the week-end.

The set duly arrived. My mate explained it all to me. "It's a TRF (tuned radio frequency)," he said, "with a regenerative detector." He wished me luck in finding an E424. I set out early on Monday morning in my search. Eventually I found a little shop in George Street with the required valve. I was able to get a spare set of the other valves in the set—E424 RF, E424 detector, E415 first audio amplifier and 8406 output. I rushed home and plugged in the missing E424. Once I had learned the intricacies of the reaction the stations rolled in. This was the beginning of a long period of enjoyment. It was a wonderful experience.

I know it is ridiculous, but I regard it as the finest set ever made. I was sorry to part with it—I sold it for a fiver. One of the E424s burnt out and I couldn't find a replacement.


ANTENNA PERMITS (and other non-events) IN S-E ASIA

Dick Goslin VK3SV

The writer recently spent a few weeks in Singapore and Indonesia. The following notes may be of interest to other amateurs considering a visit to these areas.

SINGAPORE

Together with a VK2 visiting Singapore for a Seaxet Convention, I spent a pleasant afternoon with Jim 9V1TE, communications officer at the US Embassy. Jim lives in an apartment provided by the US Government, and after prolonged negotiation with local authority received written permission to erect a quad on his penthouse roof. Some time later the authorities telephoned to say that a gentleman (?) living nearby had objected to the antenna on aesthetic grounds and that it must be removed forthwith. In view of the permit issued to him, Jim naturally declined to do so. Following a further telephone call from the authorities, a working party arrived with a notice of revocation, dismantled the quad and stacked the pieces neatly on Jim's balcony where they still lay at the time of my visit. Jim is now operating with a vertical and keeping his fingers crossed against further "QRM".

David Rankin, VK3QV/9V1TH is fully occupied with settling into his new home with XYL and 13 month daughter Sheila, as well as with his increasing business commitments. Due to shortage of time on both sides, we were unable to meet each other on this occasion, but managed a short telephone contact before he left his office to supervise the finishing touches at an electronics exhibition in which his company had a number of stands. David and family hope to spend a few weeks in Melbourne in the near future, his first holiday in VK-land since transferring to Singapore several years ago.

With no 2 metre facilities available in Singapore such as we enjoy here in Australia, it is not surprising that many amateurs have little knowledge, either personally or on air, of other operators who in some instances may be living only a relatively short distance away. Due to the authorities' keen interest in the marketing of amateur equipment, except for replacement components such as PA valves, etc., not much is available "off the shelf". I found only one 10-160 metre rig for sale ex stock, and no information was forthcoming about its suitability for use in Australia. Price asked was only fractionally better than that advertised in VK for a similar transceiver.

JAKARTA

About a month before starting our holiday, I had been working Lumbangaol YBOWR on 20m. On learning that we would shortly be at Jakarta, he offered to meet us at the airport and spend an hour or so driving us around the city. I explained that as passengers en route to Bali we expected to be confined to the transit lounge and therefore unable to join him. However, we found after completing the usual formalities that we were free to wander as we pleased until shortly before the connecting flight was due to leave some 2½ hours later. As a request for Lumbangaol to meet us at such short notice could possibly embarrass him, we contented ourselves with a phone call to his office. Another non-event, but the transit arrangements at Jakarta may be of interest to amaters passing through Halim Airport en route to other destinations in Indonesia. Lumbangaol's address is Box 4602, Jakarta, and his office phone numbers are 41 4521 and 41 3747.

BALI

No stations on the Island of Bali are listed in the 1976 ARRL call book, but a chef at one of the hotels assured us that there are now five amateurs operating from the capital Denpasar, which is midway between the main holiday resorts of Kuta Beach and Sanur Beach, and that he knew one of them personally. This information was received only the day before we left so I was not able to follow it up. The chef is a daily listener to Radio Australia before commencing duty at 7 a.m. He has a better-than-average knowledge of English and attributes this to the assistance he receives from Australia's foreign language service.

ACKNOWLEDGEMENT

Due to some flights being cancelled by the Indonesian authorities, we were required to leave Bali a day before schedule, and at very short notice. Through the co-operation of VK2HH and VK3NJ I was able to inform our family in time for them to meet us at Melbourne airport a day earlier than originally planned. Thank you, Harry and Ken—your assistance was greatly appreciated.
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<table>
<thead>
<tr>
<th>Item description</th>
<th>Price</th>
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<tr>
<td>FT-101E AC-DC HF Transceiver</td>
<td>$795</td>
</tr>
<tr>
<td>FT-101E AC HF Transceiver</td>
<td>$745</td>
</tr>
<tr>
<td>101E DC-DC Conv. Kit</td>
<td>$70</td>
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</table>

FT-101Z New model HF Transceiver, 160 10m 2 x 6146B PA: $799
FT-101 W/S Maintenance Manuals: $27 plus P.P. $2.00
FT-7 HF Transceiver: $389 (Yes, fair dinkum!)
FL110 Solid State Linear
FT-227R 2m FM Digital: $339
FL-2100B linear: $579
FT 7B HF Transceiver, 100W
YC-7B Dig. adaptor for FT-7B: $125
FRG-7 Receiver: $349
Battery holder for FRG-7: $10
LFC-2A Selective SSB filter for FRG-7: $20
YC-500S Counter 500 MHz: $499
YC-500E Counter 500 MHz: $656
YP-150 Dummy load/power meter: $112
SP-101B Ext. speaker for 101E: $49
CW filters for FT-101: $59
FT-301 series CW, AM, RF Proc. filters: each $45
FRG-7000 Dig. Receiver: $645
OTR-24 World Clock: $35
YH-55 Yaesu Headphones, 8 ohm: $19
YD-844 and YD-148 dual impedance desk mics., 600 ohm/50K ohms: $49
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RSM2 base, inc. RSE2A stub mast, with Co-ax. cable attached: $29.90
Resonators — RSL-3.5 $22, RSL-7 $21, RSL-14 $20, RSL-21 $19,
RSL-28 $19, RSL-145 (5/8 2m) $24.
6JS6C P.A. Valve FT-101: $11
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FM transceiver, built-in mic., spkr., "S" meter, inc. carrying case and crystals, to clear: $199

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Also available Rubber ant., optional hand mic., mobile adaptor, Nicad batteries.
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This is a report of the analysis of a portion of the project ASERT data for January 1979. These data are singled out for immediate analysis since they demonstrate, very clearly, some phenomena of immediate practical importance to the VHF amateur.

Figure 1 displays the signal strength of the 144 MHz Albany beacon, VK6RTW, as received at Adelaide on 27/1/79. The data was received at the QTH of VK5HI, using a TS.700A receiver, and a ten dB gain yagi at a height of 15 metres. The voltage across the signal strength meter of the TS.700A was recorded on a "rustrak" chart recorder, running at 25 mm per hour. The strongly fluctuating nature of the signal, with periodicities ranging from less than one minute to the order of an hour, is clearly seen.

Figure 2 is derived from the data such as Figure 1, and summarises the state of the Albany to Adelaide path at 144 MHz, throughout the period 20/1/79 to 27/1/79. The solid histogram gives the peak signal received in Adelaide during each hour, while the graph plotted below the histogram gives the percentage of that hour that the circuit was inferred to be open for SSB operation (see below). Note that this latter graph is plotted upside down.

About 0700 GMT on 22/1/79 VK60E worked VK5NX in Adelaide via the VK5 repeater, VK5RHO. The beacon signal on the recorder chart for that time was 0.17 uV RX input voltage. Assuming that this signal strength on the beacon recorder, running at 25 mm per hour. The detailed chart records (similar to Figure 1) shows that this 10-20 per cent was made up from many short-lived intervals of from 1 to 2 minutes' duration, the signal barely exceeding the inferred SSB threshold on each occasion. The path was open, but only just!

The data from Table 1 have been plotted in Figure 3 to demonstrate the dependence of "hours open" upon signal threshold. This graph provides great insight into the properties of VHF communication at these ranges, and is discussed in detail in the following paragraphs.

Table 2 interprets Figure 3 in terms of normal amateur practice. A less efficient receiving antenna, increased cable loss, reduced height gain, or an increased receiver noise figure could all reduce the reception gain below that used for these tests. Reductions of 3, 6 and 9 dB are considered normal practice. A less efficient receiving antenna, increased cable loss, reduced height gain, or an increased receiver noise figure could all reduce the reception gain below that used for these tests. Reductions of 3, 6 and 9 dB are considered normal practice.

---

**TABLE 1**
The number of hours for each day in the study interval for which the peak signal exceeded five reference levels. "Yes" in the last row indicates the presence of a pressure high between Albany and Adelaide.

<table>
<thead>
<tr>
<th>Threshold (uV)</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
<th>25</th>
<th>26</th>
<th>27</th>
<th>27</th>
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<td>0.1</td>
<td>1</td>
<td>18</td>
<td>12</td>
<td>6</td>
<td>6</td>
<td>9</td>
<td>16</td>
<td>21</td>
<td>1</td>
<td>90</td>
</tr>
<tr>
<td>0.17</td>
<td>1</td>
<td>9</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>19</td>
<td>0</td>
<td>44</td>
</tr>
<tr>
<td>0.27</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>15</td>
<td>0</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>0.42</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>12</td>
<td>0</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>0.63</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td></td>
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</table>

**Pressure High**
Yes Yes

**TABLE 2**

<table>
<thead>
<tr>
<th>Gain (dB)</th>
<th>Reception</th>
<th>Transmission</th>
<th>Gain</th>
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<tr>
<td>—6</td>
<td>—6</td>
<td>—6</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>17%</td>
<td>42%</td>
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</tr>
<tr>
<td>—3</td>
<td>11%</td>
<td>26%</td>
<td></td>
</tr>
<tr>
<td>—6</td>
<td>7%</td>
<td>17%</td>
<td>42%</td>
</tr>
<tr>
<td>—9</td>
<td>3%</td>
<td>11%</td>
<td>26%</td>
</tr>
</tbody>
</table>
FIGURE 2: The peak signal strength for each hour, and the fraction of that hour for which the Albany-Adelaide path was inferred to be open for SSB.

Transmission gain can vary because of greater, or less power, different antenna gain, increased cable loss, or different height gains. Gains of +6 dB and —6 dB are taken as indicative of current practice relative to the Albany beacon.

From Table 2 it is clear that the ability to communicate depends extremely strongly upon the gain parameters at each end of the path. Thus Table 2 shows that "normal practice" could have resulted in frequencies of communication varying between 3 per cent and in excess of 42 per cent during the study period. It is sobering to remember that it is relatively easy to "lose" 6 dB in a receiving installation (e.g. 2 dB in the antenna, 2 dB in the cable, and 2 dB due to a higher than optimum noise figure, each of which appears relatively trivial) and yet the overall penalty is great (17 per cent versus 42 per cent). Stated differently, a few dB improvement in either transmission or reception gain results in major improvements in communication efficiency.

The scientific facts in Figure 3 belie the common belief that "when the band is open on VHF, anything will get through".

An important goal of project ASERT will be to determine the extent to which the inferred performance figures in Figure 3 actually relate to the amateur experience. In doing this we will be able to correct any errors made in our assumed thresholds for FM and SSB communication. To this end, project ASERT requests that any SSB or FM operators that worked the Adelaide-Albany circuit on 144 MHz in the period 20-28/1/79, provide the details of your contacts to Project ASERT, Box 150, Toorak 3142. Please give date, time (GMT), station worked, mode, RS and your estimated power output and antenna type.

REFERENCE:
THE IMPORTANCE OF AMATEUR REPRESENTATION AT WARC 1979

The following article is reprinted with acknowledgements to the EMDRC Radio Bulletin for March 1979 as the contents deserve wide publicity. The article was written by Jack O'Shannassy VK3SP.

"A short time before Christmas the Australian delegation to the Special Preparatory Meeting (SPM) of the World Administrative Radio Conference, 1979 (WARC), returned to Australia. The delegation had spent four weeks in Geneva, towards the end of the European autumn, and were glad to be back to the warmth of Australia. Under the leadership of the First Assistant Secretary P. and T. Department (Mr. Jim Wilkinson) the 15 man delegation had been more than busy putting the views of Australia as contributions towards the production of a Technical Report which will be a very important input document to the WARC which commences in September, 1979.

A notable ‘first’ for this delegation was the inclusion of an Amateur as a full time Delegate. Because of the difficulty of obtaining the necessary time for their normal occupations, the work was shared by two people — David Wardlaw and Michael Owen. In the past, Amateur involvement in International delegations of this nature has been confined to the production of briefing documents only, or, on rare occasions, to the presence of an Amateur as an Observer.

Representation of the Amateur Service in the Delegation by a full time Delegate on this occasion is due partly to the balanced outlook of Jim Wilkinson, who accepts as desirable the representation of non-Government frequency users and partly to the availability of Amateurs with the energy and ability of Michael Owen and David Wardlaw and, just as important, their availability to attend the many preparatory meetings and drafting sessions over a period of many months.

TECHNICAL VIEWS IMPORTANT
It is tremendously important to have technical views which you wish to be used as the basis for decisions of WARC agreed to in the SPM and printed in its Report. It is only in the comparatively technical atmosphere of the SPM (which is not a frequency allocation conference) that technical arguments can be put and may be accepted in a more logical engineering climate.

At the WARC itself many other factors — particularly those of an economic social and political nature — are balanced against the purely technical considerations. The fact that the SPM Report contains almost all of the views which Australian Amateurs consider to be important is a tribute to the preparatory work in Melbourne and the work in Geneva of our joint Delegates.

Although many nations at the Conference expressed an interest in the Amateur aspects of the SPM, in the event only three nations made a written input — USA, Canada and Australia. In almost every aspect of radio technical matters in the ITU arena the Australian Input has a particular significance. When considering our small population this may seem surprising. The reason why the Australian view carries so much weight in Geneva is due to a combination of factors — some political, such as our non-alliance with any major political power, some technical, in that Australia despite our small population is regarded as technically advanced in communication technology generally, and some commercial, in that there is no large nationally supported radio manufacturing industry in this country.

In addition, because of our small population, our views are often accepted by other small nations, and, because of our low population density and large distances, our technical approach to communication problems generally is more allied to the problem of lesser developed nations. We also have the advantage of speaking English as our mother tongue. Although French is the language which prevails in the event of a dispute in the ITU, English is the main working language and the language used by the majority of nations attending.

PREPARATORY WORK
Success at a conference such as the SPM requires more than active participation in Geneva. It requires a large amount of preparatory work in Australia leading to the preparation of the official Australian Brief, and in particular, it requires the preparation of Input Documents which are clear, technically sound, generally acceptable to a wide range of nations, and worded so that their message is clear and unambiguous. In this regard it is significant to note that many of the agreements and recommendations contained in the Report of the SPM were taken almost word for word from the Australian input documents. This is a tribute not only to our delegates in Geneva but also to the dedicated group of Amateurs working behind the scenes who helped in the preparation of our input documents.

The main issues of concern to the Amateur Service in the SPM Report came under the following headings:

- The appreciation of the nature of the Amateur Service,
- Recommendations concerning frequency bands below 30 MHz,
- Recommendations concerning frequency bands above 30 MHz,
- Recommendations concerning the Amateur Satellite Service.

The wording of the Report concerning the nature of the Amateur service is very much to our satisfaction. The recommendations concerning the needs of the Amateur Service for bands below 30 MHz contain recommendations which we considered of importance, e.g., additional frequency bands in the vicinity of 10, 18 and 24 MHz.

The only notable exception is the absence of a recommendation concerning the
proposed new low-frequency band in the vicinity of 160-190 kHz. The recommendations for frequency bands above 30 MHz in general agree with the Australian view, both as to bands and the desirability of wider bands in some cases which could be shared with the Radiolocation Service. So far as the Amateur Satellite Service is concerned, the recommendations are very close to our views.

Although the SPM is a 'preparatory meeting for WARC' this should not be taken to mean that it was small or unimportant. Over 750 delegates attended, representing 85 nations. Fifteen special organisations attended (including the IARU) and 30 private operating agencies were also represented. A total of 368 input documents were processed.

By comparison, the WARC will have representatives from about 140 administrations with more than 1000 Delegates. It is expected that there will be more than 1000 input documents which represent a tremendous amount of paper to be processed and information to be absorbed by the Delegates attending.

TEN WEEKS CONFERENCE

The WARC, which commences in September, runs for 10 weeks into November. This is a very long period for a conference of this nature, taking account of the climate in Geneva at that time of the year and the very heavy pressures which will be exerted on the Delegates from smaller nations such as Australia. The timetable for conferences of this type is essentially set by the nations with the larger delegations, e.g., USA, UK, USSR and, as a result many simultaneous meetings result.

As the Conference progresses, the work tends to spread into the evening hours and occupy part or all of the weekends. These extended hours, together with the necessity for daily Delegation co-ordination meetings and the preparation of additional input documents, and the very cold climate (in (Australian terms) combine to put a heavy load on all of the Australian delegates.

Whilst there is an excellent degree of co-operation and sharing of workload amongst the Australian Delegates, it is clear that the Amateur service case is best put by the one Delegate at WARC (David Wardlaw), the combination of long working hours and the cold climate raises the possibility of his being unavailable at some stage due to illness. It would be very desirable if the Amateur service could have a second representative to cover this possibility and also to help in the presentation of the Amateur case generally.

The availability of another Amateur Delegate however, involves a very considerable cost and raises the problem of finding a suitable person with the appropriate background and the necessary time to attend the preparatory meetings over a period of many months before the Conference, and whose business will allow him to be absent overseas for 10 or 11 weeks without salary.

TECHNICAL AGREEMENTS NECESSARY

Without the necessary technical agreements reached at the SPM, the Amateur Service would have an almost impossible task at the WARC. However, success at the SPM does not automatically mean success at the WARC. The comparatively calm technical climate of the SPM will be replaced by an actively political climate at the WARC and many nations who had little to say during the technical discussions at the SPM may be much more vocal at the WARC.

ACTIVE OPPOSITION

Although there is evidence of a more widespread support for the Amateur Service in recent times there are still quite a few countries which actively oppose the Amateur movement. There is no doubt that the spectrum available to Amateurs over the next 20 years will be dependent in no small measure on the efforts of the Amateur Delegate in the Australian Delegation to WARC 1979 and on the support he gets in the preparations for that Conference.

EQUIPMENT REVIEW:

THE ETO ALPHA 76 PR LINEAR AMPLIFIER

This is the first time that a linear amplifier has been the subject of a review in this magazine and it was instigated when James Goodger of Australian Sound and Signal Research offered one of ETO's Alpha 76 PFRs for our appraisal.

These amplifiers are made in the USA by Ehrhorn Technological Operations Inc. of Canon City, Colorado. ETO have built up quite a reputation over several years in the production of linear's and the 76 PR is representative of their current production.

Naturally as these units are designed for use in the USA they are rated at power levels well above the Australian maximum output of 400 watts PEP. Before putting the 76 on air, I rang the local Radio Branch to check on the legality of using such a unit. It appears that so long as the PEP output is kept at 400 watts or below that all would be OK. However, it was stressed that the onus was on the amateur concerned to prove this to the department in the event of an inspection.

In view of this it might be a good idea to look at the specification of the Alpha 76 PR.
heavy duty power transformer and power supply section. However, apart from this information, there is no specification on the difference between this and the standard supply.

Reference to the illustration reveals that the 76 PR is a handsome but large unit. Both the cabinet and front panel are of heavy plastic covered aluminium with a smooth ripple finish.

The row of push buttons under the meter selects the various meter functions. These are High Voltage, Grid Current, Plate Current and Forward and Reflected Power. Under these again are the AC on switch and the SSB/CW TUNE switch. The AC switch is spring loaded and it is only necessary to push it down momentarily then release to lock in the AC switching relay in the power supply.

As most of the overall weight of the unit is in the power transformer, this is shipped in a separate package to the amplifier and is installed by the owner. The reason for this is obvious when the smallish box containing the transformer is picked up, and then immediately put down again to get a better grip. Installation of the transformer is, with the exception of the weight, an easy job. The side panel comes away with the removal of several screws, the transformer is bolted in and the electrical connections are completed with two pairs of multi-pin plastic connectors. The above procedure is fully explained in the excellent instruction book.

Interior layout and construction is quite superb. Liberal use of ceramic stand-offs, a large silver plated coil for the higher frequency bands with large toroids for the lower bands. It is interesting to note that the input is untuned but a balun is provided to ensure optimum impedance match into the three 8874s. The centrifugal blower draws air from the outside around the power transformer, past the tubes and up through rubber tubes to three outlets in the top of the cabinet.

Both the tuning and loading controls are operated via smooth reduction drives and a 0-100 scale is provided for logging on each. It is interesting to note that the models sold in the United States no longer include the ten metre band. Apparently quite a large percentage of linear owners were going into the CB market, so the elimination of ten metres is calculated to overcome this.

On connecting the Alpha to the driving transceiver our first criticism was brought to light. The input connector is nothing more than a phono type socket. Why not a BNC or even another SO-239? As there is no way to lock a phono plug in this would have to be considered non-professional. I know that these connectors are commonly used in American made gear for RF purposes but in a unit of this class is somewhat out of place.

Safety interlocks are provided on both the high tension and AC lines. Should the amplifier top cover be removed for inspection, the HT would immediately be shorted to ground and the primary AC voltage removed. Even the forgetful expert is therefore protected.

Plugging in the AC cord and switching on brings our second (and final) criticism. The blower system is very noisy. Not only that but there is also a degree of rumble which is transmitted into the desk or table on which the unit is sitting. Perhaps blower noise is a subjective thing that might bother some people more than others, but if I were using an Alpha I would want it on a separate table several feet from the operating position. At initial switch on, the meter is illuminated red and it is necessary to wait for the delay circuit in the power supply to operate before tune-up is commenced. Delay conclusion is signalled by the meter illumination turning green. A front panel switch selects either high or low voltage for tune-up CW or for SSB operation. For Australian conditions the low voltage setting should be used at all times. However, here comes the problem. Tune-up requires the amplifier to be run at an input of 1 kW and so the use of a dummy load is mandatory. An accurate RF power meter and a monitor oscilloscope are also required equipment.

SWITCHING

Switching the amplifier to "transmit" is by shorting the operate line to ground. This is normally done by a relay connection in the driving transceiver. In the non-transmit situation, the antenna is connected through for normal receiver operation.

Well, just how does one check out a 2 kW output linear at 400 watts output? Two things can be said right away. The amplifier runs stone cold at all times and distortion products are much further down than the specified —30 dB. This of course assumes that the exciter is clean.

However, when using modes other than SSB it is necessary to run the amplifier at a maximum of 150 watts input to comply with local regulations.

Unfortunately I do not have access to a spectrum analyzer, but reference to a QST review of January 1978 indicates that the third order distortion products are around 40 dB down on full PEP output so one can expect at least this figure at 400 watts. When one considers that some of the older transceivers using sweep tube finals are struggling to reach 20 dB down, some idea of the Alpha's performance can be seen. For our on-air tests the 76 PR was driven with a Kenwood TS-820 transceiver and the output taken via a Drake W-4 wattmeter and a Heath SB-610 monitor scope. A Heath Cantenna was available for high power testing. With everything running full on, just on 1700 watts carrier was delivered to the Cantenna. ETO make quite a point in their advertisements that you can put a brick on the key and hold the power output at full steam indefinitely. I am sure the 76 PR would take it but the Cantenna certainly would not. Under the same conditions PEP output as indicated on the scope was around the 2000 watt mark.

Provided that the drive level was kept constant, the output from the Alpha remained essentially constant from band to band.

Bringing things back to 400 watts for our on-air tests only requires the exciter to deliver about 30 watts PEP. A check with a local station showed that the 400 watt output signal was in fact slightly cleaner than the TS-820 running alone at full power. Perhaps a run down on the method of checking this might be of interest. With the TS-820 and a few other transceivers, it is possible to switch to the opposite sideband without changing frequency. This means that the strength of the unwanted sideband can be read on the "S" meter. Now it follows that the reading will be the product of two things, the unwanted sideband and the distortion products of the transmitter. Naturally, too, the sideband rejection of the receiver also comes into it. However, assuming a good receiver filter and transmitter sideband suppression of 40 dB or better, the thing that will show up is the distortion products of the transmitter. If the calibration of the receiver "S" meter is known then the distortion can be checked with fair accuracy.

The instruction manual is well written and contains all the information needed to use and possibly service the Alpha. The only thing missing is a printed circuit board layout in the power supply section.

SERVICE

In so far as service is concerned, I will quote from the covering letter received from James Goodger. "As a normal pre-delivery check we operate all our amplifiers on all bands 160-10 metres checking power output, making sure there are no problems after the journey from the USA. By doing this we have no problems with any amplifiers that we have sold. To hand is also a fully equipped workshop, and our 24 hour order number (02) 36 7756 ensures that an electronic engineer will answer any technical queries as soon as he starts work. Both our engineers are extremely familiar with Alpha, Dick Ehrhorn Products, as both have had considerable time in the factory with Dick, enabling them to often pinpoint problems over the phone."

Well, just where does an amplifier of this type fit into the Australian scene? Perhaps this is a bit like saying where does a Porsche sports car capable of 250 kilometres per hour fit into our restricted speed limits? In other words there is more to it than sheer speed in a car and perhaps power in a linear amplifier. However, there is also no doubt that both take expert handling. For further details on price and delivery, your transmitter should be addressed to: Amateur Radio April 1979 Page 27
Although the USSR has indicated that the P0 pulse signal has been minimised it still bugs all Amateurs throughout the world.

The screech published below has been received at this QTH from three separate sources:

"From the West Coast DX Bulletin, 14th February, 1979:

THE RUSSIAN WOODPECKER

If you have not heard this one, you have not been on the air in the last year or two. Like a lot of other things, you try to live with it and wish it would go away but it seldom does. Maybe if you know a bit more it might help to tolerate the continuing burden. The following information compiled by W3 . . . ."

"The 'woodpecker' is a long range radar and the range can be estimated by noticing that the repetition corresponds to 25 w.p.m. CW dots. At this speed, the time it will be effective unless it is able to pass the watt jammer would have an advantage over by path loss to a mere 0.0006 watt. However, if you figure twenty metres at dBi of antenna gain, the ERP is 88 dBw. The following information has been minimised it still not has a 10 to 1 advantage. It might even be that a 100 watts or 1 kW would be more effective."

"There is some reason to believe that the above is true. For one thing the woodpecker is only heard on the phone bands where voice envelopes can be rejected by the radar video circuit. Also, when someone is sending CW dots at 25 w.p.m. the woodpecker usually QSYs within five minutes."

Some who have studied the situation have noted that persistent CW sending on the woodpecker frequency has had them go QRT, one instance it lasting for about three weeks, returning with a new gimmick. The woodpecker showed with a frequency hopping mode. If problems developed, the woodpecker would hop to some other frequency on the amateur band.

However, the woodpecker must have an IF bandwidth of 20 kHz in order to process the 100 micro-second pulses that he had heard on two metres that is not correct. Not all of a jamming signal passed on to one ham band. Observation tends to reinforce this thinking, only about eight operators sending dots at 25 w.p.m. spaced 20 to 30 kHz across a band would eliminate the advantage gained by the frequency-hopping technique.

Son of a Gun! This is high level technical stuff and we did note that deliberate jamming might not be exactly kosher. One bright type came back with the information that he had heard on two metres that H5HHH was on from Baja Bophuthatswana and that he was calling him but having trouble counting all of those dots. A likely story!!"

Is the above interesting to you? I found it so. From K6WM.

Do you think the above baloney, as "experts" in New Zealand seem to think, OR WHAT?

And, by the way, my QTH after the first week in May will be as follows:—

Alf Chandler VK3LC, 15 Point Avenue, Beaumaris 3193.

AMATEUR SATELLITES

Bob Arnold VK3ZBB

OSCAR 7 Still working on occasions, generally on Mode A unless commanded on to Mode B. Telemetry is garbled.

OSCAR 8 Working well on all Modes. Mode J on Saturday, Sunday and Wednesday; Mode A at other times.

RS Telemetry working on both RS1 and 2. My only record of the transponder being ON is orbit 1492 on 27 Feb.

RS2 power supply is having some difficulties due to excessive radiation effects.
TRIO KENWOOD COMMUNICATION CENTRE
Trio-Kenwood Amateur Equipment
Trio-Kenwood Test Instruments
B & K Precision Test Instruments.

KENWOOD PRODUCTS:
TS 120-V all solid state transceiver 30 W.P.E.P.
TS 520-S 160-10M. Transceiver
TS 820-S 160-10 M. Transceiver
R-820 S 160-M. Transceiver
R-820 Communications receiver
TS 700 SP. All mode 2M transceiver.
TS 600-A All mode transceiver
TS 7000-A 2 M FM, 25W Transceiver
TR 7500 2 M. FM, 10W transceiver
TR 7600 2 M. FM digital transceiver 800 CH.
TR 8300 70 CM. FM. Transceiver
VB 2200-A. Power booster for TR-2200
VFO-30-G Remote VFO for TR-7200 TX-12. MHZ.RX. 45. MHZ.

OPTIONAL ACCESSORIES
VFO-120
PS-20
MB-100
YK-88C
SP-120

SKY-BAND MOBILE HELICAL ANTENNAS
SKY 80 six feet long 3.5 MHz .............................................. $28
SKY 40 six feet long 7.060 .................................................. $26
SKY 20 six feet long 14.150 .................................................. $26
SKY 15 six feet long 21.100 .................................................. $25
SKY 10 six feet long 28.500 .................................................. $24

CRYSTAL FILTER, 9 MHz, similar to FT-200 ones. With carrier crystals. .................................................. $39

COAX CABLE CONNECTORS
PL-259
SO-239 Chassi Mount
Male to male joiner
Female to female joiner
Angle connector

ACCESSORIES
SWR 50A 3.5 -150Mhz SWR meter ........................................ $26
12VDC regulated supply .................................................... $26
5M RG 58-U w/PL-259 one end ........................................... $3
Bumper mount c/with 3/8" 24-thread ant. mount ...................... $7
Garter mount c/with 3/8" 24-thread ant. mount ...................... $4.50

HY-GAIN ANTENNAS
12-AVG 10-15-20M vertical 13 1/2" tall ................................... $50
18-AVT/VB 10-80M vertical 23" tall ..................................... $125
TH-6-DB 10-15-20M senior 6 el. yagi 24' boom ......................... $300
TH-3-MK3 10-15-20M senior 3 el. yagi 14' boom ...................... $240
TH-3-JR 10-15-20M junior 3 el. yagi 12' boom ....................... $175
204-BA 20M 4 el. Tiger Array 26' boom .............................. $230
HY-QUAD 10-15-20M full size cubical quad .......................... $260
2M 5 el. Yagi w/balun 63" boom ........................................... $25
2M 8 el. Yagi w/balun 12 5" boom ....................................... $30
2M 14 el. Yagi w/balun 15 6" boom ..................................... $40
BN-86 Balun 50 ohm 1:1 .................................................... $20
BU-5 Balun 50 ohm 1:1 ...................................................... $14

ANTENNAS SUITABLE FOR 10M
11M 5 el. Yagi 17" boom ................................................... $70
11M 3/4 wave G.P. w/3 radials .......................................... $20
CLR 5/8 wave vert. w/4 radials 22 9/3" 11M .......................... $50
CLR-2 5/8 wave vert. w/3 radials 19 10" 11M ......................... $40

ROTATORS AND CABLE
KEN KR-400 rotator medium duty 28V-AC ............................ $125
CDE HAM L11 rotator heavy duty ....................................... $175
RG-BU Polyfoam Coax ...................................................... 80c per yard
RG-58U Coax ................................................................. 30c per yard
8 core rotator cable ....................................................... 65c per yard

RN-86 Balun 50 ohm 1:1 .................................................... $14
BU-5 Balun 50 ohm 1:1 ...................................................... $20

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POPULAR BRANDS OF H.F. & V.H.F. TRANSCEIVERS, ANTENNAE, ROTATORS

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Dick Smith Electronics will better any genuine price offered by anyone on Yaesu products. YES! This means that we will sell you a fully guaranteed, genuine unit at a cheaper price — even if we are competing with a backyard importer who probably hasn’t even got provision for warranty service.

And you’ll be buying from a fully Australian owned company – your one stop electronics shop who actively supports amateur radio!

**HERE ARE OUR PRICES:** *(WE’LL SEND ANY OF THESE TO ANYWHERE IN AUSTRALIA FOR $6 EXTRA!)*

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Code</th>
<th>Price</th>
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<tr>
<td>FT-101E 80-10m HF transceiver</td>
<td>D-2860</td>
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<td>FT-301 Solid State HF transceiver</td>
<td>D-2870</td>
<td>$795.00</td>
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<td>FT-7 Mobile HF transceiver</td>
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<td>$375.00</td>
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<tr>
<td>FT-7 2m FM transceiver with memorizer</td>
<td>D-2890</td>
<td>$379.00</td>
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<tr>
<td>FC-301 Antenna tuning unit</td>
<td>D-2896</td>
<td>$219.00</td>
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<tr>
<td>FL-2100B 1.2kW linear amplifier</td>
<td>D-2546</td>
<td>$529.00</td>
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<tr>
<td>FRG-7 Solid State HF Rcvr</td>
<td>D-2850</td>
<td>$119.00</td>
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<td>FP-301 13.8V/20A supply</td>
<td>D-2872</td>
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<tr>
<td>FT-101Z New HF transceiver</td>
<td>D-2862</td>
<td>$775.00</td>
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<tr>
<td>FT-901D Top class HF transceiver</td>
<td>D-2854</td>
<td>$1349.00</td>
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<tr>
<td>FT-227RA 2m FM scanning transceiver</td>
<td>D-2891</td>
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<tr>
<td>CPU-2500 computerised 2m transceiver</td>
<td>D-2889</td>
<td>$549.00</td>
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<tr>
<td>FC-901 antenna tuning unit</td>
<td>D-2855</td>
<td>$246.00</td>
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<td>FL-110 200W linear amplifier</td>
<td>D-2884</td>
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<td>FRG-7000 Digital HF rcvr</td>
<td>D-2848</td>
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<tr>
<td>YC-500S 500MHz Freq. Counter</td>
<td>D-2892</td>
<td>$475.00</td>
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</tbody>
</table>

We believe that the prices above are better than any supplier in Australia. If you find someone cheaper for the same goods, tell us!

For us to better any price, simply show us the advertisement from any Australian company. After checking that they have stocks available at that price we will sell for a lower price. Offer remains open while present stocks last (approx. $250,000 worth).
FIELD DAY — PICTORIAL ROUND-UP

The Publications Committee operated portable at Devil Bend Reservoir, Mornington Peninsula, using bands 80m to 70 cm on phone and CW. Call sign used was VK3UV. Section entered — Multi-Op, 6 hours.

LEFT: 5 min. "smoko" — Yagis for 6, 2, 70 cm on Gil VK3AUI's car.

ABOVE RIGHT: Bruce VK3UV on 40 Mx CW — motto "Points gained is proportional to 'tinnies' consumed".

LOWER LEFT: "Smoko" continued — Ron VK3AFW still works on in Mazda.

LOWER RIGHT: Ron VK3OM with FT7 enjoying the shade.

Photos by Bill Rice VK3ABP.
**WAGGA ARC FIELD DAY ACTIVITY**

JOHN MOYLE NATIONAL FIELD DAY WEEK-END
Mt. Granite, near Tumbarumba, on the edge of the Snowy Mountains.

Club activity started at the camp site after Friday lunch time when the spearhead of the Wagga group got a flying start in the afternoon. Around 4 p.m. work commenced on a huge 80 metre antenna system that went for nearly a mile through the bush. Work on this antenna was interrupted many times by the necessity to quench the consistently high thirst. More of the party arrived just after tea and one or two tents were erected and the scene was set for the evening’s social activities that always accompany the Wagga Club’s field day activity. The social activities and general frivolities continued till well into early Saturday morning. Saturday opened with once again good weather, and the task of erecting the rest of the tents, aerials and generator systems commenced. By this time around 15 club members were at the site. It was a real team effort in getting the wide range of HF and VHF aerials assembled. By 3 o’clock everyone was fed, all gear tested out, the log sheets ready and pens sharpened. Activity was very consistent on all HF bands during the week-end whilst 6 and 2 metres did appear to be a little disappointing due to lack of activity within the service range of Mt. Granite. Our VHF operation did confirm that the bands were actually open for most of the week-end . . . but there was just not sufficient participation from home stations and other field stations to ensure the level of activity so much hoped for during a large field day operation. However plenty of contacts were made and we don’t recall any of our club participants saying that he was bored. It was a terrific week-end enhanced by a mixture of good operating conditions on the air and, of equal importance to us, a really first class social period that will be remembered for a long time. Let’s hope we see more stations in the field next year.

**WEIGHT:** 3.1 kg (6 lb. 14 oz.).

**POWER REQUIREMENTS:** 12-14V DC, 16 amps peak on transmit, supply connections, etc., are automatically made when set is plugged into special mobile mount or AC power supply console.

**MODELS OF OPERATION:** SSB (USB, LSB), CW.

**GENERAL SPECIFICATIONS**

**PRICE**

WITH NOISE BLANKER INSTALLED: 

<table>
<thead>
<tr>
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<td>DDC</td>
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<td>other ACCESSORIES AVAILABLE</td>
<td>$120</td>
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</table>

**OD6-C**

For more information contact: Melbourne Enquiries: (03) 547 5860

**THE PERFECT MOBILE RIG**

**ATLAS 210X/215X — 5 BAND — 200 WATT**

Still the most powerful mobile rig on the market.

**PRICE** WITH NOISE BLANKER INSTALLED: $852 INCLUDING TAX.

**GENERAL SPECIFICATIONS**

**FREQUENCY COVERAGE WITH INTERNAL VFO:** 1800-2000 kHz (Model 215X only), 3500-4000 kHz, 7000-7500 kHz, 14,000-14,500 kHz, 21,000-21,500 kHz, 28,400-29,400 kHz (Model 210X only). Note that 10m band may be easily adjusted to cover any 1000 kHz segment.

**FREQUENCY CONTROL:** Highly stable VFO common to both receive and transmit modes. Less than 1 kHz drift during the first 30 minutes. Less than 300 Hz after 30 min.

**ALL SOLID STATE DESIGN:** 4 ICs, 18 transistors, 32 diodes.

**MODES OF OPERATION:** SSB (USB, LSB), CW.

**MODULAR CONSTRUCTION:** With plug-in PC boards.

**PLUG IN OPTIONS:** Antenna, Power and supply connection, etc., are automatically made when set is plugged into special mobile mount or AC power supply console.

**POWER REQUIREMENTS:** 12-14V DC, 16 amps peak on transmit, 300-600 mA in receive.

**DIMS:** 24.1 cm wide, 8.9 cm high, 24.1 cm deep.

**WEIGHT:** 3.1 kg (6 lb. 14 oz.).

**ACCESSORIES**

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**FOR ATLAS AND SPECIALISING IN MARITIME MOBILE AMATEUR RADIO**

Frank VK2NFW working 20 metres during the early hours of Sunday morning.

**QSP**

**SOME COMMON DEFINITIONS FOR UNLONELY PERSONS**

ADDER: A snake in the grass.

FULL ADDER: As above, but not hungry any more.

AND: Strine.

OR: Substance from which metals are extracted.

EXCLUSIVE OR: Uranium.

SHIFT REGISTER: Book to sign on and oil at work.

OR: Substance from which metals are extracted.

STORE: Local shop.

AND: Stryne.

ADDER: A snake in the grass.

NAND: Past tense of grandmother.

DRIVER: Chauffeur.

BUFFER: French polisher.

DECODER: DC3.

TWISTED RING COUNTER: A very dirty old man.

ODD: Everything that is odd.

OCTAL: Everything that is octal.

BUFFER: French polisher.

EXCLUSIVE OR: Uranium.

FULL ADDER: As above, but not hungry any more.

NOR: What dogs do to bones.

NOT: Refer to Scout manual.

DECADE: New brand of soft drink.

CODE: Nasal virus.

BINARY: Two one-legged canaries.

OCTAL: Everything that is octal.

FAN OUT: Regional air-conditioning.

CHIP: Thing eaten with fish.

From Department of Transport Airways Engineering Branch News Bulletin “Grapevine”.

**THE UNIQUE WIDE RANGE WIRE TUNER**

The Unique Wide Range Wire Tuner will provide a perfect match to nearly any single wire fed antenna system in the frequency range 1.7 MHz to 30 MHz. It provides the broadest tuning range of any antenna coupling device on the amateur market. At 6% in. wide, 5% in. high and 13% in. deep, it is compact in size and capable of handling in excess of 1500 watts of output power through its continuously variable LC combination. There are no gaps between tapped settings as found on most transmatch devices allowing any frequency within the specified range to be matched. It is therefore suitable for use as an amateur services in the MF and HF spectrum.

It is ideal for portable and maritime mobile operation where space and/or lack of time precludes the use of various resonant antennas. Herb Johnson, President of Atlas Radio, uses one on his own yacht and recommends their use with Atlas equipment. Construction is of first quality materials throughout.

Write or phone for further information and full technical specifications.

**PRICE:** $295 — SALES TAX AND DUTY PAID. GUARANTEED FOR ONE YEAR.

**ALSO AVAILABLE:**

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<thead>
<tr>
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<tr>
<td>Shure 404C PTT hand held mike</td>
<td>$35</td>
</tr>
<tr>
<td>Shure desk mike</td>
<td>$35</td>
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</tbody>
</table>

**NOTE:** The Atlas 350XL will be in stock again as soon as it is back in production. It is temporarily out of production while Atlas concentrate on a new small model, thus increasing their range to three models.
LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

The Editor,

Dear Sir, I wish to draw the attention of a certain clout who recently joined us by using the call sign VKIAHK on the 144 MHz band to the fact that, as the genuine owner of that call, I strongly object to this practice.

I believe that the recent practice of using someone else's call sign, as evidenced by call sign VKIAHK, is unacceptable. This not only infringes the rights of the genuine owner of the call sign, but also undermines the integrity of the amateur radio community.

Yours faithfully, H. O. Kellas VKIAHK.

The Editor,

Dear Sir, I read with interest the comments from the "RD" contest manager in February AR, page 60, about the problem of log entries. Having been involved in a related area, I know only too well the problem he faces and he has my sympathy. However, I have also seen the other side of the coin, too, and I believe some excuse for the problem.

I suggest that any rules or regulations concerning log entries should be revised to accommodate the needs of both the entrant and the operators. One copy could simply be attached to the station log as a permanent record.

The use of log sheets to record contact information is not only cumbersome but also time-consuming. By using computer technology, we can streamline the process of recording and verifying contacts. This would not only save time and effort but also ensure accuracy.

Sincerely yours, Terry Clark VK2ALG, RNARS 1196.

The Editor,

Dear Sir, I wish to second the sentiments expressed by "RD" concerning the problem of log entries. It is my firm belief that the use of log sheets to record contact information is an outdated practice.

By employing log sheets, we are not only increasing the workload of the entrants but also adding unnecessary complexity to the process of verifying contacts. It is my suggestion that we should consider the introduction of digital log sheets, which would not only reduce the workload but also ensure accuracy.

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The use of log sheets to record contact information is not only cumbersome but also time-consuming. By using computer technology, we can streamline the process of recording and verifying contacts. This would not only save time and effort but also ensure accuracy.

Sincerely yours, Terry Clark VK2ALG, RNARS 1196.

The Editor,

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Sincerely yours, Terry Clark VK2ALG, RNARS 1196.
Why then, was the material submitted by Mr. Ramsbom published, apparently in its original form? Perhaps you could pursue these matters further through the good offices of the Federal Convention. Had he rejected the Woolley Bum article, we would not have been disturbed by it and have remained ignorant of its existence. Furthermore, he had exercised his editorial powers, neither you, I, or Mr. Ramsbom would ever have known why he rejected it! The editor's work is fraught with psychological pitfalls, so that what appears to him as a boisterous attempt at humour albeit, on the coarse side, becomes an outrage to some readers and evokes guffaws of belly laughter from others. Again, I emphasize my dislike of ideas and material of the Woolley Bum species, and their usually over loud noises of those who enjoy it. There are some varieties of journalism which seek, covertly, to influence readers under the well known guise of doing good! We've all heard of the Do Gooders.

How about this gem from QTC, our Queensland pamphlet, of October 1978.

"MAINLY FOR OLD TIMERS"

Lord, thou knowest better than myself that I am growing older and I will some day be cold. Keep me from getting talkative and particularly from the fatal habit of thinking I must say something on every occasion. Release me from the craving to try to straighten out everybody's affairs. Keep my mind free from the recital of endless detail; give me wings to get to the point! I ask for grace enough to listen to the tales of other plans. Help me to endure them with patience. But seal my lips on my own aches—they are increasing and my love of rehearsing them is becoming sweeter as the years go by. Teach me the lesson that occasional silence is not a mistake. Make me reasonably sweet; a sour person is one of the crowning works of the devil. Make me thoughtful enough to listen to the tales of other plans. Help me to try a scoring system based on participants' scores only.

Several years of RD contest participation.

M. N. O'Burtill VK3WW,
3 Maxwell Street, Lalor, Vic. 3075.

CONTESTS

Wally Watkins VK22NW/NCU
Box 1065, Orange 2800

WESTLAKES NOVICE CONTEST 1978: RESULTS

SECTION N (Novices)
CLASS A (Phone)
VK2NBZ 447 VK3NLP 144
VK2NLY 442 VK3NWC 65
VK2XUB 376 VK4NKL 456
VK2VBY/P 323 VK4NK1 283
VK2NJ2 163 VK4NKJ 99
VK2VBC 157 VK5NLC 180
VK2VAR 95 VK5NDZ 543*
VK2ZXU 73 VK5NFB 384
VK2NB 47 VK5NGP 366
VK2NB 45 VK7NSA 193
VK2NLI 415 VK7NFR 84
CLASS B (CW)
No logs received.

CLASS C (Open)
VK2VX 761* VK3NTS 268
VK2NYP 470 VK3NPJ 165
VK2NMP# 234 VK3NHR 101
VK2NNG 747 VK5NAY 336
VK2NHA 645 VK8NJN 205
VK2NTP 574

SECTION F (Full Call)
CLASS A (Phone)
VK2AEB 366 VK3BER 10
BK2BID 375 VK4ARW 308
VK2VBY 208 VK4AYL 10
VK2BOS 130 VK4ACL 53
VK2BLP 94 VK5ABW 257
VK3AKN 62 VK8DB 444*
VK2AKX 48 ZL1TB 419
VK3AV 66

CLASS B (CW)
VK3AXD 227

CLASS C (Open)
VK2KL 302 VK3KS 155
VK2IQ 91 VK4AAR 380*
VK3BIR 225

SECTION L (Listener)
CLASS A (Phone)
R Weston VK3 283*
C. Thorpe VK4 219
R. Daymon VK5 69
E. Entwistle VK6 5

CLASS B (CW)
E. Trebilcock VK3 25*
M. Hall VK2 453*

SECTION R (Club)
CLASS A (Phone)
VK2BHV 83* VK3ARC 45

CLASS B (CW)
No logs received.

CLASS C (Open)
VK2ATZ 655 VK5ALM 254
VK3BHU/P 791* * Indicates winner in this Class.

ROSS HULL MEMORIAL CONTEST 1978-79:

(a) TX Open:

7 Day 48 Hour

(b) TX Phone:

VC2NZ 556 120
VK4D 2748 954
VK2ZBD 930 249
VK3AUJ 784 420
VK3AUJ 509 209
VK2YHG 96

(c) TX CW:

Nil entry.

(d) RX Open:

L40018 16

CONTEST CHAMPION TROPHY POINTS TO DATE

VK2NZ—10 points, VK4D—10 points, VK2ZBD—9 points, VK3AUJ—8 points, VK3AUJ—7 points, VK2YHG—6 points.

Points are subject to confirmation of WIA membership.

Other nominated contests for 1979 are: John Moyle, Remembrance Day and the VK/2L.

ROSS HULL MEMORIAL CONTEST 1979-80:

(a) TX Open: 7 Day 48 Hour

(b) TX Phone:

VC2NZ 556 120
VK4D 2748 954
VK2ZBD 930 249
VK3AUJ 784 420
VK3AUJ 509 209
VK2YHG 96

MOGARUS

New subscription rate:

QST — for one year $18.75

WIA

P.O. Box 150, Toorak, Vic. 3142

QSP

CO PROCEDURE

REMEMBER, before calling QSO, first a clear frequency must be found. Listen carefully on the frequency for at least a minute, check that the frequency is clear, then give your call sign. It is also recommended that you enquire if the frequency is in use. If this procedure were followed faithfully operating on the HF amateur bands would be much more enjoyable. It is also called "good manners."

The great evolution of DenTron power machines!

DTR 2000 L — 2 kW AMPLIFIER

The ultimate in precision linear amplifiers from DenTron. Features range from a Broadcast proven 8877 tube with a continuous duty built-in power supply with a vacuum impregnated power transformer. Cooling is EIMAC specification forced air, through a pressurized chimney and chamber. Dual metering is provided for plate voltage and current monitoring, along with front panel switching of transformer secondary taps and linear bypass. Compatible with most exciters. These amplifiers have been tested and proven in every imaginable situation folks could put them through, from rare DXpeditions to medical research labs. Not to mention hamshacks the world over.

SPECIFICATIONS
- Freq. Ranges: 10-160 metres.
- Modes: USB, LSB, CW, RTTY, SSTV
- DC Plate Voltage: 2600V approx.
- CW (idle + 1800V approx.)
- Duty Cycle: 100% at full power
- Input Impedance: 50 ohms nom.
- Output Impedance: 50 ohms nom.
- ALC: negative going, adjustable from rear panel
- Spurious Emissions: IMD, greater than 30 dB down Harmonics, greater than 40 dB down FCC Type Accepted
- Size: 24/14/14.5W x 14/14/14.5D.
- Weight: 47 lbs.

$1399

MLA 2500 B — 2 kW AMPLIFIER

The world famous MLA-2500 is now the MLA-2500B. Featuring the same EIMAC 8875 tubes, the MLA-2500B maintains the same unit that thousands of Amateurs now have in use the world over; a cool-running full-power Linear Amplifier of high quality, all-American construction and design.

SPECIFICATIONS
- Freq. Ranges: 10-160 metres.
- Modes: USB, LSB, CW, RTTY, SSTV
- Power Requirements: 234/117V AC 50/60Hz
- RF Drive Power: 125W max., and 65W RMS min. for 1 kW DC input
- DC Plate Voltage: SSB (idle + 2600V approx.)
- CW (idle + 1800V approx.)
- Duty Cycle: 100% at full power
- Input Impedance: 50 ohms nom.
- Output Impedance: 50 ohms nom.
- ALC: 3 to 1 max.
- ALC: negative going, adjustable from front panel
- Spurious Emissions: IMD, greater than 30 dB down Harmonics, greater than 40 dB down FCC Type Accepted
- Size: 24/14/14.5W x 14/14/14.5D.
- Weight: 47 lbs.

$1199

The CLIPPERTON-L 2 kW AMPLIFIER

Adventure is a part of hamming, and DenTron's new "Clipperton-L" linear amplifier is dedicated to that spirit, with continuous duty power and high quality components. There are four 572B triodes operating in grounded grid, hi-lo power switching and linear bypass from the front panel, a large illuminated meter for monitoring plate current and plate voltage, a built-in continuous duty power supply with rear panel selection of 117V or 234V primary transformer taps, adjustable ALC. Compatible with most exciters, the Clipperton-L delivers 2000 watts PEP input on SSB and 1000 watts DC input on CW, RTTY or SSTV; all continuous duty.

SPECIFICATIONS
- NEW FEATURE: Hi-Lo power switching
- 50 Watt input impedance unbalanced at better than 1.5 to 1 VSWR
- Harmonic Suppression: meets or exceeds FCC requirements
- Built-in ALC (negative going)
- Built-in RF wattmeter
- Easily changed 117v or 234v AC 50-60Hz
- Third order distortion down better than 30 dB
- RF Drive: 135W max.
- Duty Cycle: 100% at full power
- Input Impedance: 50 ohms nom.
- Output Impedance: 50 ohms nom.
- ALC: negative going, adjustable from rear panel
- Spurious Emissions: IMD, greater than 30 dB down Harmonics, greater than 40 dB down FCC Type Accepted
- Size: 15 by 6.5 x 14 by 14.5" D.
- Weight: 42 lbs.

$799

GLA 1000 — 1 kW AMPLIFIER

SPECIFICATIONS:
- SIZE: 5¾" H, 11" W, 11½" D.
- WEIGHT: 24 lbs.
- ELECTRICAL — Power Consumption: 117V AC 50/60 Hz 12.5 amps. Factory fused at 15 amps. 234V AC 50/60 Hz 7 amps. Recommended fuse, 10 amps.
- FREQUENCY COVERAGE: 80 metres: 3.45 to 4.3 MHz
- 40 metres: 6.950 to 7.5 MHz
- 20 metres: 13.950 to 14.5 MHz
- RF DRIVE: Max. 135W for 1 kW input
- DC INPUT: 1 kW CW, 1200W PEP SSB
- INPUT IMPEDANCE: 50 ohms 1.5:1 VSWR APX.
- SPURIOUS EMISSIONS: Ind better than 30 dB, harmonics down better than 40 dB
- COMPONENTS: 4 — D50-A tubes
- 6 — Diodes.
- FCC Type Accepted.

$489

WRITE FOR OUR LATEST HAM-RADIO EQUIPMENT CATALOGUE

DenTron ANTENNA TUNERS:
- MT 3000A $447
- MT 2000A $270
- SUPER TUNER PLUS $199

$104

$160

$95

$43
MEMORY DISPLAY that remembers frequencies
amateur transceiver. The RJX-1011 covers all
ol 1.5, 2, and 3. Perfect for Ham base
watts. SWR BRIDGE reads standing
wave ratios —0-20 , 0-200 , 0-2000 watts. SWR
AM-PM light. Hashing seconds colon, and 12
put to antenna and viewing modulation patterns.
240V AC. Great base station accessory for
amateur communications.

The most deluxe Black Cat accessory.
Hence, the incomparable National RJX-1011
turns 600 kHz and desired frequency • RF output
with 6 meter input. For further information and specifications
write, phone or call in!

For further information and specifications
write, phone or call in!

CONVERT MORSER, RTTY AND ASSOL TO VIDEO

$1990

WAVASEE JB1003C/M

CLOCK/WATTMETER/SWR BRIDGE

ELECTRONIC CLOCK 5 in. red LED digits AM-FM light flashing seconds colon, and 12
hour format. Peak-reading WATTMETER has 3 ranges —0-500, 0-5000, 0-500 watts. SWR
BRIDGE shows standing wave ratios of 1.2, 1.3 and 1.5 W. Transmit 0-2000 watts. Low 240V
AC. Great base station accessory for

$668

WAVASEE PRODUCTS

JB1003C/M Clock/Wattmeter/SWR $225
JB1002FC/M Counter/Wattmeter $225
JB101015/CVM SWR/Wattmeter/SWR $225
JB10005W Wattmeter/SWR Bridge $130
JB10102W Wattmeter $130
JB10006W Wattmeter $130
JB10007W Wattmeter $130

KENWOOD PRODUCTS

ANTENNAS

SR-1-12 on. 20, 15 & 5-5 elements 10 20
SR-12 on 10, 15 & 20 elements 47
4-BTV w/80m Resonator (40-80 vertical) 10

$135

ANTENNA ROTATOR

MEDIUM-SIZED MAIN ANTENNA ROTATOR —FU 400. With approved power supply, additional mast clamps. Completed for long, trouble-free operation. 200 kg vertical weight capacity. Extra heavy duty stave that prevents wind.ing.

$117

SCOPE/ COUNTER/ WATTMETER/SWR BRIDGE

The most useful Deluxe Black Cat accessory. MONITOR SG-2B permits measuring output to antenna and viewing modulation patterns. FREQUENCY COUNTER has six big LED digits, 1 to 50 MHz range (typical), 100 cycle readability. Simple-to-use. Peak-reading WATTMETER has 3 scales—0-500, 0-200, 0-2000 watts. SWR BRIDGE reads standing wave ratios of 1.2, 1.3 and 2.5. Perfect for Ham base

$379

Wilson SY-2

DELIVERS OUTSTANDING PERFORMANCE ON 20, 15, AND 10 METERS. Features Wilson's large diameter
High-Q traps and pre-amplifiers. A beta-match method prevents tapered impedance, which provides most efficient 3 band matching and RG ground to eliminate precipitation static. The result is SWR less than 1.5:1 at resonance on all bands and maximum front-to-back. An added feature is the separate variable reflector for correct mains spacing. Add to this the rugged boom to element mounting, heavy duty tapper swaged elements.

$240

MALTEZ ORDERS: Box K21, Haymarket NSW, 2000, Australia
WRITE, PHONE OR CALL IN!
Next month, MAY 1979, we shall have a stock of new CDR rotators, apart from the well-known HAM-III. The TAIL-TWISTER is actually a larger version of the HAM-III, good for Christmas-tree stacked HF Yagis or 40 Metre beams, further the BIG-TALK, a smaller one than the HAM-III, for small HF and larger VHF beams. The BIG-TALK has apart from the normal azimuth control, a push-button programmable 4-position control.

All rotators of necessity will continue to be for 28 Volt low voltage AC operation as the N.S.W. Electricity Authority demands high fees for inspection and approval of 240 V AC operated control boxes which expense we cannot justify with the small market here for rotators.

<table>
<thead>
<tr>
<th>HY-GAIN ANTENNAS:</th>
<th></th>
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<tbody>
<tr>
<td>12-AVQ 10-15-20M vertical</td>
<td>$50</td>
</tr>
<tr>
<td>18-AVT/WB 10-80M vertical</td>
<td>$125</td>
</tr>
<tr>
<td>TH-EDXX 10-15-20M 6-el yagi</td>
<td>$300</td>
</tr>
<tr>
<td>TH3-MK3 10-15-20M 3-el yagi</td>
<td>$260</td>
</tr>
<tr>
<td>TH3-JR 10-15-20M 3-el yagi</td>
<td>$175</td>
</tr>
<tr>
<td>204-BA 20M 4-el Tiger Array</td>
<td>$230</td>
</tr>
<tr>
<td>HY-QUAD 10-15-20M Quad</td>
<td>$260</td>
</tr>
<tr>
<td>2M 5-el yagi w/balun 6'3&quot; boom</td>
<td>$25</td>
</tr>
<tr>
<td>2B 8-el yagi w/balun 12'5&quot; boom</td>
<td>$30</td>
</tr>
<tr>
<td>2M 14-el yagi w/balun 15'6&quot; boom</td>
<td>$40</td>
</tr>
<tr>
<td>BN-86 balun for beam buyers</td>
<td>$20</td>
</tr>
</tbody>
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<thead>
<tr>
<th>ANTIMNAS SUITABLE FOR 10M</th>
<th></th>
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<tbody>
<tr>
<td>11M 5-el yagi 17&quot; boom</td>
<td>$70</td>
</tr>
<tr>
<td>11M CLR 5/8W w/4-radials</td>
<td>$50</td>
</tr>
<tr>
<td>11M CLR-2 5/8W w/3-radials</td>
<td>$40</td>
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</tbody>
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<thead>
<tr>
<th>ROTATORS AND CABLES:</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>KR-400 Med. duty 28V AC oper.</td>
<td>$125</td>
</tr>
<tr>
<td>HAM III Hy. duty 28V AC oper.</td>
<td>$175</td>
</tr>
<tr>
<td>Bottom bracket Ham III</td>
<td>$10</td>
</tr>
<tr>
<td>KS-065 Thrust bearing KEN</td>
<td>$25</td>
</tr>
<tr>
<td>8-core rotator cable per yd.</td>
<td>65c</td>
</tr>
<tr>
<td>RG-8U foam co-ax per yd.</td>
<td>80c</td>
</tr>
<tr>
<td>RG-58U co-ax per yd.</td>
<td>30c</td>
</tr>
<tr>
<td>No.14 H.D. copper wire per yd.</td>
<td>10c</td>
</tr>
<tr>
<td>¾&quot; H.D. foam co-ax per ft.</td>
<td>$1</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>ACCESSORIES:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SWR-50A 3.5-150Mhz SWR meter</td>
<td>$26</td>
</tr>
<tr>
<td>Voltage Reg. 18V AC in. 12V DC output</td>
<td>$23</td>
</tr>
<tr>
<td>240/18V AC transformer</td>
<td>$10</td>
</tr>
<tr>
<td>5M RG-58U w/PL-259 one end</td>
<td>$2.50</td>
</tr>
<tr>
<td>Bumper Mount ¾&quot; 24-thread</td>
<td>$5</td>
</tr>
<tr>
<td>Gutter Mount ¾&quot; 24-thread</td>
<td>$3</td>
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<thead>
<tr>
<th>FOX CONNECTORS:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PL-259, SO-239. Cable joiners ea.</td>
<td>75c</td>
</tr>
<tr>
<td>Right angles &amp; T connectors ea.</td>
<td>1.50</td>
</tr>
<tr>
<td>Mic sockets 3 and 4 pin ea.</td>
<td>75c</td>
</tr>
<tr>
<td>GLP right angle RG-58U to SO-239</td>
<td>2.50</td>
</tr>
<tr>
<td>w/lock nut &amp; weatherproof cap</td>
<td>90c</td>
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</tbody>
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<thead>
<tr>
<th>KENWOOD PRODUCTS:</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>TS-520-S 10-160M transceiver</td>
<td>$725</td>
</tr>
<tr>
<td>TS-820-S digital transceiver</td>
<td>$1100</td>
</tr>
<tr>
<td>TS-700SP 2M all mode trans.</td>
<td>$850</td>
</tr>
<tr>
<td>TS-120V 10-80M mobile trans.</td>
<td>$600</td>
</tr>
<tr>
<td>TR-7600 2M FM transceiver</td>
<td>$400</td>
</tr>
<tr>
<td>TL-922 10-160M linear amp.</td>
<td>$1200</td>
</tr>
<tr>
<td>DK-520 Adaptor (TS-520)</td>
<td>$20</td>
</tr>
<tr>
<td>LF-30A low pass filter</td>
<td>$30</td>
</tr>
<tr>
<td>TV-502 2M transverter</td>
<td>$300</td>
</tr>
<tr>
<td>AT-200 Antenna matchbox</td>
<td>$175</td>
</tr>
<tr>
<td>DS-1A DC/DC converter</td>
<td>$75</td>
</tr>
<tr>
<td>VFO-820 for TS 820-S</td>
<td>$185</td>
</tr>
<tr>
<td>VFO-520S for TS-520-S</td>
<td>$160</td>
</tr>
<tr>
<td>SP-520 for TS-520-S</td>
<td>$30</td>
</tr>
<tr>
<td>MC-10 hand held microphone</td>
<td>$20</td>
</tr>
<tr>
<td>MC-50 Desk microphone</td>
<td>$50</td>
</tr>
<tr>
<td>HC-2 Ham clock</td>
<td>$35</td>
</tr>
<tr>
<td>BS-8 and BS-5 (pan adaptor) ea.</td>
<td>$65</td>
</tr>
</tbody>
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<thead>
<tr>
<th>YAESU MUSEN PRODUCTS:</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>FT-7 10-80M mobile trans.</td>
<td>$475</td>
</tr>
<tr>
<td>FT-301S 10-160M mobile trans.</td>
<td>$600</td>
</tr>
<tr>
<td>FRG-7 5-30Mhz receiver</td>
<td>$350</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>NOVICE SPECIALS:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10M Sideband SE 502 USB/AM 15W PEP 240V</td>
<td>$150</td>
</tr>
<tr>
<td>AC/12V DC. inbuilt SWR/RF meter</td>
<td></td>
</tr>
<tr>
<td>28.3-28.6 Mhz</td>
<td></td>
</tr>
<tr>
<td>10M Universe 224M USB/AM 15W PEP 12V</td>
<td>$125</td>
</tr>
<tr>
<td>DC 24-ch. 28.480-28.595 Mhz in 5-Khz steps</td>
<td></td>
</tr>
<tr>
<td>clarifier operates transmit and receive</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>CRYSTALS (For amateur license holders)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Set of 8-crystals for converting 23-Ch. 27-Mhz CB units to 28Mhz. Suitable for Sideband, Universe, Kraco, Hy Range V etc. Converts as per UNIVERSE 28Mhz above — crystals and conversions instr.</td>
<td>$40</td>
</tr>
</tbody>
</table>

All prices quoted are net, ex Springwood NSW, cash with order, subject to change without prior notice. All risk insurance is free: freight by air, road, rail or post at cost. All orders cleared on a 24 hour basis after receipt with payment.

Arie Bles (VK2AVA) Proprietor
Roy Lopez (VK2BRL) Manager
VK/ZL/OCEANIA DX CONTEST 1978: RESULTS
160
20
440

40
4
—
4
—

20
40552
13585
86480
27666

15
48922
98670
8960
38148

10
106353
—
2046
18666

379800
51675

9432
4717
525

4
—

500

1824

—
—
360
2080
1450

3719
11766

—
36

8600
44376
1184
552

117784
136192
121800
91910
3968
16900
20336
6030
608
450
546608
9024
44460
11360
50
80
32
188
72

360
240
700
990
550

70584
1856
—
—

4365
1300

—
—

144
289

—

19800

36736
10320
9144
72
14880

72
66360
2112
11970
31302

19647
7095
11094
288

256542
15840
1680
2346
972
459

70863
97902
59625
36300
16851

2376
63114
39804
13923

1440
1012
264

1080
60

9522

798
6144

221841
152368
102480
118542
49104
51600

46

258

32448
13446

102315
35154
25704
819

23450

5
120
—

224

62805

Total
195851
112255
97930
84480
379800
236082
169459
136192
121800
121657
35154
29672
22440
20336
19647
17364
11766
11702
3062
546608
274166
104676
11360
4594
3374
2080
1482
1398
531
360
240
Check
108299
109212
69319
36372
31731
Check
73032
66360
65226
53646
45225
4365
8320
1072
508
289
251163
152368
134933
118542
63348
57749
23450
304
Check

1334
2350

210
3510

1549
5880

75864

79980
1968

218873
1968

122625

122625

VK3RJ
VK3AEW
VK3YK
VK3VF
VK3DQ
VK3CM
VK3XB
VK3SV
VK3FG

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5

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24
4

—

1650
2700
3106
1989

8360
3920
3500
3710

21285
912
2178
561

—

—

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—

—

120
420
5

—

840

—

—

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—

—

20

200
180
45

—

—

45

20

—

VK4XA
VK4SF*
VK4CJ
VK5MD
VK50R
VK5SW
VK6AJ
VK6NZ
VK6FW
VK7ZZ
VK7RY

—

—

11232

40180

—

—

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—

—

224

—

16

2480

—

—

—

—

—

—

—

—

27875
16289
4300

—

—

—

—

—

22010

—

—

—

—

—

20

30

21285
10951
8802
7257
6659
420
205
180
65

—

55440
128
260

112230
2100
1134

219147
2228
1634

15680
286

5088

51123
16575
4300

—

—

—

41328
—

918
180

32

VK9XW

—

8844

~

41328
22010
3138

—

18

3120

2264
578

1320

—

—

4902
840

—

8844

•denotes QRP

ZL — Phone
Call
ZL1AOI
ZL1AZV
ZL1BQD
ZL1ANH
ZL1AKY
ZL1BCG
ZL1MQ
ZL1AGO*
ZL1AAS
ZL1BHR
ZL1AQO
ZL2ACP
ZL2AH
ZL2BAK
ZL2AJB

160

80

40

—

—

—

—

—

—

40
—

—

—

—

—

—

220

—

—

16
100

—

570
2960
2450

—
—
—

—

—

—

—

—

—

270

—

—

—

—

—

—

5
90

288
4

—

190
150

—

—

10

—

—

ZL4IJ
ZL4BE
ZL — C W
ZL1ADI
ZL1IL
ZL1BCG
ZL1HV
ZL1MQ

4488

—

—

ZL3ABC
ZL3AAX

540

4560

ZL2BR
ZL2ACP
ZL2AGY
ZL2AYP
ZL2GZ

—

30
—

ZL4HA

175764

—
—

2320
3016
4446

—

298452
80190
3140
4488

—

—

3996

342359
164704
17533
9988

53650
22176

22275
7420

22050
7665

98369
37411

5328

6825

12163
Check

1056
107678
6790

—

150274
17072
16160
5336
3888

114030
1512
78435
23908
12

265360
128404
115279
29364
7600

62062

62952

44908
24087

22401
91440

41760
14840

147415
91440
88588
38957
Check

—

—

2112
13984
100

20
—

—

—

—

—

—

—

—

20
30
30

—

130152
12816

—

—

267036

Total
558648
541974
535230
360760
303952
162862
17612
11504
2960
2450
270

10
156510

—

112112
143510
7100
2294

—

—

15
110682

95535
8378
10140
3608

—

—

20
291456
541974
87362
360760
5500
80132
11440
1900

1900
—

34544

—

3700

.—

—

52326

15872

—

—

432

1033204

VK • ZL INDIVIDUAL BAND SCORES
Band
Open
Phone

160

80

40

—

—

—

—

—

5

—
—
—

—

75
—

—
—

—

61.14
—

3600
—

20
2436

15
128

10
2775

Total
5339

62484
11088
15360
23160

73706
33250
8112
10836
16728

47411
11868
24552

183601
62355
48024
37671
16728

—

.

—

5

23540

14280

3762

—
—

148044
540

148044
42127

VK
30T
2XT
3AMK

CW

546608
379800
274166

VK
4XA
2APK
3MR

10m
3AMK
2AXM
6NE

256542
236082
221841

15m
30T
2XT
2NZU

546608
379800
136192

Phone

CW

219147
183601
148044

ZL
1ADI
1AZV
1BQD

558648
541974
535230

3MR
4XA
2APK

148044
112230
47411

1AKY
1BQD
1ADI

298452
175764
156510

1AOI
2ACP
1BCG

114030
91440
78435

2APK
4XA
2GW

73706
55440
33250

1BQD
2AH
2ACP

267036
143510
112112

1IL
2BR
2AGY

107678
62952
41760

Amateur Radio

ZL
1ADI
2BR
1IL

April 1979

265360
147415
128404

Page 39


2. General acceptance of the new scoring system.

the readers of Amateur Radio, I thank Brian for
future. I will endeavour to keep up an Interesting
VKSCA after a certain amount of persuasion on
2. Too many late logs — all from VK.

4U1 UN — United Nations Headquarters, New York,
STO — Southern Sudan — only contacts made from
countries now number 45.

DXCC TALLIES

from time to time. The recipients of awards Issued
are made within two years after the contest.

On behalf of all the members of the WfA and
the object of creating more interest in this
mode, I have decided to publish the confirmed
tallies for RTTY operators who send me details.
As a suggestion I would envisage the issue of an award for 25
countries and with
rules to apply. I invite any comments on this
proposition.

Here are two scores for a start.

CONFRONRT ON RTTY

VKSRY — Tally 47.
VK5SW — Tally 20.

SSTV

is there any interest in an award for this mode.
Although I am not an enthusiast, I would be
Please to receive any comments.

Finally, here are the details of an award for
RTTY operators.

EURO AWARD

The Deutscher Amateur Radio Club (DARC) Issues
the Europaeisches RTTY Diplom (EURD) to promote
RTTY activities. The Award is presented by the
Deutsche Amateur Fernschreib Gruppe (DARG)
and is available to all licensed amateurs who use RTTY.
The Award is issued in three classes for
working European countries and prefixes.
Class 3: 100 prefix points in at least 20 countries
Class 2: 150 prefix points in at least 30 countries
Class 1: 200 prefix points in at least 40 countries.

The European countries are determined by the
WAE country list. Each official European prefix
class is based on European countries and prefixes.

In Queensland. The population figures in these
are 20 (twenty) Incorporated Cities and
DELETIONS

DELETIONS

1. This Award is divided into two sections:
(a) WORKED ALL CITIES AND TOWNS
(b) WORKED ALL SHIRES

2. Any transmitting Amateur or Listening Amateur
may apply, provided that these applications comply with the Rules.

3. Only one Award is issued, but this will be
updated upon receipt of further additions.

4. WORKED ALL CITIES AND TOWNS

There are 20 (twenty) Incorporated Cities and
Towns in Queensland —
Brisbane, Bundaberg, Cairns, Charters Towers,
Daly, Gladstone, Gold Coast, Goondiwindi,
Gympie, Ipswich, Mackay, Maryborough, Mount Isa,
Redcliffe, Rockhampton, Roma, Thursday Island,
Toowoomba, Townsville, Warwick.

Initial Award: Fifteen contacts with Radio Ama-
ters from these Cities and Towns. A "silver sticker", If ALL Cities and Towns are worked.

5. WORKED ALL SHIRES

There are 113 (one hundred and thirteen) Shires
in Queensland. The population figures in these

ARGWAYS
COLUMN

Bill Verrall VK5SW
7 Lalit Ave., Flinders Park, SA

Readers will observe that I have taken over the job of Federal Awards Manager from Brian
VKSCA after a certain amount of persuasion on
his part.

On behalf of all the members of the WIA and
the readers of Amateur Radio, I thank Brian for a
good job done over the past five years. No
doubt we will hear more of him on the air in the
future. I will endeavour to keep up an Interesting
standard in this column.

AUSTRALIAN AWARDS

It is my intention to compile an updated list and
give maximum publicity in this column to awards
Issued to WIA members. Each official WIA prefix
counts one (1) prefix point per band.

In this effort were made to make the scoring effective
and multi-band attractive without overloading this. Possibly contact scores for bands
could require revising but changing conditions
could alter things again!

3. Inability of some to read and understand the
rules.

4. General lack of support for QRP.

5. In general — a dropping off of CW operation.

6. Great support and results from VK "Novice"
area.

7. There is a problem of costs — certificates, re-
duplicates for winners, postage, etc, etc.

8. The compilation of a big contest log is a time
consuming task and this is appreciated. No

is the lot of the Contest Manager, who has many logs to deal with...

9. Maybe there should be a contest division for the
VK "N" calls, but the scores from some of these
stations is very commendable.

73 and good operating.

Bill Verrall VK5SW

brief comments from the Contest Manager:
1. Too many late logs — all from VK
2. General acceptance of the new scoring system.
Join the I.W. net at 2300Z on Thursdays on 14165 kHz when you have intruder information.


Initial Award: 51 (fifty-one) contacts. "Stickers" for 61, 81, 91, 101 Shires, with a gold sticker if ALL Shires have been contacted.

6. MODES AND BANDS. All legitimate modes and bands may be used, LF, HF, VHF, UHF, OSCAR, EME, etc., but CROSS-BAND MODES ARE NOT ALLOWED.

7. SPECIAL VK-RULE.

As a number of areas are not very active, "DX-peditions" to these areas are encouraged . . . to help the Award Hunter (and others) to get that rare Queensland Shire, Town or City.

The following will apply:
A copy of the VK/P log shall be forwarded to the Queensland Awards Manager for use as a checklist.

The VK/P operator will automatically be credited with "as having worked" that particular area, if at least 20 (twenty) different stations have been contacted from that location.

6. METHOD OF APPLICATION:
A certified list of contacts, as per CHC rules, to be sent to:
THE WIA(Q) AWARDS MANAGER
GPO BOX 638
BRISBANE, QUEENSLAND, 4001
AUSTRALIA
with either $1 (Aust.) or 10 IRCs or equivalent for the initial Award. Subsequent stickers will be issued free, although return postage will be appreciated.

9. CONTACTS MADE AS FROM 1 JANUARY 1976 WILL BE FOR THIS AWARD.
That's good news, I hope those responsible will have many opportunities of keeping a watchful ear of inclusion in the list at this period. "QRM" that a six metre beacon will be operating far as I know has never been heard in southern regions even when there have been massive openings from September to December 1978. Now back to T12NA. Reports have cropped up from one or two areas that appear interesting. One apparently an IF break-through with a 28 MHz to 6 metre transverter! Other times, weak, OSBing TV spots have given some a scare. However, I have a tape of what looks to be the beacon sending TEST T12NA ... QH6EIQ has appeared a couple of times this year but most reports appear to be confusing and not consistent, apparently. In VK6, in early February around about the time KG6 worked K7, VET. Just remember also that weak CW on any of these frequencies may be a JA in QSO with the other system, etc., just because it may be an international segment doesn't mean that everyone stays out of it, so be sure of your CW. And even if your open, let everyone know so as they have a quiet 52.05 MHz for their DX pals.

**VHF/UHF DX SUMMARY**

"Following is a summary of VHF/UHF DX and otherwise drawn from several logs. 1-1 and 2-1 saw large 52 MHz QSOs. Japan though 52 MHz saw very little. VK6GB was worked from VK5 0540Z onwards. 3-1 and 4-1 saw some good tropo on 2 metres to VK3 but unfortunately not many, • as to be worked from VK3 except the usuals. 6-1 saw FK8, YJ8 and JA to VK5. 7-1 YJ8 and JA to VK1, 2, 3 and 5, tropo on 2 metres still good. 8-1 YJ8 to VK5 with VP8 appearing several times. For the next several weeks the new YJ8 PB beacon appeared on the band so many times that I wonder where it was placed. The best place in the most regular appearance charts 9-1 YJ8 and ZLS to VK5. 12-1 YJ8VB and YJ8PH to VK5 0010 to 0500. 14-1 large ZL opening (1, 2 and 3 metres) from southern stations. 17-1 FK8 to VK3 except the usuals. 23-1 VK3 and VK3KU and one or two kept on having local OSOs. 24-1 and 25-1 heard VL2PH and VX2PH from one Japanese conversation I suddenly heard VK50U mentioned! For a moment I thought VA50U was something (Tst, tut. With all the big ears listening . . . 5LP). However, further into the discussion it became obvious the other station was JA0 and not some DX. Therefore DX on 52 MHz occurred from 01SZ to 0157Z. Straight after I worked two JAs and then set for three hours straight for DX. Below 52 MHz there were quite a few carriers evident with a few TV types that don't fit into somebody's list. All came from the north. A few QSOs were made, mainly amongst JAs and JAs. Band ORT at 0400Z. JAs late that night. 17-2 band open to JA around 0645Z on 52 MHz but no one tried it even though they were talking in Japanese on that SACRED 52.050. Again JA on 50 MHz late at night.

"Just lately when working locals on 6 metres it is usual to hear some JAs on 50 MHz. Keeping two separate systems going can be very interesting as the better one stays on 50 MHz to listen and while in QSO with the other system on 52 MHz. It is still surprising how many JAs are calling even with my little 5 element south trying to have an uninterrupted QSO on 50 MHz. We think we have to do something to one or two bands on 50 MHz where the same thing happens there! I think it just indicates that overall this equinox will be 100 per cent better than last year. As far as DX is concerned, well, take it or leave it, but with an ES extension both ends and a reasonable Type 1 path to VK1, VK5, VK6 and JA, the DX horizon is quite good. Nothing has happened this month to alter the path to Perth opened and several tests showed that only a few metres was a no go, though the Es opening on 0645Z was still a bit strange. Band closed on 6 at 1515Z.

**THE SCENE IN THE SOUTH**

As David VK5KX is still home from University and has many opportunities of keeping a watchful ear on the bands, I have asked him for another report this month, which covers events from 1-1-79 to the end of February, though the last week of February went very quiet on all bands.

David reports as follows: "It remains to be seen as far as DX is concerned, whether the conditions on 6 metres will spell out real DX for this equinox. On a casual observation February 1979 had in the first three months conditions far better than 1978. To 1315Z when I finished (i.e. afternoon) than so far this February 1979. However, this February has seen many, many good extended Type 2 openings at night, and also very good wave conditions in the AM band. Rumours spread about beacons being heard. To clear a few points it would seem that the period 5-12 to 22-12-78 drew reports of PK465, apparently weak-end week. In VK7 have heard T12NA at times around 1400Z. WA6JRA apparently has not been as consistent in their opening as in previous years. While in QSO with the other system on 52 MHz. From 20-1 to 26-1 quiet a few small openings 1-1, 2-1, and JA to VK1, 2, 3 and 7 worked JA and JA to VK7 on 2 metres still good. From 30-1 to 5-2 a larger number of times this year but most reports appear to be normal stations and some only operate on an attended basis.

**AMATEUR BAND BEACONS**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Call Sign</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>50.023</td>
<td>HL9WI</td>
<td>Ballarat</td>
</tr>
<tr>
<td>50.025</td>
<td>KH6K</td>
<td>Pearl Harbour</td>
</tr>
<tr>
<td>50.050</td>
<td>W1AXN</td>
<td>New Brunswick</td>
</tr>
<tr>
<td>50.055</td>
<td>W4GK</td>
<td>Los Angeles</td>
</tr>
<tr>
<td>50.065</td>
<td>W7VMA</td>
<td>Oregon</td>
</tr>
<tr>
<td>50.085</td>
<td>VE1SIX</td>
<td>New Brunswick</td>
</tr>
<tr>
<td>50.100</td>
<td>F08DR</td>
<td>Tahiti</td>
</tr>
<tr>
<td>50.110</td>
<td>VK5LH</td>
<td>Kalgoorlie</td>
</tr>
<tr>
<td>50.150</td>
<td>VK5RH</td>
<td>Townsville</td>
</tr>
<tr>
<td>50.200</td>
<td>VK5W</td>
<td>Sydney</td>
</tr>
<tr>
<td>50.250</td>
<td>ZL2VM</td>
<td>Palmerston North</td>
</tr>
<tr>
<td>50.280</td>
<td>ZL2NM</td>
<td>Christchurch</td>
</tr>
<tr>
<td>50.300</td>
<td>VK6RT</td>
<td>Albany</td>
</tr>
<tr>
<td>50.350</td>
<td>VK6VF</td>
<td>Mt. Lobly</td>
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<tr>
<td>50.400</td>
<td>VK6RTX</td>
<td>Otaki</td>
</tr>
<tr>
<td>50.450</td>
<td>VK6RTV</td>
<td>Perth</td>
</tr>
<tr>
<td>50.500</td>
<td>ZL2PH</td>
<td>Wellington</td>
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<td>ZL2HM</td>
<td>Palmerston North</td>
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<tr>
<td>50.600</td>
<td>VK6RT</td>
<td>Wellington</td>
</tr>
<tr>
<td>50.650</td>
<td>ZL2HM</td>
<td>Palmerston North</td>
</tr>
<tr>
<td>50.700</td>
<td>VK6DD</td>
<td>Christchurch</td>
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<td>50.750</td>
<td>VK6ZT</td>
<td>Dunedin</td>
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<tr>
<td>50.800</td>
<td>VK4RB</td>
<td>Brisbane</td>
</tr>
<tr>
<td>50.850</td>
<td>VK3RP</td>
<td>Ballarat</td>
</tr>
<tr>
<td>50.900</td>
<td>VK3FF</td>
<td>Dunedin</td>
</tr>
</tbody>
</table>

All stations are called first to be informed so may be given listing. Full details please.

I would draw your attention to the fact that many of the beacons listed from overseas countries and Australia are located in geographical areas of interest and could well be heard when conditions are right. Hence in most cases they are worthy of being heard in the period.

---

Eric Jamieson, VK5LP
Forreston, 5233
20w AM/CW plus 1296. Good QTH. ZL1THG 3 to
Tom THG sent a list of 70 cm stations In
January opening to New Zealand at the time of the
Nth. ZL1TAB 10W SSB, good
432.250
produced no results. An earlier knowledge of the
large 2 metre opening In January. Lyle reports
writes to say Bob Grimm K6RNG Joined the ranks
to 0745 EST). ZL1THG called without success,
for your future Information. ZL1TAB 10W SSB, good
and VK9NI Norfolk Island to complete about all
is for the time being . . . during November
KGM7K and KDG6X, all on 50 MHz of course . . . David
VK5CK just back from Cook Islands reports ZK1AA
has a 7 helical antenna for satellite working, a
44 element Yagi. Also David has a 44 element LP
yagi on the ground for six metres But no
VK5AM reported hearing of contacts between WIA and
miles early February, possibly on Channel 40 . . .
no further Information obtainable on this . . .
TV stations on 1295 MHz in Korea . very often strong
around 0300 to 0500.
ABOUT 52,850
HasseIs seem to arise from time to time over the
usage or non-usage of the 6 metre calling fre-
quency. I mention this Up to now, ZL1THG has
not found it necessary to use the 6 metre calling
frequency. On the other hand, there was a report there were moves by a VK3 operator to start another calling frequency on 52.025. Such a move is to be deplored as only of recent times have we seen such encouragement to give time and
energy to our little hobby. VK9KI recently reported
overseas that our calling frequency is 52,050, and
I would appeal to the VHF fraternity to keep 52,050
and not let the 6 metre calling frequency fall into
the hands of the amateurs. With the first of the 1979 equ-
axial periods right on us and with the cycle 21
peak just around the corner, any moves for such changes must be resisted strongly.

PERSONALLY, I see the use of 52,050 in the following manner and I believe these views are
supported by quite a number around me.

1. The main idea of having 52,050 MHz as a calling frequency Is to use It as such, i.e. overseas
and local stations who can see a need for such a
contact would first of all carefully monitor the frequency (under the terms of your license) and if
in use a call would be made; or if in use a
local call made to the station operating on that
frequency for a contact.

2. If the call results in a DX contact, especially it Is to be understood that this Is to be a
brief one, in which case there seems no reason
why the contact cannot be continued for a short period. This Is also the view of the above
alerting others to a possible contact.

3. If an answering station Is a local station and the
contact desired to be continued it seems
common sense that the local operator should
move off the call frequency particularly if
DX being around then you can either make the
call brief and return to make a further call on the
call frequency or make a shift to, say, 10 kHz
which leaves you close enough to the call fre-
quency to be able to monitor it. I would appeal to all amateurs to keep 52,050 MHz for
contacting overseas, then it Is likely the contact will be a
DX contact.

4. The action of some high powered stations
sitting on the call frequency and using it to the
exclusion of others in the hope they will be the first
to operate on the band as the new
words, keeping the frequency clear only for them-
selves, Is also to be deplored. This has happened,
and I believe the frequency is now
not able to reach further on 432 MHz than Aub
VK6XY had done the year before, taking the record.

Let's also hope two metres will see a similar
success in the coming years. I expect this is common through-

52.050 MHz as a calling frequency for the VHF band It is
the standard frequency for calls into overseas countries.

5. Any changes must be resisted strongly.

SILENT KEY
Norman Burton BR11494 from Revesby, NSW, writes to say Bob Grimm K6RNG Joined the ranks
of Silent Keys on 13-1-79, following a massive heart
attack at the age of 46 years. Bob was extensively
involved in DX and some of these are relatively
new calls, who are developing acu-
Having said all that, let's close with the thought for the month: "Maturity begins to grow when you can sense your concern for others outweighing your concern for yourself."

73. The Voice of the Hills.

COUNTRIES ACTIVE ON SIX METRES
From SMIRK comes a listing of countries which are active on six metres. This listing of 42 countries does not include any DXpeditions or other planned activity. With the current sunspot cycle it should present a unique challenge to DXers unlike the boxtop DXCC of the FH bands.

The list is as follows:

From the SMIRK newsletter comes a warning to anyone writing to BV2B on Formosa. Apparently you should not put his call sign on the outside of the envelope. Remember in many countries call signs on envelopes can lead to trouble for the station concerned. So when BV2B is on 6 send your QSL in a plain envelope.

6 METRE LIAISON NET
A 6 metre liaison net is on 28.885 MHz. This is to co-ordinate listening and calling schedules and reports of 6 metre propagation. W6KJ is on most week-ends. A net on the West Coast of the USA meets at 2100Z Sundays, which is Monday morning in Australia.

STOP PRESS
6m DX TO USA
Bruce N6CT, 60 miles north of San Francisco, was worked on 52.060 MHz by Ed VK4ZEV, Hal VK4DO, Neville VK4ZNC, and Dave VK2ZDK/4 on 2nd March, 1979, at about 0900Z. Signals to 5 x 9 at VK4DO, who also worked N6CT with his IC502.

Also... on 12th March, W6KJ, N6CT and others worked VK3AU, VK3AVQ, VK3ZXX, VK3AOR, VK3AMK, VK3AKK, VK3OT.

Contacts started with W6KJ and VK3OT at 0830k and lasted till 0935k.

JAs and KG6DX were worked during the evening.

These are the first VK-USA contacts for cycle 21.

QSP
WHEN NOT TO USE THE GREAT AUSTRALIAN ADJECTIVES
Amateurs everywhere are reminded that we are supposedly "self-policed." Notwithstanding all this, amateurs (or a few) on the local airwaves of late, have been prone to unthinkingly making use of a range of innocent great Australian adjectives. If you hear some then you will be doing amateur radio a favour by inserting a gentle type of reminder. This IS amateur radio!

DESCRIPTION
Directed to Bob VK2ZRN was the observation by Gus VK2ZQJ: "Your signal was up and down like a toilet seat at a mixed party." — From "Smoke Signals", Dec. '78.

NEW LOW PRICED AMATEUR TRANSCIEVER FROM ATLAS RADIO INC
Atlas Radio Inc. USA are due to release a new Amateur transceiver line in Australia through their Australian agents, GFS Electronic Imports, in early April.

This new transceiver/receiver range, known as the "Atlas 110 Line", consists of a high performance amateur band receiver, the RX-110, covering 80 through 10 metres, and two "bolt on" transmitter modules, the TX-110L and TX-110H which, when combined with the RX-110, produce a high performance low cost transceiver. The TX-110L is a low power module having 15 watts input, while the TX-110H runs around 200 watts input.

Overall size of the combination is only 31 width x 9.5 height x 24.8 deep cms, which makes the Atlas RX/RT-110 ideally suited to a mobile installation.

Initially only the high power RX/TX-110H transceiver combination will be available from GFS Electronic Imports. Its expected price is around $499.

For further information on the Atlas 110 line and its accessories contact GFS Electronic Imports, 15 McKeon Road, Mitcham, Vic. 3137. Phone: (03) 873 3939.

HY-GAIN PRODUCTION UP AND NEW LINES ADDED
Since the re-opening of Hy-Gain Electronics in Australia, orders have outstripped production, according to the new Australian distributors, Audio Telex Communications Pty. Ltd.

"We are all delighted with the speed in which Telex Communications were able to restore production and re-introduce the line range of Hy-Gain antennas," said Rod Craig, General Manager, Audio Telex.

Apart from re-establishing existing lines, Hy-Gain have announced that the Telex range of headsets and boom mics, which are specially designed for amateur use.

"We are stocking the popular CM1320 and C1320 series," said Mr. Craig. "These models are well known in the amateur field, particularly in the CM1320 headset microphone with ceramic boom mic."

Mr. Craig went on, "Now that Hy-Gain is a division of Telex Communications Inc., it is logical that products for the same market should be sold by the one group, and we at Audio Telex will be marketing these products through our Hy-Gain retailers."

ICOM RELEASES IC202S
The latest update to the popular 2m ICOM portable transceiver is the IC202S 3 watt model featuring both upper and lower sidebands. Previously this unit suffered the disability of having only one sideband.

The IC202S also incorporates a number of circuit improvements over the IC202E and the earlier, IC202.

HELP YOURSELVES — GIVE TO THE WIA WARC FUND
NEW ATLAS 110 LINE

- **200 WATS** • $499 • **80-10MX**

We at G.F.S. are proud to introduce a real breakthrough in versatile, low cost, Amateur Transceivers.

First came the receiver, The Atlas Rx-110... A performance plus Amateur Band Receiver incorporating high sensitivity, selectivity and dynamic range. Couple that to a "bolt-on" Transmitter Module, the Atlas TX-110H... which has low spurious and harmonic radiation, high carrier and unwanted sidetonic rejection and 200 Watts in-pull. You now have the unbelievable Atlas RX/TX-110H top performance transceiver which costs... NOT $950... NOT $750... NOT even $650 but just $499.

Now, for only a fraction of the outlay previously necessary you can run 200 Watts on 80 through to 10 Metres, work CW or SSB or 2m mobile, from the car or from the home QTH using the RX/TX-110H in combination with its AC Power Supply, PS-110.

**RX/TX-110 Transceiver** .......................................................... $499
**PS-110 Power Supply** .......................................................... $109
**MM-110 Mobile mount** .......................................................... $58

For color brochure with complete specifications write to us, phone us or just drop in and have a look at the RX/TX-110.

Why settle for a second hand FT-101 or TS-520 when you can now buy a NEW Atlas Transceiver.

**NEW SX-100 Programable VHF/UHF Receiver.**

It had to come. A Keyboard Entry, Microprocessor controlled VHF/UHF Monitor Receiver from Japan with the following outstanding features:

- **Wider frequency range. 30-54, 140-180 and 410-514 MHz.**
- **5 kHz Channel Spacing on VHF and UHF.**
- **Covers 6, 2 and 0.7 MHz Amateur Bands.**
- **32,000 Channels.**
- **0.5 uV Sensitivity.**
- **220-240 VAC and 12-16 VDC operation.**
- **Large Green readout, showing channel number, frequency, time, day and date.**

Write for a brochure or pop-in for a demonstration of this remarkable receiver.

**NEW!!**

**NEW STANDARD MODEL**

- **HFE WADELY LOOP**
- **COMM. RECEIVER**

A state of the art communication receiver covering the range 0.5-30MHz using a Wedley Loop for rock solid stability. Unlike some other receivers that use only one filter in the IF and exhibit poor selectivity. The C-6500 has two filters, giving good selectivity on SSB and AM. For more details write to us for a brochure.

- **C-6500**
  - **$799.00**

**NEW ATLAS 210X** is still available, but now at a special low price for current stocks that won't last long. Be early and save over $150.00. Atlas 210X only $659.00.

**MJK ANTENNA TUNERS & ACCESSORIES**

| MJK 9418 | New Updated Tuner, now has 6 Position Coax Switch, more inductance as well as SWR/POWER Meter, Meter, Balance and Bracket $199
| MJK 943 | Same as 9418 but less Meter, Switch and Balance $139
| MJK 901 | Same as 9418 but less Meter and Bracket $199
| MJK 900 | Same as 901 but less Balance $179

**MHF-1000** HF-Noise Bridge 1 to 100 MHz - Heads actual Resistance (0.250 ohms) and Reactance (+ 0-150 ohms) $79

**Multi Palm II**

- **Leather Case** $11.50
- **Palm Batteries** $3.00

**WE Fохран». **

- **S229.00 inc. 1 cm and Ni-Cad Batteries**

**G.S. ELECTRONIC IMPORTS**

15 McKeon Road, Mitcham, 3132. (03) 873 3939
The TS-600 is an all-mode solid state transceiver which fully covers the 6-meter band. This transceiver is based on our many years of successful experience with the 6-meter band. Its features include SSB, FM, CW & AM operation with sending and receiving capabilities on 20 channels with 5 crystals. The TS-600 is an all-in-one type that comes complete with built-in speaker, power supply, and microphone. You can enjoy QSOs with domestic stations or DX especially when sporadic E occurs.

The TS-700S is the all-mode solid state transceiver that provides you with versatility plus over the entire 2-meter band. It's feature-packed design puts you on SSB, FM, CW, and AM. The AC and DC power supplies are built-in which allows you to operate the TS-700S just about anywhere. Equipped with a VFO that enables continuous tuning from 144–148 MHz, the TS-700S comes complete with built-in digital frequency readout, receiver preamplifier, VOX, sidetone, and microphone.

The TS-820S is a 1.8 to 29.7 MHz SSB, CW, RTTY transceiver backed by our many years of successful experience and "know-how", as well as the most advanced electronic technology. The signal circuits of both the transmitter and receiver sections are quite simplified with the employment of a single conversion system for linearity. This transceiver also employs phase lock loop (PLL) circuitry. PLL technology allows accurate frequency

The TS-520S combines all of the fine, fieldproven characteristics of the original TS-520 together with many of the ideas, comments, and suggestions for improvement from amateurs world-wide. Kenwood's ultimate objectives ... to make quality equipment available at reasonable prices. The TS-520S provides full coverage on all amateur bands from 1.8 to 29.7 MHz. Kenwood gives you 160 meter capability, WWV on 15.000MHz. And with the addition of the TV-502 and TV-506 transverters, your TS-520S can cover 160 meters to 2 meters on SSB and CW.
SWAN TRANSCIEVERS

300W INPUT $809.00
SSB HF TRAN.
DIGITAL DISPLAY
MODEL 350D HAS THE SAME
SPECIFICATIONS AND
CHARACTERISTICS AS THE 350B
EXCEPT THE UNIT COMES WITH A
BUILT-IN DIGITAL FREQUENCY
DISPLAY WITH READOUT TO 100HZ.

DIGITAL DISPLAY
TO SUIT 700S
350B, ETC. $250.00

3 MTR FM SYNTHESIZED $450.00
IC-PSU $253.00
1-8-30 MHZ HF
IC-701 $1380.00

IC-225 FULLY PROGRAMMABLE
2MTR 10W FM $330.00
IC-211 2MTR ALL MODE $799.00

PLEASE SEND FOR PRODUCT CATALOGUE!

Championship performance! That's what is in a Swan transceiver. Engineered completely by Americans to be a top performer, for less cost-per-watt. Swan transceivers are designed to let you have all the punch and performance needed.

ICOM & SWAN ALSO DISTRIBUTED BY SIDEBAND ELECTRONICS SALES CROWS NEST PHONE: 438 4191 FOR SWAN IN W.A. PERTH CONTACT WILLIS TRADING PHONE: 321 7609
Mike Bazley VK6HD
6 James Road, Kalamunda W.A. 6076

I was listening around on 20 SSB the other day and came across a QSO between a VK3 and a VK7. The VK3 had recently put up a 3 element mono-bander and was detailing the DX he had worked. The VK7 was not really impressed because, as he said, “DX was not for him as he could only find room to put up a 20 meter dipole at 70 feet height.”

I just cannot agree with this statement. If one has room to put up a dipole on 20 then one has room to put up dipoles on 15 and 10 as well. All three antennas, if needed, can be fed from the same feeder. One hundred watts of CW can work the world.

Discounting most of the North and South Americas the majority of amateurs using the CW mode use directional antennas. CW has a distinct advantage over SSB, but in circumstances of low power and non-direcional antennas CH 3X1IX has tried that on SSB we never would have made him as he could only find room to put up a 20 meter dipole at 40 feet and did not own a linear.

After last month’s comments on the possible abuse of nets one might think that I was totally against them. Nothing could be farther from the truth provided they are well managed and a station is not going to 3X, Guinea, in April. This writer never heard him again and doesn’t believe that the DX lover. As a certain DX station recently jumped the gun? Yes, there is still a place to brush up that code speed, against them. Nothing could be farther from the truth provided they are well managed and a station can work the world, why should we not do the same?

The West Gulf DX Bulletin also reports that ST0HF has been worked from VK6 on 80 SSB. His location counts as Syria and he stated that the antenna was not connected to the system a few days later. Even so, capacitive coupling from the antenna to the repeater still caused some damage.

The transmitter is still intact as it was housed in a separate building.

Damage is estimated at $1800-$2000, and an appeal has been launched from Melbourne CH 2 uses to contribute towards its replacement. Further donations would be most welcome and will help speed the restoration process.

The opportunity has been taken to overhaul the complete system and to arrange for a more secure site to be located.

At this stage it is expected that the repeater will be back in service around late March-April.

According to reports from the initial testing, the system is now operational again.

REPEATERS

Since Christmas, Victoria has had its fair share of repeater problems with 4 repeaters being off the air due to various causes at the one time.

CH 2 MELBOURNE

This repeater was vandalised in late November 1978. The receive cavity resonators were stolen, the receiver and control circuitry smashed beyond repair and the coaxial cable was severed. The transmitter is still intact as it was housed in a separate building.

The damage sustained was beyond economical repair, and a stand-by unit was prepared for installation into the system.

The system was back on the air on 20th March.

According to reports from the initial testing, the system is now operational again.

CH 7 MT. WILLIAM

Grenells struck this repeater during late January. The power supply decided to overheat and explode, causing severe damage to the transmitter.

The damage sustained was beyond economical repair and a stand-by unit was prepared for installation into the system. The repeater was back on the air on 20th March.

Editor’s Note: Contributions on a regular basis from the various repeater groups and clubs are welcome for inclusion in this section. Please forward your group’s comments to: The Editor, PO Box 2511W, GPO Melbourne 3001.
LEGEND

FROM WESTERN AUSTRALIA
FROM EASTERN AUSTRALIA

BETTER THAN 50% OF THE MONTH, BUT NOT EVERYDAY
LESS THAN 50% OF THE MONTH.

PREDICTIONS COURTESY IPS, SYDNEY
ALL TIMES UNIVERSAL UTC (GMT)

MAGPUBS

WIA Car Stickers now available:
Send only 20 cents each — GET ONE NOW. Send only self-addressed stamped envelope with 20 cent stamp — Direct to your Division or from Box 150, Toorak, Vic. 3142.

New rates for 1979 subscriptions:
- VHF Communications by:
  - Surface mail: $8.20
  - Air Mail: $12.40

Single issues, when available from Magpubs for 1978/79, will be each: $2.10

MAGPUBS — A WIA Membership Service, Box 150, Toorak, Vic. 3142.

HAMADS

- Eight lines free to all WIA members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- 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 the advertiser's name and address are correct in the current WIA Radio Amateur Call Book.

FOR SALE

- Yaesu FT-381D Transceiver, fully solid state with digital readout with deluxe power supply FP-3010. $1000 ONO; also matching FP-3010 remote VFO. $125. VK3AVE. Ph. (03) 64 4290 bus.
- Heathkit SB610 Monitor Scope, 1.8-144 MHz, up to 1 kW power, with 2 line test. L. White VK4AMF, 30 Oaklands Pde., East Brisbane, Q. 4169. Ph. (07) 391 6160.
- Yaesu FT-301D Transceiver, 160m-10m, with SSB, AM & CW filters. FP-301 AC power supply and mobile mount for FT-301D, $1230; 6 ft. 80m adjustable mobile whip aerial with spring. $40. AL4BXN. 40m & 80m trapped dipole in original carton, $50. R. J. Lukels VK3BRL. Box 18, Eaglehawk, Vic. 3556.
- Systro Donner digital frequency meter, model 1034 with 8 digit display and crystal oven options. Operating manual and full circuit details. $95 ONO. Typewriter 18 AVT 80m-10m trap vertical antenna, good condition, $85 ONO. Ray Roche VK1ZJR/4, 1 Heather St., Silkstone, Qld. 4304.
- Janel Laboratories model 80PB 28-30 MHz low noise satellite pre-amplifier. $25 per unit. Ross Treloar VK2BPZ. Ph. (02) 239 5067 bus.
- Icom IC-202 2m SSB Transceiver, complete and in exc. cond., $140. VK3KK, QTHR. Ph. (03) 469 4200 after 6 p.m.
- Pye Leader Mod. MVA519 Lo Band AM Mobile Transceivers — Quantity 16, various conditions, majorilly functional, still commercially licensable, suit conversion to 6 metres — $200 the lot. B. Marsh VK3ZHI. Ph. (03) 725 7262.
- Realistic DX160 Rx, ideal for listening and beginner, only 12 months old, $100. VK2VHP. Ph. (02) 84 2195.
- Communications Rx Drake SSR-1, 0.5 - 30 MHz, solid state, battery & 240V AC operated, built-in speaker & antenna, as new, in original box & with handbook, $250. VK2ZFH. Ph. (02) 713 1911 May (April).
- 23 Ch. 27 MHz Pace 1000m, full PLL, very suitable for 10m conversion and extensive channel range, $300. TRC 47 — 23 Ch. 27 MHz, all crystal, $100. VK3NMP. Ph. (03) 743 6992.

Amateur Radio April 1979 Page 49
For Swan SW240, 3 band transceiver, function switch SWI; four position control for off, receive, transmit, tune. VK4DO, QTHR. Ph. (079) 28 1550.

Parts for AR7 (HRO type) RX, particularly coil boxes, circuit diagrams and even junk units, for overseas societies, therefore donations most welcome. VK3CFP, QTHR.

Variable capacitors — transmitting — high voltage type. “Bill” Perry VK3BAV, QTHR. Ph. (03) 590 5737.

Yasue FL2010B Linear, in good condition. J. E. Fathkin VK3E3, QTHR. Ph. (03) 41 5073 bus.

PCI Equipment: 14X4 TX, R4 Rx, noise blanker, QSL fillers, speaker, etc.; urgently required. Please contact Peter Nesbit VK3APN, 78 Downshire Rd., Elsternwick, Vic. Ph. (03) 523 6932 AH, or (03) 317 9011 bus.

Type 3000 Relay, also circuit diagram of disposals used. D13 Type 1, Serial 16. Measures AC and DC voltages, 50-500-500 AC, DC current 1-10-50 amps. Prices: to: Allan Bull VK2FB, 67 Fernleigh Rd., Waga 2650, NSW.

TRADE HAMADIES

Why drill a hole in the roof of your car? Fit a "J & D" Catman-plated mounting bracket direct to your ski bar — fits all wings, etc. — $2.00 plus postage £0. C. Chivers, 19 Naomi Crt., Bayswater, Vic. 3153. Ph. (03) 729 3806 AH.

QSL cards, log books, contest sheets — send 20c stamp for samples and prices to Linda Luther VK4KV, P.O. Box 498, Nambour, Qld. 4560.


XITEX "Glass Teleprinter", needs only a keyboard and TV set to provide an output of 16 lines of 64 characters; switchable for 45.45 Baudot—110/300 ASCII, 20 mA or TTL interface; full U/L and Greek chars in ASCII mode, addressable cursor; feed on-board PSU 8-12V AC or or into an S-100 slot; micro computer controlled pre-programmed; full kit, $195, including delivery and sales tax; suitable keyboard kit, $270. From The Micro Shop, Box 207, Gawler, SA 5118.

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A NOTICE OF INTEREST

The local hams in the colony of New Holland are duly advised that Trio-Kenwood have just received a shipment of the new Power Plus TS-120S series.

Engineered for the more discerning amateur operators. The TS-120S is the most recent successful result of Kenwood's advanced engineering capability, giving a compact, lightweight transceiver with 100W RF output power.

Another new arrival is the TR-7625 2 meter FM transceiver with memory, designed to permit multichannel (800-channel) operation.

You are respectfully invited to view this merchandise at your local friendly Trio-Kenwood retailer.

P.S. We would like to inform all VHF buffs that we now have Phase III Satellite Equipment.

TRIO-KENWOOD (AUSTRALIA) PTY. LTD.
31 Whiting Street, Artarmon, Sydney, N.S.W. 2064. Telephone (02) 438-1277

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PLUS MANY OTHER REGIONAL OUTLETS THROUGHOUT AUSTRALIA
AMTENNEA TYPE AM 4-2

AM 4-2. 15-10 M.

$159

DUO BAND BEAMS NOW ONLY

8 dB. Forward Gain. 12 month warranty.
25 dB. front to back. Solid Construction.
4 M. Boom.
2 kW. Power Rating. (ideal Novice use!)

Soon available TYPE AM 3-3. 20-15-10 M.

SUPPORT LOCAL INDUSTRY.

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EMOTATOR Rotors have thermal cut-out for overload protection.

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<td>4,000</td>
<td>10,000</td>
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<td>Weight</td>
<td>165 lb</td>
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EMOTATOR "THE BEST ROTATOR"

201AXX, New Model $175
103LBX, Medium Duty $169
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COAX

Switches

TRAP VERTICALS.

NOW AVAILABLE

ALL AUSTRALIAN MADE TRAPPED VERTICAL ANTENNAS.

80-10 M AMTENNEA TYPE AMV-5

only $99 including radial kit.

Why pay more for imported types.

AUSTRALIAN MADE.

MULTI BAND BEAMS.

AM 4-2 • 15-10 M. $159—
AM 3-3 • 20-15-10 M. $219—

MONO BAND BEAMS.

AB 3-10 • 3 el. 10 M. $69—
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Allow 10 days for delivery.

VHF BEAMS.

AV 5-2 • 5 el. 2 M. $28—
AV 8-2 • 8 el. 2 M. $39—

ROTARY DIPOLE.

AM 1-3 Dipole 20-15-10 M. $99—

Due to great demand, some delay may occur.

Open 6 days a week.

All prices include Sales Tax. Freight and insurance extra.
Prices and specifications are subject to change without notice.

26 EDWARDS RD.
LILYDALE 3140.
PHONE (03)726 7353

FAST MAIL ORDERS.
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★ VOX ADVANCE
★ SIMPLE 10 GHz RECEIVER WITH TRANSMITTER OPTION
★ RETURNING THE 50-52 MHz ALLOCATION
★ EARLY DAYS IN RADIO
★ ISLE OF MAN
CUSTOM COMMUNICATIONS
No. 6 ORCHARDLEIGH ST.
YENNORA (Near GUILFORD) N.S.W. 2161
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A/H: 674 1719

ICOM

IC-280
2 MTR FM SYNTHESIZED $450.00

IC-225
FULLY PROGRAMMABLE 2MTR 10W FM $330.00

IC-PSU
$253.00

IC-701
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Cover Photo

Manning the portable amateur radio station (VK4WIR) to cover the WIA Capricornia Amateur Radio Festival in September ’78 are, from left, Novice operator Peter Logan who is waiting to be allocated his call sign, Doug Kraatz VK4ZDK, and Gordon Adams VK4GM. (See the report in November AR.)

Photo courtesy of the Morning Bulletin, Rockhampton.
Listening to some QSOs, one is often astonished at the lack of knowledge about the WIA, exhibited, not only by members and non-members, but also by those who should know better.

The problem then, appears to be a communication stumbling block somewhere in the system, working, so it seems, both ways, executive — councils — members and vice versa.

After some six years on the council of the Queensland Division, I have come to the conclusion that the main stumbling block is usually the council-member-council network.

VK4 recognised the problem some four years ago and took steps to rectify part of the problem with the Institution of the Radio Club Workshop, which has just finished its fourth annual meeting. Its success may be measured by the fact that over forty constructive motions were presented and discussed by the affiliated radio clubs in Queensland.

Besides the direct communication link between council and club delegates, who, incidentally, represent some sixty per cent of the total WIA members in VK4, the federal councillor for Queensland is now able to state that his views at the federal convention represent the views of the majority of WIA members in Queensland.

Another direct communication link between council and club radius was established last year, the weekly radio club net whereby club representatives are able to have direct access to council and discuss problems, solutions and suggestions, without fear of misunderstanding or lengthy delays. We are happy to announce that this system works very well, something we, unfortunately, cannot as yet say about the council-member link, the Queensland net. But given time, it will work to the benefit of both the member and council.

These then, are but a few solutions Queensland is trying out to overcome one of the major communication stumbling blocks in a communication oriented hobby.

The necessary positive feedback is starting to come in from members, albeit very slowly, but it is nevertheless a hopeful sign that we are on the right track.

Next step is an effective inter-communication system between councils — we don't need one with the Executive, that is already satisfactory — and eventually we somehow could achieve Bob Arnold’s idea, without losing our precious State identity.

Communications in times of stress (VICEN, channel 5A, channel 0) is near total, why not under “normal” conditions?

JOHN AARSS, VK4QA
President, VK4 Division.
This is the text of a letter sent to the Minister for Post and Telecommunications on 14th March, 1979 —

"Recent newspaper reports (Reference 1) compel the Wireless Institute of Australia, on behalf of the Amateur Service, to raise once again the whole issue of piece-meal approach to spectrum management in Australia and, in particular, the continued and planned use of TV Channel 5A.

Only in Australia, and nowhere else in the world, does a broadcasting allocation exist adjacent to the Amateur two metre band. The Institute seriously questions the wisdom of continuing to make use of incompatible frequencies for television broadcasting contrary to recognised international practice when compatible international spectrum is available but unused (UHF) (Reference 2).

From the information available, and in the light of recent investigations by amateurs and others in this country, it is obvious that the co-existence of amateurs and television broadcast stations on adjacent channels is a volatile combination (Reference 3).

The closure of amateur stations which may be alleged to cause interference to Channel 5A reception, as has been suggested (Reference 4), is considered by this Institute to be a dictatorial stand and unacceptable to the thousands of radio amateurs wishing to make use of their two metre spectrum allocation. This would be unnecessary if the broadcast spectrum were to be properly planned.

The Amateur Service has contributed, and is still contributing, to advances in technological and scientific areas and, on this basis alone, vigorously defends the tenancy of the two metre band — the only internationally exclusive allocation in the VHF and higher frequencies to 24 GHz, available to the Amateur Service and in particular the limited licensees.

Australia's contribution to the Amateur satellite programme is well known. It is iniquitous that Australia's amateurs should be denied access to an international resource merely because of a television station allocation unique to Australia.

The WIA therefore believes that, for the above reasons and for other sociological and technical reasons, the Channel 5A allocation should be withdrawn with the utmost speed and that all existing and proposed 5A services be transferred forthwith to UHF.

Reference 1: Hamilton Spectator 19/12/78 and 4/1/79.
Reference 2: ITU Radio Regulation 3580 (Footnote 279A) and Huxley.
Reference 3: Material supplied by Victorian Channel 5A Committee.
Reference 4: Letter from PM to VK3OT."

In a note circulated to Divisions on 7th with regard to WARC 79, the Federal President announced that in the Australian proposals for the work of the conference, it was proposed that footnote 3580/279A be modified to read —

"In Australia the band 137-144 MHz is also allocated to the broadcasting service for television until that service can be accommodated within the Regional Broadcasting allocation."

This footnote presently reads —

"In Australia the band 137-144 MHz is also allocated to the broadcasting service for television."

6m BAND

In his note the Federal President also advised that it is proposed to maintain the Region 3 allocation of 50-54 MHz with a modification of Footnote 3544/246 for Australia that the band 50-54 MHz is also allocated to the broadcasting service. At present, this footnote states that in Australia the band 50-54 MHz is allocated to the fixed, mobile and broadcasting services.

He also advised that Australia proposes the introduction of new world-wide exclusive amateur bands 10.1-10.2 MHz, 18.058-18.168 MHz and 24.15-24.35 MHz.

Australia, he wrote, proposes for 40m, an exclusive amateur band extending from 6.95-7.1 MHz and various additional allocations for amateur satellites in the existing SHF amateur bands between 2 and 11 GHz. No Regional or Australian change to existing amateur allocations were proposed.

The Federal President, it will be remembered, is Chairman of Committee 2 of the Australian Preparatory Group (APG) for WARC 79.

1979 FEDERAL CONVENTION

Mr. Ron Henderson VK1RH will be attending the 1979 Federal Convention in his own right as Federal Councillor of the ACT Division.

Additional Agenda Items for the Convention includes three from the SA Division relating to WICEN and one from the NSW Division on the same subject. VK2 also included an Agenda Item supporting the circulation of Convention Minutes to Clubs.

Since this newsletter is being written before the closing date for Agenda Items additional items are expected to be submitted from both VK2 and VK4.

1979 CALL BOOK

Considerable discussion at Executive level, as well as in the Publications Committee, has been conducted in relation to the 1979 Call Book.

The unhappy situation reported in March WIANEWS has been resolved with most welcome co-operation from the P. & T. Department. Almost complete listings have been received for all months from May 1978 to January 1979. Details for later months are also promised.

So many complaints were received about the use of the computer prints used for the 1977 Call Book that typesetting for the 1979 Call Book will be used. Ways and means to keep the price of the Call Book below $3 are being closely examined.

For many years a demand has been observed for the publication of monthly updates or possibly the production of a mid-term supplement (i.e. 1980, etc.). Monthly updates in AR occupy space to the exclusion of other material unless the magazine's size is increased by additional pages at extra cost probably unsupported by additional advertising according to enquiries made. There are problems involved with producing a mid-term supplement, but these now appear capable of being resolved, at little extra cost, by the use of a word processor either commercial or in-house.

EXAMINATIONS

A meeting on 17th March chaired by Mr. G. F. Scott, the Federal Education Co-ordinator, and attended by experts from VK2, 3, 4, 5 and the P. and T. Department, produced an AOCP syllabus jointly agreeable to all parties. A small amount of residual work is required which should be finalised quite quickly. As a result, it now seems almost certain that the August AOCP theory exam will be multi-choice thanks to good co-operation shown by the Department. If this is achieved the marking of answer papers, even by computer possibly, will significantly reduce the delay of the past in announcing results.

The opportunity was also taken to discuss the Novice morse examination.

MEETINGS

Executive Meeting on 15th March also discussed the certificate sketches for the Ron Wilkinson Achievement Award, 1979 RD Contest opening address, Federal Treasurer, responses to WARC 79 appeals, workload of the Executive office arising from the greatly increased membership, the future production of AR and inter-related subjects, CCIR Seminar in Sydney, medallions for the 1979 VK/ZUO Contest.

It was regretted that an NZART invitation to send WIA representatives to their annual Convention in June could not be accepted because of heavy involvement with preparations for WARC 79.
At the meeting of the Publications Committee on 6th March the 1979 Call Book production occupied much time to enable distribution to be made no later than about July or August, continued quality production of AR and the continuing need for photographs and technical articles.

Meetings of the VHF/UHF Advisory Committee on 27th February and 22nd March were occupied almost wholly in discussions on the Channel 5A situation and WARC 79 matters.

A routine meeting of the Federal Repeater Sub-Committee was held on 11th March.

ADVERTISERS’ DONATIONS

The Federal President wishes to extend grateful thanks to our advertisers for generous donations towards the expenses of WARC representation

<table>
<thead>
<tr>
<th>MARCH 1979</th>
<th>$</th>
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<tr>
<td>Dick Smith Electronics</td>
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<td>Vicom International</td>
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<td>Chirnside Electronics</td>
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<tr>
<td>Scalar Industries</td>
<td>50</td>
</tr>
<tr>
<td>Elmeasco Instruments</td>
<td>25</td>
</tr>
</tbody>
</table>

These are entitled to the use of the WIA emblem and the words: “WARC Amateur Supporter” in their advertising displays.

---

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LETTERS TO THE EDITOR

Sometimes the cat gets amongst the chickens — going on some of the letters we receive on varying subjects. Space for letters must be restricted to approximately one page, however, we endeavour to publish most of the letters received. The probability of early publication of your letters is inversely proportional to its length — i.e. the longer the letter, the longer it may take to appear. Please try to keep your letters to less than 250 words. If you want to criticise AR or the WIA, do it by all means — but in a constructive way. No “Waffle” — please!! We can only judge our performance by your remarks.

ARTICLES

We are always looking for original material, however, we are not averse to publishing an item which has appeared in other magazines/journals, should the need arise. Our column should be self-generating — i.e. the longer the letter, the more articles we can publish within a few moments to write a column.

Please keep the articles coming in; don't forget Novice items and photographs. The editor's lot is not a picnic, but it can be very satisfying.

Donations for WARC 1979

LIST No. 2
The Executive wishes to acknowledge with grateful thanks the receipt of the following donations from WIA members for WARC 79 (further lists will follow):

<table>
<thead>
<tr>
<th>Amount</th>
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<tr>
<td>EM &amp; DRC (Sept. 1978) $100.00</td>
<td>Anon (at EM &amp; DRC Sept. 1978)</td>
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<td>VK3YPX</td>
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<tr>
<td>$10.00</td>
<td>VK2OC</td>
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Are you checking our bands for intruders and reporting same to the Intruder Watch Co-ordinator?
One of the problems of VOX systems is the time lapse between the presence of audio and the completion of the receive to transmit switching. While this delay is minimal with the solid state switching in later equipment, many rigs still depend on a relay which only extends the delay.

One of the effects of this delay is the clipping of the leading syllable of each over. Operating procedures have evolved to disguise this problem. These include extension of the leading syllable and saying "Ah" until the relay has pulled in. While these methods are considered as "trade marks" to some, they don't blend with articulate speech.

An alternative, which is developed here, is to delay the audio until the VOX circuit has completed switching.

Delay concepts have been used in other facets of audio electronics such as voice scrambling, reverberation and telephone time compression. Methods of delay have ranged through tape loops, long echo tubes and springs, but they have always been mechanical. Because of their complexity or unwieldiness, little use was made outside of musical effects techniques. With the advent of audio delay integrated circuits these mechanical methods became obsolete. Now some of these delay line integrated circuits, called bucket brigade devices, are generally available.

The basis of operation of a bucket brigade device (BBD) is to sample the signal at finite intervals and pass these samples along a chain of capacitor FET stages. The sampled signal then appears at the end of the chain with a time delay set by the number of links and that finite interval (determined by a clock frequency).

Without delving too deeply into theory, any recurring wave such as audio, no matter how complex, can be resolved into a set of sine waves of varying frequency, phase and amplitude. This is the basis of Fourier analysis, after the French physicist Joseph Fourier (1768-1830). Also, any sine wave can be regenerated from a series of fixed values providing there are at least three values per cycle to work with. This means that the audio signal can be regenerated from the BBD output providing it yields at least three values, per cycle, of the highest frequency Fourier component. Of course, this is a theoretical limit for in practice about fifteen values, per cycle, are required for complete regeneration. This sampling, passing and regeneration is the basis of the BBD delay system.

The chip used is the MN3001, dual 512 link BBD in a 14 pin DIL package. It is made by Matsushita of Japan and distributed in Australia by the Elcoma division of Philips. One off lots can be purchased at Dick Smith's.

Each link in the chain uses two FETs and a capacitor. It is wired so that in the presence of a clock pulse the capacitor's charge is revised to a value synonymous with the input. The tailing FET is a buffer allowing perception of the capacitor's charge with minimal interaction. Two clocking inputs are required (connected to

FIG. 2A: Block Diagram

FIG. 2B: Circuit Diagram

FIGURE 2: Schematic Diagram of VOX Advance Circuit
The delay is indirectly proportional to the clock frequency; it equals the number of effective links multiplied by the clock period. So by using the frequency equation the delay can be expressed as:

\[ \Delta t = \frac{512RxC}{(0.405Rk + 0.693)} \]

The manufacturers specify a maximum delay of 25.6 mSec.; probably due to capacitor leakage. On the circuit diagram I chose Rx as the frequency determining component. A plot of delay vs. Rx is included (Fig. 4) to assist choice of an appropriate resistor. Just remember that the actual time of relays is 6 to 10 mSec.

Although the staggered system eliminates the clock component from the BBD output, switching transients will still be present. These transients must be suppressed or they can lead to spurious emissions. The first two operational amplifiers, operating as low pass filters with a Q of 1 and a cut off of 2.5 kHz, achieve the suppression. If you wish to run an alternating pass characteristic, then I refer you to the good pragmatic discussion in the book by Hayward and DeMaw (ref. 2), page 80.

Suitable operational amplifiers are the LM307, uA741 and MC1439, all of which don't require the compensation capacitor (between pins 1 and 8), while the LM301 and uA748 can be used directly.

The last stage is an audio amplifier, with a gain of 8.5 dB, to compensate for the losses of the BBD. It, too, has a cut off frequency, but it is about the 6 kHz mark.

The MN3001 is a p-channel silicon gate device requiring a negative voltage; -15 volts. If you are unable to tap a source of negative voltage in the transceiver then an auxiliary supply will be required. In my example the voltage is split using an error amplifier referenced to a voltage divider. Although I used a 2N3055 due to a need for extra power for something else, a 2N3053 should be a satisfactory substitution. The 24 volts DC used to drive the system is arbitrary, although the LM309 will require at least 7 volts for good regulation. Drain on each supply is approximately 10 mA. The trimpot is adjusted to give -15 volts, the 5 volts being independent. See Fig. 4.

Of the transceivers I know, the audio input scheme seems to be as shown in Fig. 5.

The mic. gain, being a front panel control, is usually fed by wire from the audio board. The delay system is placed in this wire; I unsoldered the wire at the potentiometer. An extra point has been provided for something else, in case the VOX line is soldered to the mic. gain potentiometer. Systems do vary so individual appraisal is necessary.

By the use of reverse logic the unit has been called a VOX advance. The advance can cope with most relay VOX systems for the average relay takes 6-10 mSec. to actuate; maximum advance is 25 mSec. The delay equation was quoted to allow tailoring to major variations. The VOX "delay" control will need trimming to accommodate the leading pause. Once the system is operational, please try to drop the opening flourish, or "Ah". Make clean articulate speech your "trade mark".
REFERENCES:

CALCULATED VALUES USED IN PLOT

\[
\text{Delay} = 512 \times \frac{R_k}{(R_x + R_k)} + 0.693
\]
\[
C = 1.0 \text{ nanofarads} \quad (1.0 \times 10^{-9} \text{F})
\]
\[
R_k = 10 \text{ kohm} \quad (10000 \text{ ohm})
\]

<table>
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<th>2f clock(usec)</th>
<th>Delay(msec)</th>
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<td>3.29</td>
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<td>68.0</td>
<td>50.65</td>
<td>25.95</td>
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</table>

QSP

BLITZ ON CB RADIO IS PLANNED

The Federal Government is planning a blitz on CB radio users whose equipment interferes with television, radio and hi-fi reception. They will face stiff fines and run the risk of having their equipment confiscated.
The tough regulations are part of a code the Government has drawn up to deal with CB troublemakers.

ARRL EME COMPETITION

QST for September 1978 includes details of the first ARRL EME competition won by VY5ZZ. The only VK entrants was VK5MC operating on 2m. One entrant operated with a single 16 element yagi on this band but dishes seemed as popular as yagis, particularly at 70 cm. According to the November issue of the Propagator (Illawarra ARS) the University of Wollongong has now received the insurance money to cover the loss and damage of equipment and buildings at Dapto, so perhaps VK2ALU will be back on beam again before too long.
The existence of widely scattered amateur stations that may contribute to data gathering in propagation research would provide a broad statistical base on which to study and define the characteristics and morphology of certain (perhaps new) modes of ionospheric propagation in the Australian-Asian and Australia-Pacific regions in the lower-VHF portion of the spectrum.

The allocation of the 50-52 MHz would materially assist in this regard, providing knowledge that would be of importance not purely in propagation research, but perhaps of more pragmatic significance in the area of defence strategy.

In a less rigorous scientific sense, the "discovery" of new modes of propagation and/or the extension of existing data records by amateurs using the 50 MHz allocation is a distinct possibility. Modern VHF amateur stations are equipped to a much higher technical standard than existed 20 years ago (even 10 years ago), there has been an increase in the number of amateur stations populating the 6-metre band and an increased awareness of the possibilities available for unusual propagation, particularly as we approach the maxima of sunspot cycle 21. The number and extent, and the geographical distribution, of ionospheric paths that may support propagation in the lower VHF region, that may be "explored" by amateur operators using the common allocation of 50-52 MHz (where all the "action" is on the 6-metre band) is now considerably greater than for the last maxima of 1968-69 and the previous one, 1957-58.

**PROPAGATION RESEARCH**

Research into Transequatorial Propagation (1), (2) has significantly advanced in recent years — hampered somewhat by the sunspot minima and the economic recession, and will undoubtedly get a boost over the period of the coming maxima. Much of the detailed morphology and geographical distribution of TEP is yet to be researched and there is considerable scope for research into the morphology of TEP in a number of geographic regions. It is known that TEP is geomagnetically sensitive in occurrence and distribution but only rela-
tively limited paths have been researched to date — Japan-Australia, USA-Argentina and Cyprus-South Africa receiving the most attention. The Australia-North Africa, Australia-Central Asia and Australia-Trans-Caribbean regions suffer from a dearth of data.

The morphology and characteristics of Japanese Archipelago-Australia trans-equatorial propagation in the lower to mid-VHF region of the spectrum is reasonably well detailed and understood at present. The Australia-North Africa, Central Asia and Australia-Trans-Caribbean regions have received much less attention owing to fairly intense and continuous propagation in the VHF region of the spectrum is reasonably well detailed and understood at present.

However, the morphology of trans-Pacific and trans-Indian Ocean TEP is typically limited paths have been researched to date. We know that occasions of trans-Pacific 50 MHz TEP have occurred, but insufficient data is currently available to provide any reasonably detailed picture. Instances of trans-Indian Ocean TEP in the lower VHF region are exceedingly rare, dating back 20 or more years. A bigger "population" on 50 MHz in critical areas of the world (i.e., North Africa; Mediterranean — Cyprus amateurs have 50 MHz; India; South-Central Asia, etc.), including Australia, would almost certainly add sufficient observational evidence of unusual propagation modes for...
Some HF backscatter ionospheric sounder research carried out by Queens-
land University from Brisbane in the 1960s has provided about the biggest body of
information on this subject. It concerns the 50-60 MHz region important to a
number of reasons — particularly in defence strategy as we shall see later. Com-
plex propagation modes exist involving refractions from the equatorial anomalies of
the ionosphere and the dense E-layer formations in the magnetic equatorial zone. These
can produce large range spreads of signals. This is particularly applicable to Australia in a
number of practical ways, not just in “pure” research. And this is secondarily of
importance in itself as money and resources for research projects is granted to
transnational projects with practical goals — particularly in the short term. A
pragmatic benefit from the allocation of the 50-52 MHz to Australian amateurs lies in
the area of its possible contribution to defence strategy.

A research project such as Project ASERT could provide propagation data, as
mentioned previously, on the lower VHF region for equatorial and trans-equatorial
circuits to the north of Australia.

Over-the-Horizon radar systems (5), suitable for early defence warning for Aus-
tralia, are affected by equatorial and trans-equatorial propagation. Although currently
using the HF part of the spectrum, OTH radar systems may, in the future, extend
into the lower VHF region. In any case “odd” ionospheric propagation modes un-
covered in the 50 MHz region affect the HF spectrum as well and may be more
easily identified at 50 MHz.

VHF propagation In the 30-60 MHz region is of defence significance in another
way. Military VHF communications in the Central Asian-China-Japan region may be
monitored at times of enhanced propagation. Indeed, this is already done. Con-
tributions to the study of the morphology of the ionosphere in this area would
clearly have a bearing on military communications surveillance activities. Again,
the return of the 50-52 MHz allocation would greatly benefit this project.

The granting of 50-52 MHz to Australian amateurs would not only put them on parity
with the same allocation in other areas of the world — particularly South Africa,
South America, the South Pacific Islands, Japan and the US, together with efforts
to have the allocation released in India and perhaps Russia, could materially assist
research in a scientific manner. To the writer, the return of the 50-52 MHz alloca-
tion would greatly benefit this project.

Ordinary “extension” of F2 mode propagation (as propagates the HF range) is now
routinely included in ionospheric predictions. Most “GRAFEX” style (computer
plotted) Ionospheric Prediction Service charts are now produced with a frequency
scale spanning 2 MHz to 40 MHz. Recently, the IPS have been putting out predictions
with frequency scales covering 3 MHz to 60 MHz! (See example.) Many paths show
extensions of F-layer propagation beyond 40 MHz at present, and the picture will
surely improve as we approach the maxima. The Australian to Central Asia
(Novisibirsk, Russia being the terminal) predictions are of great interest. Complex
ionospheric modes are almost certainly involved in extended propagation at times
and to frequencies beyond the purview of the predictions. Again, the 40-60 MHz re-
gion of the spectrum is important and a
50 MHz allocation, coincident with the allocation in other countries, would be an
advantage.

DEFENCE SIGNIFICANCE

Research into TEP and the propagation characteristics of the equatorial ionosphere is
particularly applicable to Australia in a
number of practical ways, not just in “pure” research. And this is secondarily of
importance in itself as money and re-
sources for research projects is granted to
transnational projects with practical goals — particularly in the short term. A
pragmatic benefit from the allocation of
50-52 MHz to Australian amateurs lies in
the area of its possible contribution to
defence strategy.

A research project such as Project
ASERT could provide propagation data, as
mentioned previously, on the lower VHF
region for equatorial and trans-equatorial
circuits to the north of Australia.

Over-the-Horizon radar systems (5), suit-
able for early defence warning for Aus-
tralia, are affected by equatorial and trans-
equatorial propagation. Although currently
using the HF part of the spectrum, OTH radar
systems may, in the future, extend
into the lower VHF region. In any case
“odd” ionospheric propagation modes un-
covered in the 50 MHz region affect the
HF spectrum as well and may be more
easily identified at 50 MHz.

VHF propagation In the 30-60 MHz re-
gion is of defence significance in another
way. Military VHF communications in the
Central Asian-China-Japan region may be
monitored at times of enhanced propaga-
tion. Indeed, this is already done. Con-
tributions to the study of the morphology
of the ionosphere in this area would
clearly have a bearing on military com-
 munications surveillance activities. Again,
the return of the 50-52 MHz allocation is
of interest. Some amateurs may be partici-
pating in this experiment. In the report
issued by the IPS on this experiment,
“An Experimental VHF Propagation Warning
System”, by L. F. McNamara, IPS-R18 (6), Dr. McNamara states that
“. . . at times communications on tran-
equatorial circuits can be achieved at fre-
quencies as much as 20 MHz above the
predicted MUF (maximum usable fre-
quency)” (from the Appendix). In the sum-
mary to this report (page 13), Dr.
McNamara makes a number of observa-
tions I consider of importance to my argu-
ment in support of the return of 50-52
MHz. They read as follows:

“The long term predictions of the
probability of occurrence of TEP modes on
various types of circuit were found to be
reasonably accurate, even though they
were based on very little data. More
accurate predictions can only be made
when more observational data have been
obtained.” (My emphasis.)

“In retrospect, it can be seen that the
TEP part of the WS (warning system)
could be improved by—

1. Monitoring at Townsville all possible
northern hemisphere transmitters operating
between 2 MHz and 20 MHz and noting their
frequencies, geographical locations and
approximate signal strengths.

2. Using the signal characteristics of the
JA1IGY beacon (on 50.1 MHz) trans-
missions when they are received at Town-
sville to distinguish between the two
possible TEP modes.”

The significance of the 50-52 MHz band
is readily appreciated. The assistance of
Australian amateurs in this project was
also acknowledged.

Mention of this warning system experi-
ment, and how TEP can be used to
improve signal conditions and reliability on
trans-equatorial paths was mentioned in a
paper by D. G. Cole and L. F. McNamara
published in the March 1975 issue of the
Proceedings of the IREE (1). In section five
of this paper, headed “The Effect of Spread
F on Ground and Satellite Circuits”, Cole
and McNamara say:

“If range spreading is present the trans-
equatorial circuit performance can be
improved in two principal ways. First, since
the range spread is an indicator of like
VHF trans-equatorial propagation (TEP),
an increase in frequency up to the VHF
band (my emphasis) may allow propaga-
tion via the TEP mode. In this case the
signal strength across the circuit will in-
crease, to the extent that transmitter power
may be reduced. A warning system using
range spread as an indicator of TEP has
been successfully tried.”

By way of explanation, “Spread F” or
“range spreading” is a phenomena observ-
able on vertical-incidence ionospheric
sounding equipment which plots the height
variations versus frequency of the iono-
sphere using a RF pulse reflected from the
ionosphere. The record produced is called
an “ionogram”. When several closely
spaced echoes are apparent over a range of
frequencies and heights of the F-layer
reflection on the ionogram, spread-F or
range spread is occurring. The phenomena
is produced by the reception of multiple
 echoes over a range of near vertical

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angles from discontinuities in the ionosphere. The discontinuities contribute to severe fading problems.

Correlation between signal characteristics on 21, 26, and 50 MHz would provide some observational parameters and perhaps some quantitative data on the improvement possible as suggested by Cole and McNamara. Amateurs in Australia and Japan are ideally situated to provide such data. However, the 50-52 MHz allocation is not shared, although 52 MHz could be used. However, the incidence of TEP at 50 MHz is known to be greater than 52 MHz and more stations use the 50 MHz allocation in the northern hemisphere around the Japanese Archipelago.

**SUMMARY**

The return of the 50-52 MHz allocation to Australian amateurs would materially benefit the Australian community, in defence, in scientific and in communications areas. The poor suitability of this region of the spectrum to television broadcasting use has been demonstrated on many occasions in the past and is likely to suffer increasing as we advance to the breakpoints of sunspot cycle 21. Returning 50-52 MHz to the Australian amateur service would serve a more useful purpose than maintaining it as part of a non-standard TV broadcasting allocation.

Putting Australian amateurs on a parity with other major nations and regions in
FIGURES 6A and 6B: Brisbane-Honolulu is an interesting trans-Pacific path. Again, the ordinary F-layer mode will support propagation over 40 MHz. Peak median MUF in November is 41.3 MHz. Note how long the 'useable less than 50% of days' predictions cover 40 MHz.

LEFT — FIGURE 7: Propagation between Australia and Central Asia (Novosibirsk, USSR) is interesting and shows promise for the maxima years to come. Already, propagation beyond 40 MHz is possible on at least some days of the month.
regard to the 6 metre band allocation would see many benefits flow from such a decision in the years to come.

REFERENCES
4. "Conduct of a Systematic Investigation of VHF/UHF Propagation Modes by the Amateur Service in Australia", by K. G. McCracken. The VHFAC is coordinating "Project ASERT".

One of the things which deter many experimenters who would otherwise build some equipment is the imagined difficulty in doing the mechanical work such as making a chassis and a box for the equipment they are building. I say imagined difficulty because it is often thought that to do sheet metal work one has to have an expensive workshop with all kinds of bending and cutting tools.

In actual fact, it is possible to make very good looking and perfectly functional boxes with the simplest of tools. Figure 1 shows how simple these tools can be. All that is needed is a couple of pieces of steel angle iron about 18 in. long, a clamp which can be bought at any hardware store (about a four inch clamp will do) and the kind of vice which can be found in practically every backyard garage. With these tools it is possible to bend aluminium sheet up to 18 gauge and if you want to use steel or galvanised iron, up to about 20 gauge. The sheet is simply placed between the angles as shown in Fig. 1 and the sheet is pushed over with one hand while the metal at the bend is gently hit with a hammer to work it over to a sharp bend. Fig. 1 shows the sheet of metal in position with the second bend completed. This particular box will have four bends and is about the simplest and most useful type there is. But it is not the only type of box which can be made. It is possible to make a wide variety of boxes and once you start you’ll soon get the hang of it.

Fig. 2 shows the completed box. It is in two sections, one being the outer casing and the other the front and back panels and the chassis. You can see it is a very simple and convenient arrangement. Knobs and switches can be mounted on the front, and plugs and sockets can be mounted on the back and the circuit board or whatever can be mounted on standoffs on the main part of the chassis. The completed chassis can then be slid into the outer casing and a couple of screws through the outer casing into the chassis are enough to hold them together.

For cutting the metal the normal tin snips can be used but if you take the trouble to get a couple of old car springs and file the edges — they are not too hard to file — and bolt the springs to a couple of pieces of 3 in. x 2 in. hardwood you can make a first class pair of shears.

Another useful thing to know is that if you want to get a nice straight edge on a piece of aluminium sheet you can plane it with an ordinary wood plane as long as you are careful to take a very fine cut. The blade will not be damaged though it may need resharpening fairly often. Don’t try the idea on steel or tinplate or you’ll ruin the blade.

So don’t be afraid to tackle sheet metal work even if you have only the simplest tools. There is nothing more satisfying than to see a home made box exactly the right shape and size, spray painted with an aerosol tin of hammer tone or wrinkle enamel and have someone say, “Where did you buy that box? It’s exactly the size I need.”

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Amateur Radio May 1979 Page 19
A SIMPLE 10 GHz RECEIVER WITH TRANSMITTER OPTION

INTRODUCTION
During recent years amateurs have had much success with simple 10 GHz equipment. Usually this has consisted of transmitters generating a mere 1-20 mW, receivers using point-contact diode mixers and with an IF bandwidth of 100-200 kHz, and horn or dish antennas having gains of 20-35 dB. Provided that the equipment is operated to take advantage of low-loss propagation modes, such as that over line-of-sight paths or of super-refraction via ducts, then contacts over paths hundreds of kilometres long can be achieved virtually as a matter of routine.

Both calculations and direct measurements show that this size of equipment usually has a reserve of system gain of tens of decibels. This reserve means that it is not even necessary for the equipment to be working well for it to be successful: an overall efficiency of one per cent may be all that is required to cope with most low-loss paths. It also means that "compromise" techniques, such as the use of a Gunn oscillator as a self-oscillating mixer (and usually also as the transmitter), are quite satisfactory under these propagation conditions provided that the rest of the systems is working reasonably well.

However, for paths containing obstructions the path losses are normally very much greater. Losses 60-80 dB (1-100 million times) greater than those over unobstructed paths are not atypical. In order to work over these obstructed paths, the overall systems gain has to be correspondingly increased and it becomes necessary to start counting every decibel. The receiver described below, although it is simple to construct, is intended to be efficient at this level. An unusual feature is the flexibility of the design. Because of its particular configuration, a small amount of the local oscillator power is radiated and obviously this can be modulated and used as a transmitter. By a simple modification the output power can be increased if desired, but at some expense of the performance of the receiver.

DESIGN AND CONSTRUCTION
The receiver is shown schematically in Figure 1. It consists of a simple mixer assembly which is connected directly to a Gunn oscillator of the type which defines its cavity by an iris. The mixer uses a length of waveguide into which is fitted the mixer diode, the hot end of which is decoupled and feeds the IF amplifier in the conventional way. Diodes of the 1N23 type are recommended; those with later prefixes (E, F, G) are preferred for their lower noise figures. The signal-input end of the guide can be of any convenient length, and it is fitted with a matching screw or screws to match the mixer diode to the waveguide. The length of the waveguide at the local oscillator end is critical: it needs to be made electrically an odd number of quarter guide wavelengths, i.e. nλ/4, where n is 1, 3, 5, 7, etc., as is convenient. This rear cavity is closed by the same iris as is used to define the Gunn oscillator cavity.

A basic problem in the design of receivers is how to couple the local oscillator drive into the mixer while keeping to a minimum the amount of signal loss by its coupling with the local oscillator circuitry. A feature of the present design is that this isolation is provided simply by using the iris to undercouple the Gunn oscillator. Apart from the simplifying construction...
PRACTICAL DETAILS

Two forms of the mixer assembly (which were developed quite independently) are shown in Figs. 2(a) and 2(b). Also shown as Fig. 2(c) is a recommended design of Gunn oscillator which is the G8APP design [1] with a fixed rather than adjustable RF short. A feature of the design given in Fig. 2(a) is that it requires the minimum amount of tools in its fabrication. Points that can be made with respect to its construction are:

(a) First drill a hole about 3/32 in. diameter centrally through the broad faces of a suitable length of waveguide size 16 and open one of the holes to 0.25 in. diameter.

(b) Remove the brass centre boss from a knob intended to be used with a 0.25 in. diameter shaft by breaking away the surrounding bakelite. Fit the two flanges in their positions and solder these and the boss in a single operation. The latter may be jigged using a 0.25 in. drill. Note that the position of the input flange is not critical in any way, but that at the oscillator end it should be within about 1 mm of that specified.

(c) Drill and tap the holes for the matching screw. Remove the excess waveguide projecting from the flanges by sawing, filing and finally by grinding on wet silicon carbide paper backed by a sheet of glass. Carefully remove burrs from the inside of the guide, especially where the insulation is to be fitted.

(d) Carefully file away the lip from the mixer diode large connection (or from the adaptor if the diode is of the reversible type) so that the connection is uniformly 0.25 in. diameter.

(e) Drill the hole in the capacitor plate so that it is a tight fit on the diode pin. When assembling, press the diode against the wall of the guide before tightening the grub screw.

The construction of the design given in Fig. 2(b) is similar, but in this case the diode is bolted to the bypass capacitor at one end, while the other end is made a tight fit in the wall of the guide. In mixer diodes that are reversible it will be found that one connection pin is solid and, preferably, this is the one that is tapped. The pin is undersized for the BBA thread specified, so the forces involved in tapping the thread are small: it can be done while holding the diode with the fingers.

The fabrication of the Gunn oscillator should present few problems. Construc-

FIGURE 3: A simple zener diode PSU. The working voltage of ZD1 is normally 7-9V (see text)

FIGURE 4: Speech amplifier and Gunn diode supply modulators
somewhat smaller than the values calculated for $3\lambda/4$ at these frequencies, namely 29.8 and 27.4 respectively.

The same procedure is recommended if it were desired to optimize the mixer assembly at another frequency, or to lengthen the cavity by making it $3\lambda/4$ or $7\lambda/4$ in order to fit a wavemeter.

Other Gunn oscillators which employed an iris at the output flange can be substituted directly. Examples are given in [1].

As noted earlier, some of the local oscillator power is radiated from the antenna port and may be used as a low-power transmitter. By increasing the size of the hole in the iris plate the amount radiated may be increased to make the transmitter more effective, although the reduced Q of the oscillator cavity resulting from this change means that the efficiency of the receiver will be impaired. Despite this, the performance of such equipment should be competitive with that of most other transceiver configurations. The size of the iris should not exceed about 6 mm diameter, otherwise the stability of the Gunn oscillator may be seriously affected.

**POWER SUPPLY UNIT**

The simplest practical PSU consists of a zener diode stabilized circuit as shown in Fig. 3. If, as in this case, the receiver local oscillator is not to be modulated, then the working voltage of the Gunn diode will be close to that which produces maximum power output. This can be checked by operating the oscillator via a variable resistor (e.g. 47 ohm 3W) from a 10V 0.3A DC supply, and using the mixer diode current as a power indicator. A zener diode of the optimum working voltage and 1W rating can then be fitted, and the value of resistor R set so that the zener diode passes 50-100 mA with the Gunn diode connected.

It is of advantage to be able to frequency modulate the receive local oscillator with tone since this enables CW signals to be detected. If there is a chance that the unit will be used as a transceiver, if only as a low-power spare equipment, then it is worthwhile also to build in speech modulating facilities. A recently developed circuit produced by G8AGN/G8ZCO is given in Fig. 4. A deviation of about 100 kHz is usually employed, this being suitable for standard broadcast FM components.

**RECEIVER PREAMPLIFIER AND IF STRIP**

One of the advantages of having a separate receiver is that there is a wide freedom of choice for the IF frequency. In fact almost any frequency can be used in principle since its value will be taken into account during the final calibrating process. With single-ended mixers of the type described above, there are advantages in using a relatively high IF in the region of 100 MHz. A convenient form for this can be a standard FM broadcast receiver, which may have limited AFC facilities built in— as well as a tape recorder. Some receivers of this type can tune 150 MHz, which is a useful IF in that the receiver can be made to tune 10,000-10,100 MHz on one channel, and 10,300-10,400 MHz on the other.Suitable varicap diodes, such as either BFY90 or 40673 devices are given in [5].

A useful check on the overall performance of the receiver is to measure the difference in its noise output when the antenna is pointed at the sky or at objects such as the ground. This technique is described briefly in [6].

**REFERENCES**

[2] RC December 1972, p. 280; also M, Fig. 8.39.
[3] RC December 1972, p. 741; also M, Fig. 8.36 and 8.37. Horn antennas normally represent a well-matched load.
[4] RC May 1974, p. 288, Figs. 6, 7 and 8. Figs. 7 and 8 are also shown as Figs. 8.52 and 8.53 in M. Also RC September 1976, p. 667, Figs. 1 and 2.


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**THE 1979 FACT SYMPOSIUM**

The "Future Amateur Communications Techniques" Symposium, held in Sydney in May last year, turned out to be one of the most important events in amateur radio for 1978. The success of this venture has created a demand for a "return" performance.

Accordingly, the 1979 FACT Symposium will be held over the long week-end of 29, 30 September-1 October this year at a venue in Sydney, to be announced.

This year's FACT Symposium will again be organised by Roger Harrison VK2ZTB, and the NSW VHf and TV Group Committee.

**CALL FOR PAPERS**

The organisers invite any amateurs, or interested persons, wishing to present a paper at the 1979 FACT Symposium to present a written abstract or synopsis on a topic of your choice—but related to communications techniques—to the committee by or before 30 May, 1979. Successful papers will be judged on originality, informativeness, possible future importance and amateur applications.

It is intended to publish the Symposium Papers before the event this year.

To enable interstate amateurs, who may not be able to attend, to contribute to the Symposium, the committee invites abstracts from authors who, if accepted, would be invited to submit a paper for publication in the Symposium proceedings.

For further information, contact the FACT Symposium Committee, C/- 14 Atchison Street, Crows Nest, NSW 2065.

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There's a couple from up country —
by their looks it's Dad and Dave.
Heck! They're In the all band scramble —
this'll be a rave!
By the looks of their equipment, it oughta be condemned.

I'd like to see that rig receive —

Let's see how they do.
That tuning gang is driven by a length of cycle chain,
wrapped aroun' a stick of wood!

They gotta be insane.
They're not using coax for their feed:
they're using some barbed wire!
Their SWR must be near 10 to 1.
And if it ain't — it's higher!
They've gotta couple of tractor springs
and using them for coils.
And every time they switch to CW —
The electrolytic boils!
For valves they've got a few light globes —
and it would be my guess
that the first valve that De Forest made,
Is somewhere in that mess!
They don't use gels or batteries.
Or anything else as subtle!
For volts, they light a big log fire —
and heat a thermocouple!

Hey, mate! It's about to start.
Let's watch these country blokes.
I'd bet a monkey's uncle —
They'll be good for a couple of jokes!
Geez! Look it that bloke pound the brass —
close to twenty words a minute!
At the rate he's making QSOs —
no one else is in it!
Great Scott! He's won the thing!!!
with sixty-five or more.
an' none of them fancy amateurs —
comin' anywhere near his score!
I reckon I'll chat these blokes
and tell 'em what I've said.
'Bout them crummy commercial rigs
and how 'ome brew leaves 'em dead!!
—From Westlake R.C. Newsletter, Dec. 78.
ISLE OF MAN

A new prefix "GT" will be used during the period 0011h BST on 30th June 1979 to 2359h BST on 8th July 1979. Many expeditions to the island are expected which will boost the efforts of the resident 50 or so licensed Manxmen. The Isle of Man Amateur Radio Society asks visitors to send them details as advice and assistance will be readily available. (VK3UV.)

Rad. Comms., Jan. '79

The use of this new prefix is to mark the millennium of Tywalnd, one of the most ancient legislative assemblies in the world. This comprised the King, two lawmen (later termed Deemsters), 24 Keys and the Freemen or Folk as fashioned on the Norse system of government when the island was conquered by King Orry—Godred Crovan. Tywalnd is also remarkable for the retention of so much of its original form, procedure and ceremonial. Today, almost a thousand years later, it comprises the Lieut.-Governor representing the Sovereign, an appointed Legislative Council and an elected House of Keys.

Tywalnd is not subject to the British Parliament (except in matters previously agreed between the two) but to the Sovereign. It enjoys legislative independence and the right to order the civil, judicial and financial administration of the island. A ceremonial is held each year on Old Midsummer Day, which is now July 5th, on Tywalnd Hill, St. John's near Peel.

Mannanin Veg Veen, Mona of the Romans or Man is indeed a tiny island in the Irish Sea. From the top of Snaefell, some 900m high, five countries can be seen on a clear day as well as the rolling green hills of the island with its tree-clad glens. The climate is generally much milder than surrounding areas and helps to explain the main industry of summer tourism, assisted, no doubt, by the Casino. The Island is even more famous for the international Motor Cycle TT races (dating from 1904) in August, during which many of its roads are closed to all other traffic.

On the way from Douglas to Castletown the road crosses a small creek where all visitors should salute "the little folk". Perhaps its long history of severe hardships, conquering hordes and periods of isolation, has much to do with superstitions. Nevertheless, Manxmen are proud of their island, of their beautiful music — especially Ellen Vannin, by Eliza Craven Green, of the early 19th century — and their service "Ir and King and country".

Manxmen can be found in most places as their names testify — Christians of Pitcaimn Island from the Bounty, Quayles, Caines, Clagues, Kennaughns, Quilliams, Kellys and many more. Perhaps as famous are Manx cats and the three legs of Man emblem.

Nearly 30 years ago I worked a GD station but no way could I get a QSL card out of him as I needed it for some award or other. I even sent him cards made out ready for him to sign and return in the envelope supplier with IRCs. It took the visit of a friend of mine, some 12 years later, to collect it in person. That was an exceptional case, because the last time I joined in the Isle of Man ARS monthly meetings the talk was about QSLing during the excellent teas we enjoyed. A fine island, full of beauty, history and charm.

EARLY DAYS IN RADIO

As a result of our "Early Days" request from "Old Timers" on amateur activities in the years 1925-1935, the author has submitted the following story.

"My present call sign is VK2LT, which I got in 1963, having caught the bug again.

Owing to pressure of work and other hindrances I let my previous licence lapse (2RG) from 1925 to about 1929, my old licence was dated 14-2-1925. Certificate No. 67, signed by Radio Inspector W. T. Crawford, Chief Manager J. Malone.

I was fairly active during 1925 to 1927, was living in Bangalow then, not far from the sea.

In about the years 1920 to 1921 I built a small two cylinder engine with the help of my brother, who was with an engineering firm in Brisbane. The machining of some of the parts such as the crankshaft and boring out of cylinders was done in Brisbane; the rest was done by myself on a small lathe, which was also made mostly by my brother, and finished and put together by myself.

I became interested in radio in about 1921-1922, made several receivers, picking up 2FC and 2BL, and entertaining the local townpeople, several of whom got me to make them a BC receiver. From then on I became interested in Amateur Radio, making several receivers, mostly picking up morse from ships, which helped me a lot to learn the code.

When I obtained my radio licence and was able to use a transmitter, I got on the air, using batteries for a power supply for a while. Then I made a transmitter for the HT supply, which was connected to the two cylinder engine; it generated 800 volts 2 amps DC, and using batteries for the LT supply. I was on the air with the 50 watt Radiotron valve. I used this until the AC power was connected through to the LT supply. I was on the air with the 50 watt Radiatron valve.

I was fairly active during 1925 to 1927.

Unfortunately none of the gear used has been kept. I have a few QSL cards. I think the best of the cards are at the Richmond River Society's Museum in Lismore. QSL cards still in my possession are: America (6AZY, 6chy), Australia (8) VK2s, (6) VK3s, (4) VK5s, (4) VK7s; had more but they have been mislaid over the years; also (10) New Zealand cards.

My first receiver was 3 coils, 4 valves; transmitter 1 valve (200). Later the transmitter used a 50 watt Radiatron valve, Hartley Circuit Power Supply, home-made transformer, stampings cut out with snips and screwed up with a file, etc., 800 volts HT. The rectifier was a number of glass bottles filled with 20 mule team borax with electrodes of lead and aluminium. They were a beautiful sight, a lovely blue colour when the key was pressed. Wavelength 35-50-57 metres, aerial 35 ft., with 4 wires, 40 ft. fan-shaped counterpoise.

Receiver used then low loss 3-coil, 2-stage AF. Later used Phone, using carbon mike; contacts mainly VK2s.

I have belonged to the local Summerland Radio Club since it began and am active on VHF using a Multi 7.

I have made several caravan trips around Australia. In 1967 used a Swan 350 with helical whip aerials, 20, 40, 80, and made many contacts and friends on the way. I was in contact with VK2BU, Newcastle, who kept our daughter, now at Raymond Terrace, informed of our progress, etc., and don't think we missed a "sked", mainly on 40 metres at around 7 p.m."

Editor's Note: Contributions from OTs regarding their early experiences, etc., around 1925-1935 (or earlier and later) are most welcome. (VK3UV.)
NOVICE NOTES

TESTING CAPACITORS FOR LEAKAGE

Gil Sones VK3AUI

Many capacitors found in older receivers and TV sets being stripped for parts are leaky. However, the leakage is often not evident at the low voltage used by a conventional ohmmeter.

A simple check can however be made using a neon tube and a series resistor if a source of between 200 volts and 400 volts DC is available. Only a very small current is required to produce a glow in the neon tube. Thus leakage current and breakdown at typical working voltages may be readily found.

When the switch is pushed the neon will light and then extinguish as the capacitor charges. The duration and intensity of this charging flash gives an indication of the capacitance of the capacitor.

1000 pF to 0.01 mF charge quickly with a small flash which may be easily missed.

0.1 mF charges with a noticeable flash.

1.0 mF charges with a very noticeable flash.

Thus you may also roughly gauge the order of the capacitance with a little practice.

If the capacitor is leaky the neon will pulse rapidly if very leaky and slowly if leaky.

If the capacitor breaks down under voltage the neon will remain alight continuously.

Electrolytics cannot be tested in this manner as they depend on some leakage current to maintain their dielectric film.

Small disc ceramics are generally of too low a value. Also discs often fail due to plating flaking off the ceramic and so reducing capacity.

However the many paper and plastic film capacitors can be checked. They usually deteriorate due to failure of their sealing allowing moisture in.

With a little practice you will become quite adept at sorting out the good ones. At about the same time you will probably be able to predict from the look of the capacitors which ones are crook. This skill used to be put to good account by TV servicemen in fixing up the older style of TV sets.

AC MAINS PLUG CONNECTIONS

Australian Standard AS3000 recommends that when viewed from the front of the outlet the pins should be Earth, Active, Neutral when rotating in a clockwise direction.

The cord flexible conductor colours are —

Active — Brown.
Neutral — Light Blue.
Earth — Green or Green/Yellow.

Older electric cord colours were —

Active — Red.
Neutral — Black.
Earth — Green.

ONE FLASH AND YOU’RE ASH

JOTTINGS FROM WESTLAKES RADIO CLUB

Young members visiting the clubs for the first time get some wild ideas.

Back in the early days, one 12-year-old was very upset that he didn’t get on with building his TV receiver in the second lesson.

The whole idea of attending the radio club at all is to learn the disciplines of electronics. Discipline is “doing as ordered”.

Now nobody is going to order you about as if you were on the parade ground.

But all the experienced members will tell you that it is dangerous to assume that because you are a radio club member you will automatically know all about electricity.

The funny phrase, “One flash and you’re ash!” is all too true when one thinks about mains electricity.

Mains electricity is present at the mains three-pin socket on the wall; inside the TV set, the radio set, the toaster, the mixer, the shaver and all other electrical appliances.

You can’t see mains electricity and this is what makes it so dangerous.

A spider or a snake or a shark look dangerous, so you keep out of the way of them if you are wise.

But mains electricity is much more dangerous than all of them and you can’t even see it!

Then what should you do?

It is just as stupid to be afraid of mains electricity as it is to think that it’s harmless.

It is much better to treat it with respect. Make it your servant but never assume that it is your friend, because mains electricity can kill you.

I’ll tell you a true story about how dangerous it can be.

Years ago, when the club was very young, one member, about 13 I suppose, mistakenly thought that because he had had a few lesson in the Elementary class he knew all about wiring up a three-pin plug.

His confidence nearly caused the death of his father.

The house in which he lived had been wired so that a power point on the wall had no switch. This was dangerous in itself but that’s only part of the tale.

This boy, thinking that he would do a good turn for the family, set about putting a new plug on the mains lead to the refrigerator. He just connected the three wires to the three pins.

If you think about it mathematically, you can imagine that there would be many ways to do it and still finish up with some degree of safety. But this boy connected the red active lead to the earth pin. His father arrived home just as he finished. He took the lead from the boy because he didn’t know about these things either. He plugged it in and reached for the door handle to see if the light came on. Fortunately, someone pulled out the plug soon enough. But it could have been fatal.

DON’T DO IT UNTIL YOU HAVE BEEN SHOWN HOW.


BOOK REVIEW

RADIO FREQUENCY INTERFERENCE

HOW TO IDENTIFY IT AND CURE IT

With the amount of electronic equipment installed in the average home increasing every year the identification of RFI and its elimination is becoming more important. This ARRL booklet will show you how to identify the interference, find its source and suggest means for its elimination — often in the equipment being interfered with, sometimes in the transmitting device.

For many years the producers of electronic power generators have been conscious of the need to produce equipment to a high standard which does not produce "spurious" outputs.

Makers of reproduction equipment have, in many instances, because of a desire to produce such equipment at low cost, been prone to overlook the effects that a nearby source may have upon their products.

All aspects of the problem are dealt with in this sixty-four page publication.

Publisher: The American Radio Relay League Inc., Newington, Connecticut, USA.

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- Noise figure 2.5 dB
- Typical image rejection 65 dB
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ELECTRONICS are now Victorian distributor for SKYBAND Mobile Antennas.

PRICE LIST:
SKY 80 6 feet long. 3.5 MHz $28
SKY 40 3 feet long 7.6 MHz $26
SKY 20 6 feet long 14.150 $26
SKY 15 6 feet long 21 .00 $25
SKY 10 6 feet long 28 .500 $24

Yaesu. Kenwood. Icom. Equipment sold by CHIRNSIDE ELECTRONICS is pre-sales checked and covered by 90 day warranty and expert after sales service.

All prices include Sales Tax. Freight and insurance extra.
Prices and specifications are subject to change without notice.

CHIRNSIDE ELECTRONICS. 26 Edwards Road, Lilydale, 3140. phone (03) 726 7353.
QSP

CALL SIGNS WITH ADDRESSES

A number of members wrote their call signs on
the subscription notices when they sent them in
with payment. Most of these were already on
record but some were not and the membership
records were duly amended — thank you.

On a motion they "unanimously VOTED
that the Board of Directors commends the
performance and contributions of those
amateurs who are actively participating in
the Intruder Watch programme and in-
structs the General Manager to give maxi-
mum support to this important activity,
particularly during the remaining year to
the World Administrative Radio Confer-
ence".

They go on to say "During the past
year, 1978, the FCC Treaty Branch was
sent numerous reports concentrating upon

the all-too-familiar 40 metre foreign broad-
cast interference into exclusive amateur
frequencies. The voluminous reports served
as the basis for the reports sent to
Washington, and we appreciate all that
you have provided us. Please keep things
going at your present level of activity as
your continued reports will be of great
assistance with regard to the ARRL efforts
on behalf of amateur radio at the WARC
sessions later this year in Geneva."

This applies equally here in Australia
too.

It is becoming common knowledge that
the Peoples Republic of China is contemplating
legalising amateur radio, and it is therefore hoped that after WARC those
annoying broadcasts may be minimised,
especially if they interfere with their own
amateurs!

I am appealing for somebody to take
over the Federal Co-ordinator position.

Ivor VK3XB has all he can handle with
the VK3 co-ordination, and with my change of QTH and mounting commitments I have
all that I can handle with Region 3.

Will somebody come forth?

It does not necessarily mean a VK3.

Anybody with some enthusiasm can do the
job successfully.

How about it?

My new QTHR is — 15 Point Avenue,

Beaumaris 3193.

AMATEURS vs. HAMS

Amateur radio is in a sense like the art of
fishing. Anyone with a triple set of hooks, a 15
pound test line and a rod the weight of a tele-
phone pole can eventually land his fish. The chap
with the light tackle is up against it, but he
gets more out of the game when he does catch
one. A station running comparatively low power
will never make the lists of high scoring stations
in one of those RST races of course. And it is
not likely that some amateurs, now we have the
gear available to run legal limits and above, will
ever again go back to luck and skill which are
the alternatives to brute power — even if the
multipliers or other condition do favour turning
the gain down. Those of us with moderate out-
put should make our weight felt just by getting
on and into whatever action is taking place as
well as accepting the fact that we will not win
any prizes, but letting others know that with our
handful of watts we are in there battling — not for
a silver-plated medal but for the very personal
fun of making contacts.

The oft-used expression "this is what separates
the men from the boys" should be turned around
to read "what separates the radio amateur from
the ham is the ability to talk".


THE INTRUDER WATCH IN
REGION 2

At the January meeting in Miami
this year the ARRL adopted a
resolution, the text of which I quote
hereunder —

GEELONG RADIO AND
ELECTRONICS SOCIETY

The Geelong Radio and Electronics Society
enjoyed a good participation of many new members
during the recent J. Moyle Memorial Field Day.

The venue was at the Scout Camp, Eumeralla,

near Anglesea.

Regular meetings are held at the Society's rooms
on the Belmont Common.

Visitors are welcome. Mail enquiries may be
directed to the Secretary, GRES, PO Box 962,

Geelong, or ring Geelong 213658 for further
information.

TRADE HAMADS

For a very long time commercial advertising
has not been accepted in AR Hamads, but as
the result of discussions at the 1978 Federal
Convention a decision was made to
open up a "Hamad-Trade" section. The rate
will be $10 for 4 lines plus $2 par line
(or part thereof), minimum charge $10, pre-
payable. Copy is required by the first day of
the month preceding publication. This will
mean that in future ordinary Hamads sub-
mitted from members who are deemed to be

in the general electronics retail and whole-

sale distributive trades should be certified as

referring only to private articles not

being re-sold for merchandising purposes.

AMATEURS vs. HAMS

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the men from the boys" should be turned around
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the ham is the ability to talk".


WIA Car Stickers now available:
Send only 20 cents each — GET ONE
NOW. Send only self-addressed stamped
evelope with 20 cent stamp —
Direct to your Division or from
Box 150, Toorak, Vic. 3142.

New rates for 1979 subscriptions:

-20 Point Avenue,

Geelong 3218.
MEET THE "THUGS"

PHOTO No. 1

PHOTO 1. L. to r. — Maurice VK3AIG, John VK3ZAZ, Doug VK3ZO0, Fred VK3YNC — whose shout next?

PHOTO 2. "If you missed the floor show, just wait until you see the waitress", seems to be the Div. President, Eric VK3ZZN’s thoughts.

PHOTO 3. Derek VK3ZVG, Div. Treasurer, "This is what I call general business."

AOCF EXAM — FEBRUARY 1979

POSTAL AND TELECOMMUNICATIONS DEPARTMENT

AMATEUR OPERATOR'S CERTIFICATE OF PROFICIENCY

SECTION M (Theory), BOOK 2

February 1979

(Time allowed — 2½ hours)

NOTE: SEVEN questions only to be attempted. Credit will not be given for more than SEVEN answers. All questions carry equal marks.

1. (a) With the aid of a circuit diagram, explain one method of producing single sideband suppressed carrier signals. (b) Discuss the importance of carrier frequency stability in this type of transmission.

2. (a) Assisted by diagrams explain the theory of operation of a silicon-controlled-rectifier (SCR). (b) Explain why interference to radio reception may be caused by equipment which employs SCR devices and suggest a method of reducing this type of interference.

3. (a) Describe with the aid of a diagram the operation of a reactance-modulator used to frequency modulate a transmitter. (b) Discuss the effects on high frequency transmissions of the daily variations in the ionosphere, the seasonal changes and the sunspot cycle.

4. (a) Sketch and describe the constructional details of a permanent magnet moving coil type meter. Explain the theory of operation and show how the meter could be adopted to measure alternating currents.

5. (a) The tank circuit of an RF amplifier is tuned to resonate at 7 MHz. State, giving reasons, whether the antenna coupling is reduced.

6. (a) Explain briefly the theory of radio transmission via the ionosphere. (b) Discuss the operation of a type of microphone suitable for use at an amateur station.

7. (c) State, giving reasons, whether the anode current of a PA stage will vary when the antenna coupling is reduced.

8. (b) Draw a circuit diagram of a pre-amplifier suitable for use with a high-impedance microphone.

9. (a) A power amplifier stage of a transmitter operates with a grid current of 15 milliamperes through a 2000 ohms resistance to earth. The total cathode current is 115 milliamperes and the total operating bias is 80 volts. What is the value of the cathode resistor?
The Editor,  
Dear Sir,  
Thank you for the letter of 5th March informing me that I received the Technical Award for 1978. I have pleasure in donating the amount involved towards the expenses of WARC 1979 and enclose a cheque for 25 dollars.

All best wishes,  
Your sincerely,  
Roy Hartkopf VK3AOH.

---  

The Editor,  
1821 South Lakeshore Drive,  
Chapel Hill, North Carolina, USA.  
March 8, 1979.

Dear Sir,  

Your February editorial covered the need for con-  

ducted non-ambiguous Amateur Service regulat-  

tions but that is only a small part of the “over-  

regulated” situation we Australian amateurs are in.  

How about the out dated stations which prevent us  

using ASCII code for TTY transmission and transfer  

of microprocessor programs? Or the con-  

tinuance of regulations preventing phone patch or  

third party traffic? It’s significant that the latter  

regulations only exist in countries with govern-  

ments in charge of the telephone as such as the  

former PMG. These carriers have an obsession in  

seeing that patch or third party “privileges” are  

not granted to amateurs. Wherein lies their busi-  

ness (in Canada and the US where patch and  

third party are allowed, studies have shown that  

no business has been lost).

In the PMG days, we had the unhealthy situa-  

tion where they were both the regulators and the  

main benefactors of the regulations and in that  
environment it was virtually impossible to get  
eguitable regulations. Now that a separate organisa-  
tion, the P. and T. Department, is the regulator  

and supposedly has the interests of the whole  

community at heart, they will, hopefully, not con-  

tinue these stifling regulations which only serve to  

suppress the growth of the amateur service.

Why start at any other number than 001? Jock  

White of the NZART completed those rules and this  

year it’s my turn. We try to give the entrants the  

kind of contest they want, and any suggestions we  

receive are most welcome. Now to some observa-  
tions. 24 hours versus 48. Most operator’s com-  

ments point a preference for 24 hours of operation.  

However I have included an 8 hour section this  

year to test for support.

I note, too, that the Canadians propose “re-  
placing the multiple-choice questions on theory  

with straight problem-type questions”. It is pleas- 

ging to see that not everyone is thoroughly bemused  

by the multiple-choice format, which is, in fact,  

only one of a number of “easy marking quick  

answering” types. It is hoped that the P. and T.  

Department does not incorporate into its Novice  

and AOCP syllabuses a rigid prescription that per- 

mits only such readers of AR to work who can  

purchase.

It has been our intentions (NZART and WIA) to  

encourage participation in any possible way. Your  
suggestions are desired. This year the WIA is  

offering to mail out log booklets as well as certifi-  
cates and trust this will give some operators the  

incentive.

Will any Club, Division or Group offer a trophy  

for the contest?

I’ll leave you with a question, to which please  

write me your answers — Should we have contests?

Neil Pentolf VKGNE.

---  

The Editor,  
35 Rutland Street,  
Cooparoo 4151, Queensland.

Dear Sir,  

PHONE PATCHING!!  

I am writing to you in your capacity of obtaining information from Mr. Geoff Swift VKONIC/ 

YGE, whose address is not known to me.

In describing his radio room and integrated units of equipment he mentions “a phone patch board”.

I am aware that phone patch units are readily available in Australia and are advertised in the Yaesu Musen SP901P Phone Patch/Speaker is a typical example, but this is the first mention of a “phone patch board” as Geoff puts it.

The prefix rule will be looked at, with JK1AA/S being considered as JA5, for scoring purposes. JA5 is the most common prefix in the “5” call area. But please keep in mind most rules need altering sooner or later.

I do not see the necessity for writing out a log three times, or even twice. A carbon copy for the station log and the original sent away to the contest manager is all that is necessary. The need back to back to the Amateur Service. Fortunately, at present they  

form a small minority.

However, if and when is allowed to continue, their numbers will increase, the overall standards within the Amateur Service will fall, and those who oppose our allocation of frequencies will have more ammunition to use against us.

I strongly urge the WIA to press for the mainten- 

ance of a reasonable standard in all examinations for Amateur licences.

(Name and address supplied)

---  

The Editor,  
10 David Street East,  
Huntingdon, Vt. 3078.  

Dear Sir,  

I notice on page 57 of “OST”, October 1978, that the Canadian administration is working on an entirely new Amateur Radio Syllabus for its examinations for the next time around. This is a step forward, while our Australian authorities can only “run” to half that number.

I note, too, that the Canadians propose “re-  
placing the multiple-choice questions on theory  

with straight problem-type questions”. It is pleasing to see that not everyone is thoroughly bemused  

by the multiple-choice format, which is, in fact,  

only one of a number of “easy marking quick  

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ance of a reasonable standard in all examinations for Amateur licences.

(Name and address supplied)
3. The use of net frequencies and channel numbers. If you are using crystal controlled equipment as I am, you need two crystals—one for the net frequency and one for your station's output channel. In this way you can conduct your QSO. If you use just the one crystal not on the net frequency, your CQs are just a cry in the wilderness.

4. Use of high power linear (or otherwise) RF amplifiers. Like the Kenwood TL-922 2kW PEP and the Denont Radio MLA2500, 1 kW DC input on CW. As the institute knows these power levels are illegal for the ARS and yet these amplifiers are sold, used and advertised as if they are a normal item in many amateur shops. If the ARS is to continue to be a professional concern, it cannot ignore the fact that many commercial operators and of the P. and T. Department, this practice must stop.

5. The proliferation of "illegal" equipment. Both of the amplifiers mentioned in (4) are advertised in the WIA journal AR (i.e. Vol. 46. No. 10, October 1978). The ignorance of this type of equipment being advertised in AR, for in the same issue there was a front page announcement apologising for a mix up between prices in the Denont MLA2500 and some other item in an Emona Electronics advertisement. Now I could stretch my credulity to believe that the busy staff of a monthly magazine simply don’t notice the advertisements offering of Illegal equipment—but not after that lot! For that statement to be made, someone would have had to look up that advertisement to confirm that the prices were in fact wrong. Also that person would have had to realise the intrinsic value of the 1 kW amplifier in order to make the apology statement with "...must have thought that Father Christmas really did exist." In any case these advertisements have appeared in the three issues of AR I have at hand. To suppose that the staff of AR have not perused these Issues after publication is to acceed to any demands that some amateur bands be given over to commercial interests. After all, we are amateurs, and not commercial operators and of the P. and T. Department, this practice must stop.

6. The use of channel numbers are that they are great provided you have got a shop-bought rig that displays that it is equipped with actual transmitted frequency. It is such a technical old thing anyway! If you happen to have a chart of the frequency against the system works, fine, if not, you become as hopelessly lost as I am when trying to figure out what frequency Channel 25 FM represents.

7. The only ways that would ensure the continuance of the ARS under these conditions is to declare—

(a) That we are a viable on-going commercial concern and as such will demand employment in the order of tens of thousands and generates cash flow in the order of millions of dollars world-wide. Also, due to the competition between major producers of amateur and other telecommunications equipment, the ARS, together with similar services, generates technological advancement of commercial at a pace that would have been otherwise impossible.

(b) With an investment of between $500 to $2000 by most amateurs in their own commercial equipment, they’re not fool enough to subsistively accede to any demands that some amateur bands be given over to commercial interests. After all, we’re Just as much a commercial concern as these professional repairmen and when their QSOs are more of a social than technical nature. The answer is, of course, they can't and It's about time the ARS considered carefully prior to publication.

I have no problem that the solid state systems used for optical communication possess a “better signal-to-noise ratio than the vacuum tube systems described ...” That statement may prove to be very difficult to substantiate.

It will be noted from Figure 13 of my article that the excess lamp modulator is a simple, relatively cost effective and enjoyable manner we presently acceed to any demands that some amateur bands be given over to commercial interests. After all, we’re Just as much a commercial concern as these professional repairmen and when their QSOs are more of a social than technical nature. The answer is, of course, they can't and It's about time the ARS considered carefully prior to publication.

1. “The sham of today's ARS. The intrusion of commercial Into amateur radio activities is so deeply entrenched and widespread, that "amateur" and "commercial" equipment is almost synonymous. I mean, why bother with actual frequencies if it is not, you become as hopelessly lost as I am when trying to figure out what frequency Channel 25 FM represents.

2. As pertaining to the ARS. As such the WIA has been interested in observing the Wireless Telegraphy Act of 1912. As such the WIA have not perused these issues after publication.

3. The use of net frequencies and channel numbers are that they are great provided you have got a shop-bought rig that displays that it is equipped with actual transmitted frequency. It is such a technical old thing anyway! If you happen to have a chart of the frequency against the system works, fine, if not, you become as hopelessly lost as I am when trying to figure out what frequency Channel 25 FM represents.

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I have no problem that the solid state systems used for optical communication possess a “better signal-to-noise ratio than the vacuum tube systems described ...” That statement may prove to be very difficult to substantiate.
The working model of the system is still operable. I would invite and welcome the opportunity of making a series of further S/N tests on the equipment, plotting this against such parameters as humidity, temperature, and wind. All that I need is the assistance of an interested party with access to a suitable location.

Dr. Abeyasekere states that, "Assuming that a S/N ratio of 20 dB is acceptable, and that input S/N seldom exceeds 50 dB, it is evident that 30 to 40 dB of degradation with respect to noise is all that can be tolerated". That seems quite reasonable. However, Dr. Abeyasekere continues, "A light or moderate fog or drizzle may introduce over 100 dB of attenuation over distances as short as 100 metres". From my own experimental work, I would assume that this is an extreme figure. However, to continue, "It is only when there are very clear atmospheric conditions ... that is needed to introduce over 100 dB of attenuation".

Admittedly, the LED systems are an elegant solution to the problem. They have extremely fast response times, while the mercury arc is limited to a response time of about 20 kHz for full modulation. The working model of the system is still operable. I would invite and welcome the opportunity of making a series of further S/N tests on the equipment, plotting this against such parameters as humidity, temperature, and wind. All that I need is the assistance of an interested party with access to a suitable location.

And LEDs do have very low power consumption. But even Dr. Abeyasekere admits that . . . the total flight output and beam energy flux density (of the radar) is only 5 per cent of those from common . . . hand-held torch lights". With such low power, it is little wonder that Dr. Abeyasekere noticed that the signal drops below ambient light levels very quickly as transmission distances increase. The "brute force" method of using an arc lamp presents, for our purpose, a less efficient but infinitely more practical solution.

As to costs, a series of priorities must be established. Despite their high cost, we decided to forego a "first rate" design for a "second rate" design in our proposed system. They have an intrinsic freedom from thermal noise at room temperature with respect to semiconductor light detectors, owing to their low infra-red sensitivity, photo-emissive nature, and high post-detection gain. An analysis of this is described at length in the book "The Laser Receivers" by Monte Ross, listed at the end of my January article. In any case, we obtained these PM tubes very cheaply on a number of occasions from disposal sources. Should these prove hard to obtain, SSTV clubs or commercial television stations could be approached for old TV PM tubes which can be trickle charged and have fallen below broadcast specifications. This tactic proved to be rewarding on a number of occasions.

The lenses used by Dr. Abeyasekere are not ideal for optical communication work, being unnecessarily high in optical quality, and insufficiently large in aperture. The 5-inch double convex lens by Dolez & Garrard $5 would have been a better choice, I feel. For a reflector behind the arc, we used a 12 inch, traffic light reflector, which I obtained solely by Eagle Signals.

There are a number of other reasons why I could give for the excellent results obtained with the equipment which I won't elaborate on here, owing to space.

To conclude, Dr. Abeyasekere states that . . . telecommunications authorities are not likely to prevent amateurs and others from conducting research into optical communication. There has already been a conviction against a business organisation in Melbourne which continued to use an IR link between two city buildings after repeated requests by the P. and T. Department to cease.

In view of this conviction, intending experimenters should approach the licensing authorities for the requisite permit before making their results public.

Yours faithfully,

Chris Long.
OTHER PUBLICATIONS
Books and Maps:
- Basic Electricity
- Basic Theory and Application of Transistors
- Counties Map
- Dictionary of Electronics
- Foundations of Wireless
- Guides to Broadcasting Stations
- How to Listen to the World
- Mullard Date Book
- Radio Amateur Operator’s Handbook
- Radio Valve and Transistor Data
- Simple Shortwave Receivers
- Transistor Audio and Video Circuits (Mullard)
- World Radio-TV Handbook

MORSE INSTRUCTION AIDS
G3HSC Rythm Method of Morse Tuition —
- Simple Shortwave Receivers
- Guide to Broadcasting Stations
- Dictionary of Electronics

OTHER PUBLICATIONS
MORSE INSTRUCTION AIDS
- The advantages to owning an amateur advanced
- Advanced LP (9-42 w.p.m.) plus book.
- Beginner’s LP (0-15 w.p.m.) plus book.
- Mullard Data Book
- Foundations of Wireless

ADVANCED AND EXTRA CLASS STUDY
DISADVANCED AND EXTRA CLASS STUDY
- First NIGHT
  - Operation at VHF and above is stressed. Topics include
  - Exotic Modes of Communications
  - Operation at up to 100 PPS. Energy storage up
  - Frequency readout, channel number, time and date
  - The Model 703 Is a compact, high speed micro-

ADVANCED MODULATION CONCEPTS
- Involving capabilities and problems of AM and FM
  - Frequency, 10.2 kHz; sensitivity, 0.01 kV; dynamic range, 50 dB; resolution, 1 C. E. L.
  - Frequency reference, 4 MHz of 2 x 10^-3 stability offering an operating temperature range of —10° to +50°C; power requirements, 110 V AC/240 V AC
  - Power fail protection available as an option.

NEW 3½ DIGIT LAB DMM
- Parameters announce the new B & K-Precision
  - Model 2830 3½ Digit Lab DMM which is well suited for all types of lab or bench operation.

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NEW PROGRAMMABLE 16 CHANNEL VHF/UHF SCANNING RECEIVER
- GFS Electronic Imports at Mitcham, Victoria, have just announced the release of a new Crystal-less
  - Programmed VHF/UHF scanning monitor receiver.
  - The receiver, manufactured in Japan by JIL, for

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THE PERFECT MOBILE RIG...

ATLAS 210X/215X - 5 BAND - 200 WATT
All Solid State HF SSB/CW Transceiver

STILL THE MOST POWERFUL MOBILE RIG ON THE MARKET.
PRICE WITH NOISE BLANKER INSTALLED: $852 INCLUDING TAX.

GENERAL SPECIFICATIONS
FREQUENCY COVERAGE WITH INTERNAL VFO: 1800-2000 kHz (Model 215X only), 3500-4000 kHz, 7000-7500 kHz, 14,000-14,500 kHz, 21,000-21,500 kHz, 28,400-29,400 kHz (Model 210X only). Note that 10m band may be easily owner adjusted to cover any 1000 kHz segment.
FREQUENCY CONTROL: Highly stable VFO common to both receive and transmit modes. Less than 1 kHz drift during the first 30 minutes. Less than 300 Hz per hour after 30 min.
ALL SOLID STATE DESIGN: 4 ICs, 18 transistors, 32 diodes.
MODES OF OPERATION: SSB (USB, LSB), CW.
MODULAR CONSTRUCTION: With plug in PC boards.
PLUG IN DESIGN: Antenna, mike, extension speaker and power supply connections, etc., are automatically made when set is plugged into special mobile mount or AC power supply console.
POWER REQUIREMENTS: 12-14V DC, 16 amps peak on transmit, 300-600 mA in receive.
DIMENSIONS: 24.1 cm wide, 8.9 cm high, 24.1 cm deep.
WEIGHT: 3.1 kg (6 lb. 14 oz.).

ACCESSORIES
DMK — Plug in mobile mount for mobile and maritime mobile use ...... $63
DD6-C — Self-contained digital readout $236
10XB — Self-contained external crystal oscillator for fixed channel operation both inside and outside normal VFO band edges $85
MTI — Mobile antenna matching transformer. Changes base impedance of antenna to 50 ohms $45
DCC — DC battery cable with plug. Not required if DMK is purchased $15
220CS — 110/220V AC converter power supply $210
OTHER ACCESSORIES AVAILABLE

THE UNIQUE WIDE RANGE WIRE TUNER

The Unique Wide Range Wire Tuner will provide a perfect match to nearly any single wire fed antenna system in the frequency range 1.7 MHz to 30 MHz. It provides the broadest tuning range of any antenna coupling device on the amateur market. At 6% in. wide, 5% in. high and 12% in. deep, it is compact in size and capable of handling in excess of 1500 watts of output power through its continuously variable LC combination. There are no gaps between tapped setting as found on most transmatch devices enabling any frequency within the specified range to be matched. It is therefore suitable for other than amateur services in the MF and HF spectrum.

It is ideal for portable and maritime mobile operation where space and/or lack of time precludes the use of various resonant antennas. Herb Johnson, President of Atlas Radio, uses one on his own yacht and recommends their use with Atlas equipment. Construction is of first quality materials throughout.

Write or phone for further information and full technical specifications.

PRICE: $295 — SALES TAX AND DUTY PAID. GUARANTEED FOR ONE YEAR.

ALSO AVAILABLE:
Shure 404C hand held mike $35
Shure desk microphone.

NOTE: The Atlas 350XL will be in stock again as soon as it is back in production. It is temporarily out of production while Atlas concentrate on a new small model, thus increasing their range to three models.

### HY-GAIN ANTENNAS:

- **12-AVQ 10-15-20M vertical** $50
- **18-AVT/WB 10-80M vertical** $125
- **TH-6-DXX 10-15-20M 6-el yagi** $300
- **TH-3-MK3 10-15-20M 3-el yagi** $260
- **TH-3-JR 10-15-20M 3-el yagi** $175
- **204-BA 20M 4-el tiger array** $230
- **2M 5-el yagi w/balun 6’3” boom** $25
- **2M 8-el yagi w/balun 12’5” boom** $30
- **2M 14-el yagi w/balun 15’6” boom** $40
- **BN-86 balun for beam buyers** $20

### ANTENNAS SUITABLE FOR 10M:

- **11M 5-el yagi 17’ boom** $70
- **11M CLR-2 5/8W w/3-radials** $40
- **HY-Q (USA) 50-ohm balun** $15

### ROTATORS AND CABLES:

- All rotators for 28V AC operation-
  - **KEN KR-400 medium duty** $125
- **CDR BT-1A light duty w/push button programmable** $90
- **CDR ham III heavy duty** $175
- **CDR tail twister extra H/duty** $225
- **Bottom bracket CDR rotators** $10
- **KS-065 stay/thrust bearing 11/4” to 21/2” masts** $25
- **RG-58U co-ax cable, per yd.** $30c
- **RG-8U foam co-ax cable, per yd.** $80c
- **8-cond. rotator cable, per yd.** $60c
- **7/8” H.D. VHF/UHF co-ax, per yd.** $3
- **CABLE-cutting and packing** $1.50

### ACCESSORIES

- **Voltage regulator 18V AC input**
  - 12V DC 3A output $23
  - 240/18V AC transformer $10
- **5M RG-58U w/PL-259 one end** $2.50
- **Bumper mountas 3/4” 24-thread** $5
- **Gutter mountas 3/4” 24-thread** $3

### CO-AX CONNECTORS:

- **PL-259-SO-239-cable joiners, ea.** $75c
- **Right angles & T connectors, ea.** $1.50
- **GLP right angles RG-58U to SO-239 w/latch nut & weatherproof cap** $2.50

### KENWOOD PRODUCTS

- **TS-520S 10-160M transceiver** $675
- **TS-820S digital transceiver** $1100
- **TS-700SP 2M all mode trans.** $850
- **TS-120V 10-80M mobile trans.** $550
- **TR-7600 10W 2M FM trans.** $400
- **TR-7625 25W 2M FM trans.** P.O.A.
- **TL-922 10-160M linear amp.** $1100
- **DK-520 adaptor (TS-520)** $15
- **LF-30A low pass filter** $25
- **TV-502 2M transverter** $300
- **AT-200 antenna matchbox** $175
- **DS-1A DC/DC converter** $75
- **VFO-820 for TS-820S** $185
- **VFO-520S for TS-520S** $160
- **SP-520 for TS-520S** $30
- **YG-3395C CW filter (TS-520S)** $50
- **MC-50 desk microphone** $50
- **MC-10 hand held microphone** $20
- **HC-2 ham clock** $35
- **BS-5 and BS-8 pan adaptors ea.** $65

### YAESU-MUSEN PRODUCTS

- **FT-7 10-80M mobile trans.** $450
- **FT-301S 10-160M mobile trans.** $600
- **FRG-7 5.30Mhz receiver** $319

### NOVICE SPECIALS — TRANSCIEVERS

- **10M Sideband SE-502 USB/AM 15W PEP-240V**
  - AC 12V DC-inbuilt SWR/RF meter 28.3-28.6 mhz-clarifier tuning transmit and receive **$150**
- **10M Universe 224-M USB/AM 15W PEP 12V**
  - DC 24-ch. 28.480 to 28.595 mhz, 5-khz steps-clarifier tuning transmit and receive **$125**
- **CONVERSION CRYSTALS for amateur licence holders**
  - set of 8-crystals to convert 23-ch. 27-mhz CB units to 28-mhz. Suitable for Kraco, Sideband, Universe, Hy-range V etc., converts as per Universe 10M above — CRYSTALS and instructions **$40**

### ACCESSORIES

- Double female connectors **80c**
- Inline mic sockets 3 & 4-pin ea. **75c**
- Mic sockets 3 and 4-pin, ea. **75c**
- MLS right angle-RG58U to PL-259 **90c**

All prices are NET, EX SPRINGWOOD NSW, cash with order. Prices are subject to change without prior notice. All risk insurance is free: freight by air, road, rail or post at cost. All orders cleared on a 24-hour basis after receipt of order with payment.

Arie Bles (VK-2AVA) Proprietor Roy Lopez (VK-2BRL) Manager
TRIO KENWOOD COMMUNICATION CENTRE

Trio-Kenwood Amateur Equipment
Trio-Kenwood Test Instruments
B & K Precision Test Instruments.

KENWOOD PRODUCTS:
TS-120 V all solid state transceiver 30 W.P.E.P.
TS-520 S 160-10M. Transceiver
TS-820-S 160-10 M. Transceiver
R-820-S 160-M. Transceiver
R-820 Communications receiver
TS-700-SP. All mode 2M. transceiver.
TS-600-A All mode transceiver
TS-7000-A 2M. FM. 25W. Transceiver
TR-820-S 160-M. Transceiver
R-820 Communications receiver
TS-700-SP. All mode 2M. transceiver.
TS-600-A All mode transceiver
TS-7000-A 2M. FM. 25W. Transceiver
TR-820-S 160-M. Transceiver

OPTIONAL ACCESSORIES
VFO-120
PS-20
MB-100
VK-88C
SP-120

SKY-BAND MOBILE HELICAL ANTENNAS
SKY 80 six feet long 3.5 MHz.
SKY 40 six feet long 7.060
SKY 20 six feet long 14.150
SKY 15 six feet long 21.100
SKY 10 six feet long 28.500.

CRYSTAL FILTER, 9 MHz, similar to FT-200 ones. With carrier crystals.

COAX CABLE CONNECTORS
PL-259
SO-239 Chassi Mount
Male to male joiner
Female to female joiner
Angle connector

ACCESSORIES
SWR 50A 3.5 - 150MHz SWR meter
12VDC regulated supply.
5M RG 58-U w/PL-259 one end
Bumper mount c/with 3/8” 24-thread ant. mount
Gutter mount c/with 3/8” 24-thread ant. mount

HY-GAIN ANTENNAS
12-AVG 10-15-20M vertical 13 1/2” tall.
18-AVT/WB 10-80M vertical 23” tall.
TH6-DXX 10-15-20M senior 6 el, yagi 24’ boom
TH3-MK3 10-15-20M senior 3 el, yagi 14’ boom
TH3-JR 10-15-20M junior 3 el, yagi 12’ boom
204-BA 20M 4 el. Tiger Array 26’ boom
HY-QUAD 10-15-20M full size cubical quad.
2M 5 el. Yagi w/balun 6 1/2” boom.
2M 8 el. Yagi w/balun 12 1/2” boom.
2M 14 el. Yagi w/balun 15 1/2” boom.
BN-66 Balun 50 ohm 1:1.
BU-5 Balun 50 ohm 1:1.

ANTENNAS SUITABLE FOR 10M
11M 5 el. Yagi 17’ boom.
11M 3/4 wave G.P. w/3 radials.
CLR 5/8 wave vert. w/4 radials 22’9” 11M.
CLR 2 5/8 wave vert. w/3 radials 19’10” 11M.

ROTATORS AND CABLE
KEN KR-400 rotator medium duty 28V-AC.
CDE HAM L11 rotator heavy duty.
RG-8U Polyfoam Coax.
RG-58U Coax.
8 core rotator cable.

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Brisbane: FRED HOE & SONS PTY. LTD — Phone 47 4311
Perth: WESTEST — Phone 337 6393
Hobart: DILMOND INSTRUMENTS — Phone 47 9077
All Mail to be addressed to: P.O. BOX 42, SPRINGVALE 3171

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KENWOOD — ICOM — YAESU — etc.
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SOLE DISTRIBUTORS for Queensland of the new BEN LINEAR AMPLIFIERS — Models for all bands — 70-120 watts — all the one price, $159 — a beautiful unit.
Ask for details of our EASY PAYMENTS PLAN for all gear.

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(Opp. Southport Hospital)  Telephone: (075) 32 2644

Visit sunny North Queensland and the FOURTH North Queensland Convention
HOSTED BY TOWNSVILLE AMATEUR RADIO CLUB
at TOWNSVILLE
15th & 16th SEPTEMBER, 1979

Contact TARC
P.O. Box 964
Townsville, Queensland 4810

"Visit sunny
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TOWNSVILLE
AMATEUR
RADIO
CLUB

at TOWNSVILLE
15th & 16th SEPTEMBER, 1979

Contact TARC
P.O. Box 964
Townsville, Queensland 4810"
FOREIGN RESULTS

1. **Asia:**
   - **OK1DMP** check OK1DMP check
   - **OK1MAW** 288
   - **OK1ATZ** 364
   - **OK1SMP** 396

2. **Europe:**
   - **OK1KZ** 4
   - **OK2KQO** 12
   - **OK2PBN** 18

3. **Oceania:**
   - **OK1FBH** 48
   - **OK1FBY** 270
   - **OK1KYS** 18

4. **Note:** Indicates Club Station.

5. **SM results are not all in order of merit.**

---

**PHONE RESULTS**

1. **Oceania:**
   - **K6HJ** 482
   - **K6FI** 342
   - **K6NZ** 367

2. **South America:**
   - **K7FI** 403
   - **K7FV** 315
   - **K7GQ** 313

3. **North America:**
   - **K9N** 50
   - **K9E** 56
   - **K9I** 40

4. **Europe:**
   - **G3DYY** 2280
   - **G3EPP** 150
   - **G3WY** 140

---

**CW RESULTS**

1. **VK7L** 1237
   - **VK7C** 178
   - **VK7M** 165

2. **VK81** 1347
   - **VK8C** 18
   - **VK8B** 18

3. **VK1** 492
   - **VK1A** 2
   - **VK1B** 4

4. **VK2** 430
   - **VK2A** 2
   - **VK2B** 50

5. **VK3** 520
   - **VK3A** 225
   - **VK3B** 18

---

**Critical Note:** Club Station.

---

**SM results are not all in order of merit.**
the number in Australia is growing, thanks to
promotes six metre operation. There are
SMIRK members. You then send details of these
eligible contacts. Many JA stations are members as are YJ8KM
EL7QBI 70 UKCBL* 1908

SWL RESULTS
Europe:
BRS 3525 8750
RUS 1353 2373
RUS 39782 1936
DL 237 12227 216
HEBLN 9610
HEREV 1540

SMIRK (SIX METRE INTERNATIONAL RADIO KLAB)
SMIRK is the Six Metre International Radio Klub which promotes six metre operation. There are
and the number in Australia is growing, thanks to the excellent six metre propagation being experienced.
To join SMIRK you must make contact with six

The following listing will help you sort out the

example: "FIFA" for the International Football Association , "NASA" for the National Aeronautics and Space Administration .

the number of the stations worked. This information, together with a once only fee of $US4, should be sent to the secretary of SMIRK.

The following listing will help you sort out the eligible contacts.

Many JA stations are members as are YJ8KM and FK2RT. If you think you might be eligible, contact WJA.

The secretary of SMIRK is Ray Clark KZMS, 7158 Stonestown Drive, San Antonio, Texas 78227.

Many comments — some strongly made — about the non-receipt of 1977 results and certificates. The 1977 contest was organised by WIA in Australia and not by NZRAT. Any queries about the 1977 contest must be made to WIA. Regrettably, some logs were incorrectly addressed. Publicity each year gives correct address for logs. NZRAT organises the contest on "every even year" — 1978, 1980, 1982, etc., while WIA does so on alternate years — 1977, 1979, 1981, etc. This year NZRAT is posting results and certificates (in March 1979 for the 1978 contest). We hope you receive these in good time and will support the contest again.

Good DX and 73.

*) Indicates Club Station.
to Channel 10 by that station in about nine months would cause little viewer inconvenience.

Even reports GLVI to Traralgon will move to Channel 8 and the translator GM6V to 10 will change output on the VHF/UHF band, but this, however, seems to be what the channel 4 seems likely to disappear from city areas, assuming eventually it is dropped. The channel 10 in other areas, viz., Cairns and now Wnyard. Whilst this arrangement is going to in- 

AMATEUR BAND BEACONS

Freq. Call Sign Location
50.023 HH2PP — Halli
50.025 EY2RD — America
50.025 ZB2VFH — Gibraltar
50.050 WA1ENX — Maine
50.050 ZS8LM — South Africa
50.050 K6FV — California
50.080 T1ZNA — Costa Rica
50.092 W5RPN — San Diego
50.098 VE1ISX — New Brunswick
50.098 W5GJ6A — Los Angeles
50.099 W7KM6A — Oregon
50.099 KG6JH — Guam
50.101 F0BDR — Tahiti
50.104 KN6EOI — Pearl Harbour
50.110 KG6JDX — Guam
50.110 JD1YA — Marcus Island
50.110 KH6HH — Marshall Island
50.500 SB6CY — Cyprus
50.519 K6JPSV — New Caledonia
50.520 VK1VPS — Darwin
50.520 VK9VTR — Perth
50.520 VK9RTU — Kalgoorlie
50.520 VK9RTN — Launcaston
50.520 VK4RTL — Townsville
50.525 VK2WI — Sydney.
50.520 ZD2JAI — Fiji
50.520 JAS6X — Nagoya
50.520 ZL2VHM — Palmerston North
50.520 ZL2HMF — Mt. Clime
50.520 VK6ALL — Perth
50.525 KS5VF — Mt. Lofty
50.530 VKOMA — Mawson
50.530 VK9YY — South Africa
50.540 VK4RTT — Mt. Bullowannah
50.540 VK9YV — Canberra
50.570 VK9RTQ — Vermont
50.580 VK5VF — Mt. Lofty
50.580 VK9RTN — Launcaston
50.600 VK9RTY — Perth
50.610 ZL1VHF — Auckland
50.610 ZL1VHF — Waitakato
50.620 ZL2VHF — Wellington
50.620 ZL3VHF — Palmerston North
50.620 ZL3VHF — Christchurch
50.620 ZL9VHF — Christchurch: 1020 UTC
50.620 KS4OE — Brisbane
50.620 VK3PRX — Ballarat
50.620 VK7RTW — Ulverstone

Daphne VK2NDX has written advising receipt of a message on the 10 metre band from N6H2 that he is a beacon in San Francisco on 50.025 MHz. No call sign mentioned.

Ken VK6ZQF reports from Koolan Island on the north-west coast of WA to say the Es season was quite this last June to October and to Perth three times, no eastern States at all! JAs started again on 2-3-79 but his best effort was to work into Hobart. On 25-2 he heard KG6OZ beacon S9 at 0502Z, then at 0503Z heard KHUSI calling on CO on 50.020, S9. Ken called on 50.020 and worked KHUSI, KG6OZ, VK6HXY, KG6OG, ZD2JJ, ZL2JG, VK6ZHV, VK6ZZ, VK6UU, VK6VG, VK6ZDR, VK6CB, VH8EBC, VK6XLM and VK6XL. Peter was using a 6 element yagi next to his car. It is a very good effort even if through a repeater, as Bunbury is as far inland as Perth and that city has never been easy to work on 2 metres using any mode. It could have been interesting to see what happened had Peter been able to use SSB.

USA TO GEELONG

The "GARC" Newsletter reports that on 11-3 the first known opening to USA W6 area took place when VK5s on the six metre band peaked at S9 and Ws were worked by VK3AOR, VK3ZZX, VK3AAK, some Melbourne stations and Steve VK8IOT. Events leading to the opening. Es conditions prevalent from 1000 to 1400Z with a 3-5 day or night opening with DX very common and DX further afield is prevalent. It is interesting to see the band was very active. Conditions were very interest-

SIX METRES

We eventually had to get around to it, didn't we?

This report covers the period from mid-February to late March, when much mystery and suspense was involved. It has helped me to fill in the gaps so that I believe it now should be of interest to readers.

The point has been reached where Japanese six metre METROS will be a day or night opening. The band is very common and DX further out is prevalent. It is interesting to see the band was very active. Conditions were very interest-

70CM WINTER 1978/79

"THREE TIMES THREE, not bad..."

Peter VK5ZST from Winter Hill near Lincoln, SA, 217 km west of Adelaide, accessed and used Channel 6 Bunbury (WA) repeater to work VK5ZH, VK5ZVZ, VK5IU, VK5VCL, VK5ZDF, VK5CB. Using a 6 element yagi next to his car. It is a very good effort even if through a repeater, as Bunbury is a very long way from Perth and that city has never been easy to work on 2 metres using any mode. It could have been interesting to see what happened had Peter been able to use SSB.

432 MHZ REPEATER

From "The Propagator" I report that Paul VK2QOT now has a new station in operation on a manned situation between 6 and 10 p.m. daily in the Illawarra area of NSW. Input is 433.225 and output 438.125 kHz and I can tune that high it could serve as a beacon at times when the band opens.

GEO SPECIAL

The "GARC" Newsletter reports that on 28-2 the first known opening to USA W6 area took place when VK5s on the six metre band peaked at S9 and Ws were worked by VK3AOR, VK3ZZX, VK3AAK, some Melbourne stations and Steve VK8IOT. Events leading to the opening. Es conditions prevalent from 1000 to 1400Z with a 3-5 day or night opening with DX very common and DX further afield is prevalent. It is interesting to see the band was very active. Conditions were very interest-

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DARWIN AND TWO METRES

From Darwin, two metres is really moving with possibilities of DX further afield. If you think the change from tropospheric to Ionospheric propagation was dramatic in the case of the 144 MHz record, then just hold your breath. There has now been a second occurrence of TEP-like propagation on 432 MHz, this time between Rhodesia and Kuala Lumpur, and a third contempt for 2525 MHz from 1816 to 1930Z on 20-3. Distance is about 8226 km. ZE2JV is very active in EME circles and his 432 MHz signals are reported running quite high ERP but still yet another crossing of the geo-magnetic equator. Who knows what next, maybe VK8 to JAS?

50 MHz (LISTENING)

HS1SD is active on 50 MHz from Thailand with an IC520 and has worked HLSTG and JAS at night, plus worked several stations in SSB, and VK5LL will most certainly work 50,000. So, yet another country! Graham VK5GB has heard KC8IN from Caroline Islands and KB8PNT/DU1 heard 65MHz, VK9LA on 11-3, open heard KS2NW on 50,110 at 0110Z calling Q at 25 w.p.m. CW! Looks like a few DXQCs (quarter centuries) coming up! VK561X at 0705Z. On 50.200 in the Indian Ocean on 6 metres. Diego Garcia is between Malagasy Republic and India. While beamng down the way it may be useful to listen on the 6 metres DX band, the VK5-250 MUF will have a reasonable peak during May or June 48 MHz so no imagination is needed to see what could happen. Even to here (VK5) the MUF can reach 250, and the DX remains close by. Also HL9WI heard VK8s on 144.11 MHz on 8-3!

DAYTIME CONDITIONS FOR VK-ZL

The number of ZL to W openings has outstripped that to VK by miles, but still are interesting. As far as VK is concerned most of the action started around 2-3. That opening has already been reported and up to 24-3 there have been no reports returned. The sunspot cycle is at 60 so there must be a good chance the VK5-250 MUF will have a reasonable peak during May or June 48 MHz so no imagination is needed to see what could happen. Even to here (VK5) the MUF can reach 250, and the DX remains close by. Also HL9WI heard VK8s on 144.11 MHz on 8-3! It's all very involved, isn't it?

OVERSEAS NEWS AND EVENTS

Jas working W, KL7, LU, PY, CE, etc., as usual. Got a large lease of 432 MHz transverter in a possible new world record on 6 metres (south-east path). HLSTG and HL9WI have also worked WA4TNV/KL7. HLSTG was heard on 50 MHz and no VK on 52 MHz but good signals on 50. Once again conditions could happen. If VK has 1200 MHz, K6DIX worked VK5ZS and VK2ZJ on 52.14 MHz. Northern VK6 working into HL9, etc. WXOJ copied by VK8RC on 17-3.

STOP PRESS

Chris VK5MC worked Peter ZE5JJ on 432 MHz via EME at 0930Z on 31-7-89. In reports exchanged sgs. 2-3 dB above noise with a peak of 6 dB. Chris using a 20 ft. dish and Peter a 30 ft. dish. On 3rd April VK5KK and VK5ST are believed to have worked XE1GE. Also on 3rd April VK3s and VK2s worked HK6NS, HL9WI and JAS.

W8GZ Loren Windom will call VK on 52.050 from 2300Z to 0300Z Saturday, USA, and VK Sunday morning, calling on the hour and half hour. Call for two minutes then listen for two minutes for 10-15 minutes. Loren, in Columbus, Ohio, runs a kilowatt and a large rhombic on Australia.

The Project ABERIT Committee of the WIA is anxious to obtain a number of Amateur wireless recorders, preferably having a range 9-0 mA and a chart speed of 5 cm/min.

Chris using a 20 ft. dish and Peter a 30 ft. dish. On 3rd April VK5KK and VK5ST are believed to have worked XE1GE. Also on 3rd April VK3s and VK2s worked HK6NS, HL9WI and JAS.

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The following is taken from the West Gulf DX Bulletin. I think it is of interest.

**THE RUSSIAN WOODPECKER**

If you have not heard this one, you have not been on the air in the last year or two. Like a lot of other things, you try to live with it and wish it would go away but it is always there. Maybe if you know a bit more it might help to tolerate the continuing burden. The following information comes from the West Gulf DX Bulletin.

The "woodpecker" is a long range radar and the range can be estimated by noticing that the repetition corresponds to 25 w.p.m. CW dots. At this speed, the repeat from dot to dot is 96 milliseconds and this means that the radar frequency is roughly 47,000,000 feet or 8,950 miles. This "on-the-air" estimate was done without instruments so it is pretty close to expectations. The actual range, was 15,000 km or 9,320 miles, the error in the estimate would only be 4 per cent.

Presuming a 10 megawatt source and 18 dB antenna gain, the distance is nearly 88 dB. However, if you figure 20 metres at 1,000 miles, this immense signal is reduced by path loss to a mere 0.0006 dB.

This might make some think that a 1 watt jammer would have an advantage over the woodpecker of over 1,000:1 but this is not correct. Not all of a jamming signal gets through the video circuitry of the radar. A constant carrier is not effective at all because it is rejected as a DC level by the AC coupled video. However, CW dots will get through if the actual range is within a few miles of the receiver. Notice that the dot jammer 3howed with a frequency hopping mode. If problems developed, the jammer would be removed until the next scheduled DXpedition date. Often only one hears of an impeding DXpedition 2 or 3 weeks prior to the operation. If anyone is interested, he might write to let me know, say, five stamped addressed envelopes with a name on each. Not a wanted list, I will try to forward brief details of any DXpeditions that come to hand. Those details that arrive too late to be used in this copy (I hope this offer does not get out of hand!)

**FROM THE WEST GULF DX BULLETIN**

HVSJ usual operator, Brother Ed, has been transferred to HK land. This leaves the Vatican without a regular amateur operator. VK3HQ shows nearly every Monday on 14250 kHz from 2100Z and on Saturdays from 2000Z. VP8SO North Orkneys on Monday from 2000Z. No more amateur radio is being allowed from the Comoros and D68AD has had his licence cancelled.

**FROM OUR READERS!**

One of my other hobbies is stamp collecting. A special QSL would be available for the April Issue, stated that a special station would be active on all the bands from 2100Z April 30. The station would be commemorating the 400th year of the "State of the Netherlands". A special QSL would be available to all those sending a QSL (via the bureau is acceptable). If you worked this one you now have it.

Another piece of history in that KP4AM/D (Desecheo) finally showed on the band during March (VQ52X) and I trust that those who chose to be a part of its history will remember it— as this writer who was doing antenna changeover and maintenance at the time!

The 3X11X reported previously has been heard again in Europe. The timing is still not stable so pile up, beam heading is OK so this could be the genuine article. No QSL information to hand at present.

Rumour has it that OZ1CRH has obtained a licence to operate from YA. No call sign as yet but it is believed that operation could commence in April or May.

One of your other hobbies is stamp collecting. What has that to do with radio? Well in a recent issue of "Stamp News" there was reference to the country of Redonda, an island adjacent to Antigua, which was in process of issuing its first stamps. It would appear that Redonda is a separate nation with its own King!!! A new DXCC country in the offering???

Apologies to all for not giving advance information of the Spratly and Franz Joseph Land DXpeditions. To be of value information has to be recorded some weeks before the actual DXpedition date. Often one only hears of an impeding DXpedition 2 or 3 weeks prior to the operation. If anyone is interested, he might write to let me know, say, five stamped addressed envelopes with a name on each. Not a wanted list, I will try to forward brief details of any DXpeditions that come to hand. Those details that arrive too late to be used in this copy (I hope this offer does not get out of hand!)

**LETTER**

The following is taken from the West Gulf DX Bulletin. It would be very happy to provide all information for those seeking confirmation of LUB Argentia. Every Monday and Friday VK3RK and VK3KDC will be on 14,000 kHz ± 0100Z at 1400Z; other regular skeds are on Saturdays and Sundays, 21325 kHz ± 0100Z in QSO with VP8QP, QJ, LUSXE, W2HTI, V56EK at — we start at 1200Z. All VKs and Pacific Region very welcome.

I would also be very happy to receive requests by mail to establish a time (Z please) and frequency for any enthusiast to confirm Argentina on 80-10. I am with facility for CW and SSB, using Heathkit HR-12, also Kenwood 520S and SSB, using Heathkit 401, 301, SB220, also Kenwood 520S and Yaesu 2100B 3 element tri-bandner for 20, 10, 10; ground plane; and long wire to back up from 80 through 10. My QTH is in the province of Embajada de Australia, Ave Santa Fe 846, Capital Federal, Buenos Aires, Argentina. My Australian address for the forwarding of correspondence (approximately 2-3 weeks) is: J. Mcinnestrud, C/o 25 Turnbull Avenue, Toorak, Vic, 3142.

Hopefully within the next few months I will receive confirmation of POR QA (Lima, Peru) and CE3 (Sant., Chile). More news of that later!

All QSOs are confirmed by QSL cards— my US manager is K6EVO — any takers for VK?? — it's quite quick!

**5THs YOU MAY HAVE MISSED**

A4XH — Box 6530, Salalah, South Oman.
AP2UR — via W8QFR.
FB8XZ, FBBVX — via FSVU/C.
FM7WO — Box 287, Fort de France.
FWOT — via 427T (S. and IRCs required).
FY7YE — via WS6LU.
G1DIA — via W4XAO.
H1MOQ — via W5SNK.
H2YJL — via WA6LFL.
J28AG — SP 80508 — GT Djibouti.
J28AG — SP 80503 — C. T. Djibouti.
J28AY — via FEETO.
WD6TC/KM1 — via K6, Guam Buro.
KH6HJ/KH4 — via K6MBI.
KP4AM/D — via W6XW.
P29BL — Box 7412, Boroko, PNG.
P29HJ — Box 1486, Lae, PNG.
T2T — via WS5RWO.
TA1ZB — via VK4LG.
FTS7P — via DL7MRO.
VKDCA/VK9 — via BH9AAA.
VK6UC — via OZ8AE.
VP2OXD — via W56BLM.
W9KKQ — via WA3HUP.
W9MR — via N5GU.
VASH — via WA8PRU.
Y50 — via 5L5K.
ZF2CI — via WA6AHF.
ZK1BD — via 2L1SZ.

**LETTER**

The following is a letter received from John McKenzie LUBE1I.

"I am taking this opportunity, whilst on holiday, to write 'back-logged' QSLs and catch up general correspondence!"

I would be very happy to provide all information for those seeking confirmation of LUB Argentia. Every Monday and Friday VK3RK and VK3KDC will be on 14,000 kHz ± 0100Z at 1400Z; other regular skeds are on Saturdays and Sundays, 21325 kHz ± 0100Z in QSO with VP8QP, QJ, LUSXE, W2HTI, V56EK at — we start at 1200Z. All VKs and Pacific Region very welcome.

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3s, Yours faithfully,
John McKenzie LUBE1I, ASSWIA, ARRL."
THE WAR CONTINUES
THE BATTLE STILL RAGES WITH YAESU — NOW HY-GAIN ANTENNAS HAVE FALLEN TOO!

You must have heard about the Yaesu price war — Dick Smith will better any genuine price offered by anyone on Yaesu products . . . We’ve received such a tremendous response from the Amateurs of Australia that we’ve decided to reduce the price of Hy-gain HF antennas. So now you can buy your complete amateur station from Dick at a real bargain price.

YOU REAP THE BENEFIT!
And you’ll be buying from a fully Australian owned company — your one stop electronics shop who actively supports amateur radio!

HERE ARE OUR YAESU PRICES:

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Code</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT-101E 80-10m HF transceiver</td>
<td>D-2860</td>
<td>$789.00</td>
</tr>
<tr>
<td>FT-301 Solid State HF transceiver</td>
<td>D-2870</td>
<td>$795.00</td>
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<tr>
<td>FT-7 Mobile HF transceiver</td>
<td>D-2865</td>
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<td>FT-227 2m FM transceiver with memory</td>
<td>D-2890</td>
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<td>FC-301 Antenna tuning unit</td>
<td>D-2896</td>
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<tr>
<td>FL-2100B 1.2kW linear amplifier</td>
<td>D-2846</td>
<td>$219.00</td>
</tr>
<tr>
<td>FRG-7 Solid State HF Rcvr</td>
<td>D-2850</td>
<td>$319.00</td>
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<td>FP-301 13.8V/20A supply</td>
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<td>FT-101Z New HF transceiver</td>
<td>D-2862</td>
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<td>FT-901D Top class HF transceiver</td>
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<td>FT-227RA 2m FM scanning transceiver</td>
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<tr>
<td>CPU-2500 computerised 2m transceiver</td>
<td>D-2899</td>
<td>$549.00</td>
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<tr>
<td>FC-901 antenna tuning unit</td>
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<td>$249.00</td>
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<tr>
<td>FL-110 200W linear amplifier</td>
<td>D-2884</td>
<td>$189.00</td>
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<tr>
<td>FRG-7000 Digital HF rcvr</td>
<td>D-2848</td>
<td>$595.00</td>
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<tr>
<td>FC-901 antenna tuning unit</td>
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<td>$249.00</td>
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<td>D-2848</td>
<td>$595.00</td>
</tr>
<tr>
<td>YC-500S 500MHz Freq. Counter</td>
<td>D-2892</td>
<td>$475.00</td>
</tr>
</tbody>
</table>

(we’ll send them anywhere in Australia for just $6.00 extra — We even lose money on this ‘below cost’ freight offer!)}

We believe that the prices above are better than any supplier in Australia. If you find someone cheaper for the same goods, tell us! For us to better any price, simply show us the advertisement from any Australian company. After checking that they have stocks available at that price we will sell it for a lower price. Offer remains open while present stocks last (approx. $250,000 worth).

NEW HY-GAIN HF ANTENNA PRICES:

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Code</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH6 DXX SLASHED BY $104.00 TO ONLY</td>
<td>D-4308</td>
<td>$295.00</td>
</tr>
<tr>
<td>TH3Mk3 BEAM: Save $50.00 . . . $249.00</td>
<td>D-4306</td>
<td></td>
</tr>
<tr>
<td>TH3JR BEAM: $20.50 off! $199.00</td>
<td>D-4304</td>
<td></td>
</tr>
<tr>
<td>18AVT VERTICAL SAVE $14.50</td>
<td>D-4302</td>
<td></td>
</tr>
</tbody>
</table>
| HY-GAIN VHF ANTENNAS ALSO IN STOCK, ASK OUR PRICE!
CONVERT MORSE, RTTY AND ASCII TO VIDEO

A Unique New SSB/CW Transceiver For Amateur Communications

There are too many substitutes for quality, performance or the satisfaction of owning the very best. Hence, the incomparable National RX-1011 amateur transceiver. The RX-1011 covers all amateur bands 1.8-30 MHz (160-10 metres). It utilizes advanced Phase-Lock-Loop circuitry with dual gate MOS FETs at all critical amplifier and mixer stages. There's a rotating dial for easy band-scanning and an electronic frequency counter with digital readout and a memory display that remembers frequencies at the flip of a switch. And that's just the beginning.

Matching speaker unit RXT-1011 and complete external VFO RJX-V1011 also available. For further information and specifications write, phone or call in!

$1990

CONVERT MORSE, RTTY AND ASCII TO VIDEO

A microprocessor controlled keyboard that generates Morse, RTTY and ASCII. Write or call for further specifications.

$564

INFO-TECH M-300 TRI-MODE KEYBOARD

Based on the powerful F-8 Microprocessor system, this new product from Info-Tech, advanced technology is an addition to the popular Model 100.

$686

New Model 75 RTTY TO VIDEO CONVERTER

Features: 4 speeds (66, 75, 100 wpm), built-in T.U. with 3 shifts (160, 425, 850 Hz), automatic CR & IF, 154 mm (6-1/2 in.) high, 415 mm (16-1/4 in.) deep, weight 470g (1.03 lbs.). Repeater offset 600 kHz modulation variable, reactive phase modulation, high-Q Traps, feeds with 52 ohms coax, a beta match method presents tapered impedance. The result is SWR less than 1.5 to 1 at resonance on all bands and maximum static. The boom to element mounting, taper swaged elements.

$407

New Model 150 RTTY KEYBOARD

Features: 4 speeds (66, 60, 75, 100 wpm), built-in AFSK with 3 shifts (170, 425, 850 Hz), automatic CR & IF. End of 64 or 72 character line, built-in low shift CW ID provision.

$448

RTTY FOR ALL SYSTEMS

Write or call for complete product details and specifications.

$229

INFO-TECH MODEL 30 MORSE TO VIDEO CONVERTER

Converts received Morse code from your receiver to a video printout on your TV, no other devices required.

$429

MULTI PALM II 2M/FM POCKET TRANSCEIVER

Specifications:

- Transceiver frequency range: 2 MHz in 144-148 MHz, transceive channels 6, channels antenna impedance 50 ohms unbalanced, BNC connector power requirement 12V DC. (engineering prototype). Power consumption transmit 300 mA, receive 200 mA (25 mA), size 68 mm (2.634 in.) wide, 154 mm (6.051 in.) high, 415 mm (16.34 in.) deep, weight 470g (1.03 lbs.). Repeater offset 600 kHz modulation variable, reactive phase modulation, high-Q Traps, feeds with 52 ohms coax, a beta match method presents tapered impedance. The result is SWR less than 1.5 to 1 at resonance on all bands and maximum static. The boom to element mounting, taper swaged elements.

$103

31" x 8" x 12 1/2" D

totally solid state SSB Transceiver

80 through 20 metres

250 WATTS

FOR ONLY $495

DAVID TELEVISION IS EASY

WITH THE NEW

ROBOT SCAN

CONVERTER

MODEL 400

- All solid state random access memory
- Slow-to-fast and fast-to-slow conversion capability
- MSSV picture display on any standard CCTV monitor or frame freeze from any standard CCTV camera, broadcast video or video, tape source
- Permanent picture storage
- Automatic or manual TV frame switch
- Internal grey scale generator adjustable standard
- Capable of real time display of digitally processed fast scan video.

$898

FDK BIGEAR TRANSCEIVER TYPE 1

2M FM SSB CW PLL SYNTHESIZED MOBILE BASE TRANSCEIVER

- 144 MHz plus digital synthesizer system.
- FM: 800 channels (5 kHz step), SSB: 400 channels (10 kHz step) plus VOX system
- 1.7 MHz • AC: 137.5/240, DC: 13.8V, 25 watt power supply
- Digital display system
- 256 character x 16 line video output with scrolling, connects directly to receiver audio and video monitor.

$694

ATLAS 215X-HF Transceiver

$795

Wilson SY-2

$269

MAIL ORDERS: Box K21, Haymarket NSW, 2000, Australia
WRITE, PHONE OR CALL IN!
DTR-2000I DENTRON
$1459
Compatible with most exciters, the DTR-2000I was designed within a series of amateur amplifiers spawned by the MLA-2500. These amplifiers have been tested and proven in every imaginable situation folks could put them through. From rare DXers to medical research labs. It not to mention ham shacks the world over.

The DTR-2000I will cover most MARS frequencies just outside the Amateur Band. (With proper coil top changes and band switch modification, the unit will also cover the 10 meter amateur band.)

- 160 through 10 meters • 2000 + watts PEP input on SSB & 1000 DC input on CW, RTTY or SSTV Continuous Duty • Variable forced air cooling system • Work contained continuous duty power supply • Two EMAC 650 system-mode ceramic/metal triodes operating in grounded grid • Harmonic Suppression better than 50 dB • Built in ALC • Built-in RF Wattmeter • 172v or 234v AC, 50-60 Hz • Third order intercept distortion: 50 MHz, 21 MHz (16.2-22.0), 28 MHz (18.0-30.0), 40 Watts drive for 1 kW DC input. 


MT-2000A DENTRON
$270
Specifications:
- Continuous Tuning 1.8 to 30 MHz • Style to match the MLA-2500 and up coming DTR-2000 Amplifiers, Receivers and Transmitters • Front Panel grounding switch for your antenna system • Antenna inputs: (a) Coax unbalanced, SO 239; (b) Random wire; (c) Balanced feed line 75-660 ohm • Handles a full 3 kW PEP • Built-in heavy duty in line filters 3 component-rotary switch 18 position, 15 amp capacity • Capacitor Spacing 600v • Low profile styling 5% in. H. x 14 in. W. x 14 in. D. • Weight 16 lbs.

LUNAR ELECTRONICS
BI-LINEAR VHF AMPLIFIERS

Specifications:
- Power handling capability in excess of 3 kW PEP • Front panel antenna switch with 5 antenna positions enabling bypass position • Built in 50 Ohm 250 Watt dummy load • Dual Wattmeters • Compact: 5% in. H. x 14 in. W. x 14 in. D. • Continuous tuning 160-10 meters • 3 core heavy duty balun.

LUNAR ELECTRONICS MODEL HF-310L
2 DUAL POWER BI-LINEARIZED HF AMPLIFIER

- Full 80-100m broadband coverage • "Full 100 watts output AM (150-500 watts PEP on SSB & Dual power; Selectable 5/10 watt input power. RF operating modes: AM, CW, SSB, RTTY, SSTV • Broadband — requires no tuning across band • Harmonic levels typically -50 db or better (see specifications) • RF actuated switching relays • Full VSWR and noise voltage protection • Extra stabilization circuitry ensures spurious-free operation at all input power levels • 4 mode 13 in. W. x 14 in. D. • Weight including 8877: 54 pounds • Packages in 5½ in. hardwood crate.

$255
LUNAR ELECTRONICS 28-432 LOW NOISE Figure RX PREAMPLIFIERS AVAILABLE

“DEDICATED TO MAKING AMATEUR RADIO MORE FUN”

MAIL ORDERS: Box K21, Haymarket NSW, 2000, Australia
WRITE, PHONE OR CALL IN!
CONTESTS
Wally Watkins VK2ZNW/NCU
Box 1065, Orange 2800

May:
12/13 (2100Z-0100Z) USSR CO-M CONTEST
ALL BAND RST (+) QSO NR
19/26 MICHIGAN ACHIEVEMENT AWARD AND QSO PARTY
26/27 (0000Z-2400Z) CO WPX CW CONTEST
RULES, JAN. CW MAG.

June:
1/4 (2300Z-0600Z) CERTIFICATE HUNTERS' CLUB QSO PARTY
Details Allen VK2AIR, OTHR, SASE PSE.
16/17 ALL ASIAN PHONE CONTEST
23/24 ARRl FIELD DAY

July:
14-15 IARU RADIOSPOT CHAMPIONSHIPS
MICHIGAN AWARD & QSO PARTY
DX stations work at least one Michigan station.
Submit log information, including name and address of station worked and a fact about Michigan given by the station worked. Send to Governor William Milliken, Lansing, Michigan 48902, no later than July 1. QSO part 19-21.

THE OOPS I REALLY GOOFED IT DEPARTMENT
The 1976 Remembrance Day results. Please change:
VK3 Open — VK3ALC to VK3NLC.
VK3HX from Phone to Open.
VK3 Phone — VK3AVQ to VK3AUQ.
Add to VK2 Phone VK2BMM 325.

Thanks to all concerned.
John Moyle National Field Day results will be published next month along with the latest points for the contest champion trophy.

I thought I was doing a class for an amateur examination. During the doldrums between exam and how to keep a tidy and well presented log! The 1976 Remembrance Day results. Please change:
VK5 Open — VK5ALC to VK5NLC.
VK3HX from Phone to Open.
VK3 Phone — VK3AVQ to VK3AUQ.
Add to VK2 Phone VK2BMM 325.

John Moyle National Field Day results will be published next month along with the latest points for the contest champion trophy.

A thought to those running classes for an amateur examination. During the doldrums between exam and how to keep a tidy and well presented log! The 1976 Remembrance Day results. Please change:
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VK3HX from Phone to Open.
VK3 Phone — VK3AVQ to VK3AUQ.
Add to VK2 Phone VK2BMM 325.

Appologies to all concerned.

The contest exchange information is: Call sign, organisation's Australia-wide communications exercise provided training in net operation and how to keep a tidy and well presented log! The 1976 Remembrance Day results. Please change:
VK5 Open — VK5ALC to VK5NLC.
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John Moyle National Field Day results will be published next month along with the latest points for the contest champion trophy.
During March, I issued award No. 12 to VK2ZHF and I wish to congratulate John on a fine effort in obtaining confirmations for the required 22 QSOs on 52 MHz, including VK5WAVK from Macquarie island and VK9ZNG from Norfolk Island in 1975. Since this award was created, presumably in late 1972, the two awards have been issued to the following:

No. 1 VK3AGR 1-1-73.  
No. 2 VK8ZJU 11-73.  
No. 3 VK8ZJO 26-7-73.  
No. 4 VK2AMK 2-2-73.  
No. 5 VK9AT 4-7-73.  
No. 6 VK5ZWW 15-7-73.  
No. 7 VK8ZBGT 17-7-73.  
No. 8 VK3AZ 29-7-73.  
No. 9 VK2Z 17-4-76.  
No. 10 VK3K 17-7-73.  
No. 11 VK8ZNS 17-12-78.  
No. 12 VK2ZHF 3-3-79.

It is significant to note that only 12 awards have been issued in six years, and except for No. 6, all have gone to VK2 and VK3. No VHF operators in the other VK call areas have been successful in obtaining this award.

I have come to the conclusion that other VHF operators are just not interested in this award because this covers far too restrictive and the required VK0 and VK9 QSOs are now virtually impossible to obtain. We have lost VK9 TPNG, our primary source of VHF QSOs, and it is likely that the station is independent, and if there was any more activity from Macquarie Island, this would favour only VK2, VK3 and VK7. It is highly unlikely that there will ever be another VHF operator as keen as VKOWW on Macquarie Island. It is now most difficult to even entice ham operators to come up on HF from Macquarie to satisfy world demand for this country.

Furthermore, there will be no activity from Heard Island in the foreseeable future, so that rules out the possibility of a VK0 VHF QSO even for the VK6s.

There are hundreds of VHF operators within our ranks who are just as keen as those who have been successful in obtaining the WAVKCA (VHF) Award but will never now be able to complete this award because of their locations and the lack of opportunity to work VK0 and VK9. In my case I continued to have activity this early sixties if it was not necessary to work VK0. However, I have several 6 metre QSLs from JA and ZL.

I am unable to determine the reasons why the WIA should have created an award with such difficult and restrictive rules. As there have been only 12 awards issued in six years, it is not worth retaining the WIA awards programme and in my opinion should be deleted. All ham operators throughout VK and its territories must have an even chance to qualify for all awards issued by the WIA.

There are alternatives. We could change the rules to allow operators from VK0, VK1 and VK4-9 a chance to qualify. One idea is to include a rule that a total of four (say) confirmed QSOs are required from any VK0, VK8 and VK9. Then it would be possible to qualify with four confirmed VK8 QSOs. Another idea would be to introduce a point scoring system so that VK0 and VK9 count for more points than any other VK call area.

Personally, I am in favour of deleting the WAVKCA (VHF) Award from the WIA awards programme. The standard WSA/WHS Award with its provision for endorsement for additional countries confirmed adequately for all VHF operators in VK. Are there any comments before I close off the records?
**A call 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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**INTERNATIONAL NEWS**

Extracts from a paper prepared by IARU Head-quarters for the Region 2 Conference in Panama last September might be found interesting.

"Most amateur radio activity takes place in the bands between 1.8 and 144 MHz, with a growing amount also in the 430-450 MHz band now that the OSCAR satellites operate there. The heaviest concentration of stations is in the 3.5, 7, 14, 21, 28 and 144 MHz bands. Therefore, most amateurs tend to regard our allocations needs in and between these bands as being of prime importance. They reason that it is these allocations which will bear the greatest burden of occupancy as the Amateur Service, world-wide, continues to grow past its present number of stations, approximately one million.

However, the amateur activity which takes place on other frequencies is also of great importance to all amateurs, and those allocations must be defended and, in some cases, expanded. Here is why this is important to all amateurs, not just to the experimenters and others who operate there today:

As the technical state of the art improves, the upper limit of frequencies which can be used for every day amateur communication moves ever higher. The 430-450 MHz band is a good example. Just one or two decades ago, the communications range on this band was limited by the rather poor equipment and antennas which were then available. With the advent of low-noise, solid-state receiving devices and more efficient antennas, amateurs found that they could operate here just about as well, and in some cases even better, than they could at 144 MHz. Today in Europe, amateur stations with reliable working ranges of more than 400 km at 432 MHz are commonplace, and the band is supporting much activity which otherwise would have to take place in the overcrowded 144 MHz band."
Overcrowded HF bands. A particular need is for administrators who have a strong technical background, both internationally and domestically, are made by amateurs who engage in idle chatter. Many friends in the scientific, political and military communities. •

DIVISIONAL NOTES

Stolen Equipment Register

The NSW Divisional Office is currently compiling a list of radio equipment stolen or lost. Other State Divisions, amateurs and radio users are invited to write to The Secretary, WIA NSW Division, PO Box 123, St. Leonards, NSW 2065, with the following details on stolen or lost gear:

1. Brand name/manufacturer.
2. Type number of equipment.
3. Date and time stolen or lost.
4. Police station reported to.
5. Owner's name and call sign.
6. Owner's address.
7. Details on stolen or lost gear:
   a. Brand name/manufacturer.
   b. Type number of equipment.
   c. Date and time stolen or lost.
   d. Police station reported to.
   e. Owner's name and call sign.
   f. Owner's address.

As details are received, these will be passed on in small groups to AR for inclusion in the Hamad Stolen Equipment Section.

HAMS

Eight lines free to all WIA members.

Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.

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Cover Photo
The photograph shows Peter Schulz VK7PS, an active radio amateur and keen bushwalker combining both hobbies as he makes a contact via the Mt. Wellington repeater from the summit of Forty Lakes Peak in Tasmania's Great Western Tiers.

Photograph: WINSTON NICKOLS VK7EM

Amateur Radio June 1979 Page 3
The following includes the text of a Press Report issued for the 1979 Federal Convention held in Melbourne 28th to 30th April:—

"The Minister for Post and Telecommunications, the Hon. A. A. Staley, last Sunday, April 29th, clarified several points that a Federal Minister has addressed the Council expressed its appreciation of the way in which the Institute of Australia, this is the first time that a Federal Minister has addressed the Annual Convention."

"In addition, the following subjects were discussed with the Minister:—

Pensioner licence fee concessions.


Definition of television broadcast service areas and the possibility of a Radio Frequency Advisory Committee for Australia to increase awareness of Spectrum Management problems.

The form of discussion allowed direct questioning of both the Minister and his First Assistant Secretary, Mr. Wilkinson, who also attended.

It is not possible in this statement to present the wealth of information made available. However, details will be forthcoming through normal channels such as weekly broadcasts, Amateur Radio magazine and Divisional meetings.

The Council expressed its appreciation to the Minister for both his and Mr. Wilkinson's attendance at the Convention.
1979 CONVENTION
As this is being written the day following the close of the 1979 Federal Convention it will be possible to include some details of it.

The Minister for Post and Telecommunications, Mr. A. A. Staley, joined the Convention delegates as a guest for dinner on Sunday, 29th April, along with Mr. Jim Wilkinson, First Assistant Secretary, Radio Frequency Management Division of the Department.

During his speech, introduced in a witty and interesting preamble, the Minister made many references to the Channel 5A situation as may be seen in the Press Release published elsewhere in this issue. Much other information of interest to the amateur service came from his address and from the question and answer forum which followed.

When the Minister observed the reaction to the first mention of the Handbook it was clear to him that the Institute was dissatisfied with the draft presently under preparation for printing. He ordered it stopped, if this could be done at this late stage, to enable further representations to be made by the WIA. The virtues of self-regulation appeared to be shared by everyone present, particularly the guests.

Some other questions were answered, including the proposed new Radio Communications Act and the desire of the Institute to be granted some involvement before finalising this legislation, the possibility of a Radio Frequency Advisory Committee for Australia and the great awareness by the Minister and his Department of the continuing valuable contributions towards WARC 79 by the WIA representatives. Questions were asked about the schedule to the latest Amateur Station Licence Form RB94 (June 1978), which specifies the authorised receiving frequency bands — e.g. 7.00 to 7.15, but does not authorise the amateur operator to listen for USA stations on their authorised frequencies between 7.15 and 7.30: A discussion highlighted the impossibility of controlling receivers (general coverage and other) and the act of listening outside the amateur bands, whereas concentration should be given to persons using information obtained from listening (which accords with the spirit of ITU RR 5195(724)).

The long delays experienced in many places between passing an exam and the issue of a licence came in for criticism. "Over the counter" licensing in Victoria was instanced as an example of the measures which could be taken.

Two final questions before concluding this short report. Reduced licence fees for pensioners — promised in a letter of 19th

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October, 1976 — appears to have become nullified by re-investigation and an early reply is not now to be expected. A discussion about interference by, and to, Channel 5A TV, brought out recognition that the receiver is very largely the culprit, defined TV station broadcast service areas are proposed to overcome the problems of interference in “marginal” reception areas and that the “ethnic” television service will definitely go to UHF.

It was indeed most heartening to be made aware of the Minister’s considerable knowledge about WARC 79 preparations and it was obvious to delegates that he had either been briefed in great detail or had been kept fully informed about them. The Convention dealt with 34 Agenda Items, 10 general business items, 2 special resolutions, several routine items and 18 annual reports, in addition to detailed explanations relating to WARC 79. The work was facilitated by the appointment of five working groups. The Convention went into Committee for debate on other matters.

Perhaps of interest to members’ pockets, the Finance Sub-Committee presented a budget for 1980 which was adopted subject to review, as usual, by 31st August. In it no increases in Federal dues were proposed provided the rate of increase in new members is maintained. A study of the latest 1979 figures revealed that the possibility of future reservations of Holders of WARC 79 after a decision had been made that Mr. Michael Owen VK3KI be an additional amateur delegate for the Australian team. This step was considered essential based on latest advances and strong recommendations from experts in ITU General Conference proceedings. It was the unanimous agreement that no stone be left unturned to ensure the fullest possible involvement of the amateur radio service in this vital Conference. Note was also taken of the absolute necessity of continuing amateur involvement during the years succeeding the Conference.

The appointment of Executive members for the ensuing year resulted in only two changes — Mr. Courtney Scott VK3BNG comes on as Federal Treasurer, and Mr. Harold Hepburn VK3AFQ replaces Mr. Graeme Scott, who resigned through pressures of business, although he hopes to continue his work in the Federal sphere as Federal Education Co-ordinator to provide continuity.

The delegates were very pleased to welcome Mr. Jack Hum G5UM as a guest for a short time during the Convention. Most old-time members will know Jack’s involvement with the RSW over many many years and his expert knowledge in the VHF/UHF/microwave regions of the spectrum affecting ITU Region 1 and the UK in particular. Never were so many Divisional Presidents and past Presidents represented as at this Convention, including visits by Mr. Eric Buggee VK3ZNN, the VK3 President; six out of the seven Divisions were so represented. Others attending the Convention included Michael Owen VK3KI, Bruce Bathois VK3UV, Bob Arnold VK3ZBB (Satellites and Project Asistent), Alt Chandler VK3LC (foreshadowing retirement as Intruder Watch Co-ordinator) and Ron Henderson VK1RH in his dual role of VK1 Federal Councillor and Federal WICEN Co-ordinator. VK3SP kindly found time to attend and provide most valuable advice in the international sphere. Amongst other votes of thanks, mention must also be made of the impending retirement from active participation in Institute affairs of Ray Jones VK3RJ, after 50 years service in the QSL field, and (b) Keith Roget VK3YQ/YJ8, the former Federal Treasurer, for his work on the financial side of affairs.

Two new Annual Reports taken at this Convention were those from the Federal Videotape Co-ordinator, John Ingham VK5KG, and the Federal RTTY Co-ordinator’s report done by Peter Mulligan, VK2ABH.

In this news report it is impractical to review all the Agenda items but a few have been selected as being of probable general interest. Proposals to admit Australia-wide special groups (e.g. Old-Timers) for affiliation were referred back to the Executive for further review and report. An item dealing with proportional voting lapsed for want of a second. A position on 10 metre band beacon was adopted with a reminder to Novices to leave the beacon frequencies clear as far as possible (28.2-28.3 MHz segment). Channel numbering in the FM portion of the 2 metre band shall be in a 4 digit number based on frequency — repeaters identified by output channel number — VK4 were opposed to this and abstained on the similar system for 70 cm. A band plan for the FM portion of the 2m band (146-148 MHz) was adopted.

A working group spent much time debating the future of AR and the related subject of the Executive office. It was decided that a second full time employee should be employed primarily for AR duties. A motion that Federal Convention Minutes be made available to all affiliated clubs was withdrawn when the delegates determined the fact that this was essentially a Divisional responsibility. A proposal for an international amateur licence/certificate along the lines of the international driver’s licence was passed. Almost an annual motion seeking higher Morse speed examinations for reciprocal licensing problems was again passed.

Motions to request more frequent Morse and other exams were again passed, in addition to exams outside normal working hours. Work is to begin on seeking the issue without fees of the suffixes WIA to WIZ on a national basis for special purposes, and that WICEN exercises should be authorised by the appropriate Statutory Authorities instead of the Department as in the past. A motion to press for By-law imports of transceivers and equipment for use on frequency bands above 2m was passed but intenders of such equipment are to be encouraged as a first step to take the initiative themselves.

It was resolved that the most effective use for the $3500 received for education purposes was the instigation of the production of a set of educational/promotional videotape masters. It was also decided that such monies should be put into an Educations Resources Development Fund/Provision. The Executive were authorised to examine the desirability of printing an annual call book. Various modern production methods for the call book were studied in addition to a short debate about the contents.

Aising out of Annual Reports it was noted that the Federal Contest Manager proposes to seek, through the pages of AR, membership opinions on various contests and rules.

Under the heading of general business items several were withdrawn, some for one reason, some for another. Passed was one requiring Executive to establish criteria for Convention Agenda Items; there was also a reminder to submit them much earlier each year so that they can be printed in AR for members' comments beforehand.

A more detailed report will be prepared for the next issue of AR.

QSP

NOTHING NEW

QRP to 100 feet long wires connecting the equipment to the line in the trunk. The use of an effective earth was not overlooked by the Major, something that today’s successful users of vertical antennas also take into account. (Copies of the E.E. supplied by Ivan, VK5OV.)

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I built a VDU. Yes! I copied it from an American magazine. What a remarkable piece of electronic wizardry. It had two pages of memory, automatic carriage return/line feed, cursor control, screen read capability, 32 characters per line, erase functions, all sorts of neat features. Modifications were thought up to provide scroll-up facilities, character counting, four pages of memory and many other additional ideas. There was still one thing wrong. As it used ASCII code I couldn't put the thing directly on the air. Oh well, why not build a new terminal unit with all the things needed?

So, to make up some more printed circuits. Two DT600 demodulators solid-state switching board, selective amplifiers and switching for the CRO monitor, DD50 Magnet Driver (to use for hard copy, two AFSK generators, two UT4 UART/FIFO systems (one for Baudot, the other for ASCII code), Baudot to ASCII Converter (using a National MM5220 BL ROM Code Converter), ASCII to Baudot Converter (from the same magazine articles), UART Parallel/Serail Converter and vice versa. Automatic CW identifier, two dual XER Crystal Clocks plus power supply. Wow! What a lot of work.

Art work to do, circuits to try out, capacitors and resistors to bridge for accurate values, negatives to be made, more research on circuits, boards to be etched, card frame made up with card guides and sockets, cabinet, panel work, lettering, more metal bashing, bits and pieces all over the place.

Time seems to run short. The project is put aside due to other pressures, complication of circuitry, need to re-think some of the approaches, other activities, WIA work, etc.

Well, I may get around to finishing this most comprehensive project some time in the future. It still looks to be a good system. There will be hundreds of inter-connections to be made between boards. More modifications will be in order as new ideas, components and methods present themselves. Lovely ways of storing information, producing pre-programmed messages, inserting corrections, all these possibilities exist.

I promised myself I would not take short cuts and put the VDU on the air without first finishing my all-singing-all-dancing new terminal unit.

So what happened? The ambitious project is still not completed. BUT! I am now on the air with noiseless RTTY. And it took little more than a week of work In my spare time. How! You may well ask.

I would like to tell you about my new VDU system. It is called the "XITEX SCT100 Single Board Video Terminal". (Ref. 1) This unit, which is advertised in Amateur Radio has allowed me to get going on noiseless RTTY very cheaply, quickly and easily. For the benefit of you who may wish to do likewise, following is a description of the unit together with some comment on my own personal experiences in getting same going. The XITEX is a complete video terminal mounted on one printed circuit board approximately 5 to 10 inches in size. Mounted on the board are a total of 32 integrated circuits, including a character generator and a micro-processor chip. The board can be obtained with all components mounted in place and tested as a unit, however it is not very difficult to solder in the components yourself, and I find it more fun to do so, and of course cheaper as well. Together with the board comes a handbook which provides full instructions on assembly, testing and operation of the unit. Having assembled the board next comes the matter of the power supply. A wide range of options are available in this area and the circuitry provided allows the use of any of the following forms of supply:

(a) 7-11V DC at 0.75A (max) unregulated.
(b) 8-12V AC RMS at 0.75A (max).
(c) 5V DC plus or minus 5 per cent at 0.75A (max.) regulated.

Having prepared the system thus far it is necessary to make a certain number of inter-connections. These are power supply, keyboard and video display. The power supply connections are made to a 2-pin connector, supplied, in the case of AC supply or via 2 pins of a 30-pin edge-connector in the case of DC supply. If one is already using what is known as an S100 bus system for computer type equipment the board may be simply plugged into the S100 bus. The keyboard connections are made via the 30-pin edge-connector or a separate 16-pin DIP socket. Now for a word about the keyboard. It is necessary that the keyboard be of a type which provides the standard ASCII code output. There are many different sources for such keyboards advertised in magazines including disposal sources. The suppliers of the SCT100 can of course also provide a suitable keyboard at reasonable cost with the unit. (Ref. 2) The keyboard I use may, however, be of interest to you. When I first obtained same it was of a type providing a computer code called EBCDIC at

View showing at top homebrew RTTY terminal unit and monitor CRO. Below Model 19 teletype and tape Tx, loop current control and switching box, VDU and keyboard.
1. ASCII type output for micro-processor applications and other computer orientated systems with both upper and lower case alpha characters, full punctuation, standard symbols and numbers plus 31 special characters intended mainly for mathematical work.

2. A standard set of Baudot characters exactly the same as you would find on any ordinary teletype machine.

Either of these two conditions are selected by means of a single pole two position toggle switch wired to the appropriate pins on the edge connector. In the ASCII mode a baud speed of either 110 or 300 bauds may be selected, again by a toggle switch wired in a similar manner, and in the Baudot mode the standard teletype speeds of either 45.45 (International Amateur Standard) or 7.42 bauds may be selected. It is also possible by using a slightly non-standard powering up and resetting procedure to obtain Baudot code at 110 bauds. Other baud speeds can be obtained by the addition of an external clock in lieu of the Xtal clock provided on the keyboard. To take the simple view, however, there is usually a matter of taking the output and input connections from the PC board to your usual teletype terminal unit to be on the air with solid state and noiseless RTTY having selected Baudot code and appropriate speed on the SCT100.

This option is quite clearly detailed in the scope of this article to describe fully the functions of the SCT100 when used in the ASCII mode, however details of a few of the other features of the unit, when used in Baudot mode, may be of interest. The unit provides 84 characters per line across the screen with a total capacity of 16 lines per frame. The first line appears at the top of the screen, as would be expected, with each consecutive line being written below the previous line until such time as the screen is filled up.

At this point the unit adopts a "scroll-up" mode with all the lines moving up one line at a time as the end of the bottom line appears. This means that the top line then disappears off the screen but gives plenty of time to read any text being received.

The unit includes provision for operation from 50 Hz supply but requires a printed track to be broken and a short jumper wire to be added on the board for 50 Hz operation. This option is quite clearly detailed in the instructions and shown on the board and circuit. Normal operation is with white characters on a black background but provision is made for reverse video, i.e., white on black, to be selected. Automatic carriage return and line feed is featured when using either transmit or receive, however a unique function appears under this circumstance. Should the unit come to the end of a line and a manual CR/LF not be received, it carries out the automatic CR/LF function but automatically places an arrow at the beginning of the next line to indicate that this line is a continuation of the previous line. This feature is of immense value when communicating with other operators using the mechanical type machines which generally have a line length in excess of 70 characters.

When baudot operation is selected, only characters normally appearing on a baudot teletype machine can be transmitted. Operation of any other character on the ASCII keyboard will result in nothing at all happening. To those not quite sure as to the meaning of this statement, I might explain that the standard ASCII keyboard carries many more characters and functions than an ordinary teletype keyboard.

On an ASCII keyboard figures do however appear as lower case characters whilst on a teletype machine there are special keys to select either figures or letters as the case may be, much the same as a shift key on a typewriter is used for upper and lower case. When using the XITEK unit the micro-processor on the board takes all the work out of this area of operation. If you are typing letters and then you press a key for a figure this fact is recognised by the circuitry which automatically inserts a "figures" shift character and transmits it before sending out the figure signal for the key you have just pressed. Likewise, if you have been sending figures and then revert to a letters key it automatically inverts a "letters" shift before sending the letters character. Very clever stuff indeed, and no knowledge or expertise required of the operator. You simply sit there and press the keys for the letters and figures you wish to send and the rest is all done for you.

Input and output points on the unit also appear on the 30-pin edge connector. Provision is made for various types of input and output levels. Opto-couplers on the board allow you to make your connections directly across the inputs and outputs of a standard machine type teletype loop at high level voltages in either a simplex or duplex mode of operation. The provision of alternative computer type RS232 input/output level points allow simple connection to associated solid state equipment. However, in making your
interfaces with your teletype terminal unit do not make the mistakes which I made through some carelessness and sheer lack of thought. Emitter followers DO NOT pull right down to earth level (logic 0) and one must also remember to check that the sense of signals (i.e., either positive or negative for a mark signal in the teletype terminal unit) is correct, when making interconnections. Simple commonsense can save you a lot of time and effort. Had I followed the correct course I should have had everything working over the period of just a week-end.

So, to re-cap. If you wish to get on the air with silent modern RTTY with a solid state VDU system try the following, even if you are just starting from scratch. Obtain a XITEX SCT100 unit and a suitable ASCII keyboard. Connect it to a power supply as described and a small cheap portable black and white TV set. Connect the output of your RTTY terminal unit either via your selector magnet loop or TTL level output to the SCT100 input. Connect the output of the SCT100 to your AFSK or FSK keyer unit to drive your transmitter. Select Baudo at 45,45 bauds on the air. It's as easy as that.

I have gone to the trouble of writing up this unit as I have for some years spent time drooling over the advertisements in both local and overseas magazines, knowing at the same time that the solid state RTTY gear advertised was so expensive as to be outside the range of my pocket-book. Having discovered the ease, and I emphasise the relatively low cost of the unit I am now using, I thought it only right to let you know that such an item exists and is available in Australia.

Comments I have heard also led me to believe that many people did not understand just what this little unit would do. It is not my intention to provide free advertising for a commercial item, neither to condemn the manufacturers of what may well be other very good equipment also available.

Before I conclude, I would like on the same basis to make known to you a few other matters which may help you in the field of RTTY. Within Australia a group has been established based on the WIA VK2 Division. This Group is known as the Australian National Amateur Radio Teleprinter Society and can be contacted through using the address of the VK2 Divisional HQ at PO Box 123, St. Leonards, NSW 2065. The Society publishes a bi-monthly newsletter called "AREWISE", which is posted to members all over Australia. Cost of membership is only two dollars per year and the cost of "AREWISE" will help you in learning more about RTTY operation. The Society can also supply kits such as the well known ST6 RTTY Demodulator at an exceedingly low cost (approx. $40.00) compared to commercial units, and can also help with spare parts for teletype machines, provide assistance with RTTY projects and generally help you to get going on this mode.

Another excellent magazine which does not cost too much to subscribe to is the American based "RTTY Journal", of which there is 10 issues per year. This magazine is available for only nine dollars (Aust.) per year as a service (he makes nothing from it) through Norm Wilson VK4NP, who is listed in the Call Book. The RTTY Journal also puts out an excellent Beginners' Handbook which would be of great assistance to anyone just getting started on this mode. The Beginners' Handbook is not, however, available through Norm VK4NP and you would have to obtain same direct from the publisher. (Ref. 3). I have found that many other excellent articles abound in general amateur radio magazines and literature, particularly the magazine "Ham Radio". So go looking through whatever back issues you can locate. Amateurs Radio Teletype is not at all as difficult as it may first appear, so don't be frightened off by thinking it may be too complicated for you.

Also in existence for some time has been the Australian Amateur Radio Teleprinter Group based in Western Australia. This Group puts out a newsletter also and may be contacted through VK6IF, 32 Mayflower Crescent, Craigie 6025. Subscription to the AARTG is four dollars per year, including the AARTG quarterly newsletter. The Group has also in the past put out a kit for the ST5 Demodulator, which is a more simple version of the ST6. I have been advised that Cliff VK6NK is the person to contact regarding this kit. I trust that this article will have been of some interest and help to you in becoming a little more familiar with some aspects of a most interesting mode of operation and one in which a growing interest has lately been evident in this country. So if you have a yen to take part in amateur RTTY operation give it a try. I find that all of the chaps on this mode are always very willing to help any newcomer in their way, so don't be afraid to ask.

REFERENCES
1 and 2. Available from the Micro Shop, Box 207, Gawler, South Australia 5118. Cost of keyboard kit $70, but can be obtained assembled and tested at an extra charge. Cost of SCT100 VDU board kit $169. Both prices include tax.
3. RTTY Journal, publisher Dee Crompton, PO Box RH, Cardiff by the Sea, California 92007. Cost of RTTY Beginners' Handbook $4.50 US.
4. DT600 RTTY Demodulator is a simplified version of the DT600 designed with the VHF operator in mind, and described in Ham Radio, March 1976, page 24.

The DD350 is a dual magnet drive for teletype machines and includes timing circuits to operate auto-start on the machines and also to automatically shut down and start up the magnet loop as necessary.

The following items can be obtained from Data Technology Associates Inc., PO Box 431912, Miami, Florida 33143.

DT600 RTTY Demodulator PC Board, $12.50 US; DT500 RTTY Demodulator PC Board, $10.50 US; DD350 SMD/ Motor Control Board, $7.50 US; DD70 Loop-Logic-Polar Interface Board, $7.50 US; 4 Potentiometer Set for DT600/500, $2.00 US.

Each of these boards are of high quality and are libreglass. The Demodulator boards are through-hole plated. I have seen these boards as supplied to a local amateur and was most impressed with them. With each board came a most comprehensive handbook with detailed construction and testing information, and even included two parts lists, one in order of component number and the other in order of component value. Instruction on how to solder is even included.

These references together with the information contained in the above article should provide anyone starting off on RTTY with sufficient information as to where to obtain data, components, etc., and provide a guide as to the costs likely to be incurred with such a project.

TRY THIS
WITH THE TECHNICAL EDITORS

A TWO METRE COLLINAR

Earlier (1963) ARRL handbooks carried a description of a 2 metre collinair. Les VK2AX and VK2AZ has submitted details of a similar antenna.

A 4:1 balun enables a coaxial feedline to be used. The ARRL suggests the use of stiff 1/8" aluminium wire for the elements, supported on ceramic standoff insulators screwed to a wooden pole. TV screw-eye insulators make a cheaper but less desirable mounting.
TWO METRE TRANSMITTER FILTER FOR OSCAR MODE ‘J’

Joe Reisert W1JR
17 Mansfield Drive, Chelmsford MA 01824

Many OSCAR 8 Mode J users have been experiencing receiving difficulties due to a large number of birds appearing on the 534.1-435.2 MHz downlink when they are transmitting between 145.9 and 148 MHz on the uplink. This is most often due to overloading and intermodulation in the 70 cm converter due to the proximity of the third harmonic of the uplink transmitter (viz., 437.7-438 MHz).

There is very little that can be done to the receiving converter without using elaborate filters and high dynamic-range circuitry. However, most of the birds can be eliminated by properly filtering the output of the two-metre transmitter to minimize any third harmonic output.

In my case, I could detect about a dozen such birds varying from just above the noise to 20-30 dB over the noise. Operation on the 435.10-435.2 MHz downlink was almost impossible. Then I added a simple (see Fig. 1) 5 element half-wave-length type of low-pass filter on the two-metre transmitter (a homebrew transistor amplifier operating class B with 40 watts maximum output). There was an immediate improvement with only two weak and three moderate (10-15 dB over the noise) birds. Needless to say, the results were dramatic.

The filter used is not an ordinary low-pass type. It exhibits the characteristics of a 1 to 2 dB ripple Chebyshev design over the 135-150 MHz band. The cut-off frequency is typically 250-275 MHz, and attenuation is greater than 10 dB on the second harmonic (292 MHz) and greater than 50 dB at 438 MHz. Therefore, this design is only recommended for two-metre use.

CONSTRUCTION

For optimum performance, the filter should be built into a shielded box as shown in Fig. 2. Double-sided printed circuit board is recommended as a suitable ground plane and also makes soldering to C1 and C3 easier. Note that solder should flow on both edges of C1 and C3 for lowest loss and VSWR. Also provide a good ground strap between J1 and J2 to the top side of the printed circuit board as shown. This will further reduce harmonic output.

OPERATION

Tune-up is simple since the filter has a broad bandpass. First set C2 to minimum capacitance and place the filter between the transmitter output and a power output or VSWR meter. With the transmitter tuned to 146.0 MHz, increase the capacitance of C2 until power output is maximum. Caution: do not exceed 50 watts output (more than enough for OSCAR 8 Mode J operation) since the components are not rated for higher power loads. Retuning for 144 MHz operation should not be necessary as the filter bandwidth is quite broad.

If you are fortunate enough to have access to a spectrum analyser, you can tune C2 for minimum output at 438 MHz. This, however, may cause additional loss at 146 MHz. If so, the transmitter output circuit may be readjusted to compensate for the mismatch.

PERFORMANCE

The 435.1 to 435.2 MHz spectrum will be much cleaner when using the described filter on your two-metre transmitter. Always use the least possible transmitter power, since this will also lower the third harmonic level. Additional separation between the two-metre and 70 cm antenna should also help.

FIG. 1. 148 MHz LOW PASS FILTER


Attenuation at 432-438 MHz: 50 dB typical.

Construction and testing: See Fig. 2 and text.

C1, C3 — 22 pF low loss Mica 300 volt min. UNELCO type J101 (Note 1 and text.)
C2 — 10 — 60 pF Mica trimmer with short tails (Note 1 and text.)
L1, L2 — 3T No. 14 AWG enamelled copper wire close-wound, 1/4 in. inside diameter (approx. 40 nanohenries).
J1, J2 — Type BNC, UHF or N coax fittings.

Note 1: 22 pF UNELCO Mica capacitors are available from Webster Radio, 2602 E. Ashlan, Fresno, CA 93726 at $1.75 each plus tax and shipping. Do not substitute other types of capacitors.

Amateur Radio June 1979 Page 11
Some methods of determining antenna surface areas have made many false assumptions. Some of these assumptions are:

1. Air flows with perfectly smooth and streamline motion, or in other words, laminar flow.
2. Since assumption is made of laminar flow, it is also assumed that this flow is in a perfect horizontal plane.
3. Since assumption is made of laminar flow in a perfect horizontal plane, it is assumed that the element portion on the leeward side is shaded out by the area of the boom (see Fig. 1).

In all cases where these antennas would be used outside, you would never have perfectly smooth and streamline motion, but horizontal and vertical fluctuations which when sudden and brief are called gusts. This type of flow would be turbulent rather than laminar. Since there are horizontal and vertical fluctuations, the element portion on the leeward side would not be shaded out. Only if the elements were spaced very close together would you get some shading out.

The Hy-Gain method of calculating antenna surface areas does not use these assumptions. In our method the wind is projected perpendicularly onto each element (see Fig. 2). The total area of all elements are then multiplied by the 2/3 shape factor for cylindrical elements. The wind is also projected perpendicularly onto the boom. The total area of the exposed boom is then multiplied by the 2/3 shape factor. The resultant total area of the combined elements and boom is obtained by using the Pythagorean Theorem for a right triangle (see Fig. 3). By using this method it takes into account the magnitude of the area from the two directions to give you the best angle of wind to give the maximum area.

**QSP**

**AMATEUR DIGITAL RADIO OPERATOR**

In Canada rules have been made for a new experimenter class of licence called the Amateur Digital Radio Operator's Certificate. Digital and pulse techniques are permitted in Canada on specified VHF and UHF amateur bands and operators of the new class are only permitted above 144 MHz. Holders of existing AR Op. Certificates and Advanced AR Radio Op. Cert. will be allowed all the operating privileges of the Digital Cert. operators except for pulse emissions.—QST December 1978.

**WALKIE-TALKIES ON 49 MHz**

Should be some fun when some of our importers get a shipment of the latest cheap walkie-talkies intended for the US market. The new frequencies allocated in the US for low powered transceivers are around 49.9 MHz. These frequencies have been chosen due to the impracticality of operating 100 mW walkie-talkies on Ch. 14 CB (27.125 MHz).

The band already has a radio club in California.

These little flea powered cheapies could provide quite a headache when they are imported and sold locally.

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* 10 watts nominal for 80 watts output.

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* Fully protected against poor load VSWR, overheating and excessive or reverse rail.

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Icom 22S owners! When you go mobile through the country side, do you miss the news and activity of the area, or miss the openings due to being engaged in driving? If so, this is the ideal scanner for the vehicle.

This article describes how a scanner can be installed in your IC22S. The scanner is easy to build and easy to operate when operating mobile. It has many facilities which, I think, make the extra circuitry warranted.

Only seven ICs, quite a few diodes, a few transistors, two regulators, some capacitors and a little thought makes life easy.

FACILITIES
This scanner has a variable scan rate, the speed of which can be varied and adjusted for optimum performance. The author's operates at a rate of 15-20 channels per second. It can be operated faster if desired with a possible deterioration of performance.

If the scan-stop is activated by an incoming signal (by the mute cct) you have two choices. You can listen to the incoming signal and during the inter-over pause break in by simply operating the PTT and replying or you may just listen to the conversation. The break-pause or scan delay time can be adjusted by the pot (RV1) in the circuit to satisfy your desire.

The scan also decides the transmit frequency for which it has to reply and by operating the duplex B (Dp B) switch you can reply on the anti-repeater frequency. The scanner scans 20 channels, i.e. 10 Dp channels and 10 anti-repeater frequencies (Spx). The author's scanner covers anti-repeaters 2, 3, 4, 5, 6, 7, 8, 40, 50, 51, plus 600 kHz above all these frequencies, coming out at repeaters 2, 3, 4, 5, 6, 7, 8, 146.6 (i.e. 40 + 600k), 147.1 (50 + 600k) and 147.15 (51 + 600k).

CIRCUIT DESCRIPTION
The circuit is very basic but is quite effective. It has a scan-stop and delay circuit consisting of TR1, TR2 and IC1a, IC1b and IC1c which work into the clock

FIGURE 1: Circuit Diagram IC22S Scanner
Amateurs who have worked VK0JC and been asked “Please QSL via OZ2AE” may not be aware that both call signs belong to the same operator — Jorgen ("Joe") Christensen, whose home QTH is Nykobing.

Joe is Radio Officer on M/S "Nella Dan" which, under charter to the Australian Government, transfers personnel, equipment and stores between Melbourne and our ANARE bases in Antarctica. Joe received his VK licence in November 1978 and with approval of the ship’s Master and owners, and the Danish radio authorities, operates on our amateur bands, both maritime mobile and whilst the vessel is berthed or anchored at Australian ports and bases. He runs a TS520S from his cabin next to the radio room with dipoles for the various bands, and works both SSB and CW, mainly the latter.

A small ship of some 2000 tons and 70 metres in length, "Nella Dan" nonetheless has room for three helicopters and a small fixed-wing aircraft on its covered after-deck. It also carries a year’s supply of provisions and water for emergency use should the vessel be caught in the ice. Equipment, diesel fuel and foodstuffs for base personnel are carried in the forward hold. In bad conditions, the Master is able to take full control of the ship’s movements and speed from a miniature “bridge” atop the foremast.

Joe’s duties extend far beyond what is usually associated with a radio officer. He is responsible for payment of the crew’s wages, catering records, and many other aspects of the ship’s running costs and performance as well as daily reports to the owners in Copenhagen and all other communications. In short, he could well be described as “ship’s secretary”, with complete knowledge of the day’s “doings” literally at his fingertips.

His pedestal-mounted chair is bolted securely to the steel deck, and well it needs to be. In heavy weather “Nella Dan” may roll up to 50° each side of centre, and even though firmly seated Joe needs a tight left-hand grip on one of the rack handles in order to use the key or keyer with his right hand. (Wonder how some of we land-lubbers would fare under these conditions!)

If the resistor R157 (4.7k) in the Dp A circuit is not lowered to about 2.2k in the IC225 receiver circuit when the scanner unit is on the logic threshold between Dp A and SPX and operation may be affected. If the DPX/SPX LED is eliminated it will work on 3.9k ohms although 2.2k ohms is recommended.

I built the unit on vero board and mounted it on the same side but to the back of the synthesizing board. It was not necessary for any shielding from any other circuitry as was first thought.

This unit was built by VK6JL (Chris), who found a problem which mine did not have. Sometimes when the channel change switch is rotated while the receiver is in the SPX mode, it will go out of sync, (meter lamp extinguishes) and the signal lamp illuminates. He cured these problems by two circuit alterations. They were by placing a 1000 microfarad capacitor across the 5 volt regulated rail of the scan. This also allowed the unit to be turned off momentarily, as may occur when starting the car or switching to accessory, without losing its programming. He also introduced the scan delay cancel circuit as he found that if the delay circuit was too long the scanner started from scratch when he turned off his car ignition and he missed a fair deal of the conversation. With this circuit it will start from scratch but there will be no delay before it starts scanning.
ARE YOU INSURED?

Mike Richter VK2BMM
NSW WICEN Deputy Co-ordinator

One aspect of modern society's search for security is that we pay a small amount of money regularly to insure against the possibility of a major loss due to accident or willful damage.

The Amateur Operator has several special insurance needs and hopefully the following information will help you obtain sufficient coverage at a reasonable price.

The type of insurance coverage you will need as an Amateur may be considered in the following categories:

1. PERSONAL insurance to cover you against illness or injury is really required by everyone but a special need exists if you intend to take part in WICEN exercises or operations as you may be exposed to additional risks. If called out by the State Emergency Services you are covered under their insurance, however under all other situations you are uninsured. It was for this reason that NSW WICEN has taken out Personal Insurance up to $30,000 per person with the Government Insurance Office to provide coverage during operations as well as exercises.

2. PUBLIC LIABILITY insurance to cover you against the possibility of being sued by a member of the public is required by anyone who has aerials that could fall on someone, whether inside or outside your property. Public Liability insurance up to $250,000 is usually included with Home Contents Insurance but you should check with the company to see if it covers you against collapsing transmitting aerials. WICEN operations also create the possibility of being sued, therefore NSW WICEN has coverage for $500,000 Public Liability with the Government Insurance Office.

3. EQUIPMENT Insurance to cover you against damage to transceivers or aerials due to theft, fire, storm, etc.

If you only use your equipment at home it can be included in Home Contents Insurance, but some companies may require you to list expensive items or unusual items (transceivers!). The cost is around 0.6 per cent but depends on the area you live in.

If you have your equipment permanently mounted in the car, then it could be added to your vehicle's Comprehensive insurance, and it is then covered for all risks that your car is covered for. The cost of this insurance is determined by adding the cost of the equipment to the insured value of the vehicle and therefore depends greatly on the vehicle cost, no claim bonus, area of residence, etc. Do not succumb to the common pitfall of believing that your Comprehensive insurance covers equipment in the car under the Personal Effects category! This is usually only $100 and only applies to wallets, watches, etc., that may be lost or damaged in an accident and not transceivers.

If you use your equipment both at home and outside then you really need Personal Property Insurance (previously called All Risks), which covers your equipment against theft, fire, collision, etc., no matter where it is. This usually costs 2 per cent per annum of the insured value and the company will require specific details of each item to be insured. One company provides a “Multirisk” extension for equipment covered by a Home Contents policy that provides additional coverage when the equipment is outside the house and only costs 1 per cent (in addition to Home Contents cost). This is cheaper (0.4 per cent) than Personal Property insurance but provides almost as much coverage. Do not expect your Home Contents Insurance to cover your equipment outside the house. Even though policies do provide for items being "temporarily removed" from the house the coverage is very limited and excludes theft and items in a vehicle!

Providing equipment insurance through WICEN would prove too expensive therefore Amateurs are urged to provide their own insurance which will give coverage for normal use as well as WICEN operations.

Aerials masts should be included in the house insurance policy. Make sure that the company includes the mast in the policy, in writing, and that you are covered for the cost of replacing the mast and aerials in case of damage as well as the repair of any damage to cars and houses that the mast, aerials and guys may cause on the way down!

You may decide the insured value of your equipment within the limits of its full replacement cost (i.e. the present 'new cost of an equivalent item') or its depreciated value (original purchase price depreciated up to 30 per cent each year). Again you should consult the company who will suggest a value but you can have this changed if you feel it is too high or too low.

QSP

4U1ITU QSL CARDS

QSL cards for all contacts from 4U1ITU are written in the time of the OSO by the operator (note: visitors wishing to use 4U1ITU must first demonstrate their ability to use and tune the equipment because of operators in the past not familiar with the equipment). These QSL cards go through OSL Bureaux. Direct QSLs are not exchanged. Incidentally, if you intend visiting Geneva and wish to use 4U1ITU a letter must be sent at least four weeks in advance to 4U1ITU, PO Box 6, Place des Nations, 1211 Geneva 20, Switzerland.—RI News October 1978.

SORTING OUT THE YUS

"According to the present national Amateur Radio Regulations, members of the family of the owner of the station licence are allowed to operate if they have passed a kind of operator's examination. In this case, letters X or Y may be added to the original call sign. It is tradition in YU that the husband operate (e.g. YU1UK/X, YU3AE/Y, etc.)."—RI News October 1978.

MAINLY FOR "OLO-TIMERS"

Lord, thou knowest better than myself that I am growing older and I will some day be cold. Keep me from getting talkative, and particularly from the fatal habit of thinking I must say something on every occasion. Release me from the craving to try to straighten out everybody’s affairs. Keep my mind free from the recital of endless detail, give me wings to get to the point! I ask for grace enough to listen to the tales of other plans. Help me to endure them with patience. But seal my lips on my own aches — they are increasing and my love of rehearsing them is becoming sweeter as the years go by. Teach me the lesson that occasionally it is possible that I may be mistaken. Keep me reasonably sweet; a sour person is one of the crowning works of the devil. Make me thoughtful, but not moody; helpful but not bossy. With my vast store of wisdom, it seems a pity not to use it all — but thou knowest, Lord, that I want a few friends at the end. By "Another OT". From QTC, October 1978.
TELEVISION IMAGES FROM THE PAST — THE ORIGINAL SLOW SCAN?

From the middle of the 19th century experimenters, physicists, engineers and others were striving for the goal of television.

The majority of these schemes were on paper only and in the years that followed the photo electric effect of selenium, the scanning disc, the amplifying valve and the neon lamp were discovered.

In 1923 John Logie Baird was the first to put them all together and come up with a workable mechanical television system. He was also demonstrating at that time 3D, colour, and infra-red transmissions which he called "NOCTOVISION" or night vision.

His mechanical system placed severe limitations on the picture size 1 in. x 2 in. and picture detail of 32 lines. Using a frame rate of 12.5 pictures per second the base frequency becomes 400 Hz and with picture information added bandwidth increases to about 7 kHz. These frequencies were used to amplitude modulate an RF carrier.

Baird was also able to record the picture information on to 78 r.p.m. shellac phonograph discs. He called this "PHONOVISION". The records were available to buyers of his receivers to be played into their "televirors" for tune up purposes.

I know there were at least two of these discs still in existence, one held by the BBC and the other by IBA Television Galleries in London. Both of these sources during my recent visit to the UK, re-recorded the image signals on to ¼ in. magnetic tape at 7.5 inches per second.

On my return to Sydney I re-worked an old 3 in. CRO to operate as a monitor on the Baird System frequencies. There are eight head and shoulder images of well known people and a wedge shape test pattern on these discs.

It is surprising, after more than 50 years and re-recording, that there is enough detail left to produce recognizable pictures. Although there were no special synchronizing signals transmitted at that time it was not difficult to devise sync from the line frequency to hold the picture quite steady for photography.

THE MELLISH REEF DX-PEDITION — 1978

What’ll they say of Oct. 3? When Hell broke over the Coral Sea. And all the world sought recognition in the Mellish DXpedition.

When Earth’s shroud, the field ‘magnetic’ Was scorched, convulsed by the pace frenetic Of calls of Hams out to make A QSO — a ten sec break.

Beams were swung and sets were tuned And if truth is known, many ruined As the gear ran hot, ran hot, Aiming at that tiny spot.

Ops at rigs with purpose bent — Not for hours but days they went. Like the buzz of swarming bees — or discordant symphonies.

Forgotten were both food and sleep, Chores and work — they could keep — Happenings were beyond belief In the struggle for the Reef.

Perhaps Ole Ionos smiled on you — and at last you got through. Your call plucked from the line With a lovely 5 x 9.

With voice gone hoarse and aching wrist, Each DXpeditioner did persist, To add another to the list, So that no one would be missed.

But all things must come and go And so has VK’s hottest “show”.

Now from the Reef, no sounds, no words Mellish is back with the birds.

So pass the 807s boys: Here’s to all that strive and noise. Cheers to the blokes who made it GO, Let the liquid “amber” flow.

When cobbers gather in the shack Let the rag chew wander back — Flip the log book to the leaf Of the Saga of the Reef.

Point up to the QSL — and say, “thereby hangs a tale to tell” — and tell it with the utmost relish. About the day you knocked off MELLISH.

Alan Shawsmith VK4SS
HOW TO LEARN FRENCH — THE HARD WAY

Every award hunter needs a good aerial. The author gives his story.

For the award hunters there are several French awards which are very attractive and well worth a place on the shack wall or under the glass of the operating table.

Apart from those which relate to the Pacific and Antarctic areas (DTA or Diplot des Terres Australes and ARANC or Association des Radio-amateurs en Nouvelle Caledonie Diplome for contact with six amateurs in New Caledonia) and which for the Australian amateur are relatively easy to come by, there are two which relate to metropolitan France and which are more difficult to land.

One of these is awarded to radio amateurs who are able to confirm contact with one station in each of the 17 Provinces of France and which include the Island of Corsica. It is called the DPF (Diplome des Departements Francaises) and is perhaps more colourful than its bigger brother which is called the DDFM (Diplome des Departements Francaises) and which for the Australian amateur are relatively easy to come by, there are two which relate to metropolitan France and which are more difficult to land.

As one of my regular contacts and good friend Pete Bowman VK5FM had assured me that putting up a quad for 20 metres was "like wrestling with an octopus" it was decided that maybe a yagi would be nearly as good and as a VS33, the Japanese equivalent of the TH3, was available second hand, this was purchased.

The idea was to mount it on top of the two section wind up tower which was used to support the wire antennas at my QTH.

As one of the problems that I have noticed with beams is that they are "way up there" but not out of harm's way as I found out in Alice Springs when a hailstorm detuned the traps on my ZL4BFU. Furthermore, as I never feel quite at home unless my two feet are planted firmly on the ground, we had to find a way of converting the tower into one of the tilt over variety so that we could bring the beam down when it was necessary to make adjustments.

Since the tower was already pivoted at the base it is possible to tilt it over but with a beam on top it calls for two and a half men and a carton of beer as the weight is considerable. In addition one has to wait until the weather is exactly right which is not very often in the Adelaide Hills. Having read in "Hints and Kinks" by ARRL that an amateur in "the States" had solved a similar problem with a telephone pole and a block and tackle I resolved to try something along these lines.

A telephone pole 30 feet long and 7 inches in diameter at the top was purchased from the local dump and it was delivered to the site where it lay for several weeks. Eventually a contractor who specialised in felling trees agreed to put it in the ground alongside the tower in line with the direction of pull and about two feet away from it. With the aid of Roger VK5RW a four inch pulley wheel was mounted inside a roughly fashioned but sturdy housing and mounted near the top of the pole. This job was done whilst the pole was still on the ground and the pulley was held in position by a long U bolt which ran right through the width of the pole. So that the pulley wheel would be free to rotate without scraping the sides of the housing, two washers were made up from tin plate as it was feared that the cable might slip down the gap alongside the wheel if it were wide enough.

To cement the pole in the ground near the tower took four strong men about an hour to do as telephone poles are heavy and cumbersome devices. After the hole has been dug down to about five feet, it is stepped on one side so that the toe of the pole can be angled into it. A crow-bar is positioned on the opposite side of the hole so that the pole will not tear the side on the way in. It should be canted slightly outward from the tower so that the top of the pole is two inches or so further from it than the base. This allows for movement towards the tower over a period of time caused by the weight of the tower as it is being raised and lowered. This can cause the pole to shift in the ground slightly.

View from the tennis court side

And she is up — ready to work the DX
The tower is lowered to its telescoped about two-thirds of the way up the first well in this application. For light towers, whilst the telephone pole was being tion in less than ten minutes. The only on top was up and fixed safely into posi-

tion, the bottom was fixed to the mast and rigged so that it in the desired direction. This is good exercise even for a strong man.

The day chosen for raising the mast was fine with a light breeze. Ropes were attached to the mast and rigged so that any tendency for side swing could be counteracted but in conditions of light wind this did not appear necessary and once the beam had been assembled and bolted into position the rest was easy and allowing for time to find a camera and take a photograph the mast with the beam on top was up and fixed safely into position in less than ten minutes. The only casualty in the operation were two tomato plants that were trodden down whilst the telephone pole was being manoeuvred into the hole.

For a while it looked as though the problem of keeping the pulley moving freely without leaving terra firma to oil it from time to time might have meant getting the ladder out after all. However, a light piece of half-round dowelling was attached to the end of a long length of light timber and a wire swing which held a small container (pill box or similar) arranged so that it could be turned upside-down, was fixed to the end of the dowelling rod. In this way one can send the oil up to where it is needed and stay on the ground at the same time. Be careful not to stand directly below whilst performing this delicate task.

Roger Wreford VK5RW turns the handle to raise the antenna. We didn’t even have to get the XYL to take the washing off the line.

THE BASIC PRECEPTS
OF SCIENCE

Gary Owen, of New Mexico, has supplied these interesting observations after many years of Amateur Experiments. His experience and observations are the same as ours.

ALLENDORFER’S AXIOM — When all else fails, read the instructions.

BASSACORDIAN’S BASIC PRINCIPLE AND ULTIMATE AXIOM — By definition, when you are investigating the unknown, you do not know what you will find or even when you have found it.

CALLAHAN’S COMPENSATION COROLLARY — The experiment may be considered a success if no more than 50 per cent of the observed measurements must be discarded to obtain a correspondence with theory.

FINKELRAT’S FUTILITY FACTOR — No experiment is ever a complete failure, inasmuch as a well-written account of it can serve admirably as a bad example.

FLANNERY’S EFFECT — Those items most urgently needed are inversely available to the degree of urgency of the need, i.e. in any pile of papers, when search commences at the top, the sought-after paper is at the bottom or vice versa.

FLIEGELBAUM’S LAW OF THE PERVERSITY OF INANIMATE OBJECTS — Any inanimate object, regardless of its composition or configuration, may be expected to perform at any (unpredictable) time in a totally unexpected manner for reasons that are either totally obscure or completely mysterious.

GUMPERSON’S LEMMA — The probability of a given event occurring is inversely proportional to its desirability.

HORNER’S FIVE-THUMB POSTULATE — Experience varies directly with the amount of equipment irrevocably ruined.

LOUGHRIDGE’S IMMUTABLE REALITY — The intensity of the desirability of an event is directly proportional to its occurrence at a wholly inopportune time.

MURPHY’S LAW — If anything can go wrong, it will (e.g. if you drop a piece of toast, it will inevitably fall jam-side down).

PATRICK’S THEOREM — If the experiment works, you must be using the wrong equipment.

SCHIMMELPFENNIGN’S CONSTANT — That quantity which, when multiplied times, divided into, subtracted from or taken to the power of the answer you got, yields the answer in the back of the book.

SPINKENHEIMER’S SPARE PARTS PRINCIPLE — Those supplies necessary for yesterday’s experiment must be ordered by no later than noon tomorrow.

STAPP’S LAW — The Universal aptitude for ineptitude makes any human accomplishment an incredible miracle.

E. Renouf VK2AWR

Submitted by E. Renouf VK2AWR

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<tr>
<td>SKY 40M 7.06</td>
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<td>SKY 20 14.150</td>
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<td>SKY 15 21.100 and up.</td>
<td>$24</td>
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<td>SKY 10 28.5 and up.</td>
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<th>SKY 80 6 feet long 3.5 MHz</th>
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<td>SKY 15 6 feet long 21.100</td>
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<td>SKY 10 6 feet long 28.500</td>
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<table>
<thead>
<tr>
<th>Filter Type</th>
<th>XF-9A</th>
<th>XF-9B</th>
<th>XF-9C</th>
<th>XF-9D</th>
<th>XF-9E</th>
<th>XF-9M</th>
<th>XF-9NB</th>
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<tr>
<td>Application</td>
<td>SSB Transmit</td>
<td>SSB Receive</td>
<td>AM</td>
<td>AM</td>
<td>FM</td>
<td>CW RTTY</td>
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<tr>
<td>Number of Filter Crystals</td>
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<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>4</td>
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<tr>
<td>Bandwidth (6 dB down)</td>
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<td>2.4 kHz</td>
<td>3.75 kHz</td>
<td>5.0 kHz</td>
<td>12.0 kHz</td>
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<td>Passband Ripple</td>
<td>&lt; 1 dB</td>
<td>&lt; 2 dB</td>
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<td>&lt; 2 dB</td>
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<td>Insertion Loss</td>
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<td>&lt; 3.0 dB</td>
<td>&lt; 5 dB</td>
<td>&lt; 6.5 dB</td>
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<td>500 Ω</td>
<td>500 Ω</td>
<td>500 Ω</td>
<td>1200 Ω</td>
<td>500 Ω</td>
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<tr>
<td>Termination</td>
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<td>30 pF</td>
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<td>Shape Factor</td>
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<td>(6:60 dB) 2.5</td>
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<tr>
<td>Ultimate Attenuation</td>
<td>&gt; 45 dB</td>
<td>&gt; 100 dB</td>
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<td>&gt; 90 dB</td>
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<tr>
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<td>$59.30</td>
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<td>$41.50</td>
<td>$73.45</td>
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RIVERCOM, Sid Ward, 9 Copland St., Wagga Wagga 2650 Ph. 21 2125

QLD. H. C. BARLOW, 92 Charles St., Aitkenvale, Townsville 4814 Ph. 69 2040
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Yaesu Agents In Australia since 1963
A MOBILE WITH A COAST-TO-COAST GROUND SYSTEM

On September 1st, 1978, Bill Main VK6NDZ commenced operating as a railway mobile station by contacting A4XGY at 0435 GMT on 28.595 MHz. Since then many VK and overseas amateurs have become familiar with the voice of “VK6NDZ railway mobile.” The success of his operation has amazed no-one more than himself.

The often surprising signal reports obtained by this very QRP station are attributed to an extensive ground system, which extends, in fact, from the Indian Ocean to the Pacific Ocean; i.e. the railway line itself which is continuous between Sydney and Perth.

Bill's railway mobile station is very simple and consists of a TenTec Argonaut 509 transceiver with an input power of 5 watts. The antenna is a stainless steel ¼ wave whip on 10m with centre loading for 15m and 80m. The loading coil/coils not in use are shorted out. Most guards' vans have brackets either side which are used for mounting kerosene lamps in the event of an electrical failure in the van. However, Bill finds them far more suitable for mounting his antenna! Power to the transceiver, on passenger trains is provided by using the 240V AC generated on the train and on goods trains the 24V DC supply is reduced to 12V using a regulator. Many thanks are owed to VK6ZGQ, Lewis Pannell, who designed and constructed the antenna at extremely short notice in July 1978. Bill normally uses a headset for ease of operation.

He has worked all VK call areas including VK9 and VK0 from the train. Other countries worked include: W, VR1, ZL, P29, HC, G, HB, YB, 9M2, 9V1, JA, DK, CT, A4, ZS, 9J, UA, and 3B8.

Recently the Perth Radio League, of which Bill and myself are members, introduced 3 Awards: These are: the WAY 79 Award, in celebration of WA's 150th Anniversary; the Black Swan Novice Award and the Zone 29 Boundaries Award.

Whilst Bill can assist stations to qualify for two of these awards simply by virtue of being a VK6 novice station, the unique mode of operation enables him to qualify many stations for the Zone 29 Boundaries Award. To qualify for this award stations need to work 1 mobile station whilst that station is actually crossing a Zone 29 boundary. Bill regularly crosses the VK6/VK5 border during his work as a railway guard. He is also the Awards Manager for the Perth Radio League. Details of the awards can be obtained by writing to him at PO Box 463, Kalgoorlie, WA 6430.

The Perth Radio League also has a Club station with the callsign VK6NFL, which at times may be used by Bill whilst rail mobile. In the near future he hopes to increase the power of his station to 30W PEP by utilizing a small linear.

If you hear Bill operating rail mobile at any time, give him a call, he'll be more than pleased to confirm any contacts made from this unusual mobile station.
Commercial Kinks

RON FISHER
VK3OM

Modifications to the FT-101 to cure strong signal overload, published in the November 1978 issue of Amateur Radio, has proved to be useful to many 101 owners, but at the same time perhaps caused a little confusion where the details do not exactly apply to your particular transceiver.

A recent letter from Les Diener VK5NJ helps to sort some of these problems out. Over to Les.

"Having implemented the modifications on my FT101B I find the results most pleasing and certainly transform what is normally a noisy receiver into a really first class unit which would compare favourably with any good "ham" band receiver. The signal to noise ratio is the most noticeable improvement even though the mod. is essentially intended to reduce front-end overload. It certainly does this also.

Previously I have been most satisfied with the AGC amp designed by Arn VK5XV, using a UA741 IC, and this certainly eliminates front-end overload, but the ZL2B AF mod. of applying AGC to additional stages is better and is a sound theory and good design practice.

Actually some sorting out was necessary with my particular unit, Serial No. 107936, as several minor points did not agree with the article and are described as follows:

1. The bi-polar transistor preceding the noise gate is Q1 in my unit and not Q2 as stated in the article.

2. The base bias resistors are R1 and R2 (4.7K and 22K respectively) and not R5 and R2.

Once this was sorted out the job was quite simple. Actually, resistors of 1 meg and 2.2 meg were used in lieu of 1.8 meg and 1.2 meg as recommended, the latter values not being on hand.

A complete re-align (as described in the handbook) was necessary to make sure all circuits were peaked, but overall the modification is a very worthwhile improvement for any FT101!"

Now a simple modification to the popular TS-520 from Alan Bolton VK5TT. This one will interest the CW operators.

"The CW filter of the TS-520 is much sharper than the SSB filter, which is ideal when listening to a CW signal once it is tuned in. When tuning across the band for a CW signal, or listening to a reply to a CQ call, the wider bandwidth of the SSB filter is more convenient. This filter can be used to locate the CW signal with the wider filter. Once the signal has been identified with the wider filter it is difficult to switch to the CW filter without losing it.

It is possible to change the TS-520 mode switch so that the tune position is used to give the wider SSB filter with the same audio note as for CW reception. Normally the tune position on the TS-520 uses the CW filter; changing to the SSB filter simply involves changing over one lead on the mode switch.

The mode switch has 5 wafers, and the filter selection is on the centre wafer. Access to the lead is obtained by removing, in sequence, the TS-520 covers, dial, knobs, nut on channel select spindle and then the decorative front panel. Then the JJY/WWV switch can be unscrewed and moved, with the leads still connected. The mode switch can be moved also, giving access to the terminal to be reconnected. The physical layout of the mode switch contacts are as shown.

After this modification the tune position can be used to locate the CW signal with the wider filter. Once the signal has been found the audio frequency can be adjusted so it will fall within the narrower passband of the CW filter while the mode switch is in the tune position. The audio note will now be unchanged when the CW filter is used. It should be noted that on the wider bandwidth some CW signals may be on the incorrect (upper) side of the demodulating carrier, but this can be realised by tuning across the CW signal. The fact that the note of the CW signal is unchanged when switching between filters makes the search for them far more convenient."
THE CQDX RADIO GROUP

I became an amateur purely by coincidence. I spent most of my life as a musician but gave that away shortly after I married. I'd heard of Amateur Radio of course, but I'd always imagined that the level of knowledge was far too hard to obtain. Through my love of music I'd developed an interest in the technical side of audio, and that was the field in which I was involved when our son Robert was born. The night he arrived on the scene changed so many things that I find it fascinating to look back and see how many people's lives it changed. This article is to do with radio so I hardly think it is relevant to mention the obvious changes that occur when a man becomes a father for the first time.

Quite a few people had said they could not imagine me walking down the street pushing a pram, but that is in fact just what happened. The difference was that I had a one channel walkietalkie antenna sticking up out of the “Mobile” and Mum was back at the “Base” with the other unit. I can't remember what the call sign was now... V followed by about five figures I think. But at any rate it was very useful for obvious reasons.

The puzzling part was that I kept hearing strange call signs such as “Foxtrot Charlie One” and others, and I found that I was not the only one on the air. Evidently there was something called CB around which needed investigation. I became a CBER and CB then was a little bit different from what it seems to be now.

I will never knock CB because it brought together so many very decent men (and women) who might otherwise never have got to know each other. What fun we had, ragchewing, looking for “Clowns”, having “Eyeballes”, etc. A mixed bunch of guys and gals, but within that bunch quite a few were genuinely interested in radio communication. When AM CB became crowded we moved “Up” to sideband. The lure of skip and “DX copies” added to the interest and the nucleus of a club formed, although we didn't know it then.

I couldn't help thinking that there had to be something more to radio than this. A chance meeting with Howard VK3ZJY, who was instructing Amateur Radio, found me attending his classes. I discovered that the best way to learn is to teach, and I set up a radio school for the members of our little group at my home. Three of us subsequently obtained licences and that attracted a few more.

By now the CB scene had become what it is today, and the serious radio enthusiasts were tending to go all out for their Novice licences or move into the UHF bands on CB. Many still stayed with 27 MHz so our Club, the CQDX Club, was formed, with myself as secretary. Initially, most of the members were young, but now more of the older men were joining and many are the same ones who used to ragchew on 27 MHz sideband. The wheel is turning full circle, but the circle is far far wider.

I find it difficult to describe my feelings when I first set out with my own “Call”. It was like watching the world from behind a window, then suddenly walking outside with the horizon stretching in every direction. Romanticism... perhaps, but that's how I felt and I wonder how many others have shared that feeling. My instructor Howard, Harry VK3EK, Len VK3NAC and others had demonstrated courtesy and proper procedure, as I watched them operate their stations and I have tried to emulate this and in turn pass it on to the members of our group... thus the reasons for my notes.

Generally I have found that by nature most amateurs are Individualists and I accept each in this way. Such thinking is reflected in the Constitution of our Club, membership being open to anyone with a genuine interest in radio COMMUNICATION, and I stress the last word, as it includes CBers, SWLs, Amateurs or anyone interested in the interchange of ideas between people. Radio just provides the common ground. Maybe we don't all live up to such high ideals, but I think most of us try.

The name was of course derived from the fact that CBers and Hams alike use the term CQDX... it means I wish to talk to someone... what a good idea in the materialistic world we live in these days.

I like DX... those who have heard me working late at night will doubtless confirm this, but I also like to stop and talk... to find out something about the other guy, providing of course that there are not others waiting in a pile up, and at least then his card, if and when I get it, will mean just that much more. If Robert ever follows in my footsteps... I sincerely hope that this is one aspect of Ham Radio that he will adopt... he got me into it, I hope he carries the tradition on.

If anyone is interested in the Club or its ideals and aims, the address is PO Box 79, Heidelberg 3084, Victoria.

Trevor C. Reid VK3NRR

EDITOR'S NOTE:
From next month, we shall commence serialising parts of the CQDX Radio Group Handbook. It will make interesting reading to all novices and newcomers (VK3UV). ■ ■ ■

MIDLAND ZONE FIELD DAY
To stimulate interest of the Novice element in the Zone all stations in the Field Day Contest 10/11 February 1979 with the exception of the 2 metre section were manned by novice operators using novice power, all of which was within the 30 watts PEP allowed. 80 metres proved to be the highest scoring section in the six hour period with contacts into VK1, 2, 3, 4, 5 and 7, and ZL1, 2, 3 and 4 zones from a
Joan VK3NLO (nice lady operator)

(Midland Zone photos by courtesy Geoff VK3NTN and printed by Harmonic of VK3NOV).

simple co-ax fed half wave dipole strung up a gum tree, I suppose being about 630 metres above sea level helped a bit.

The 2 metre boys had a very productive six hours both on 2 metres FM and SSB, and the assistance of several of the AOCP members in the zone with their knowledge of antennas and how to get them into the air quickly was fully appreciated by all novice operators.

This was a very good exercise for our novice operators and next year we hope to give other zones and clubs a run for their money. Gallons of coffee were consumed, but there was a singular lack of 807s. The journey down the Mount was very enjoyable with the 10 metre mobiles taking full advantage of the propagation at 1.00 a.m. on Sunday morning, with running commentaries of the skill and otherwise of the drivers who had not been up to one of the highest points in our Zone. Amateur radio is a hobby much enjoyed by our novices in the zone and we look forward to advancing in the skills required for that "full ticket"; field days take you a long way in giving you the incentive to study and up-grade your licence.

**AROUND THE NOVICE SHACKS**

Stan Tayler VK3NGN is one of the more active members of the Western Suburbs Radio Club in Melbourne. Stan, licensed since 1977, operates either his TS-820 modified or an FTDX400 modified into a three element tri-band Yagi, and on 80 metres uses a mobile whip mounted above his superbly constructed shack. Stan recently was voted Secretary of the club for the second consecutive term, an indication of the excellent job he does.

Formerly a VK6 novice, Ward Long is now VK3NAJ and has a very impressive and extremely operational shack, complete with a recently installed tower and TH6 tri-band beam. Ward is also active in the mobile with an FT7 and helical whip. And as you can see by the photograph, Ward plays a mean golf round as well as having a mean signal on HF!!
THE ITU WARC SEMINAR—SYDNEY

The MLC Centre is a tall octagonal building in the heart of Sydney, Australia. On the 50th level spectacular views of the Harbour Bridge, the Heads and even in the distance Botany Bay can be seen from every window.

It was in this magnificent setting that the third of the ITU Regional Seminars was held, the others being held in Panama and Nairobi. 170 people took part from 37 countries and organizations. The Seminar was held on the 29th March to the 10th April, 1979, and was opened by the Australian Minister for Posts and Telecommunications, Mr. A. Staley.

The main purpose of the Seminar was to familiarize the many countries who will be attending their first Radio Conference, the World Administrative Radio Conference 1979, with the requirements for revising and updating the Radio Regulations. The Seminar also discussed topics of interest to countries in the Region, including communication problems associated with island countries and the use of high frequency radio for domestic communication.

On Saturday, the 31st March, the Wireless Institute of Australia, for itself and for the International Amateur Radio Union, hosted a reception in honour of participants on the 50th level of the MLC Centre.

Amongst guests were the Secretary-General of the ITU, Mr. Mill, and Mr. R. E. Butler, the Deputy Secretary-General, in an adjoining area a continuous videotape showing Amateur activities and relating those activities to the definition of the Amateur Service in the Radio Regulations was shown and many of the guests took time to watch this 5½ minute segment. Booklets from IARU Region 2, with an insert giving names of IARU Region 3 member societies, describing the Amateur Service, were available and very many of the delegates accepted these booklets.

An IARU receiver was on show on a corner table and attracted considerable interest. Delegates from many countries, particularly from developing countries, were very interested in this example of a low cost receiver, capable of receiving SSB and CW, that could be simply assembled.

For the small number of prominent Australian Amateurs who acted as host during this reception it was a wonderful opportunity to meet those involved in frequency management from so many countries and, in many cases, to answer their questions about Amateur Radio.

Michael J. Owen VK3KI.
"YAESU" FT-101ZD

MONO BAND BEAMS.
AB 3-10 • 3 el. 10 M. $69.--
AB 5-10 • 5 el. 10 M. $89.--
AB 3-15 • 3 el. 15 M. $89.--
AB 5-15 • 5 el. 15 M. $139.--
AB 3-20 • 3 el. 20 M. $129.--
AB 4-20 • 4 el. 20 M. $159.--

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YAESU Mobile Antennas.
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BO M. Resonator $22
40 M. Resonator $21
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IC-225, FM 10 Watts 2M Mobile Transceiver, $299
IC-211, ALL Mode 2M Transceiver, $770
IC-280, Mobile 2M Digital Transceiver, $449
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Beside a whole range of AMATEUR RADIO EQUIPMENT and special communication systems such as RTTY and SSTV, we are also entering the exciting field of HOME and HOBBY COMPUTERS.

To mark this special occasion, all products sold during the month of JUNE will be sold at greatly reduced prices.

Here are some of our June specials

### National RJX1011D — the king of all transceivers

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<td>FRG-7 Receiver</td>
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### Kenwood Products

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<td>TS-820S Transceiver</td>
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<td>TS-120V Mobile Transceiver</td>
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### Dentron Products

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<td>HF-200A Transceiver</td>
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<td>MLA2500 Linear Amplifier</td>
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<td>CLIPPERTON-L 2kW Linear Amplifier</td>
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<td>MT3000A Antenna Tuner</td>
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<td>DTR-2000 2kW Linear Amplifier</td>
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<td>PA-28, VHF Inline Preamp, Low Noise (10m)</td>
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<td>OSCARBOX J, UHF Down Converter</td>
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### Info-Tech Products

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<td>JB1003C/M Clock/Wattmeter/SWR</td>
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<td>JB2000SW Wattmeter/SWR Bridge</td>
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### Microphones

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<td>SHURE 444</td>
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## FT-101Z
NEW MODEL TRANSCEIVER

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<th>Model</th>
<th>Description</th>
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<td>FT-227</td>
<td>W/S Maintenance Manuals</td>
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<td>$14</td>
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Add P&P $2.50 per manual

FT-7B Transceiver .................................................. $699
YC-7B Digital Readout for FT-7B ................................ $125
FL-2100B Linear ....................................................... $559
FT-227R 2m FM Digital .............................................. $339
YC-500S Counter, 500 MHz .......................................... $499
YC-500E Counter, 500 MHz .......................................... $656
YP-150 Dummy load/power meter ................................... $112
SP-901 External Speaker for FT-101 and FT-901 .............. $55
FTV-901R, YC-901, SP-901P, F-101, & DC kit .................. $7BA

CW Filters for 101Z and 901 ........................................... $63
CW Filters for FT-101E ................................................. $59
FRG-7 Receiver .......................................................... $319
Battery holder for FRG-7 ............................................ $10
LFC-2A Selective SSB filter for FRG-7 .......................... $20
FRG-7000 Digital Receiving ......................................... $599
QTR-24 World Clock .................................................... $35
YH-55 Yaesu Headphones, 8 ohm ..................................... $19
YD-844 and YD-148 dual impedance desk mics, 600 ohm/50k ohms $49
YE-7A 600 ohm and YD-846 50k ohm hand mics ................. $21.50

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RSL-28 $19, RSL-145 (5/8 2m) $24.
6J6SE6 P.A. Valve FT-101E ............................................ $11
Other Yaesu valves also available.

SRC-146A Standard (Japan) 2m hand-held 5 chan. 2W
FM transceiver, built-in mic., spkr., "S" meter, inc.
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Base adaptor SRC ......................................................... $23
Also available Rubber ant., optional hand mic., mobile
adaptor, Nicad batteries.

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1102 MXX $368.

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For 103 $18, 502 $29.50, 1102 and 1103 $45.

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For 103 $16, for 1102/3 and 502 $32.
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TH6DXX $275, TH3JR $195, VS-33 $249, DX-33 $215, DX-32
(Note: The Hidaka "VS" beams inc. balun; VS-33 & DX33
equiv. to TH3 — Mk III. DX-32 & DX-34 are 2 and 4 ele-
ment versions. All heavy duty construction, 2 kW rating).

DENSO 430 Anti-Corrosive Compound for joining antenna &
beam elements, per tube ........................................ $2.90
add $1.10 P&P

Hy-Gain BN-86 balun ...................................................... $28
Lightning Arrestors ..................................................... $4.95
Co-Ax. Switches, TWS-120, 2 position ...................... $16
ASW-1, 5 position $34, 590G, 5 position $39.90.
Antenna Egg Insulators, Porcelain ............................... 50c

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HC-75 $65, HC-250 $89, HC-500A $119, Yaesu FC-901 $245

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## MORSE KEYS:

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Above prices (R.R.) inc. S.T. Freight is extra. Prices and specs. subject to change. 90 day warranty on sets, excluding power valves and power transistors. Full service facilities and comprehensive range of spares.

Most items ex stock at time of advert. preparation.

60 Shannon Street, Box Hill North, Vic. 3129
Phone: 89 2213
Agents in all States and A.C.T.

FRED BAIL VK3YS
JIM BAIL VK3ABA
New shipment of the superb TS-520S just arrived in Australia. Ask your nearest Kenwood distributor for your extra special deal on the ever popular TS-520S all band (1.8 to 29.7 MHz) SSB Transceiver. Amateurs throughout the world acclaim this rig which was specially engineered for the serious enthusiast.

Due to production delays overseas, the TS-120S and the TS-180S Transceivers previously advertised will not be available until the end of June.

TRIO-KENWOOD (AUSTRALIA) PTY. LTD.
31 Whiting Street, Artarmon, Sydney, N.S.W. 2064. Telephone (02) 438-1277

Interstate Distributors:
N.S.W.: SIDE BAND ELECTRONICS SALES (02) 438-4191 • CUSTOM COMMUNICATIONS (02) 681-3544
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PLUS MANY OTHER REGIONAL OUTLETS THROUGHOUT AUSTRALIA
VK/ZL/OCEANIA DX CONTEST — 1979

The WiA and NZART, the national amateur radio associations in Australia and New Zealand, invite world-wide participation in this year's VK/ZL/Oceania DX contest.

WHEN
Phone — 24 hours from 1000 GMT, Saturday, 6th October, to 1000 GMT, Sunday, 7th October, 1979.
CW — 24 hours from 1000 GMT, Saturday, 13th October, to 1000 GMT, Sunday, 14th October, 1979.

RULES
1. The sections in the contest are:
   (a) transmitting phone, 24 hour period;
   (b) transmitting CW, 24 hour period;
   (c) transmitting phone, 8 hour period for VK/ZL only;
   (d) transmitting CW, 8 hour period for VK/ZL only.
2. All amateur bands may be used, but no crossband operation is permitted. NOTE: VK/ZL stations, irrespective of their location, DO NOT contact each other for contest purposes EXCEPT on 80 and 160 metres on which bands contacts between VK and ZL stations are encouraged.
3. Only one contact per band is permitted with any one station for scoring purposes.
4. Only one licensed amateur is permitted to operate any one station under the station's call sign. 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.
5. CYPHERS
   A serial number of five or six figures will be made up of the RS (phone) or RST (CW) report plus three figures, beginning with 001, increasing in value by one for each successive contact.
6. 8 HOUR SECTION (FOR VK AND ZL ONLY)
   Operation must be continuous and a 24 hour entrant cannot enter this section.
7. SCORING
   (a) For Oceania stations other than VK/ZL
      2 points for each contact on a specific band with VK/ZL, and 1 point for each contact with the rest of the world.
   (b) For rest of the world other than VK/ZL
      2 points for each contact on a specific band with VK/ZL, and 1 point for each contact with Oceania stations other than VK/ZL.
   (c) For VK/ZL stations
      1 point per contact, multiplied by the prefixes worked on that band. NOTE: W1, K1, WA1, A1, N1 (although in same call area) are different prefixes and count as multipliers; W6AA/1 is same as above and counts as W1 and not W6; JK1AA/5 will become the common prefix for the "$" area, namely JA5.
8. 80 metre section
   For contacts between VK and ZL, each VK and ZL call area will be considered a "scoring area", with each different call area counting as a multiplier.
   (c) 160 metre section
      As for 80 metres, plus contacts for scoring permissible between VK/ VK, ZL/ZL.
9. LOGS
   (a) Logs to show, in order — date, time in GMT, call sign of station worked, band, serial number sent and received. Separate log for each band required.
   Summary sheet — to show call sign, name and address, and each band, QSO points multiplied by VK/ZL call areas worked.
   All band score will be total QSO points for all bands multiplied by total VK/ZL call areas worked on all bands.
   (b) VK/ZL stations — as for overseas stations and the summary sheets to show call sign, name and address, and each band, QSO points multiplied by prefix worked on that band. All band score will be total of single band scores.
   Signed declaration that all rules and regulations have been observed also required.

IMPORTANT NOTE:
Should a VK or ZL entrant so desire, submission of a summary sheet signed by at least two other operators, who need not have been in the contest, will be accepted by the contest manager, who reserves the right to call for the log should he so desire.

AWARDS
World wide, except VK/ZL
   (a) Mounted medallion to top world scorer.
   (b) Bronze medal to top scorer in each major area of contest activity.
   (c) Top scorers in each country (call area WJU) will receive a certificate. Depending on activity, other awards may be made.
VK and ZL stations
   (a) Mounted medallion to top scorer in VK and in ZL (two medallions).
   (b) Bronze medal for top scorer of each band for VK/ZL (six medals).
   (c) Top scorers in each call area of VK and ZL.
   (d) Top scorers in VK and ZL on each band.

ENTRIES
Should be posted to:
   WIA, GPO Box N1002, Perth, West Australia 6001, or VK6NE-WIA VK/ZL Contest Manager, 388 Hunter Rd, Woodlands, West Australia 6018, to arrive on or before 31st January, 1980.
   Results may be obtained by enclosing 1 IRC with your log.—VK6NE.

HISTORICAL FILM
At this year's Federal Convention David Wardlaw VK3ADW, the Federal President, presented a copy of an historical wireless telegraphy film to the Institute.
   The film, of French origin, does not deal directly with Amateur Radio, however, because of its age, it portrays wireless installations not unlike many amateur stations of the early days.

Originally, the film was on 28 mm (not 35 mm), a relatively rare film gauge which was used for early home movies and by educational institutes.

"The sparks fly as the operator keys" — a frame from the film.

The copy of the film presented to the Institute was photographically reduced from 28 mm to 16 mm by Peter Lor VK3NPL at Victorian Film Laboratories using the "Wetgate" technique. This provides enhancement of the image by reducing the effects of scratches on the original.

Both "old-timers" and newcomers alike will find interest in this new acquisition which will be available via the Institute Videotape Co-ordinator, John Ingham VK5KG.

TRIAL AOCp EXAM
TRIAL AOCp EXAM — IN JULY, MULTIPLE CHOICE TYPE, CLUBS OR DIVISIONS. CONTACT ROY HARTKOFF VK3ACH, FOR DETAILS.
WHY?

The basic appeal of the Amateur Service has probably been impaired by changes in allocation over the years. Congestion in some parts of the world and confirmed opposition to amateur activity in other parts have contributed to decreased operations and no doubt, some technical progress.

Although there has been growth and innovation especially in Australia, it is apparent that further reductions or even small changes in a negative direction will lead to a loss of many of the vital functions performed by the amateur service.

Of course, an increase in the allocations will be accepted in the spirit in which it is given. Hopefully, they will be wisely used to enhance the status of the amateur service.

According to the Australian context, the indirect extension to amateur activity in other parts of the world is portrayed through personal and unrehearsed dialogue. Unlike international broadcasts which consist of political discussions and news with strong editorial undertones, the amateur service can provide a source of self-training in electronic skills, limited only by the effort the individual is prepared to put into it. Despite proliferation of "black boxes", an understanding of the techniques used, plus a desire to implement these principles in experimentation must stimulate the development of communications technology.

ECONOMIC CONTRIBUTION

Although not particularly appropriate in the Australian context, the indirect extension of amateur radio and related equipment into professional consumer and government markets must advance to play a role in raising the general level of technological knowledge.

THE NATIONAL IMAGE

Especially on DX bands, the image of the country is portrayed through personal and unrehearsed dialogue. Unlike international broadcasts which consist of political discussions and news with strong editorial undertones, the amateur service can project abroad a strong and creditable image of the nation.

In supporting the WIA and Region III IARU, we at Vicom believe that the Amateur Radio Service clearly emerges as a national and international resource whose value to any nation is great. Any attempt to prune this resource must constitute a serious loss. We welcome and support the activities of the WIA and IARU Region III. We hope all amateurs share this philosophy.

ORBIT PREDICTIONS — JULY 1979

Oscar 7

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Oscar antennae at VK3ZBB — Bob Arnold.
AROUND THE TRADE

SKI-BAR BRACKET
Something new on the market from Barry Chivers, 19 Naomi Court, Bayswater, Vic. 3153, is the J & D cadmium plated ski-bar mounting bracket. Just the thing for Amateur or CB whips, and it saves one of those little “problems” if you are trying to make one up yourself from the junk box. They are available for $2.00 plus 50c postage. Enquiries to Barry at the above address or phone (03) 729 3906 (A.H.).

NEW MFJ ANTENNA NOISE BRIDGE
GFS Electronic Imports, Australian agents for MFJ Enterprises, Mississippi, USA, have just announced the release of the model MFJ-202 antenna noise bridge.
Housed in a compact 5 cm x 7.5 cm x 10.2 cm case it offers the user the ability to read pure resistance of the unknown source over a range of 0 to 250 ohms and both inductive and capacitive reactance with a ± 150 pF capacitor. Frequency range is 1 to 100 MHz.

Powered from an internal 9 volt battery the MFJ-202 makes solving antenna problems a breeze. For example: Resonant frequency on the antenna can be determined, electrical half wave length of a transmission line calculated, input and output impedance of an RF amplifier may be found, baluns can be measured for impedance, velocity of transmission lines can be calculated.

With the addition of a Range expanding resistor the MFJ-202 may be used to make resistive measurements up to 5,000 ohms and inductive capacitive reactance measurement up to 2,200 ohms.

Price of the MFJ-202 is $78. For more information contact GFS Electronic Imports, 15 McKeon Road, Mitcham, Vic. 3132. Ph. (03) 873 3838.

BWD APPOINTS SA DISTRIBUTOR
BWD Electronics Pty. Ltd., the manufacturer in Australia of precision instruments, announces that Protronics Pty. Ltd. is their sole distributor in South Australia and the Northern Territory.
The announcement was made during a recent visit to BWD Electronics by Bob Crabbe, Managing Director of Protronics. Mr. Crabbe, on the left of the photograph, is seen with Bruce Owen, Managing Director, and Ron West, Marketing Manager, for BWD Electronics at the signing of the agreement. Ron West said Protronics’s five sales engineers and comprehensive service facilities would make a significant contribution to the already successful distribution of BWD products in Australia and would further strengthen local customer sales and service facilities.
A larger order has been placed by Protronics for items from the wide range of BWD products, in particular for the Powerscope, Oscilloscopes, Signal and Waveform Generators, Power Supplies and “Mini-Lab” (the teacher’s friend). Protronics address is 174-180 Wright Street, Adelaide, SA 5000. Phone (08) 212 3111.

VICOM SUPPORTS WARC 1979
As a contribution to the effort in preparing and maintaining a presence at the coming World Administrative Radio Conference, VICOM have donated $1,000 towards the Wireless Institute’s funding for the project.

A spokesman for VICOM said that the Conference will have a profound effect on the long-term interests of both the Amateur fraternity and the viability of the commercial interests throughout the world!

If you are reading this issue but are not a member of the WIA and if you would like to receive AR every month for your own personal use and future record —

Would you like to join the WIA now?

Please write to the

WIA,
P.O. Box 150,
Toorak, Vic. 3142
for details of how to join.
An expanding

VHF-UHF
An expanding world!
Eric Jamieson
VK5LP

Amateur Radio June 1979 Page 37

CASEY BASE IN THE ANTARCTIC ON 52.100 WITH
sure please let me know.

RADIO BEACONS

52.100 VK0MA has never or not been heard for a very long time. Operation category, namely HL9TG, K6FV, ZS6LN, JIYAA, all of which could be very useful.

SIX METRES

There is just so much going on at the moment on this band that it's difficult to know where to start and then when to stop! The distances being worked by individual stations are being extended all the time, certainly it seems as if the undersea cable has been worked halfway across the world — you can't go much farther than that — beyond that it would be difficult to say whether or not you were receiving a station the other way round! I think the easiest way to give you the information is to start with what David VK5KK has tabulated and that can be added to. No matter what I include at the moment will not be the complete story, so much has gone on that hasn't really been reported, or it is heard as hearsay, which if I print it I can be accused of being inaccurate for that reason, so you will have done something which should have been noted and you don't rate a mention, it is because you or anyone else are too near to the place, but I can't be in the shack all the time. I do have to keep the wolf from the door, at times eat, and keep the peace with the YL, who is very understanding to say the least! And I still ask time to look at some other VKs: K6FV can be often heard near 9400 kHz, that borderline again or someone scoops it all up before it gets here! Signals to 5 x 9 and last WS-VK opening, probably because it occurred at the times, signals 5 x 5 to 5 x 9 + on peaks. Also HLSWI worked VK5KK 5 x 9 at 0310Z. Probably the first widely available signal for VK5/K6FV opening to the lower states and the following weeks saw the same thing repeated over and over again. Most openings to VK4, 5, 6 and 8, although several to VK3 and some excellent openings toward to VK3 on 3-4, and VK1 same day. HL9TG worked a total of 7x2 (?) VK7s, thus he has now qualified for WAS in VK. The only explanation for this is that earlier reports in ML to VK3, contacts to pass the recent interest shown by both HL9T stations towards VK more often. Conditions have certainly been good enough before.

Also K6S has been more widely available to VK5/K6FV 3, 4, 5, 6 and 8, mainly with Joe KG6DX, but also KG6J/KS, KG6JF and KG6JX. Openings fall into various time slots from 2245Z to 0010Z, with some on 50.050 for complete opening. Signals heard by VK3NM, VK3AUI and VK5ZZZ. VK5ZBU and VK57L, VK52Z to 0130Z, VK5RO 0045Z and VK3ATN from 0110 to 0120Z by VK5KK, VK5LP, VK5RO and VK5ZBU. The first signal of VK5/K6FV heard by VK5KK was on 12-4 at 0020Z WD4IYS heard by VK5ZMO, VK510ZMO, VK501ZMO and VP1MT to

On receive he uses a crystal controlled converter to a Collins 75A2. A 6 element yagi at 60 feet is popular, t don't think anybody (nearly) has heard that record to about the 9300 mark again when he worked 6510 to 579 on CW. At 2330Z also VK5KK to XE1GE 599 CW. XE1GE also heard by VK2BA, VK2BOU from 0110 to 0120Z by VK5KK, VK5LP, VK5RO and VK5ZBU. The first signal of VK5/K6FV heard by VK5KK was on 12-4 at 0020Z WD4IYS heard by VK5ZMO, VK510ZMO, VK501ZMO and VP1MT to
plus VK2. Later Es between VK5 and VK2 and VK4 from 1020 to 1100Z. And after everyone had gone to bed John VK5ZBU worked K6GDX on a good 30 minutes from 1400Z at 5 x 9+. And VK3KKN but not other contacts.

SIX METRES CONTINUES

On 11-4 VKBB worked W7LY and A6QSS from 1614 to 1635Z. Then John also of KG6N heard W7LPI and 6F7M to VP1; XE1; VK4 and VK5 to W4; from 1-4 to 20-4. Path is approximately equivalent to VK6W for Z6. And you can also copy same station in almost any conditions. Well the frequency 52.032. Also VK50X copied same station at 1315Z. And the States had well been passed. Also VK60X and 7-4, 27 days apart! The W openings started in early March with afternoon openings and only after that VK50X worked and VK51X worked H6KJ in Darwin worked H44DX Solomon Is. 1222Z 5x9. On that day Kazu heard 15 countries on 6 metres. 3D2CM has been worked from W4, W5 and W6.

MORE ON SIX METRES

David VK5K continues: "More generally the DX so far this year has outstripped all predictions, at least those based on the 1957-59 period. For those able to pick patterns in DX there has certainly been quite a bit to follow; e.g. take the openings like the following: VK4 and VK6 to KZ2; VK4 and VK5 to W6; VK4 and VK5 to W5; VK4 to W6. It is no coincidence that these.

VK6ZCC, and Perth stations to a lesser extent, have copied VK50X and VK51X many times in this period between 0400 to 0500Z. Later Es between VK5 and VK2 and VK4. By then the peak of conditions for the lower VK areas did just as well, so the day would help.

And for the completeness coverage you have. Not the 6 metre scheme. Does not leave a lot for me to fill in! The reason such good coverage of activity from VK5 is given fairly obvious, firstly we live here, but, more importantly with a lot of "phone time" to write to me with such complete information, and we don't have to be probed either, and that's worth a lot. Being a dedicated VK operator and with a great interest in propagation, it is inevitable he will have a lot of information about SSTV as well! Wonder what happens to the picture when TEP 2 flutter sets in?"

Again many thanks, David, for the complete coverage you have given the 6 metre scheme. Thanks a lot for filling in all the information.

NEWS FROM VK5

Tony VK5BB passes on information re activity in the West, saying first of all that Es activity to the eastern States was rather poor this year. First JA openings were not much until May, then the early March with afternoon openings and only after 18-4 did the same afternoon conditions return to VK4. By then the peak of conditions for the lower VK areas did just as well, so the day would help. Afternoon openings and only after 18-4 did the same afternoon conditions return to VK4. By then the peak of conditions for the lower VK areas did just as well, so the day would help. Afternoon openings and only after 18-4 did the same afternoon conditions return to VK4. By then the peak of conditions for the lower VK areas did just as well, so the day would help.

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was noted under the beacon, being W6XJ running his keyer 1 kHz removed! This is the first recorded copy of a W station on six metres in VK6. Russian station believed heard on 52.000 0215 testing at 0600. Excellent beacon again into Perth 0133 to 0142, and during this time Wayne VK6WD heard and taped WSKJ on 50.005 at 519. Also recorded by W6XJ, VK6RA, VK7ZG and VK7ZBB at 0142. Some time open to KG6 — well let us know the VK6 boys are sharing in the six metre spoils.

NEWS FROM VK3
Gil VK3AUL sends two letters with a coverage of activity in the Box Hill suburban area of Melbourne. To start with a letter of Feb 4 when a J31C was heard on 50 MHz — in co-ordinating the 28855 MHz net for six metre operators, which has proved to be immensely useful for liaison for six metre openings, and no doubt the way to overcome the problems associated with our 2 MHz difference when the US stations hear the VK and ZL TV stations. Such a service helped to ensure the success of the contacts between W and VK on 12-3, when W6XJ, N6CT, N6AZ, W6NMT and A6S were contacted by VK3OT, VK3AMK, VK3AKK, VK3AQR, VK3AUI, VK3AUG, VK3AZZ and VK3ATN. Same day open to JA, and late at night to KG6DX.

On 18-3 via 28855 were reports of the W6 opening to VK2, VK9 and ZL, but nothing heard in Melbourne. Reports were also heard by VK3AUI on Kermadec Is., and several other ZL stations. Four countries on six in a short space of time.

On 19-3 all the above stations heard ZL and ZS9. 30-3, 31-3. On 3-4 K6HE, JA and HSLWI. 8-4 worked KH61AAA on 0930-12, 10-4, on 9.4 on 0052Z whilst tuning on 50 MHz Gil heard an FM signal on 145.16 MHz. Could have been the Columbia repeater HD3/4. Beam heading was right.

Gil reports it is pretty hard going in Melbourne due to the rubbish from Ch. 0, but a vertically polarized antenna beam has helped him some success, and hopefully the removal of Ch. 0 later will see VK3 being heard much more regularly. Thanks for writing, Gil.

FROM JAPAN
Kuni JA2TT0 writes to say his 6 metre equipment consists of FT101, FR101 and FTV650, using two 146 valves to give about 100 watts Input, 7 element yagi up 17m. Currently he is trying a TS600, home brew linear for 100 watts input. He is Editor of 6 metres column in “The Mobile Ham”, a monthly magazine. He is 24 years of age, and he lives in Hamamatsu City, with a population of over half a million people! Included with the letter were details of the start of the Japanese EME activity using YBOX for 24-8 to 6-4, any reports of which will be given next month. JA1UT will handle the QSL info, address being Yoshihaya Hayashi, 4-20-2 Nishigotanda, Shinagawa, Tokyo, 141, Japan.

EME HAPPENINGS
For a change of subject, Ray VK3ATN advises during the April EME session and using his 16 foot dish he heard VE7BBQ, ZE5JJ, a JA6, JA7 and two W stations which were not identified. At the same time VK3MC is using his 20 foot dish contacted VE7BBG, ZE5JJ, ISMBH and a JA6. All these hearings and contacts were on 432 MHz, and the VK3MC reports an opening on 2300Z and a JA6 on 2230Z.

PORT LINCOLN NEWS
Peter VK5ZCT writes from Pt. Lincoln at the lower end of Eyre Peninsula to say that amateur radio is forging ahead there. They have formed the Lower Eyre Peninsula Radio Club, which now has a membership of 20. Licences have been issued to VK5AE, VK5EEJ, Em VK5SEN, Jim VK5ZSM, Greg VK5ZER, Peter VK5ZCT, plus about 6 Novice calls, with plans to have 8 active this year to increase in the next 12 months. Peter’s QTH is 30m above sea level, but it conditions look good on 2 metres he goes to the top of Winters Hill overlooking Pt. Lincoln, which is 23m a.s.l. and a clear take off in all directions. Presently equipment only allows repeater operation but is aiming towards two metres SSB later this year.

A condensed version of Peter’s operating at peak reception times is as follows: 10-2, 2245 to 2300 when VK5AE was heard VK5AUI, VK5AKK, VK5ZCT, VK5ZER and VK5ZCT. From 0700 to 1000 the beam is pointed at VK. During beacon times there will be activity on the liaison frequency of 28855 kHz. The May MFJ to Northern Australia is expected to go to 48 MHz. For those looking for openings there is a Russian TV station on E2, i.e. 48.250 MHz.

Third: S84AZ In Cyprus and Z82BL In Gibraltar both have 6 metres permits.

Fourth: The bad news. Concern is being expressed about the continuing proliferation of Ch. 5A as an interference source. Many VK8s are receiving signals from Ch. 5A, which is already causing widespread interference, and there are no reasons really why it should not be of total interest. If you wish to contact your local VK8 or the Australian Organiser. Or use the general emails for amateurs residing outside Oceania, 5 points. For amateurs residing inside Australia, 15 points; for amateurs residing outside Oceania, 10 points; for amateurs residing outside Oceania, 5 points.

Second: Diego Garcia VQ9KK in the Indian Ocean is now on 6 metres. And Russ Z56NL and Z56XJ are now operating a 50.050 beacon, 80 watts into an 8 element yagi. From 0400 to 0700 the antenna is beamed to JA, From 0700 to 1000 the beam is pointed at VK. During beacon times there will be activity on the liaison frequency of 28855 kHz. The May MFJ to Northern Australia is expected to go to 48 MHz. For those looking for openings there is a Russian TV station on E2, i.e. 48.250 MHz.

AWARDS

— possibly very few people are on that band at 50 MHz. Signals were 5x9 each way. 1. The name of the award shall be the EN-
In addition, for amateurs residing outside Canada, contacts with VK DXCC Members on the 3.5 MHz band will count double points. For the purposes of this award, any VK DXCC Member may be contacted inside Australian waters may be counted as a VK Member.

3. The award will be endorsed ONLY on the request of the applicant and the following endorsements are available: "ALL CW", "ALL SSB", "ALL 3.5 MHz", "ALL 28 MHz", "ALL NOVICE", "FIVE-BY-FIVE". The last endorsement being for gaining at least five points on each of the five high frequency bands.

4. To claim the award, no QSLs are required. However full log details showing the VK Member (or /MM plus QTH) worked, their RNARS number, date, time, frequency, mode, plus an application fee of $1.50 Aust. or 7 IRCs are to be sent to the Endeavour Award Custodian, Mr. Barrie ML6MU, 43, HMAS Australia Road, Henley Beach South, SA 5022, Australia. Please ensure all cheques are in Australian currency and made payable to "A. Baty"). Clearly state what endorsements are claimed. Certificates to successful applicants will be forwarded by post as soon as possible after the claim has been checked.

JOHN MOYLE MEMORIAL NATIONAL FIELD DAY CONTEST 1979—RESULTS

Note third figure in sections D and E represents number of operators.

CONTEST CHAMPION AGRHY
Aggregate points so far allocated to individual amateurs towards this trophy are shown, however all points are subject to confirmation of WIA membership. Other nominated contests for this year are the VK/ZL and the RO.

ALLOCATED POINTS
16 points: 3AUQ.
10 points: 2HZ, 4DO, 5OX, 5OR, 3YLD, 3XB, 5NDF, 2JM, 2EL, 3AVI, 7BD.
9 points: 22BD, 4NFU, 4PZ, 3AEW, 5ZIM/NIM, 3XU, 3FV, 3ZJS, SOU.
8 points: 5NZM, 3AYL, 42IG, 7KC, 5ALX, 3 никогда.
7 points: 4ZB, 2BDT, 2BUT, 1RP, 3NEA, 2BQZ.
6 points: 2YHG, 4ARH, 2VEO, 4PV, 3KS, 3EF, 3ZPA.
5 points: 4AD, 4AEZ, 4PJ, 1LF.
4 points: 4AOQ, 3KK, 5NLC.
3 points: 4AOQ, 7NFR.
2 points: 4AOQ, 7NFR.
1 point: 8NT.

Certificates for the 78 RO, the Ross Hull and the John Moyle were held up by the postal dispute but should now be delivered.

Mike Batzley VK6HD
6 James Road, Kalamunda W.A. 6076

In the meantime KV4KV and WDXD organised their own DXpedition and proceeded to the island where they operated from 12th to 16th October, 1979. The log was forwarded to DXCC and the days operating on Desecheo and the nights aboard their boat. As a result of this operation the proposed DXpedition by KP4AM was temporarily shelved pending further demand for the island.

QSLS for KV4KV were issued and the ARRL was about to recognise the operation for DXCC when a letter of protest was received from the ARRL HQ from the US Department of Interior complaining about illegal entry on Desecheo National Wildlife Refuge by ham operators. This was back in late December 1978.

As a result, the ARRL posted a stop signal on accreditation for this operation and the latest unconfirmed information is that QSLs from KV4KV/Desecheo will be reviewed for DXCC.

Accordingly the Northern Californian DX Foundation, in consultation with the ARRL and the US Department of Interior, proceeded with the previously planned DXpedition and the island was activated under the call sign K4AM/D in early March. We await official word from the ARRL before adding this new country to the DXCC listings.

SABLE ADVICE
Advise has been received that the operation from Sable Island by VE1MTA during the period August/September 1978 was not legal. Further submissions of this operation for Sable Island will be returned uncredited and I await official confirmation from the ARRL before resending credits already given for this operation. (Acknowledgement WRN UD1DXA.)

PROPOSED NOVICE AWARD
I have received several suggestions that the WIA should issue an award specifically for Novice operators. I agree that some recognition should be given for achievements by our Novice operators as the WIA awards programme only caters for HF and VHF operators at this time.

Several criteria should be considered when a new award is created, for example—

1. The award should be an attractive piece of hardware worth the inclusion in the ham circles.
2. The rules should provide for a special effort on the part of the operator to qualify for the award but must not be too restrictive as, for example, the WAVKCA (VHF) award.
3. The rules must allow an even chance for Novice operators in all VK call areas to qualify.
4. QRZ rules to apply as QSL cards and postage are now a major expense for ham operators.
5. Separate endorsement for all SSB or all CW.
6. The award to be issued to VK Novice operators only. Once you achieve full call status you become ineligible.
7. The award must not be too difficult to administer. (From the award managers' point of view H1.)
8. A nominal fee should accompany all applications as I have received one or two award applications lately that have not contained any donation to the coffers. If I am not very careful I will soon reach the stage where I will have to finance this job on fresh air.

As a suggestion I think the rules of the WAVKCA award as published in the March 1979 AMATEUR RADIO could be suitably amended to provide the basis for a proposed WAVKCA (Novice) award. Novice operators would be required to complete the 22 QSOS but would have to work hard to catch a VK6 and VK9.

I invite any suggestions or comment before I approach Federal Executive to see if they have any funds available to cover the considerable printing costs that would be involved.

Best 73 and Good Hunting.
A few words of doubtful wisdom about my recent struggles with TRIO KENWOOD AUSTRALIA.

After buying around $100,000 worth of transceivers and accessories from them in the 6 months between May and November 1978, they were unable to supply me more than a miserable 5 pieces TS-120-V just before CHRISTMAS 1978 and no promise but a few more in FEBRUARY 1979. Naturally I objected to that treatment and also because their prices had become equal to what the TS-120-V costs set only, directly. As a result I had stock of them when my “friends” in Artarmon had none yet and that must have hurt them, consequently their “warming” in the APRIL 1979 issue.

TRIO KENWOOD JAPAN sell their products under the TRIO brand in Japan and exports the same as KENWOOD units. There is absolutely no difference between a TRIO and a KENWOOD TS-120-V. If Artarmon maintains there is, they simply are not telling the truth. I fully guarantee my TRIO TS-120-V imports myself and fortunately can sell them a lot cheaper than when acquired through the Artarmon Office.

But again, TRIO and KENWOOD are one and the same. My TS-120-Vs carry the TRIO KENWOOD CORPORATION tag and come with English manuals. As a rugged individual in this amateur equipment business for 15 years since 1964, I have been accused of importing SWAN, YAESU MUSEN under cover, assembled in Hong Kong or salt water damaged by parties who tried to explain why they had to sell dearer than I could — all sour grapes and nothing else.

Arie Bles VK2AVA
CUSTOM COMMUNICATIONS

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170-172 CHURCH ST., PARRAMATTA
N.S.W. 2150.

ICOM

IC-280
2 MTR FM SYNTHESIZED $450.00

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300W INPUT $669.00
SSB HF TRAN.
DIGITAL DISPLAY

MODEL 350D HAS THE SAME
SPECIFICATIONS AND
CHARACTERISTICS AS THE 350B
EXCEPT THE UNIT COMES WITH A
BUILT-IN DIGITAL FREQUENCY
DISPLAY WITH READOUT TO 100HZ.

DIGITAL DISPLAY
TO SUIT 700S
350B, ETC. $220.00

MX-100 $630.00
100W PLUS
MOBILE SOLID STATE

DEALERS WANTED
IN ALL STATES!
Swan's high technology engineering department is challenging the best in the world. In keeping with the master plan of establishing Swan as number 1 in its areas of expertise, two more state-of-the-art transceivers will be announced at the Dayton Hamvention the last week in April.

The first is the microprocessor controlled, digital synthesized ASTRO 150 amateur HF Transceiver. With powerful 235 watt PEP and CW input on all bands, and extended frequency coverage in the 2.30 MHz spectrum, it is bound for instant success. The all electronic tuning VRS (variable rate scanning) and associated microphone remote tuning gives the operator complete and precise control.

**ASTRO 150**

**Standard features include:**
- Full or semi break-in selectable in CW mode, narrow band CW filter, USB/LSB, memory, VOX/PTT, and WWV reception.
- NASA (National Aeronautics and Space Administration) has already ordered the ASTRO 150 and 1500Z linear amplifier combination.

**TRANSMITTER SPECIFICATIONS**

- **Power Output Rating:**
  - 100 Watts Solid State Mobile

- **Unintended Sideband Suppression:**
  - Greater than 60 dB

- **Carrier Suppression:**
  - Greater than 50 dB

- **STANDARD FEATURES:**
  - 100 Watt output
  - 1000 Watts PEP
  - 235 Watt CW input
  - Full or semi break-in selectable in CW mode
  - Narrow band CW filter
  - 230 MHz coverage

- **Available now for only $630.00**

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Trio-Kenwood Amateur Equipment
Trio-Kenwood Test Instruments
B & K Precision Test Instruments.

KENWOOD PRODUCTS:
- TR-7200 G 2 M. FM 10 W. Transceiver
- TR-7010 2 M. SSB 10 W. PEP Transceiver
- TV502 2 M. Transverter
- TV506 6 M. Transverter
- TL922 2 KW. PEP. Lineal amplifier
- SP-B Regulated Power supply 8 Amps
- VFO-520-S External VFO for 520-S
- VFO-820 - External VFO for 820-S
- VFO-700-S External VFO for TS-700-SP
- SM-220 Station monitor
- TS-820 Deluxe Speaker consul
- SP-520 Speaker consul
- AT-200 Antenna coupler
- MC-30-S Microphone 500 OHM
- MC-35-S Microphone 50. K OHM
- MC-10 Microphone 50. K. OHM.
- MC-50 Deluxe desk Microphone dual imp
- HC-2 Deluxe Ham clock
- YG-68 CW filter for TS-820
- YC-3395 CW filter for TS-520
- LA-30 A Lowpass filter
- HS-5 Headphone
- HS-6 Headphone
- RD-2200 Power booster for TR-2200
- VFO-120
- PS-20
- MB-100
- YK-88C
- SP-120

OPTIONAL ACCESSORIES
- VFO-120
- PS-20
- MB-100
- YK-88C
- SP-120

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- PS-20
- MB-100
- YK-88C
- SP-120

HY-GAIN ANTENNAS
- HY-QUAD 10-15-20M vertical 13 ½' tall
- HY-QUAD 10-15-20M full size cubical quad
- 2M 5 el. Yagi w/balun 6 3/4' boom
- 2M 8 el. Yagi w/balun 12 5/8' boom
- 2M 14 el. Yagi w/balun 15 6/8' boom
- 204.4A 20M 4 el. Tiger Array 26' boom
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- HY-QUAD 10-15-20M vertical 13 ½' tall
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- HY-QUAD 10-15-20M vertical 13 ½' tall
- HY-QUAD 10-15-20M full size cubical quad

CRYSTAL FILTER, 9 MHz. similar to FT-200 ones. With carrier crystals...

COAX CABLE CONNECTORS
- PL-259 Chassi Mount
- SO-239 Chassi Mount
- Male to male joiner
- Female to female joiner
- Angle connector

ACCESSORIES
- SWR 50A 3.5 - 150Mhz SWR meter...
- 12VDC regulated supply...
- 5M RG 58-U w/PL-259 one end...
- Bumper mount c/with 3/8' 24 thread ant. mount...
- Gutter mount c/with 3/8' 24 thread ant. mount...

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REG. 96: Clearance of emergency frequencies.
REG. 109: Emergency communications.
I am sure you will find that, after compiling your WICEN Emergency Plan, you will have a better feel for your role and will be able to approach it with confidence.

And that embraces one of the key phrases in the WICEN mission, namely ".. a pool of trained licensed operators, with equipment, available for deployment ...".

note a local sequence No. and receipt time in the top shaded area, add D.T.G. if necessary, check "from" and "to", check releasing officers name/authority, place in sending queue in priority order.

Sending messages —
log as for sending, complete R shaded box at foot of message form, keep a duplicate file copy if directed.

Delivery of messages —
delivered (and Info) addresses by runner or hand.

Note that the present trial arrangements concerning emergency networks, introduced by P & T, requires you to keep a complete log and to retain messages for 12 months.


WICEN ACTIVITIES IN VICTORIAN EASTERN ZONE
It seems that our activities in Amateur Communications are being increasingly noticed.

Many Amateur operators are active with State Emergency Service (SES) messaging, "know how" to non-technical operators and joining the various SES local groups. This results in police and other organisations becoming more familiar with our communication potential.

This Zone, upon request, had two worthwhile exercises during March 1979.

During the times of 1900 hrs. March 10 through to 1900 hrs. March 11, a sizeable team helped with communications for the Marley Point Overnight Yacht Race.

This event had over 600 yachts participating starting at the top of Lake Wellington, sailing through the night across the lake, through McLeans Straits, into Lake Victoria, and on to finish at Paynesville.

The WICEN Involvement was to pass messages for 12 months.

Brian VK3BBB relayed messages between aircraft and ground in connection with the WICEN comms with the recent Power Boat Race from St. Kilda to Lakes Entrance.

From Keith V. Scott VK3SS, Zone Co-ordinator.

Are you checking our bands for INTRUDERS AND REPORTING SAME TO THE INTRUDER WATCH CO-ORDINATOR?
LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

The Editor,
68 Elmiata Street,
Braddon, ACT 2601.

Dear Sir,
I refer to the letter from Edwin R. Rooms published in your March issue or, more specifically, to that gentleman's signature block.

I accept that his degree, his call sign and his being a dealer for Atlas Radio are all relevant to the subject matter of his letter; but what has his being a Yachtsman got to do with it?

As I believe I am well known in the amateur radio fraternity, I do not append the post-nominal initials to which I am entitled, but simply sign myself,

Yours faithfully,
Jim Lloyd VK1CDR,
Yachtsman, Photographer, Winemaker, Beekeeper,
etc.

The Editor,
43 Barrett Street,
Gympie, Qld.
20-3-79.

Dear Sir,
I wish to thank those amateurs who so generously answered my plea for information on the Geloso TR222 Tx.

I received five (5) replies, two of which included photocopies of the circuit and information, and one a technical bulletin from Geloso (Italy) for my perusal and return.

Many thanks.

Your sincerely,
Barrie Bestmann VK4ALN.

The Editor,
5th April 1979.

Dear Sir,
I noted with interest in April edition of Amateur Radio that someone is using H. O. Kellas VK3AHK's call sign. I wish to say that some of the Geelong hams are also having their calls used by "pirates", the main ones being VK3JY, VK3AGJ, VK3AW, and my own, VK3ALG. This has been going on for at least four years. I just wonder how many other hams in Australia are having their calls used also. I myself have been very active for 31 years and I have notified the Department of such practices.

F. A. Freeman VK3ALG.

3 Gardenia Street,
Pakenham 3810.
16th April 1979.

Dear Sir,
As I am not yet a member of the WIA, it is only through the courtesy of a friend that I have just read the February issue of Amateur Radio. Two of the letters absolutely amaze me. Firstly, I am surprised that you saw fit to publish the letter on pages 29 signed (?) VKCN —... as surely anyone making such allegations against David Ramsboltom, or indeed any other person, should have the intelligence to put his name to them.

As to the letter from Rex Black VK2YA, his libellous attack on the Woolybum Club is unjustified and as a licensed amateur, licensed CB operator and a holder of the WB Club Certificate No. 55, I resent the accusations and implications of the letter.

The generalizations and omissions in his letter cannot be justified by one's personal opinion of the situation. The Club's award certificate can only be gained in one of two ways, firstly by qualifying as an amateur through one of the courses run by the Club, as I did, or, secondly, by earning sufficient points by contacting by radio other members. It is therefore no more an attempt to take over the band than is the issue of a DXCC award, or a JARL award or membership of the Mopoke Club, etc., etc. To suggest that the Club is "determined to inject the sub-standard" and as such, the "subjective" system. It is offensive in the extreme to me, and I expect, probably futilely, an open apology from Mr. Black.

I feel nothing but the highest praise for the care and diligence of the Club's radio course instructor who helped me and many others to qualify for a licence. I would have no complaint had I ever offended one would expect from a group "Determined, etc..." as Mr. Black so vehemently asserts.

It is unfortunate that Mr. Black does not appreciate the Club's charm either. Possibly I may agree with his type either, but I'm not going to make such a noise about it. I thought the true interpretation came from the Editor in a recent article on the 6-month made was virtually unanswerable of the lines of "To each his own, but after all It's a free world".

When it's all said and done, nobody has to join the Club or obtain a certificate unless they want to. If I'm going to have been given the opportunity to do so.

Or is that the trouble, hasn't Mr. Black been asked?

Yours faithfully,
D. E. Jackson VK3VAA, VBB 470, WB 35.

Editor's Note: So that you may obtain your own library of ARs and partake in the many other benefits of WIA membership, I have forwarded an application for WIA membership to you under separate cover (VK3JUV).

TECHNICAL CORRESPONDENCE

The Editor,
Dear Sir,
Ref. 4 to the FT101 in AR November, 1978.

On page 11 there is a mistake and also the info on changes to the 101-B and E. It should read:

Locate the transistor Q2 in the 101 Mk. II and its bias resistors R5 4k7, and R6 22k; Q1 in the 101-B and E, and its bias resistors R1 4k7 and R2 22k.

I found this out the hard way!

Regards.
L. Martin VK2Ll.

The Editor,
Dear Sir,
Because of the large variations in the "standards" adopted for calibration of receiver signal strength (S) meters, the impact of signal strength reporting on the assessment of the performance of an amateur station's equipment and aerial system is questionable.

The attached copy taken from December 1978 'Radio Communication' appears to be a move towards standardisation of calibration and as such should, I believe, be encouraged. Perhaps you would consider its publication and recommend its use.

Yours faithfully,
G. E. Wiencke VK5WX.

INTERNATIONAL NEWS

S-METER STANDARDS

In order to make a uniform reporting system on the amateur bands possible, taking into account the widespread use of the 'subjective' S-system, and the large deviations between the characteristics of S-meter on current amateur equipment. ARU Region 1 recommends the use of the S-system for signal strength reporting on the amateur bands, based on the following standards:

(a) One S-point shall correspond to a level difference of 6 dB.
(b) On the bands below 30 MHz a meter deviation of S9 shall correspond to an available power of a CW signal generator connected to the receiver input terminals — 73 dBm.
(c) On the bands above 30 MHz this power shall be —93 dBm.
(d) The metering system shall be based on quasi-peak detection with an attack time constant of 10 ms ± 20 ms and a decay time constant of at least 500 ms.

COMMENTS

1. Signal reporting on the amateur bands at the moment is based on the well known 'subjective' RST system. Although the system is very useful, the availability of modern, sometimes profession-
3. Once having agreed upon the value of one S-point, a second, less important, but very useful recommendation is the definition of a reference level. Taking into account the practical situation it is not possible to define one reference level for all amateur bands. On the HF bands a level of —73 dBm (50uV over 50 ohm) does not deviate too much from current practice. On the higher bands, however, where thermal noise is the limiting factor in many cases, a lower level must be chosen and —93 dBm (5uV over 50 ohm) seems appropriate.

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<tr>
<th>STANDARD TABLE</th>
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<tbody>
<tr>
<td>S</td>
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<tr>
<td>HF bands</td>
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<tr>
<td>dBm (V over 50Ω)</td>
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<td>0 dB</td>
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4. Although the standards given above are based on continuous signals, in real traffic non-continuous signals (i.e. A3) will be encountered. It is necessary, therefore, to define the measurement system in more detail. In many cases the S-meter is coupled to the AGC system of the receiver. Therefore a quasi-peak detector will be taken as the standard, with an attack time constant of 10 ms and, although of less importance, the decay time constant shall be more than 500 ms.

5. It is hoped that the recommendation will be followed by all equipment manufacturers, so that in the not too distant future one will know how to interpret the strength report of the other station. Societies should advise their members about equipment manufacturers adhering to this recommendation, and try to avoid publication of receiver designs which do not, in principle, use the recommended standards. Simple means for calibration of at least the 6 dB level ratio should be published.

WANTED

The Project ASERT Committee of the WIA is anxious to obtain a number of Rustrak miniature recorders, preferably having a range 0-1 mA and a chart speed of 5 cm/hour.

If any member or other person reading this advertisement is prepared to donate or sell a recorder of this type, the ASERT Committee would be most grateful.

Please have a look in your junk box and see what you can find; then either write to Box 150, Toorak, Vic. 3142, or telephone Les Janes (03) 338 9284 A.H.

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Technical Articles Always Needed

Page 48 Amateur Radio June 1979

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC

IPS update for June is delayed due to mail strike — this is the chart for May for information only.
MEET THE VK2 DIVISIONAL COUNCIL

Photo taken at WI Centre on the night of the 1979 Annual General Meeting.

From l. to r.: Tim Mills VK22TM (Sec.), Ian Mackenzie VK22IM (Vice-Pres.).
Henry Luddell VK22HE.

20 YEARS AGO

Ron Fisher, VK3OM

JUNE 1959

The situation in June 1959 was much as it is today. The Editorial page puts it in a nut shell; To Geneva — What then? Sounds familiar. In fact most of the June issue was taken up with reports on the forthcoming Geneva conference and also the proposals released by the Post-Master-General that we would have to face cuts in many of our popular bands. The proposed cuts were: 80 metres, down 100 kHz to 3.7 MHz; 40 metres, down 50 kHz to 7.1 MHz; 20 metres, down 100 kHz to 4.25 MHz; 15 metres, unchanged; 11 and 10 metres cut from 55 to 60 MHz, down to 56 to 58 MHz and the interesting one on the two metre band, a change from 144/148 to 146/150 MHz.

On the basis of this report, Federal Executive sent urgent telegrams to the then Prime Minister, The Rt. Hon. J. McEwan and other members of parliament. This apparently hit the right spot and a great deal of discussion followed in The House, which was reported in the June issue of Amateur Radio.

Supporters at the time included Senator Hannan, Mr. (later Sir) A. Fairhall VK2KB and Mr. J. Fraser, Member for the ACT.

A transcript of a talk given by Mr. A. Fairhall via VK2AWK on all HF amateur bands was printed in full. As you can imagine, this left very little room for technical articles, but a description of a two stage transmitter for 7 MHz was included. Alan Smith VK3AN showed how to build it but omitted to say what the power output was; perhaps too low to measure.

Note that the second edition of the ARRL Single Sideband Handbook had just been published. A review commented on this.

QSP

NBS RADIO STATION WWV

Effective December 1, 1978, WWV resumed its previous transmission on 20 MHz. This transmission has been reinstated because of improved propagation conditions on the 20 MHz frequency and will continue as long as propagation conditions warrant.

BANDS


10MHz: 7.008, 7.085 kHz

5MHz: 14.150, 14.200, 21.400, 28.550 kHz

A1-A3: AGC on-off

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- Eight lines free to all WIA members.
- $9 per 3 cm for non-members.
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- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
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Cushcraft 2m ring with instructions, $30;
Hallcrafters F300 336 SSB/CW Tcvr, 10-800W DC input, AC-DC, solid state, 500W final USA made with manual, new spare finals, $350.00;
Crafters 2m ring, $150;
Old Phillips 700, $150;
YAESU FT-2100B, 10-800W PEP output, 1 year old, little use, mint with manual, $450;
Cushcraft 2m ring, $150;
Osker block 200 power meter, $45;
YAESU FT-2100B, $350.

QTHR means the advertiser’s name and address are correct in the current WIA Radio Amateurs Call Book.
Unmoddified FT290 with full 10m coverage, 240V AC power supply, and DC-DC power supply for FT200, also full 10m. Palans, VK3BEJ, Box 30, Doncaster East, Vic. 3109.


Large Reflex Horn Loudspeakers for PA work, also 15 or 20W 500 or 600 ohm drivers in good working order. VK2UJ, QTHR. Ph. (068) 65 3213.

260 Matching Speaker for Heathkit HW-101 transceiver, also SB-650 readout in any cond., and Wick 444 50k imp. mic., $40; Emotomat rotator 103LX, 150 kg vertical load, VK3NPM, 8 Macintos St., Mt. Gambier. Ph. (07) 25 2407.

Rectal Phone AFSK mod., auto CW Ident., auto etc., had little use, suit novice. $120 ONO. Jim W6MXV Slow Scan TV Monitor, 0.5-30 MHz, 8 months old, perfect cond., very little use, $240, ONO; HC 500A microphone, 260 420, perfect cond., very little use, $200 ONO. VK3NOD.

Linear Yaesu FL2100B, perfect, used only a few times. Lee Wilms VK3AB, QTHR. Ph. (02) 17 0450.

Kenwood TS-520, 240V AC, 12V DC, power supply, 0/100W on 12V DC, e.g. Denton MLA250, Drake so var., remote VFO, new, 1246B in final amplifier; all in excellent condition. For sale complete to first genuine offer. (Sydney area). Ph. (02) 48 2261. DEShal TDK 1000L, 3-50 MHz, Wedley loop cct, batt. and AC operated, as new, in excellent cond., handbook and cct., $230. Ph. (04) 25 3357.

ACI Marine Towr, 12-14V DC, solid state, broadband 20W SSB/CW, modified to 80/40/6m transceiver, 4 xtal positions available, NB, RIT, meter, 200 x 100 mm x 30 mm. $195 ONO. VK3UJ, QTHR. Ph. (03) 874 5632.

Deceased Estate — Kenwood TR2700G 2m Tivr, mini cond. w/manual, $200; Trio 2m external VFO for above, $100; 13.8V PS w/meter for above, $30; Yaesu LP filter FF50DX, $10; Hansen dual SWR meter, $15; Vibroplex key, $15; 500 ohm L/Z Kenwood desk mic., new, $40; 28 MHz to 3.5 MHz ATU, $30; 240V 420V 12V 240V ATU, suit 80m, two of $15 ea. Ph. (052) 87 3359. Mobile Antenna, complete roof-side set. RSL-14. $100. ATU, suit 80m, two of $15 ea. Ph. (052) 87 3359. Yaesu Mobile Antenna, complete roof-side set. RSL-14. $100. ATU, suit 80m, two of $15 ea. Ph. (052) 87 3359.

Astatic Mic.. Modal 10DA, $15. VP4000, new, $60; Kingdon 1000A, new, $60. Linewell Electronics, 21, 22, 52.

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2m FM
MOBILE
$335

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<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tr>
<td>FT-101E</td>
<td>80-10m HF transceiver</td>
<td>$789.00</td>
<td>D-2860</td>
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<tr>
<td>FT-301</td>
<td>Solid State HF transceiver</td>
<td>$795.00</td>
<td>D-2870</td>
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<tr>
<td>FT-3 Mobile</td>
<td>HF transceiver</td>
<td>$375.00</td>
<td>D-2866</td>
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<tr>
<td>FT-227 2m FM transc with memory</td>
<td></td>
<td>$390.00</td>
<td>D-2890</td>
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<tr>
<td>FT-227A</td>
<td>Mobile HF transceiver</td>
<td>$219.00</td>
<td>D-2896</td>
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<tr>
<td>FL-2100B 1.2kW linear amplifier</td>
<td></td>
<td>$529.00</td>
<td>D-2546</td>
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<tr>
<td>FRG-7</td>
<td>Solid State HF Rcvr</td>
<td>$319.00</td>
<td>D-2850</td>
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<td>FP-301 13.8V/20A supply</td>
<td></td>
<td>$169.00</td>
<td>D-2872</td>
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<tr>
<td>FT-101Z</td>
<td>New HF transceiver</td>
<td>$775.00</td>
<td>D-2862</td>
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<tr>
<td>FT-901D Top</td>
<td>class HF transceiver</td>
<td>$1229.00</td>
<td>D-2854</td>
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<tr>
<td>FT-227RA 2m FM scanning transc.</td>
<td></td>
<td>$379.00</td>
<td>D-2891</td>
</tr>
<tr>
<td>CPU-2500</td>
<td>computerised 2m transc.</td>
<td>$549.00</td>
<td>D-2889</td>
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<tr>
<td>FC-901 antenna tuning unit</td>
<td></td>
<td>$429.00</td>
<td>D-2855</td>
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<tr>
<td>FL-110 200W linear amplifier</td>
<td></td>
<td>$599.00</td>
<td>D-2884</td>
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<tr>
<td>FRG-7000 Digital HF Rcvr</td>
<td></td>
<td>$475.00</td>
<td>D-2848</td>
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<tr>
<td>YC-900S 900MHz Freq. Counter</td>
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<td></td>
<td>D-2892</td>
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JULY 1979
VOL. 47, No. 7

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Cover Photo

A BIT OF NOSTALGIA

With thanks to R. N. Torrington VK3TJ for supplying the photo, here is a picture of the Zero Beat Radio Club Field Day at Lansdowne Bridge, Carramar, NSW, 1936. Those identified are:

STANDING: Basil Dale VK2XX (now VK2AXX) 2nd left, Mrs. Stocks 3rd left, Noel Smith 4th, Cam Moglinie VK2CN 5th, Peter Mulligan VK2ABH 6th, Clive Hutchison VK2YP 8th, Harry Whytemeach 9th, Bob Fusel VK2SS 10th, John Gue 11th, P. Torrington VK2TJ 12th.

SEATED: Les Stocks 2nd, Bill Piggott VK2WN 3rd, Harry Branson 4th, Andy Kerr VK2AX 7th, George Shelley VK2QF 8th, Russ Miller 10th. VK2s ABH, YP and AX still hold these calls.

Is anyone able to identify any of the others?
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VK6 Mr. N. R. Penfold VK6NE
VK7 Mr. R. K. Emmett VK7KK
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VK1 Mr. R. G. Henderson VK1RH
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President — Mr. E. J. Buggee VK3ZZN

Divisional information
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6 Wagin. Time 0130Z.

QSL —

THE WIA AND YOU

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VK3 — Inwards QSL Bureau, Mr. E. Treblelock. 340 Gillies Street, Thornbury, Vic. 3071.
VK4 — QSL Officer, G.P.O. Box 538, Brisbane, G.P.O. Box 1234, Adelaide, 5001 — HQ
VK5 — QSL Bureau, G.P.O. Box 1234, Adelaide, 5001 — HQ at
West Thebarton Rd., Thebarton.
VK6 — QSL Bureau, G.P.O. Box 3717, Wollongong, N.S.W., 2500.
VK7 — G.P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 3717, Wollongong, N.S.W., 2500.
Slow move transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VK3 ADW — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

The Federal Convention having been and gone, one must be broad-minded enough to sit back and review the effectiveness of the meeting and whether the members of the WIA and the Amateur Service generally have benefited from the exercise.

A report on the proceedings will come from Executive in due course, and although the policies of the WIA show no radical changes for the year ahead, attitudes of members and the Amateur Service generally, need to be examined to determine if adequate inputs are being received so that meaningful decisions can be made by the Institute.

It has been often and rightly said that the members ARE the Institute. Generally speaking, criticism of the Institute is warranted if it acts contrary to the wishes of members, but there is an increasing feeling that members, individually or acting through their Divisional Councils are unperturbed at the direction their hobby is heading and the potential encroachments in their spectrum.

As a case in point and of topical interest is WARC 79. Quoting exceptions such as some radio clubs and industry, feed-back from members has, in short, been apathetic.

The meeting details of WARC will be history after September but what of the future? Any new bands will be a bonus — the converse is obvious, yet what contingency plans does the Amateur Service have if it suffers a reduction in its facilities?

One answer lies in improving the amateurs’ image — an image currently viewed in many circles as equalling that of CB radio. An examination of current technical licensing standards leaves much to be desired with the “appliance operator” perfectly catered for. How much better it would be if incentives were given in the form of additional or extended bands in return for an increased standard of technical awareness and expertise!

As President of our newest division I am also concerned that our national image as the official voice of Amateur Radio is not making sufficient and significant impressions.

When the tumult of WARC 79 subsides, Institute policy must be regenerated in the areas of direction and purpose. Improving our lot to obtain increasing credibility and efficiency must be our next priority for the 80s.

ANDREW DAVIS VK1DA
Divisional President of ACT Division.
FEDERAL CONVENTION

1979 Federal Convention notes appear in greater detail elsewhere in this issue than could be prepared in time for the June issue of AR. The Federal President comments that many people believe that Federal Conventions are dull and uninteresting. By their very nature these Conventions must handle controversial and other topics of the day in as much unemotional detail and depth as possible to enable solutions to be found which are acceptable throughout Australia and can receive majority support.

Federal Conventions are very much a multiple interchange of views as well as being a forum of common agreement on matters affecting the amateur service in our land.

The Federal Executive in Melbourne has to be made aware of current Federal Council thinking on a wide range of topics if it is to function properly throughout the rest of the year. Conversely, Divisional delegates must be made aware of the multitude of considerations which influence actions at the central focal point of the WIA. Much can be committed to writing but neither the Executive nor the Divisions can function in vacuo as isolated units.

This is what makes the WIA tick. Those who return to their Divisions take back with them an immense background of information to pass on to their Divisional Councils and membership in general. This way dispels local ignorance by enabling Federal Councillors to explain the reasons for particular actions or lack of them. An informed cohesive membership is more than ever necessary in this day and age of national and international pressures, intrigue and political expediences. This is what Federal Conventions are all about and why they appear dull to the spectator. Perhaps there is no word yet coined to replace the word “Convention”.

Newcomers to the WIA take note. If you believe some aspect of amateur radio requires changing take it up with your Division. If it is of sufficient moment it will most certainly be presented to the Federal Council, either in Convention or otherwise, for nationwide debate and decision.

JOINT COMMITTEE

There was a Joint P. and T./WIA Committee meeting on 23rd May, attended for the first time by Mr. Jim Wilkinson, First Asst. Secretary P. and T. Department Radio Frequency Management Division. Michael Owen was a member of the WIA team and, as might be expected, the main topic of discussion was the proposed new legislation to replace the 1905 Wireless Telegraphy Act and its train of Regulations. It is now possible to see how the WIA’s view of the amateur service can be made clear to those involved in drafting the proposed legislation in a much better way, perhaps more effectively, than previously thought.

REGULATIONS AND HANDBOOK

So many of the restraints and restrictions on what amateur operators may or may not do stem from the Regulations. There has been consistent talk at high levels about the need for self-regulation of services. The Handbook revised edition has been stopped in mid-stream. Much work has gone into the revision of it and a lot more is now happening. The constraint, however, is that it must parallel the existing Regulations. All the more reason to do everything possible for the amateur service to make its views properly known in good time for the proposed new legislation. This is being done at the Executive level, well briefed and instructed in Federal Council policies and requirements.

Members will be interested to know that the Minister for P. and T. personally telephoned the Federal President on 25th May to assure him there would be no increase in the amateur licence fees resulting from the mini budget announced in Parliament the previous evening.

Illustrated is a BASE STATION ANTENNA
Omnidirectional Gain 3 dB and 6 dB
Models G11, G21, G22.

Scalar’s range of HIGH GAIN base station antennas provide an omnidirectional radiation pattern combined with gains of 3 dB and 6 dB depending on Model number. They are designed as base station antennas for two-way radio systems. Constructed of high grade aluminium, the radiating elements are completely enclosed within a fibreglass radome.

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MARINE AND MOBILE H.F.
TUNEABLE GROUNDPLANE ANTENNAS
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UNITY GAIN – (FIBREGLASS) WHIPS
4.5 dB GAIN (FIBREGLASS) WHIPS
PHASED SIDE MOUNT DIPOLES
VHF-UHF DIRECTIONAL ANTENNAS YAGI MAGNABASE – MAGNETIC BASE
HELICAL WHIPS – 6ft, 8ft, 12ft, 15ft.
PAGING ANTENNA H.F. BALUNS
ANTENNA MOUNTING HARDWARE ACCESSORIES
FILTERS AND DIPLEXERS PORTABLE WHIPS
H.F. MOBILE WHIPS – 6ft, 8ft, 12ft, 15ft.
FLEXIBLE, MOBILE WHIPS

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Communication Antennae Engineers


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A new set of terms of reference of Amateur Advisory Committees is to be forwarded to the WIA for comment.

AUGUST EXAM

It appears likely that the August AOC examination will give the candidates the choice of answering either (i) the existing essay style of format or (ii) a 50 multi-choice question paper. There is at last some hope that the style of the Novice morse exam has achieved the kind of standard long advocated by the WIA.

SIX METRE REPEATERS

The Department agrees in principle to granting approval for some 6 metre repeaters on a trial basis, but these would have to be well outside TV Channel 0 reception areas.

Another item which is now to be allowed by the Department on a 12 month trial basis is the F5 mode on the 32 cm band. Here again, individual applications would receive consideration by the Department.

1979 CALL BOOK BEGINS TO TAKE SHAPE

The Publications Committee has spent much time on the 1979 Call Book. The output of our ED programme will be incorporated into a tape for direct typeset print-out as opposed to the process used for the 1977 Call Book, which was done direct from the actual computer print-out. Compatibility has been established and every hope is expressed that the final printed version will be good.

Excellent co-operation from the P. and T. Department has ensured that the latest possible call sign information will be no more than about two or three months old by the time it appears in print.

OFFICE AND AR

At the May meeting of the Executive a decision was made to approve in principle the publication of a Call Book in 1980. This meeting also approved the appointment of a new member of the Executive office to undertake a wide range of routine work associated with the production of AR, in addition to servicing advertisers and generally learning the work and functions of the office, so as to become an effective assistant to the Secretary-Manager. This post has been the subject of discussions at the Convention brought about through representations that AR had outgrown the continuing efforts of volunteers and unless something was done quite soon the very future of the magazine in its present form could not be guaranteed.

Intensive investigations were carried out prior to the Convention to examine a very wide range of magazine production methods. Details of the outcome of these researches were reported to the Convention in an Executive paper. Federal Council agreed with the proposals that the bulk of the day-to-day drudgery associated with putting together a journal such as AR should become one of the major duties of a new recruit in the office. This had special validity since the expenses involved would not be materially greater than is already expended on salary for an advertising representative, honoraria and allied subjects. The increased volume of work flowing through the Executive office also had relevance to this decision.

Mr. Mark Stephenson VK3NOY, a young man who has displayed great interest in Institute affairs for some time, was appointed to the position with effect from 28th May. It is hoped he will successfully conclude his probationary period and become a valued long-term employee of the Institute.

WIA BANNER

The Executive commissioned the production of a large 9 ft. x 3 ft. banner as a display item and this was on show at the Convention with posters and other material. The banner is now available on loan, under certain conditions because of its quite considerable cost, to Divisions for display at major amateur events.

WARC 79 DONATIONS LIST No. 3

The Executive wishes to acknowledge with grateful thanks the receipt of the following donations for WARC 79 from members.

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These are entitled to the use of the WIA emblem and the words: "WARC Amateur Supporter" in their advertising displays.
A QSO:

JOTA

The date of the 22nd Jamboree on the Air this year is 20th-21st October, 1979, from 0001h on the 20th to 23.59h on the 21st.

One of the biggest single events of the 150th Anniversary celebrations of Western Australia will be the 4th Asia Pacific (12th Australian) Jamboree in Perth from 28th December, 1978, to 7th January, 1979. Up to 1,500 Scouts, local and overseas, are expected to attend. Scout Amateur Radio VK5SH, of Box 7, West Perth 6005, will be the special station for the event.

The Australian Radio Scout Net is held on the first Sunday of each month from 09.30h EST on 7050 kHz ± QRM and then QSYing to 14190 kHz an hour later. The net station is VK4QH. Special Novice classes for Scouts have begun in VK3 by VK3TR, Branch Organiser for JOTA in VK3.

AMATEUR RADIO — VIDEOCASSETTES

Is your Club or Group looking for high class promotional material for amateur radio?

Ask your Division for the loan of video cassettes in colour.

“Amateur Radio the Natural resource of every Nation” (6 minutes).

This was specially produced by VK5KG, the Federal Videotape Co-ordinator, for the CCIR Seminar in Sydney.

“This week has 7 days” (25 minutes).

ARRL films (60 minutes in all).

“ATV in Australia 1978” (30 minutes).

“VK5 ATV History” (30 minutes).

“VK5 — official opening of Burley-Griffin Building” (80 minutes).

“GSCJ Aerial Circus” (90 minutes). On special loan ONLY.

Also, a service exists for copying any of these titles (except GSCJ Aerial Circus) on your own cassette—you pay postage both ways.

CLUBS — Why not start your library now, write to your Division or direct to VK5KG.

NOTE — Educational tapes are now being considered but please wait for an announcement in AR.

NAMES OF COUNTRIES

Want to know the correct official names of countries? The ITU Telecommunication Journal often lists names as officially notified by the Administrations of the countries concerned. In the January 1979 issue the following appear — The Federal and Islamic Republic of the Comoros, The Democratic Socialist Republic of Sri Lanka, The Republic of Indonesia. In the March issue we note “People’s Republic of China”.

4U1ITU

There is an ever increasing volume of visitors to Geneva, according to January 1979 Telecommunication Journal’s Radio amateurs notes, making it impossible for radio amateurs on the staff of the ITU to meet requests for station operation unless advance notice is given. A licensed radio amateur wishing to operate from 4U1ITU should write to “The Station Manager of 4U1ITU, PO Box 6, Place des Nations, CH-1211, Geneva 20, Switzerland” so that his Letter arrives at least four weeks in advance of the proposed visit. Operators will have to demonstrate their ability to know and tune the 4U1ITU gear because of past damage by operators unfamiliar with the station equipment. All QSL cards from 4U1ITU are made out at the time of the contact and go via national Bureaux; do not ask for a direct QSL.

USA BAN ON LINEARs 24-35 MHz

OST December 1976 reports on a speech by FCC Commissioner White. While White listed the type-acceptance program as all that was necessary, that a linear ban would not be effective for TVliners capable of operating from 24 to 35 MHz. Commissioner White is reported as saying — “There is no question that there is an increasingly serious problem of TV interference or TV! caused by the use of linear amplifiers operating on or near the 27 MHz CB band ... I believed that the type-acceptance program was all that was necessary, that a linear ban would not be effective and that to include it was regulatory overkill for self-regulation through the proof of licence at point of sale. An amateur simply would have to present a valid amateur licence to buy an external amplifier from a retailer. Although there may be some items with this proposal, such as in the case of mail orders where licence verification would be difficult, it was certainly a more reasonable and fair approach than the ban.”

MOROKULIEN FOR PHILATELISTS

Morokulien is located on the borders of Norway and Sweden and was founded in 1559, the UN Refugees Year. ARIM — Amateur Radio in Morokulien — operates under the call signs LSLG/ S3JW. In the period 1st June to 15th September this year a special envelope will be obtainable carrying both a Norwegian and a Swedish stamp.

WAC ON 2m

GW4COT is close to achieving WAC on 144 MHz, having already worked 5 continents on moonbounce. He lacks the Asia Pacific to complete his WAC. G3LTF has already received his WAC moonbounce certificate for 432 MHz, but nobody has yet achieved this on 144 MHz. Rad. Comms. March 1979. New News... that GW4CQT has not yet worked VK5MC on 2m to complete his WAC on 2m.

PLEASE SUPPORT OUR ADVERTISERS

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VK5 — Mr. C. J. Hurst VK5HI.
VK7 — Mr. P. D. Frith VK7PP.
A 25 cm VERTICAL FOR HF MOBILES

Tim Hunt VK3IM

I began operating mobile with a large helical antenna and then heard about increased efficiency from the use of capacitance hats. I kept increasing the size of the capacitance hat and decreasing the length of the antenna: then I went into the theory and I found that it had all been done before, about 35 years ago!

Here are some details of one of my small top-loaded verticals.

The height of the antenna is the length of the coil stock plus an extra inch or two both at the top and at the bottom. With a capacity hat 2½ feet in diameter and having six spokes, the antenna will operate on 3.5 to 28 MHz simply by shifting the position of the alligator clip tap on the coil and repeaking the 100 pF variable capacitor. My present capacity hat is made from aluminium tubing and covered with aluminium wire netting in order to increase the capacity. I have also made up a 4 foot diameter capacity hat which is sometimes used with a 6 foot vertical on top of the car roof!

With regard to the matching, the capacitor is set at about ¼ capacity and the alligator clip is run up and down the coil until maximum received signals are obtained. Then on transmit the capacitor and tap are carefully juggled until a 1 to 1 SWR is obtained at the desired operating frequency. The bandwidth of the antenna on 3.5 and 7 MHz is about 10 kHz, becoming larger on the higher frequencies. However a repeat of the variable capacitor will bring it down to acceptable limits over a much wider bandwidth.

There is nothing magical about the 2½ foot diameter associated with the capacity hat. The only “design” considerations were:

(a) It had to fit in the car when dismantled

(b) It shouldn’t look too conspicuous.

Within reason, it is always desirable to make the diameter of the hat as large as possible and the vertical section as long as possible — consistent with resonance as a quarter wavelength. The most lossy component in the antenna is the coil and large capacity hats imply small coils.

In order to reduce ground losses, a good earth connection is essential. My ground connection is a wire soldered to the middle of the car roof! The antenna is located in the middle of the car roof to ensure reasonably uniform radiation in all directions. Mounting the antenna at the front, back or side of the roof gives the antenna strong directivity (and also some power gain in the direction of maximum body area). I have used the antenna on the lawn, making a reasonable ground plane by driving in a ground stake and laying aluminium foil along the ground.

Another consideration is the length of the vertical section. Increasing the length increases the bandwidth, radiation resistance and efficiency (since less power is burned up in coil resistance and ground losses). If the antenna can be made 2, 3 or 4 feet long all the better, but the coil should be kept at the top and aluminium tubing should be used for the bottom section.

The matching method is simple. The antenna is made sufficiently inductive for the magnitude (real part) of the base impedance to be 50 ohms. The inductive reactance is then cancelled out using the series capacitor. (Note: Most of the 50 ohms will be coil and ground losses.—Ed.)

As a rough guide to the performance to be expected when operated against a car body ground plane, a loss of 3 to 5 dB on 14 MHz 5 to 10 dB on 7 MHz, 10 to 20 dB on 3.5 MHz and less than 3 dB on 21 and 28 MHz, is observed when compared with a substantially full size vertical on the same ground plane. If the coil is wound with copper tubing (turns held in place by means of a small polystyrene strip, outside coil), a significant improvement in efficiency can be obtained on the lower frequency bands.

It is possible to be a little more scientific in the design of this antenna:

If the antenna height h is small compared with the wavelength λ, the radiation resistance R can be calculated from

$$ R = 1600 \left(\frac{1}{h} \right) $$

and if 100 watts were fed into the antenna, a current

$$ I = \sqrt{\frac{P}{R}} = \sqrt{100/1} = 10 \text{ amps} $$

would flow in the inductor. This assumes no loss resistance in the coil but does give some indication of the maximum current to be expected, and reinforces the necessity for a good ground connection and a low loss coil.

We can also calculate fairly exactly the values of inductance and capacitance needed for resonance on each desired band, but since it takes only a second or two to re-position the alligator clip, there isn’t too much in favour of the (complicated) mathematics!

MML 144/100 Watt Linear Power Amplifier

- 80 watts minimum RMS output 100 watts RMS typical.
- Fully protected against poor load VSWR overheating and excessive or reverse supply rails.
- Equipped with RF VOX and manual override.
- Frequency bandwidth 144 - 148 MHz at 0.5 dB.
- 10 watts nominal for 80 watts output.

PRICE AMATEUR NETT: $265.00

MML 432/100 100 Watt 432MHz Linear Power Amplifier

- 100 watts minimum output 10 dB minimum gain.
- Fully protected against poor load VSWR, overheating and excessive or reverse rail.
- Equipped with RF VOX and manual override.
- Frequency Bandwidth 435 MHz - 15 MHz @ - 1dB.
- 10 watts nominal input for 100 watts output.

PRICE AMATEUR NETT: $395.00

Transverter Model MMT 432/144‘S’

UTILIZING an IF of 144MHz * 10 WATTS DRIVE of ½ WATT * VOX OPERATED, TWO SELECTABLE RANGES 432 - 434/434 - 436 MHz. FEATURES EXTENDED COVERAGE FOR OSCAR 8

FEATURES: High quality double-sided glass fibre printed board * Highly stable zener controlled oscillator stages * PIN diode aerial changeover relay with less than 0.2 dB through loss * extremely low noise receiver converter, typical 3 dB * Separate receiver converter gives independent receiver facility * Built-in Automatic RF VOX with override facility * Built-in 10 watt 144 MHz termination, selectable attenuator for ½ watt * Use of the latest state of the art Power Amplifier transistors provide reliable 10 watts continuous output.

MODEL MMT 432/144 ‘S’ Price Amateur Nett: $295

Transverter Model MMT 432/28‘S’

FEATURES EXTENDED COVERAGE FOR OSCAR 8

Second Crystal Oscillator gives two ranges: Low 432 - 434 MHz - High 434 - 436 MHz programming available to either Transmit/receive both Low, both High, or a mixture of the two. Adjustable Drive Level is now provided by an input potentiometer. Optional RF VOX. Power Output 10 watts minimum * 28 MHz IF * Drive 1 mW to 500 mW * Aerial Changeover by PIN diode switch * Modern Microstrip Techniques * Power requirements 12 volt nominal at 150 mA, 2.5 amp peak * Case size 187 x 120 x 53 cm * Spare 432 input socket.

MODEL MMT 432/28 ‘S’ Price Amateur Nett: $245

MODEL MMT 144/28 Price Amateur Nett: $185

NEW READY-TO-OPERATE MODULES AVAILABLE IN THE SALES PROGRAM OF VHF COMMUNICATIONS.

All modules are enclosed in black cast-aluminium cases of 13cm by 6cm by 13cm and are fitted with BNC connectors. Input and output impedance is 50 ohms. Completely professional technology, manufacture, and alignment. Extremely suitable for operation via satellite or for normal VHF/UHF communications.

10 METRE MOSFET CONVERTER: Input frequency range 28 - 30 MHz * IF output frequency 144 - 146 MHz * Overall gain 15 dB min * Overall noise fig. 1.8 dB * DC Power requirements 11 - 13.8V at 50 mA. PRICE AMATEUR NETT: $45.00

6 METRE MOSFET CONVERTER: Featuring 24 MHz local oscillator output for transverter use. Input frequency 52-54 MHz, I.F. Output frequency 28-30 MHz. Typical gain 30 dB. Noise figure 2.5 dB. Typical image rejection 65 dB. Crystal Oscillator frequency 24 MHz. Power requirements 12 volt ± 25% at 35 mA. MODEL MMC52/28LO PRICE AMATEUR NETT: $49.00

2 METER MOSFET CONVERTER: Noise figure typ. 2.8 dB. Overall gain typ. 30 dB. IF: 28-30 MHz. 9-15 V 20 mA. PRICE AMATEUR NETT, $45.00

DUAL RANGE 432 - 434 MHz & 434 - 436 MHz Converter, Type MMC 432/28 ‘S’ & MMC 434/144 ‘S’ Input frequency ranges 432-434 MHz (low), 434-436 MHz (high), I.F. output frequency 28-30 Mhz or 144/146 Mhz. Typical gain 30 dB. Noise figure 3 dB maximum. D.C. Power requirements 11-13.8 volts, 12.5V nominal. Current consumption 50 mA maximum. PRICE AMATEUR NETT: $57.00

1256 MHz CONVERTER; Microstripline, Schottky diode mixer. IF: 28-30 MHz or 144-146 MHz. Noise figure typ. 8.5 dB. Overall gain 25dB. Power requirements: 12 volts DC ± 25% at 50 mA. PRICE AMATEUR NETT: $65.00

VARACTOR TRIPLER 432/1296. Max. input at 432 MHz. 24 W (FM,CW) - 12 W (AM) Max. output at 1296 MHz. 14 W. PRICE AMATEUR NETT: $74.00

500 MHZ COUNTER 6 DIGIT LED DISPLAY. Two ranges 0.45-50MHz, sensitivity. Better 50mV. 50-500 MHz, sensitivity better 200mV. Features low angle AT cut quartz crystal, typical temperature stability of 0.5ppm per degree C. Power requirements 11-15 Volts DC at 300 mA approx. MODEL MMD050/500 PRICE: $175

BNC CONNECTORS - Excellent quality, fully imported from U.K. U.S. Mil. No. UG88E/U. PRICE AMATEUR NETT: $1.35 each.

CONVERTERS

PACK & POST AMATEUR ELECTRONIC IMPORTS IS THE EXCLUSIVE AUSTRALIAN DISTRIBUTORS FOR ALL PRICES

These Precision British Made Units from Microwave Modules Ltd. F.O.B. SYDNEY

Amateur Electronic Imports
P.O. BOX 160, KOGARAH, N.S.W. 2217
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CABLE: "AMATIMPORT, SYDNEY"

All prices subject to change without notice. Onwards forwarding please add sufficient for freight or postage. Excess will be refunded.
**BI-BAND ANTENNA**

This antenna uses the impedance properties of $\frac{1}{4}$ wavelength stub lines to present an approximate 300 ohm load to a 300 ohm feedline on two harmonically related bands.

On the lower frequency band the full length of the antenna acts as a half wave dipole with a "T" match section to the 300 ohm line.

On the higher frequency band the centre section of the antenna acts as a folded dipole which presents 300 ohms to the feedline. The end sections, being each a $\frac{1}{4}$ wavelength long do not introduce unwanted reactance, but are effectively disconnected from the folded dipole section because of impedance mismatch.

A standard 4:1 balun transformer as shown for example in the "ARRL Antenna Book" at page 103, can be used to feed a 70 ohm coaxial line or connector.

---

**WATCHING SUNSPOTS**

G. P. Anderson G2QY

It is apparent from discussion on the air that amateurs are very often unaware of the ease with which spots may be observed on the face of the sun, so providing an added interest to Amateur Radio activities.

But first of all a warning that cannot be repeated too often: never, repeat never, attempt to look at the sun directly through a telescope or field glasses. This rule applies even if a smoked glass or other optical filter is used, as such a device can easily slip and expose the eye to the concentrated full power of the sun, resulting in damage and possibly destruction of the sight.

Having said that, the method to be described is perfectly safe, and calls for little equipment. The principle item is a telescope, which can be quite a simple terrestrial model; in the writer's case it is of unknown specification and is at least 100 years old, having been used by his grandfather during service as a ship's engineer in the Far East in the 1860s.

The telescope is set up on a convenient stand, constructed so that the telescope may be moved both vertically and horizontally in order to line it up on the sun (an old camera tripod with a simple mount made to fit to the top is convenient). It is also beneficial to fit a simple mask around the barrel of the telescope — a piece of cardboard about 12 in. square is suitable, in order to minimise the direct sunlight falling on the screen.

Having set up the telescope on its stand (obviously choosing a day when the sun is clearly visible) point the end with the larger lens — the Objective — at the sun, and holding a piece of white card or plastic near to the eye-piece, move the telescope until an image of the sun appears on the "screen"; with the telescope so aligned move the card away from it until the desired size of image is achieved.

During this procedure it will be necessary to adjust the telescope in order to focus a sharp image on the screen.

If any sunspots of reasonable size are present they should be readily seen, and their position can be marked on the card; it will be found advantageous to prepare a circle of suitable size, say 2 in. diameter, on the card before making the observation, so that the locations of the spot may be marked with reasonable accuracy. It is important to keep the card upright — that is, the sides vertical to the ground, so that later observations may be compared, and the progress of spots across the face of the sun followed. When weather conditions permit, daily inspection of the sun is worthwhile, and co-ordination with observations on radio conditions, particularly at the higher frequencies of 21 and 28 MHz will show interesting results.

A note about the screen may be useful. Good quality clean white card or paper is satisfactory, but some experiments with white plastic may be worthwhile, to find a better reflecting surface; the lid of a plastic margarine box has proved very suitable.

One further point: although obviously a true picture of what is happening on the face of the sun is required, and consequently the screen should be set up perpendicular to the axis of the telescope, it has been found to be helpful to move the screen away from this position while inspecting the image, as shown in Fig. 2, especially when projecting on to a plastic surface. The resulting image is of course distorted, but spots stand out much more clearly, as they are enlarged by the distortion.

Reproduced from "The Shortwave Magazine", Vol. XXXVI.
AMATEUR RADIO WEEKEND — SPRINGWOOD NSW

The remainder of this year will see two special weekends being set aside for a whole array of radio studies, experiments, and get-togethers for newcomers, students and licensees. The WIA Education Service, incorporating the Youth Radio Service, would like to invite all amateurs, their families and friends as well as all newcomers to the hobby, and everyone studying for their licence to come along to one or all of the following weekends, where crash study classes for the novice and full licence exams will be held as well as on-air and other demonstrations.

160 TO 2 METRE AMATEUR STATION (Photo 1)
Various on-air activities were available, including world-wide exchanges. Here you see newcomers being introduced to the art of relaying the WIA news broadcast from 2 metres FM up to the 160 metres AM frequency.

From right to left we have Bruce VK2YIU controlling the 2 metre patch, Steve VK2VFB making technical adjustments on 160 metres under the supervision of Peter VK2PV. John, who is studying for his novice (up from Bathurst), looks on.

PHOTO No. 1

The amateur radio weekends will be held at the Blue Gum Lodge at Springwood, NSW, from 8 p.m. Friday till 2 p.m. Sunday on the weekends of the 27th to 29th July and the 2nd to 4th November, 1979. These weekends correspond to P. and T. exams, which are held a month later, hence are ideal for those needing a brush up for novice and full exams. An additional weekend in the Wagga area is currently being discussed.

Here are some of the highlights of the last weekend which was held at Katoomba, NSW.

PHOTO No. 2

CONSTRUCTING ELECTRONIC PROJECTS (Photo 2)
Steve VK2VFB shows some of the newcomers how to construct some of the simple projects available at these weekends. These weekends have given Steve valuable experience towards his plans to start up a radio club at his school in Sydney.

PHOTO No. 3

ROUND TABLE STUDY (Photo 3)
Here is one of the small group study sessions where theory discussion or morse code practice can be undertaken. Going around the circle, from left to right, we have Sel VK2NOK (one of the weekend organisers), Chris VK2ZPB, Hal VK2NSF and Ken VK2NWK (another of the weekend organisers).

All food and accommodation is provided during these weekends. To book your place write to Box 52, Asquith 2078, or phone Ken on 638 1687; Sel on 827 3589, or Les on 47 3044.

A LETTER OF PROTEST

To dear Mr. P. and T.,
Please excuse my typing since my hands shake badly due to a Parkinsons disease affliction.

My reason for writing is to protest the speed increase of amateur RTTY. You see, I am an old CW (A1 to you) operator but no longer able to operate due to the shakes.

The Senior Citizens' League recommended that I take up a hobby to occupy my mind. Dancing was out of the question unless the beat was in sync with my shakes. (I found a record once that sync'd in on a sub-harmonic but the physical exertion put me in bed for ten days.)

Other hobbies have ended up the same way in disaster.

However, in my efforts to discover a hobby, I found that I could copy 60 w.p.m. RTTY in my head and it was in perfect sync with my shakes. The up-shift and down-shift were quite exhausting until I converted the jumping off my chair and resettling to a nod of the head. It works beautifully and I have spent many pleasant hours reading the news (80 w.p.m. press) and listening to the Ham band.

I have checked with my Doctor to see if there is a drug available that could increase the speed of my sync. Some of the drugs have possibilities but they are not legal and that is another story. To date I have only been able to sync in on 60 w.p.m. stations.

I implore you to maintain at least a few 60 w.p.m. stations for old-timers like me. Sure, you can call it progress, but the automobile didn't entirely replace the horse — I can still see a few of them around.

Yours faithfully,
A. S. Shaker.

P.S.: Developed a reperf system by installing punches on my teeth. But the added weight caused my uppers to keep falling out and the tape almost choked me so I had to give that away.

From AARTG, No. 12.
Early in December 1978, my wife Rosemary VK2NID and I spent an enjoyable week holidaying in Tasmania. We drove from Sydney to Melbourne, flew across to Launceston, and then rented a car as part of a fly/drive package holiday.

Not wanting to lose touch with the world of Amateur Radio, we took portable 2 metre FM equipment with us because of its convenience and widespread use. This information elaborates on the notes made during the trip which should be of interest to amateurs holidaying or travelling in the same areas.

**VK3RNE MT. BIG BEN — Channel 8 (48)**

*Hume Highway:*
Accessible from north of Holbrook (NSW) through to Euroa (Vic.).

**VK3RGL MT. ANAKIE — Channel 8 (48)**

*Hume Highway:*
Copyable up to about 60 km out of Melbourne.

**VK7RAA MT. BARROW — Channel 8 (48)**

*Tasman Highway:*
From Launceston, excellent coverage until about 10 km west of Scottsdale; then only intermittent access (e.g. near Derby and Welldorf Pass).

*Good signals from St. Mary's south to the top of Elephants Pass.*

**Bass Highway:***
From Launceston, good coverage to Deloraine (where we turned south on to the Lake Highway).

*Lake Highway:*
From Deloraine, patchy coverage south. Accessible from the Scenic Point just north of Breona and at most places alongside the Great Lake, which were somewhat elevated (i.e. not near water level).

*Good access at the Marlborough Highway intersection (where we turned southwest).*

**Hobart City:**
From the Mt. Wellington lookout, VK7RAA was easily workable by 1 watt hand-held transceiver (we found VK7RHT being keyed simultaneously due to its physical proximity).

*Quite a few base stations in Hobart were able to work into VK7RAA with little difficulty.*

**VK7RHT MT. WELLINGTON — Channel 2 (42)**

*Lake Highway:*
Accessible from the Scenic Point just north of Breona by 1 watt hand-held transceiver. Intermittent access south to the Marlborough Highway intersection. (Scratchy but workable signals were heard from a mobile with a similar set up to ours from just north of Bothwell.)

*Marlborough Highway:*
Very intermittent access.

*Tarraleah Highway:*
Intermittent access from Bronte to Tarraleah. Good coverage from Tarraleah to Ouse.

**Lyell Highway:***
From Hobart, good coverage to Ouse (where we turned on to the Tarraleah Highway).

**Huon Highway:**
From Hobart, good coverage to Glendevie.

*South of Strathblane, only very intermittent access was possible.*

**Historic Richmond:**
From Hobart, good coverage. Workable by 1 watt hand-held transceiver in Richmond.

Simple mobile operation (good for rented cars), power from cigarette lighter, rig "squashed" under centre armrest.

Simple Antenna Installation. Magnetic CB base converted to 2 Mx quarter wave. BNC socket on base for quick disconnect.
There is no substitute for quality, performance or the guarantee of the very best. Hence, the incomparable National RJX-1011 transceiver. The RJX-1011 covers all amateur bands 1.8-30 MHz (160-10 metres). It is easy to use, with dual gate MOS FETs at all critical RF amplifier stages, totally solid state and with spurious-free operation at all input power levels. Operating modes: AM, FM, CW, SSB, fixed and variable FM. This state of the art design yields a transceiver for correct monoband spacing. Add to this the rugged boom to element mounting, heavy duty taper swaged elements, and the ability to handle any standard CCTV camera, broadcast video or video, tape source. For a truly professional video display of digitally processed fast scan video. Under 1 dB insertion loss in channels 6, channels antenna impedance 50 ohms unbalanced. BNC connectors, microphone receiver, double conversion superhetrydyme (1st IF, 16.9 MHz; 2nd IF, 455 kHz). Sensitivity —4 dBu N0 Q and 3 from 3 to 2000 watts. Operates on 12 volt long trouble-free storage • Automatic or manual TV frame adjustment standard • Capable of real time display of microcomputer generated video. • Built-in receive pre-amplifier • Automatic squelch on transmit • Internal grey scale generator adjustment standard • Compact size • Under 1 dB insertion loss in channels 6, channels antenna impedance 50 ohms unbalanced. BNC connectors, microphone receiver, double conversion superhetrydyme (1st IF, 16.9 MHz; 2nd IF, 455 kHz). Sensitivity —4 dBu N0 Q and 3 from 3 to 2000 watts. Operates on 12 volt long trouble-free storage • Automatic or manual TV frame adjustment standard • Capable of real time display of microcomputer generated video. • Built-in receive pre-amplifier • Automatic squelch on transmit • Internal grey scale generator adjustment standard • Compact size
WHAT WAR CONTINUES? Take it easy, Dicky Smith, we all accept that you are an energetic and successful young businessman, but you are still a newcomer in the business of genuine licensed amateur equipment. Don’t try to take on a “BACKYARDER” with 15 years experience who has already forgotten some tricks that you or Gary may still have to learn. Try to beat MY latest HY-GAIN prices.

ARIE BLES.

**HY-GAIN ANTENNAS**

<table>
<thead>
<tr>
<th>Antenna</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH6-DXX 10-15-20M 6-el yagi</td>
<td>$295</td>
</tr>
<tr>
<td>TH3-MK3 10-15-20M 3-el yagi</td>
<td>$240</td>
</tr>
<tr>
<td>TH3-JR 10-15-20M 3-el yagi</td>
<td>$190</td>
</tr>
<tr>
<td>18-AVT/WB 10-80M vertical</td>
<td>$195</td>
</tr>
<tr>
<td>204-BA 20M 4-el Tiger Array</td>
<td>$200</td>
</tr>
<tr>
<td>12-AVQ 10-15-20M vertical</td>
<td>$50</td>
</tr>
<tr>
<td>2M 5-el yagi w/balun 6’3” boom</td>
<td>$25</td>
</tr>
<tr>
<td>2M 8-el yagi w/balun 12’5” boom</td>
<td>$30</td>
</tr>
<tr>
<td>BN-86 balun for beam buyers</td>
<td>$20</td>
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<tr>
<td>10/11M 5-el yagi 17’ boom</td>
<td>$70</td>
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**COAX CONNECTORS**

<table>
<thead>
<tr>
<th>Connector Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL-259-SO-239-cable joiners ea.</td>
<td>75c</td>
</tr>
<tr>
<td>Right angle &amp; T connectors, ea.</td>
<td>$1.50</td>
</tr>
<tr>
<td>GLP right angles RG-58U to SO-239 with lock nut &amp; cap, ea.</td>
<td>$2.50</td>
</tr>
<tr>
<td>Double female connectors, ea.</td>
<td>80c</td>
</tr>
<tr>
<td>MLS right angles RG-58U to PL-259, ea.</td>
<td>90c</td>
</tr>
<tr>
<td>In-line mike sockets 3 &amp; 4 pin, ea.</td>
<td>75c</td>
</tr>
<tr>
<td>Mike sockets 3 &amp; 4 pin, ea.</td>
<td>75c</td>
</tr>
</tbody>
</table>

**TRIO-KENWOOD PRODUCTS**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-520S 10-160M transceiver</td>
<td>$650</td>
</tr>
<tr>
<td>TS-120V 10-80M 12V transceiver</td>
<td>$520</td>
</tr>
<tr>
<td>TL-922 10-160M linear amp.</td>
<td>$1,100</td>
</tr>
</tbody>
</table>

All further Trio-Kenwood accessories and transceivers at competitive prices.

**NOVICE SPECIALS — TRANSCEIVERS**

<table>
<thead>
<tr>
<th>Transceiver</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>10M Sideband SE-502 USB/AM 15W PEP-240V AC 12V DC-inbult SWR/RF meter 28.3-28.6 mhz-clarifier tuning transmit and receive</td>
<td>$125</td>
</tr>
<tr>
<td>10M Universe 224-M USB/AM 15W PEP 12V DC 24-ch. 28.480 to 28.595 mhz, 5-khz steps-clarifier tuning transmit and receive</td>
<td>$100</td>
</tr>
</tbody>
</table>

CONVERSION CRYSTALS for amateur licence holders —set of 8-crystals to convert 23-ch. 27-mhz CB units to 28-mhz. Suitable for Kraco, Sideband, Universe, Hy-range V etc., converts as per Universe 10M above — CRYSTALS and instructions | $40   |

**KYOKUTO**

FM-2016A 800 channel 2 meter FM transceiver with 4-channel memory & scanner | $360   |

All Prices are NET, ex Springwood, NSW, on a pre-payment with order basis. All risk insurance is free of charge, allow for freight charges by air, road, rail or postal, excess will be refunded. Prices are subject to change without prior notice. All orders cleared on a 24-hour basis after receipt of order with payment.

Arie Bles (VK2AVA) Proprietor
Roy Lopez (VK2BRL) Manager
THE KULROD STORY

Many of you may not be familiar with the name Kulrod, which is Larsen's trademark. I think that its origin might be interesting to you.

Kulrod had its beginnings during the early days of Larsen's experimentation with various types of loading coils, antenna rod lengths, etc., in the investigation of the best means of producing a superior gain antenna for the VHF frequency range. This was about 14 years ago. At that time there were a few antennas around but there was serious doubt as to whether they made any improvement over a quarter wave antenna. For that matter, there still is.

I do hope, however, that in the material which I will be presenting, to dispel that idea. Larsen's was fortunate to have a 100 watt transmitter available for testing their early prototypes, improving both their loading coils and the antenna rod. Their first loading coils became extremely hot at 100 watts — some of them actually burning up. When this difficulty was finally eliminated, they noted that at the 100 watt power level the 17-7 stainless steel rod which they were using became extremely hot at the point of maximum RF current (approximately 18 inches from the top). So hot, in fact, that keying the transmitter for approximately one minute developed so much heat that touching the rod at the point of maximum current after the removal of the transmitting power would literally burn you. They reasoned, and it was subsequently proven to be the case, that the power being used to heat the antenna rod was wasted for communication purposes and that if it could be eliminated, a noticeable improvement in antenna performance might be expected. They were aware of the phenomena as “Skin Effect”, which describes the condition of radio currents travelling only on the surface or very near the surface of a conductor.

A little research into the literature revealed that the depth of penetration into the surface of a conductor a 150 MHz was in the order of .00025 inches, or two and one half ten thousands of an inch. It is interesting to note, at this point, that the primary function of the antenna rod is simply to support this extremely thin surface area which does all the work. 17-7-PH stainless steel is probably the most common material used for taper ground antenna rods. It has achieved this high usage due to its high strength, reliability, and relatively high resistance to corrosion. It does, however, have the undesirable characteristic of extremely high electrical resistance. Its resistance is in the range of 20 to 30 times that of copper, which certainly gives it poor marks in the efficient electrical conductor category.

Armed with this information, Larsen's proceeded to have a rod silver plated. To their great joy, when the rod was placed in a good loading coil and subjected to 100 watts, the rod was no longer hot.

While driving through the mountains on the Tasman Highway near Scottsdale, we heard weak signals which we thought were VK7RAA but instead turned out to be VK3RGL!

The following repeaters were not in operation during our holidays and hence no mention has been made of them: VK3RML, ch. 2, VK3RMM ch. 5, VK1RGI ch. 7, VK2RAW ch. 5.

It appeared to be common practice in VK3 and VK7 for repeater channels to be called (e.g.) “channel 8” and not “channel 48”. I had been warned before leaving Sydney that any reference to “NSW-type repeater channel numbering” in other States would result in severe earbashings from local operators — this was definitely not the case.

CONCLUSION
The four repeaters mentioned in detail all worked well and provided excellent coverage over wide areas. Credit must go to the repeater groups themselves.

It is reassuring when driving in unfamiliar territory to know that access to a repeater is possible should there be any need to call for assistance, whether it be an emergency or just simply for directions.

I hope that other amateurs travelling and using these repeaters will find these notes useful.

Jim Larsen W7DZL
President, Larsen Electronics, Inc.,
11611 N.E. 50th Ave.,
Vancouver, Washington, USA 98663.
watts of power for a full minute, there was no trace of heat in either the rod or their vastly improved loading coil. To their great joy they also discovered a great improvement in performance as indicated by an approximate 1 to 1.5 dB improvement in field strength when an unplated rod was replaced by a plated rod. The demonstrable improvement of their early antennas over those which were then currently available, allowed them to penetrate what was and is an extremely competitive market.

If you’re afraid I’m not going to tell you how the word Kulrod originated, just be patient for a few more minutes. For the first five or six years of Larsen’s existence they silver-plated their rods to get the high performance, which they realised had become a necessity. The silver, unfortunately, had a bad tendency to corrode and produce rust spots when used in certain parts of the world; the worst areas were the tropics and those areas in North America where a great amount of salt is used on the streets and roads during winter time.

During this period, they continued to search for a coating material which would provide them with the required electrical efficiency and at the same time be resistant to the corrosion problem. It consists of a sandwich of nickel, copper, nickel, and chrome, applied over the basic rod material in that order. The first coating is known as a nickel flash and provides a base for the copper. A thick layer of copper is then applied; the copper coating is in a way the most important because it contributes to the low resistance characteristic which they need. A coating of nickel is then placed over the copper, a very thin calibrated coating, I might add. Finally a coating of chrome is applied over the nickel to provide a cosmetic effect. It is extremely important that the last two layers be quite thin; otherwise, the surface resistance of the rod might significantly increase, and they would wind up right where they started.

Prior to the development of this system, they spent a great deal of effort in advertising their silver-plated rods and then found it necessary to make a change.

Larsen’s advertising department conceived the name Kulrod, which with its unique spelling was bound to attract attention and at the same time signify the fact that if you have a Kulrod antenna you do in fact have one which will provide you with a cool cool rod. From time to time they receive complaints that their present rods will turn green when exposed to winter road salting conditions. This condition in no way interferes with the electrical performance of the antenna and may be alleviated to a considerable degree by cleaning the salt encrustation off the rod from time to time and by also, at the beginning of the salt season, applying a good auto body wax to the rod. The green colouring is caused by the penetration of the outer plating layers by salt and its consequent reaction with the copper layer which produces a green coloured salt, probably copper chloride, which appears on the surface.

They could also improve this situation by making the nickel and chrome plating thicker, but this, unfortunately, has the undesirable by-product of increasing the surface resistance of the rod and bringing them right back to the point where they started. Larsen’s is still working on the problem and hopes one of these days to have the perfect answer.

Their method of making field strength comparisons might be of interest, in that it is a system which anyone might use with a minimum of equipment to compare various antennas. The particular area which they had available for conducting tests was poor from a classical standpoint; in that when they investigated its use, they found that it was subject to considerable multipath even when illuminated from a standard signal generator using a corner reflector approximately 500 feet away. They reasoned that perhaps this might be a blessing, inasmuch as the situation more closely approximated actual working conditions. Larsen’s procedure follows a standard signal generator using a corner reflector approximately 500 feet away. The antenna transmission line was connected to a calibrated receiver and field strength reading taken at 50 intervals throughout the 100 ft. course.

This procedure was repeated for each antenna to be compared. An average was taken of the 50 readings for each antenna and the result used to obtain comparative gain figures. They were pleased to discover that their results have correlated quite well with those obtained by the most elaborate systems. The key, of course, lies in taking a tremendous number of readings and obtaining an average; in this way, obvious slight errors are averaged out. One simple way this system might be used to obtain comparisons in a vehicle would be to connect a remote meter or test set to obtain a first limiter reading under unsaturated signal conditions. Obtain a signal from a repeater or some other source and, of course, count aloud slowly to 40; at each count an assistant will read the value of the meter reading and jot it down. The readings may either be averaged or simply totalled and the results compared to other antennas which have been tested in exactly the same way. The results may be invalidated in some cases if the signal source is subject to intermittent fading conditions due to transmission path conditions.

While we are on the subject, let’s talk a bit about antenna gain. There seems to be a tendency among some antenna manufacturers to thump their chests and proclaim that “we have the best antenna in the world” and in order to amplify on this situation they feel obliged to publish gain figures that will confirm it. For example, in a recent issue of Ham Radio magazine there were two different manufacturers proclaiming 3 and 3.8 dB gain for their antennas. Based on the generally accepted criteria of comparing the gain to the quarter wave antenna, which is replaced by the gain antenna, it is difficult assuming a decent quarter wave antenna for either of the units to provide more than a measured 1.5 to 1.75 dB gain. They have never been sure whether some of these claims are due to deliberate misrepresentation or whether they stem from a different concept and philosophy of gain measurement. One of the advertisers did, however, in extremely fine print, that the gain was compared to an isotropic antenna: the presentation was done in such a way that it would be difficult not to come to the conclusion that they were deliberately trying to confuse the reader.

What is an isotropic antenna? You may have seen many references to it in antenna advertising. Well, an isotropic antenna is essentially a source from which radiation is equal in all directions. This of course, does not correspond to a dipole or 1/4 antenna on a ground plane, whose radiation in general may be visualised by placing a doughnut in the electrical centre of the antenna. As a consequence, the effective gain of an isotropic antenna is approximately 2.5 dB less than a 1/2 wave dipole or a quarter wave ground plane.

In other words, an antenna which has a rating of 3 dB over an isotropic antenna would actually have a gain of only 1/2 dB over a dipole or a quarter wave antenna on a ground plane. If they were to use an isotropic antenna as the basis of their gain claims, they could quite honestly state that they had a 5.5 dB antenna.

I am sure that all of you know the relationship between dB and power, but it wouldn’t hurt to remind you that 3 dB improvement is equivalent to doubling the mobile transmitter power. If you were operating mobile to mobile and placed a 3 dB antenna on each of the mobile units, it would be the equivalent of obtaining a 6 dB system gain or actually increasing the effective power of each mobile unit by 4 times, which is not a bad bargain considering the relatively low cost of a good gain antenna. This is, of course, another reason why it is important for you to obtain an antenna which will give you an honest 3 dB gain in VHF and not one which gives you 3 dB over an isotropic and which would actually, when installed on two mobile units, provide only 1 or 1.5 dB actual system gain, certainly not your money’s worth. Another gain antenna application would involve the installation of a gain antenna on the quarter deck instead of a 1/4 installation on the roof top, in which case the gain of the gain antenna will very nearly equal that of the quarter wave on the roof and with a considerably simpler installation.
Before you invest in new amateur communications equipment or accessories, spare 60 seconds to read this advice.

"Any salesman will find a way to give you a better price — but for every dollar you save that way, you spend twice as much to find the after sales service you need. Before you buy, ask another Ham where he gets good sales assistance and concerned service attention."

At Bail Electronic Services we continue to offer first class equipment with a sure back up service.

A selection of the equipment available from Bail.

All-New FT-101ZD Series:
High-performance HF Transceiver with today's technology backed by a proud tradition. This rig includes variable IF bandwidth, digital plus analog frequency display, a built-in RF speech processor, and wide receiver dynamic range.

FT-101Z, Analog Model:
Top performance for the budget-minded amateur. The precision VFO gear mechanism is coupled to an easy-to-read analog display, providing resolution to greater than 1 kHz. All other features — the variable IF bandwidth, RF speech processor, superb noise blanker, VOX — are identical to the FT-101ZD. Counter and Dig. display can be added later. Set is basic and you add the extras you need.

Digital Display Communications Receiver with CPU Digital Clock and Timer — FRG-7000
The digital clock and timer, controlled by a CPU chip will read out both local and GMT time and will control peripheral station equipment such as a tape recorder.

STOP

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The digital clock and timer, controlled by a CPU chip will read out both local and GMT time and will control peripheral station equipment such as a tape recorder.

Other equipment from Bails includes Antennas, desk and hand microphones and headphone sets such as the YH-55 illustrated.
WHATS YOUR REASON FOR GOING ON AIR

Radio Communication is what you make it. There is the DX specialist, the ragchewer, the technician and the "average operator" who is probably a combination of all four.

The DX specialist never works local stations unless it is to find out some snippet of information about a rare contact who may be on frequency at a later date. His prime interest is in working as many countries as possible with a view to obtaining awards, etc. You will probably only hear him when he's working a "rare one"... at other times he is constantly listening and tuning up and down the band.

The ragchewer will be found in local nets, interstate groups, or talking to his mate over in Denmark or somewhere. Don't expect him to go clear in a hurry if you would like to work the station he is speaking to... he won't. There are many ragchewers on the bands, particularly on 80 and 40. They are less common on ten metres as this is a DX band when it is open, although there are often nets in progress at times of low band activity.

If you are the "ragchew" type do not assume because the band is quiet there is nobody listening... there are probably many others doing the same thing and a CQ local call could find you propped on the bands, particularly on 80 and 40. As this is a DX band when it is open, there are often nets in progress at times of low band activity.

You will rarely hear the technician... ninety per cent of the time he is in his shack constructing something and if he comes on the air at all, it is usually on two metres. Many technical minded operators do of course operate on the high frequencies, but their conversations are naturally orientated toward matters in which they are interested. Be wary of joining their groups unless you can contribute to the technical matters under discussion... and then only if you are sure you are competent to do so.

That leaves the "average operator". He has usually worked quite a lot of DX stations... particularly during the period after just receiving his licence. Having gained the satisfaction in knowing he can "get out" he will work DX if it is there... or ragchew if there is someone to talk to. He is not particularly worried whether he talks about radio, the weather or raising chickens, and he rarely bothers to QSL within Australia... but don't expect to find him on every night. He might be building something, playing cards with the XYL, or have gone out to the drive-in. He comes on the air when he is in the mood, and you take him as you find him. He may be a full call or a novice, and you will find him on any band. He is doing his own thing... as it is up to you to decide what your "own thing" will be. That is what amateur radio is all about.

AMATEUR RADIO OPERATION

WHAT YOU CAN'T GET AWAY WITH

Don't brag about the countries you've worked... the word will get around without you saying it.

Don't get involved in technical discussions unless you are sure of your facts.

Don't discuss religion or politics.

Don't make snide remarks or stir... what is acceptable in this country is not acceptable in others. Not all people think the way Australians do and their method and type of humour is completely different.

Never say anything about any operator that you have not already told him to his face, and even then be very careful.

Never say anything about an operator that you do not want to get back to him... you can bet it will.

Remember... the shack is the place for disagreements... not the airwaves.

Always be prepared to accept criticism or advice gracefully and to give criticism or advice tactfully.

Always check if the frequency is clear before transmitting.

Avoid transmitting too close to the edge of the bands allocated to you, about 3 kHz should be adequate.

Never purposefully transmit out of your band.

Conduct yourself with dignity on air... your reputation AND THE REPUTATIONS OF THOSE WITH WHOM YOU ASSOCIATE DEPENDS ON YOU. Remember many others may be listening to you.

Remain calm even when provoked by rudeness or thoughtlessness. Example: "Sorry Old Man... this frequency is in use... please QSY."

(from CQDX Radio Handbook.)

Trevor Reid VK3NNK, Box 79, Heidelberg Vic. 3084.

CHEAP TOWER DESIGN

Here is an idea for a cheap tower. This method gave me 25 feet of fully rotatable tower for less than $2.

The basic requirement is to have on one side of the house a flat wall going up to a peaked roof (see photo 1). The tower is then basically a 20 foot length of water-pipe, or suitable equivalent, held against the side of the house in a bracket that allows the pipe to rotate. Dropping the water-pipe over a metal spike driven into the ground stops any lateral movement of the tower at the base while still allowing an Armstrong Rotator to be used.

The tower in my case was secured at the end of operations by bolting another 3 foot section of steel to the pipe and poking it through a ventilation hole in the brickwork of the house. By more luck than design this left the beam pointing towards Europe and across most of Sydney.

The bracket is basically a short length of tube larger in diameter than the water-pipe. Mine was a rattling good fit with about ½ in. between pipe and bracket. Later when finances allow a rotator can easily be added by placing it at the base of the tower. In this position it will not be subject to any great lateral forces (see photo 2).

The only materials that had to be purchased were the bolts that held the bracket to the house. These had to be long enough to pass not only through the facia board on the house but also through the main supporting beams in the roof. This ensured the entire structure was fairly solid.

An extra 4 feet of height was gained by ramming a short length of 1½ in. water-pipe down the original 1½ in. pipe. It is important not to get greedy at this point. The length above the last support acts like a large lever when the wind blows and tries
HOW I BECAME AN AMATEUR

As a boy at Technical College in the 1940s I learnt to build crystal sets and how to use them. This was the start of a lifelong interest in radio. Money was very scarce in my home so when school finished, work was the important thing. Radio was pushed into the background, but not forgotten. Marriage and the raising of a family meant radio remained in the background, but then CB radio came along.

My 20-year-old son arrived home one evening with a CB and we went to the highest vantage point possible to try out its tricks. Thirty years of smouldering interest in radio was awakened again and I found the advances in radio technology "out of this world". More importantly the realm of ham radio type communication was now within the bounds of my financial possibilities.

After a short term on CB radio I realised its shortcomings and was looking for something better and more reliable. By accident I overheard a discussion in the local electronics supply shop on a new course for novice radio amateurs at the Devonport Technical College. I enrolled, thinking to myself that even at 46 I wasn't too old to learn, or was I?

During that course 12 months ago I doubted my own ability to absorb Ohm's Law, oscillators, SSB, radio wave propagation and all the rest of it but my teacher was full of optimism. Like a nervous schoolboy I went along for the November examination last year full of fear and trepidation. Morse code was my weakness and the exam was in three parts. Firstly regulations which wasn't too difficult, then theory which gave me a glimmer of hope to pass. During waiting time in the corridor with other candidates I felt confident of passing the first two parts, but then came the Morse code section.

One by one we filed into the room to send our sample of morse in a given key or one of your own choice. After some initial practice I set off and made one number mistake and was overtime by two seconds. Still the biggest hurdle was to come when I was called back into the room shortly after and sat at a long table with a set of earphones. The time had arrived for me to receive a message in morse code.

I set off after a brief practice session and, concentrating hard, almost finished the assignment before I stumbled on a letter and missed the next couple of dots. Believing I had blown the whole examination I carried on and eventually my written message appeared like a Chinese conglomeration. My confidence shattered, I accepted an application form from the examiners for the next exam and drove away sure I would have to return for the next course.

A fortnight later my wife telephoned me at work to say my results had arrived and I had passed all three sections. I asked her to read it to me over the phone, not twice, but three times before I could believe her. A lifelong dream had just come true, the best Christmas present I could ever wish for. I just had to ring my course teacher and tell him. His reply was simply: "I knew you would pass, you know." Obviously he held more faith in my ability than I did.

The necessary papers were filled in and despatched to authorities and back came that coveted piece of paper informing me that I was now VK7NLH and duly authorised to indulge in my dream of 35 years or more.

The next step was a rig, the old Kraco CB set was amendable to 10 metre work if I got new crystals, and a letter was sent to a United States supplier.

In the meantime I looked at several good amateur rigs and one or two were borrowed for a practice session on air. Then I made and erected a G5RV dipole on the advice of some friends and the results were quite good. But, like amateurs everywhere else, I wanted better, so up went an elegant 2 element, 2 bander Yagi on a telescopic mast, in went a good tuner and then a TS520S transceiver miraculously appeared in the temporary radio shack of my spare bedroom. It was at this time my wife and family were considering moving house to leave me with my bits and pieces. The hint was taken and I promptly built a permanent shack in the furthest corner of my large garage. Fitted out with lights, power points, carpet, soft chair, special console to accommodate my gear and a good intercom to the kitchen (hell, I couldn't starve, could I!). I grabbed a heater for Tasmania's cold nights and shifted camp.

I am now quite settled in and keen to work for my full call. My wife, along with other amateurs' wives, is amazed at how cheap our gear is.

The transceiver was a bit over a hundred bucks, desk mikes go for a few dollars as do towers for antennas. The antenna was only $50, and you know as well as I that the more that goes into that little shack the cheaper it all gets. Joiners, connectors, power supplies, meters. Gosh, they are almost being given away. Ask any amateur, he'll tell you.

Seriously, though I must admit that I have gained a great deal of satisfaction from the knowledge that I worked and studied to the extent that I could obtain a novice licence. And as I mentioned earlier I will keep going for my full call to get the most possible enjoyment from the hobby. It isn't cheap, it isn't dear, it's just what you want to make it. And there are no unnecessary demands as you can pick it up or put it down when you like. It is up to you whether you operate one hour a week or 12 hours a day and the enjoyment and satisfaction is as rewarding either way.

By the way, the crystals ordered from the United States seven months ago have still not arrived and I guess they got lost somewhere. To finish, my wife wishes to know of a divorce action anywhere citing TS520S as a co-respondent.

Cheers and 73s.

Don Houston VK7NLH.
TRANSMITTING MODES IDENTIFIED

For our readers information the following treatise on the modes of radio transmission are designated.

The official "Classification of Typical Emissions" are laid out below, and a brief description given.

Acknowledgement is given ITU Regulations.

AO, A1, A2, A3 and F3 are too well known to need a description of the sounds produced on air, but A4 and F4, facsimile, or the transmission of pictures by radio, which cause considerable hash on our bands are identifiable by the tick, tick, tick as the carriage returns, and either a high pitched (for white) or a low pitched (for black) squelching signal.

A7A, the multi-channel voice frequency telegraphy, sounds like a buzz saw, the pitch being consistent with the speed of transmission.

F1, frequency shift keying (FSK) in morse or teletype (RTTY), can be identified by the mark and the space on two separate frequencies, separated by 180 to 1,000 Hertz. The mark carries the intelligence and the space in morse is what we used to call the "back wave". Teletype is sometimes hard to identify because it is not always sent at the same speed. The American speed is 45.5 bauds, while the British is 50 bauds. Some multi-channel run at as high as 192 bauds. Here we have a rather confusing issue. What is a baud? The Oxford dictionary gives a complete erroneous definition, so I'll leave it to you!! On our bands are often heard teletype blanks, reversals and RYs. Blanks sound like dots on one frequency and dashes on the other. Reversals are a series of fast dots, while RYs sound like the fast rhythmic trilling of one's tongue.

F6 — four frequency diplex telegraphy is as though two separate Fs are on adjacent frequencies, very often two kilohertz apart.

The P series have come into prominence lately, and are pulses. In the case of the Russian "woodpecker" P0, ten to the second. Recently there has been a faster one (26 to the second), which I believe is a European ionospheric sounder.

Further information on all these signals can be ascertained from your Intruder Watch Co-ordinator, and all these signals can be heard and identified by sending me a C60 cassette or reel (30 minute) tape. I can then dub my IW identification tape for your edification and education.

Alf Chandler VK3LC,
Federal Intruder Watch Co-ordinator.

NOTE NEW ADDRESS:
15 Point Avenue, Beaumaris 3193.
AMSAT AND ARRL

I am pleased to advise renewed contact with AMSAT through Bernie Glassmeyer, W9KDR, and I hope to have some up-to-date leaflets, etc., in the not too distant future — I will let you know the situation when further letters have crossed the Pacific.

Also, the first AMSAT newsletter for a year has turned up with airmail postage of 87c. Obviously AMSAT cannot afford to keep this cost up continuously, so we shall have to find a formula to assist. This is a problem for Life Members as the cost of sending a draft for a few dollars for additional airmail charges is about $2.50. Any ideas? Please don't suggest that I should collect the money! (It might get attributed to excessive radiation during launch; a most disappointing end to a great effort by our Russian colleagues. At least a few of us managed QSOs via RS.1 and 2 and we are looking for QSLs perhaps they will become as rare as a "penny black" in due course.

Oscar 7 still operates but there is little activity via the most general mode in use — "B". Reports indicate that complete failure is anticipated in September but maybe it will have yet another new lease of life.

Oscar 8 still performs well. Colin 9M2CR reports that stations in Asia hear VKs in the middle of the band, whereas in accordance with the official band plan they are at the higher end. I guess that operators in VK and ZL have not required resort to band planning on the Oscars due to limited activity in this part of the world. Maybe we should fall in line with convention — more on this next month.

PUBLICATIONS

I have been fortunate to have had an opportunity to review a new publication by ARRL entitled "Satellite Communications", which is edited by Bernie Glassmeyer, W9KDR. This book, which is mainly made up of re-prints of articles published in QST during 1978 and 1979, is primarily devoted to Oscar 8 and particularly to Mode "J" operation.

Chapters include basic AO8 information, telemetry, antennas, filters, comprehensive mathematical and computer calculations for the location of satellites and information on the Russian series.

Words of wisdom appear throughout the book such as "Antennas cut for 432 MHz can be used for Oscar 8, Mode J, but very few exhibit any gain at 435", and "some so-called low-loss types of coax are not good with me!"

Pulse Modulation

Telephone

Audio frequency or audio frequencies modulating the width (or duration) of the pulses P2E

Audio frequency or audio frequencies modulating the phase (or position) of the pulses P2F

Amplitude modulated pulses P3D

Width (or duration) modulated pulses P3E

Phase (or position) modulated pulses P3F

Code modulated pulses (after sampling and quantization) P3G

Cases not covered by the above in which the main carrier is pulse modulated — P9
The Hon. A. Staley, Minister for Post and Telecommunications, officially opened the Radio Bay and Station at the Museum of Applied Arts and Sciences on Friday, March 23rd, at 10.30 a.m.

The newly completed Radio Bay is equipped with an Amateur Radio Station VK2BQK, generously donated by Dick Smith, of Dick Smith Electronics. The equipment is the latest in amateur radio, and is operated by novice and amateur licence holders from the Wireless Institute of Australia, who voluntarily man the station on weekends. The Radio Station has successfully transmitted to all parts of Australia, including the Science Museum in Victoria; New Zealand, Japan and the USA.

Graphic material, photographs and historical radio and communication equipment are also on display.

For further information please contact Margaret Betteridge, Public Relations Officer, or Jeff Sergei, Curator of Electronics, on 211 3911.


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**Vertical Amplifier**
- Sensitivity: 20mVp-p/div or better.
- Bandwidth: DC or 2Hz to 4MHz (~3dB)

**Horizontal Amplifier**
- Sensitivity: 300mVp-p/div or better.
- Bandwidth: DC to 250kHz (~3dB)
- Time Base: Sweep Frequency 10Hz—100kHz in four ranges.
- Synchronization: Internal; negative polarity only.

**Transmitter Monitoring**
- Frequency range: 1.8 — 54MHz.
- Impedance: 50 to 75 ohms.
- Measurable Output Power: 5 to 500 watts.
- Size and Weight: 150(H) x 112(W) x 125(D)mm; 1.2kg.

**Two-tone oscillator**
- Frequency: 1300 and 1900Hz (approx.).
- Output voltage: 50mVrms, max.

**Power supply**
- 15V/50VA; 50/60Hz; 12VA approx.

**Transmitter Monitoring**
- Frequency range: 1.8 — 54 MHz.
- Measurable Output Power: 5 to 500 watts.
- Impedance: 50 — 75 ohms.
- Size and Weight: 40(H)x50(W)x90(D)mm; 110 g.

**Frequency**

- Range: 1.8 — 54 MHz.

**Impedance**

- 50Ω.

**Forward and Reverse Power**

- Three ranges each: 20, 200, 1000W full scale.
- Accuracy: ±10% f.s. to 40MHz, ±15% f.s. to 54MHz.

**SWR indicator**

- 1.0—10, direct reading.
- Less than 10W.

**Connectors**

- Type M (UHF) (Input-output)

**Size and Weight**

- 150(H) x 112(W) x 125(D)mm; 1.2kg.

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YAESU SP101B  Speaker
YAESU YC601B  Digital Display for FT101E
YAESU FT301E  Transceiver
YAESU FT301D  Transceiver
YAESU FT301D  Power Supply
YAESU FT901DM  Transceiver with Memory
YAESU TV901DM  Scanning, VFO
YAESU Y0901  Monitor Scope
YAESU FC901  Antenna Tuner
YAESU SP901  External Speaker
YAESU FRG7  Receiver
YAESU YP150  Dummy Load
YAESU YC500S  Frequency Counter
YAESU QTR24  World Clock
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LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

35 Whynot Street,
West End, Brisbane,
Queensland 4101.
23-5-79.

The Editor,
Dear Sir,

Geoff Wilson VK3AMK and Neil Penfold VK6E have posed some pertinent questions re our VK/ZL contest. I agree with both.

Should we have a contest—or contests? Most definitely, yes. Only a minority of Hams participate in contests and only about one quarter of these submit logs—so even then, they fill a definite psychological need. As far as I am concerned, there are many persons handling such items who are quite unaware of the dangers involved. Unfortunately, the use of beryllium oxide (BeO) seems to be widespread. Probably, we all remember the site of the first log submitted, I am sure. It might be possible that it’s this possibility that keeps cheating to a minimum. So because of this log submission, in my view, is mandatory.

Alan Shawsmith VK4SS.

30 Lock Street, Eltham,
Victoria 3095.
28-5-79.

The Editor,
Dear Sir,

I wish to draw your attention to an article that appeared in the radio amateur journal QST July 1976, which warns of the extremely toxic nature of the substance beryllium oxide.

As well as those applications mentioned in the article, beryllium oxide is to be found in commonly used RF power transistors (e.g. 2N5590, 2N6084, B40-12, etc.). Some mounting kits for transistors also use beryllium oxide washers for improved conductivity. I am certain that there are many persons handling such items who are quite unaware of the dangers involved. Unfortunately, the use of beryllium oxide (BeO) seems to be widespread. Probably, we all remember the site of the first log submitted, I am sure. It might be possible that it’s this possibility that keeps cheating to a minimum. So because of this log submission, in my view, is mandatory.

W. J. Smith, VK5YNM.

86 Free Street,
Ballarat,
Victoria 3350.
May 9, 1979.

The Editor,
Dear Sir,

I doubt whether anybody could suggest a solution to the problem by adding one’s age to the report. Any participant in the All Asian Test will have observed that this works very well. However, I’d like to take this a step further by suggesting that RANDOM OR PERSONAL NUMBERING be adopted. This simply means that any participant can choose any two digit number, which will be used as identification. This makes for much easier operating over the 001 sequences and enhances the number of logs submitted.

I realise the contest committees might well be loathe to take such a radical step. The only alternative then, as I see it, is to fall back on the “Get White Innovation” of allowing the participant to commence with any number between 001 and 100. This prevents each from gauging the other’s progress—which is the way it should be, particularly as we operate on the assumption that the number of logs submitted—which is the prime aim of any contest committee.

Finally:—the GCR and Summary Sheet: At first glance, the GCR rule and summary sheet seem to have merit, as it would save a lot of writer’s cramped and entice more log entries. However, it might also be that some participants submit a log, cheating, by explaining how. However, an eagle-eyed scrutineer can explain how.}
coming so all in all, the award was very hard to come by and has a high degree of prestige for those fortunate to hold it.

We are always having rumbled to home about the first 'this' on 6 and the first 'that'. Well, this is one-first! that won't be taken away in a hurry, not without much effort. Every VHFer should be allowed to have the opportunity to qualify for the award. Making it easier, just because it is hard is not sufficient grounds for revising the rules. Remember, impossible things take just that little bit longer. Do you really think someone stuck for want of a VKO would appreciate the Federal Awards Manager meddling in the rules just to allow "all in"? He admits himself that he could also qualify for want of a VKO.

As far as getting VK0 on HF, how long did it take for you to get your QSL card back, Bill? And how often is VK0PK on the air? I can tell you that it is at least three times per week for over the last 2 weeks. Those who haven't worked him are not looking in the right place.

This brings me to point two.

A comment in Eric Jamieson's column hits out at VK92NG's lack of QSLing and gives credit to VK9ZNG for the first VK-VK9 QSO. QSLing and gives credit to him are not looking in the right place.

One "first" that won't be taken away in a hurry, of redress, instead of hiding behind page final reaction.

As far as ASLs, at least four VK3s, including myself, hold Martin's dark red card in our possessions, readily obtained by direct QSL to Box 409, Norfolk Island 2869.

As far as ASLs from VK9. I was, up to recently, not aware of any response. Meanwhile, four new members are being written up in QST and make in-

A direct quote from the editorial in QST later stated:—

As VG3A, 16 weeks of the contest trying to make contacts. The Editor, R. C. Black VK2YA.

My final comment is that lately there has been one-up-man-ship and oblique mud-slinging from VK5 area in matters of 6 metre operation. I believe that any column should be based upon credible news and facts which interests everyone, not just a personal soap-box for one or two one-eyed members of a "clique" who feel that the world above 50 MHz belongs to them alone!

I could of course put this in my column, but that would be abusing the privilege of writing for the VHF populus of Australia; instead Mr. Editor use your forum, thus giving anyone the right of redress, instead of hiding behind page final deadlines and long delays between comment and reaction.

Yours faithfully,
Steve Gregory VK3OT
Editor, VK3 ZBB

INTERNATIONAL NEWS

WARC 79

On special assignment, WASIDN, IARU Assistant Secretary Bruce Johnson, is travelling in Africa for WARC preparation, meeting amateurs and talking with Government officials of many countries. His travels are being well publised in QST and make inter-

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On special assignment, WASIDN, IARU Assistant Secretary Bruce Johnson, is travelling in Africa for WARC preparation, meeting amateurs and talking with Government officials of many countries. His travels are being well publised in QST and make inter-
1979 FEDERAL CONVENTION

This Convention, held in Melbourne over the weekend 29th-30th April, was attended by the Federal Councillor and Alternate Federal Councillor from each Division and all members of the Executive. Chairman of various Federal Committees were also present, as shown in last month’s WIANEWS, which provided an initial report on the proceedings.

In his opening address the Federal President said that the ARRL was well placed to receive this first Novice operator to attend a Convention as a delegate - Fred Parker VK2NFF, the VK2 President. In his response, Tim Mills VK2ZYM expressed thanks to the Federal President for the enormous amount of time expended on WARC 79 matters and said prior organisation this time was the best ever by amateurs and especially the WIA for such a Conference.

In discussions arising from annual reports the Federal President said he had attended 13 full day, 4 half day and 33 days overseas on Australian work during the year. Delegates were brought up to date on IARU and WARC 79 affairs. The IARU kit receiver, developed for use mainly in “Third World” countries, was produced and examined. Under Intruder Watch matters it was hoped that WARC 79 would produce some useful results concerning “the woodpecker”, but any policy to attempt combating pollution with pollution was hoped that WARC 79 might produce some usefullness on these would provide guidelines for proposing changes; more participation in contests, especially the Ross Hull and VK/ZL contests, was required. Increased liaison and publicity by the Department for more frequent and Special Projects $3,000 1,000

STATEMENT OF INCOME AND EXPENDITURE
FOR YEAR ENDED 31ST DECEMBER, 1978

<table>
<thead>
<tr>
<th>Description</th>
<th>1978</th>
<th>1977</th>
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<tbody>
<tr>
<td>Members’ Subscriptions</td>
<td>$81,938</td>
<td>$62,841</td>
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<tr>
<td>Immediate Receipt</td>
<td>5,074</td>
<td>2,697</td>
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<tr>
<td>Surplus — Log Books</td>
<td>—</td>
<td>53</td>
</tr>
<tr>
<td>Call Books</td>
<td>—</td>
<td>3,038</td>
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<tr>
<td>Magazines</td>
<td>6,426</td>
<td>4,239</td>
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<td></td>
<td>95,436</td>
<td>72,859</td>
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<tr>
<td>Expenditure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amateur Radio (Note 1)</td>
<td>33,445</td>
<td>20,455</td>
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<tr>
<td>Audit Fees</td>
<td>489</td>
<td>492</td>
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<tr>
<td>Bank Charges</td>
<td>685</td>
<td>658</td>
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<tr>
<td>Convention Expenses</td>
<td>2,492</td>
<td>2,438</td>
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<tr>
<td>Catering and Entertaining</td>
<td>122</td>
<td>251</td>
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<tr>
<td>Committee Expenses</td>
<td>524</td>
<td>95</td>
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<tr>
<td>Depreciation</td>
<td>340</td>
<td>300</td>
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<tr>
<td>EDP Expenses</td>
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<td>2,090</td>
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<tr>
<td>Electricity and Power</td>
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<td>267</td>
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<tr>
<td>General Expenses</td>
<td>542</td>
<td>643</td>
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<tr>
<td>Insurances</td>
<td>546</td>
<td>646</td>
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<tr>
<td>Membership Recruiting</td>
<td>2,568</td>
<td>1,249</td>
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<tr>
<td>Postage and Freight</td>
<td>3,382</td>
<td>2,025</td>
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<tr>
<td>Provision for Amateur Satellites and Special Projects</td>
<td>3,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Rent and Rates</td>
<td>2,230</td>
<td>2,137</td>
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<tr>
<td>Repairs and Maintenance</td>
<td>167</td>
<td>484</td>
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<tr>
<td>Stationery and Printing</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Stationery and Printing</td>
<td>4,545</td>
<td>1,778</td>
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<tr>
<td>Salaries and Secretarial</td>
<td>26,448</td>
<td>21,647</td>
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<tr>
<td>Telephone</td>
<td>884</td>
<td>608</td>
</tr>
<tr>
<td>Telephone</td>
<td>128</td>
<td>1,610</td>
</tr>
<tr>
<td></td>
<td>$86,615</td>
<td>$62,002</td>
</tr>
</tbody>
</table>

NET SURPLUS

$6,821

BALANCE SHEET AS AT 31ST DECEMBER, 1978

Members’ Funds:

Accumulated Funds $33,100 $26,279

Special Funds — IITU (Note 2) 3,062 8,921
WARC (Note 3) 10,894 9,604
WARC (Public Donations) 781
IARU (Note 4) 380 4,653
RWAA (Note 5) 1,153 1,100

$49,280 $51,167

Represented by:

Current Assets:

Commonwealth Bank — General Account $41,260
Commonwealth Savings Investment Account 25,223 22,685
Australian Savings Bonds 23,100 23,100
Australian Development Bank 2,200 2,200
Sundry Debtors — Less Provision for Doubtful Debts (2,000) (2,000)
Stock on Hand — at Cost 4,278 8,264

Non-Current Assets:

Furniture and Fittings — at Cost — 5,185
Less Provision for Depreciation (340) — 1,697

Accumulated Fund 14,795 12,990
Special Funds — ITU (Note 2) 3,062 9,521
WARC (Note 3) 10,894 9,604
WARC (Public Donations) 781
IARU (Note 4) 380 4,653
RWAA (Note 5) 1,153 1,100

$49,280 $51,167

Deduct:

Current Liabilities:

Commonwealth Bank — General Account 5,182
Sundry Creditors 2,468 4,526
Subscriptions in Advance 42,437 11,325
Provision for Superannuation 4,652 3,424
Provision for Amateur Satellites and Special Projects 4,349 1,613
Provision for Holiday and Long Service Leave 3,500 2,763
Deposit VK4 300 300
Dick Smith Education Donation 3,500 —

Accumulated Surplus 110,586 80,300

$49,280 $51,167

NOTES TO AND FORMING PART OF THE ACCOUNTS

AMATEUR RADIO (Note 1)

1978 1977
Income:

Advertising $37,756 $25,860
Subscriptions 1,175 2,274
AR Sales 1,567 1,159
Inserts and Sundries 4,344 2,127

44,844 30,530

Expenditure:

Awards $90 $90
Bad Debts — 280
Monororums 4,540 3,810
Postage 10,099 6,827
Publishing, Printing and Distribution Costs 54,919 35,287
Salaries 7,778 3,666
Travelling Expenses 663 1,025

78,289 50,985

Amateur Radio July 1979 Page 20
Ken Seddon VK3ACS, Chairman, Federal Repeater Sub-Committee.

Graham Scott VK3ZR, Federal Education Co-ordinator.

John Bennett VK3ZA, Nominal Editor.

3. During the year, Keith Roget VK3YQ was transferred overseas on business. This left us with a vacancy which we are still having great difficulty in filling, although Mr. Roper agreed to act for a time as shown below.

4. Keith is one of those dedicated members whose hard work has had much to do with the success of the WIA over many years. It is pleasing to report he has been made an Honorary Life Member of the Victorian Division in recognition of his many years of service.

5. To the date of writing we have not secured a permanent replacement for Keith despite discussions with and appeals to many members.

6. At the present Bill Roper has been co-opted into Keith’s place on Executive.

7. Luckily, the Executive office has, with the aid of some outside accounting help, been able to see the year through successfully on the bookkeeping side.

8. Bruce Bathols VK3UV, as Managing Editor of “Amateur Radio” and Chairman of the Publications Committee, has maintained close liaison with the Executive by attending at many meetings as possible.

9. No report on the personnel of the Executive was made available for the WIA in most of the reports from the previous year.

10. Fourteen (14) meetings of the Executive were held since the 1978 Federal Convention. Attendances were as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. D. Wardlaw</td>
<td>14</td>
</tr>
<tr>
<td>Mr. P. Wolfenden</td>
<td>13</td>
</tr>
<tr>
<td>Mr. K. C. Seddon</td>
<td>12</td>
</tr>
<tr>
<td>Mr. G. F. Scott</td>
<td>10</td>
</tr>
<tr>
<td>Mr. J. G. Bennett</td>
<td>9</td>
</tr>
<tr>
<td>Mr. K. V. Roget</td>
<td>4</td>
</tr>
<tr>
<td>Mr. W. E. J. Roper</td>
<td>2</td>
</tr>
<tr>
<td>Mr. G. Scott</td>
<td>1</td>
</tr>
</tbody>
</table>

11. The following also attended:

<table>
<thead>
<tr>
<th>Name</th>
<th>Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. D. Bathols</td>
<td>13</td>
</tr>
<tr>
<td>VKZZZC</td>
<td>1</td>
</tr>
<tr>
<td>VK3FJ</td>
<td>1</td>
</tr>
<tr>
<td>VK3JK</td>
<td>1</td>
</tr>
<tr>
<td>VK3STR</td>
<td>1</td>
</tr>
<tr>
<td>VK3YII</td>
<td>1</td>
</tr>
<tr>
<td>VK3AED</td>
<td>1</td>
</tr>
<tr>
<td>VK3ZVG</td>
<td>1</td>
</tr>
<tr>
<td>P. B. Dodd</td>
<td>14</td>
</tr>
</tbody>
</table>

**FUND PAYMENT SUMMARIES**

<table>
<thead>
<tr>
<th>FUND</th>
<th>Payment Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITU Fund</td>
<td>$1,666</td>
</tr>
<tr>
<td>Share IUG</td>
<td>$6,011</td>
</tr>
<tr>
<td>Dues</td>
<td>$5,611</td>
</tr>
<tr>
<td>New Zealand</td>
<td>$933</td>
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<tr>
<td>ITU Fund:</td>
<td>$1,666</td>
</tr>
<tr>
<td>Publications</td>
<td>$1,685</td>
</tr>
<tr>
<td>CCD/SMP Geneva</td>
<td>4,582</td>
</tr>
<tr>
<td>Circular Appeal</td>
<td>1,090</td>
</tr>
<tr>
<td></td>
<td>$7,441</td>
</tr>
</tbody>
</table>

12. As our opinion is the attached accounts give a true and fair view of the state of the Institute’s affairs at 31st December, 1978, and of its surplus for the year ended on that date.

2. As required by the Companies Act 1961, we have audited the accounts of the Wireless Institute of Australia for the year ended 31st December 1978, and have examined the balance sheets of the Association as at the above date.

**RATIFICATIONS**

**WARC**

19. As Chairman of Committee 2 (Amateur, Amateur-Satellite) the President of the Institute is extensively involved in Australia’s preparations for WARC 79. During 1978 there were two main streams of preparation.

20. Firstly, those involved with the Special Preparatory Meeting of the International Radio Consultative Committee (CCIR) of the ITU. At the last Federal Convention the offer by the Australian Administration to include an amateur in their delegation to the WARC was accepted. It was suggested that Australia should present a paper on this subject at the WARC. This meant a lot of hard work by a number of members, particularly Jack O’Shannassy VK3SP and Earle Russell VK3BER, co-ordinated by Michael Owen VK3KI. When the results are looked at I think the effort was well worthwhile.

22. The report of the CCIR will be used as a basis for WARC 79.

23. In Sydney there was an ITU Regional Seminar to discuss the results of the WARC at which the WIA represented the interests of the IARU.

24. Secondly, those involved in the preparation of Australia’s submissions for the work of the Conference, particularly with respect to the future of IARU after WARC 79. It was obvious that many of our problems are the same as those across the Tasman. It was also interesting to observe the method of operation of the Conference.


29. During the year the Federal President has had the opportunity to meet the Minister for Post and Telecommunications on a number of occasions, one meeting being specifically to discuss TV Channels.

30. Since the last Convention a Joint Committee of personnel from the Central Office of the Radio Frequency Management Division of the P. and T. Department and Members of the Executive of the WIA has been set up. This Committee has met on a number of occasions and covered a wide range of topics. Brief notes of the proceedings of each meeting are circulated to Federal Councilors.

**TV CHANNEL 5A**

31. The thorny problem of Channel 5A again raised its ugly head during the year. For many years the WIA has been campaigning against this Channel (non-standard internationally). When the suggestion was made in the Melbourne Press that 5A could be used for ethnic TV, the President immediately wrote to the Minister for Post and...
Telecommunications, the Hon. A. A. Staley, and followed this up with a personal interview. At this meeting the problem of a TV Channel adjacent to an amateur band was explained and some documentation of tests carried out on TV receivers was handed over.

32. At the same time all amateurs were urged to put the matter to their Members of Parliament. Follow-up contact was made with the Minister.

33. At the Queensland Division Convention the Federal Member for Bowen, Mr. David Jill, said that Channel 5A to be used in metropolitan areas has been completely shelved and won't happen—furthermore, an investigation is now under way by the Department to eliminate those areas that are using Channel 5A for translator facilities in some country TV areas.

34. On 20th September the Minister announced special broadcasting services for the ethnic community would be on UHF.

35. A technical submission on the problems of Channel 5A has been presented to the Minister.

36. It is interesting to note that in the Australian proposals for the work of WARC 79 it is proposed to modify Footnote 279A to read:

"In Australia the band 137—144 MHz is also allocated to the Broadcasting Service for Television UNIL THAT SERVICE CAN BE ACCOMMODATED WITHIN THE REGIONAL BROADCASTING ALLOCATION."

EDUCATION

37. An Educational Co-ordinator's Sub-Committee has held two meetings in Melbourne during the year. These were both attended by interstate representatives. Also, the Co-ordinator, Graeme Scott, has been in constant contact with the Examination Section of the Department. A Bank of 600 Novice questions was presented to the Department. This Bank was the combined work of a number of Sections.

38. The main subject of concern to the Education Co-ordinator is the AOCP Syllabus, particularly with the intention to go to multiple choice type questions. This was discussed at the Department. This Bank was the combined work of a number of Sections.

39. Dick Smith has donated $3,500, the proceeds of the auction of equipment, to the Federal body of the WIA for educational purposes. At the meeting on September 22nd August, in answer to a WIA question, it was decided to sponsor the WIA as a project.

40. At the Joint Meeting with the Department it was stated that now only minor edits could be done. It was explained that this new edition will obviously need to be revised after the new Act and associated regulations and WARC 79.

41. One worrying aspect is that much of the WIA submissions on the Handbook forwarded to the Department over a number of years appears to have been overlooked or mislaid.

WARC FINANCE

42. As instructed by the Federal Council, a letter was sent to all non-member amateurs soliciting their contributions to WARC funds. The response barely covered the cost involved although we have gained some new members.

43. Contributions were also sought from the commercial advertisers in Amateur Radio with a satisfactory result. Also many Radio Clubs are making substantial donations and these are also very greatly appreciated.

PUBLICITY AND RECRUITING

44. We have maintained our advertising in ARA and CBA throughout the year at a non insignificant cost. However there seems to be a constant stream of replies to these advertisements. In order to help with displays, a number of sets of coloured posters depicting amateur radio have been prepared. Unfortunately due to their cost they are not disposable.

VIDEOTAPES

45. Due to the importance of Videotape as a visual publicity and educational medium, it was decided to appoint John Ingham VK5KG as Federal Videotape Co-ordinator to handle our growing library of videotapes.

STANDARDS ASSOCIATION OF AUSTRALIA COMMITTEE 14/4. SITING OF RADIO COMMUNICATIONS EQUIPMENT

51. The WIA was represented at the inaugural meeting by Ken Seddon VK3ACS, who reported the standard is not intended to apply to radio amateurs and the general opinion was it could not be applied to amateurs. The WIA will continue to be represented.

PROJECT ASERT (Amateur Service Experiment In Radio Transmission).

52. Following a proposal by Ken McCracken VK2CAX that amateurs should become involved in a systematic investigation of VHF/UHF propagation modes, the Executive, on the advice of the VHF/UHF Advisory Committee, decided to sponsor the project.

SCIENTIFIC GOALS

53. It is proposed that the Amateur Service should conduct an experiment with the following goals:

(1) To provide a set of unbiased statistics and a definition of the morphology of Member of UHF/UHF transmissions over the Australian continent and to conjugate with other points in the Northern Hemisphere.

(2) To distinguish between the several propagation modes and to relate them to other observable parameters.

AMATEUR RADIO

54. The current high standard is being maintained by the Publications Committee under the able leadership of Bruce Bethel VK3UV. Bruce has indicated his intention of giving up his present position at the end of the year. As a consequence, a number of possibilities have been investigated by the Executive. At the forthcoming Convention it is hoped to be able to support the discussions on the various alternatives with as much as possible...
that can be obtained in the way of factual figures. Of course, many discussions on the future of Amateur Radio is very much tied to discussions on the future role of the office.

AMATEUR ADVISORY COMMITTEE SYSTEM

55. At the February Joint Meeting with the Department it was agreed that the aims and objects should be re-stated and that the P. and T. Department would re-draft the necessary memorandum for mutual discussion.

56. The Federal Repeater Sub-Committee Chairman reports that, although he had all but reached agreement with the Department in November, the Repeater conditions as proposed in the Draft Amateur Operator's Handbook generally appear to have ignored the discussions between the Department and the Executive over the past couple of years.

WICEN

57. At the same time as there was a change in the Federal WICEN Co-ordinator, there was also a change in the Director-General of NDO. However, the new Director-General, Rear-Admiral R. C. Swan, has been briefed on WICEN matters by Ron Henderson VK1RN, the new Federal WICEN Co-ordinator.

58. Further DX records on VHF and UHF were recorded during the year.

EDP

59. No opportunity has arisen to re-examine the packaging account in our computer programmes.

MAILING SERVICE

60. A disastrous fire at Automall in late July destroyed our stocks of envelopes on hand as well as causing problems with current papers awaiting August AR.

CALL BOOK 1979

61. Work is proceeding on this. Input of non-members' data from P. and T. Department records has been accelerated thanks to great co-operation by the official involved.

MEMBERSHIP STATISTICS

62. These are compiled on the same basis as for previous years. It should be noted, however, that the Departmental totals means licences issued, whereas the Institute's statistics refer to number of members. With many people now holding both a limited and a novice call there will obviously be more licences than actual people.

63. In conclusion, I would like to thank all those Federal officers and Committee members who have worked so hard for the Institute, and it is heartening to see the growth in membership, particularly as WARC 79 approaches.

DAVID WARDLAW, Federal President

DIVISIONAL NOTES

VK2

The VK2 Division has approval pending for the operation of Australia's first 10m beacon. While this has been listed for some time as operational, there have been delays in licensing. It is some years since the concept of 10m in Australia was developed, there now is some lessening of the need with the increasing activity in this band. It is now likely that three 10m beacons will be developed for Australia. The first will be located at VK2WI Dural and the others could be in North Queensland and Western Australia. The frequency block will be 28.260, 28.265 and 26.270 MHz.

VK2 Division Council has approved the establishment of 70 and 23 cm beacons at Dural. The equipment will also serve as broadcast programme outlets.

In order to encourage 70 cm development Council has approved the establishment of a second repeater on this band, which will be located at Dural. The first is located at Paddington, which is still to change frequency to the band plan. Both repeaters will use the 5 MHz separation system.

ATV broadcasts will be re-commenced after a couple of years break. Signals will originate from Paddington on ATV Ch. 2 (442 MHz) and relayed by the Central Coast repeater on ATV Ch. 1 (426 MHz). In the near future it is expected that the Division's ATV repeater, to be located in the eastern Blue Mountains, will be operational for both experimental and broadcast use. Frequency is 50 cm which is ch. 33 on a UHF TV set.

Mt. Bindo channel 1 repeater VK8DRX of St. George ARS was vandalised some time about 8th June.

VK3

On Sunday, 25th February, 12 members of the THUGS Radio Club tackled the job of sorting the Vic. Division's library, which has been stored in tea chests for some five years.

After about 10 hours work library shelves were stacked with books and magazines dating from 1928 to 1978.

On behalf of the Council and members of the WIA Vic. Division, Mike VK3WW, the Divisional Librarian, would like to thank all the willing workers who gave so generously of their time and effort to complete this difficult task.

The N suffix call signs having been allocated the new Novice series for Victoria with V suffixes being issued.

VK6 — OFFICE-BEARERS 1978

President, Mr. Ross Greeneway VK5DA; Secretary, Mr. Peter Savage VK6NCP; Treasurer, Mr. Bruce Jacobs VK6ZAT; Federal Councillor, Mr. Neil Penfold VK6NE; Alternate Federal Councillor, Mr. Peter Savage VK6NCP; Assistant Secretary, Mr. Bruce Hedland Thomas VK6SO; Councillor, Mr. Alyn Mashett VK6TH; Education Officer, assisted by VK6UI and VK6DA; Positions of Technical Officer and Social Organiser still vacant.


QSP

EMERGENCY TRAFFIC RE-BROADCASTS

The FCC, according to Ham Radio, April 1979, decided that amateur transmissions of emergency information cannot be re-broadcast by commercial broadcast stations.

RTTY IDENT.

The FCC turned down a petition that stations operating on RTTY be permitted to identify on RTTY instead of CW as now required. —Ham Radio, April 1979.

For further details write to:
THE COURSE SUPERVISOR,
W.I.A.
P.O. BOX 123,
ST. LEONARDS, N.S.W. 2065

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**AMATEUR BAND BEACONS**

<table>
<thead>
<tr>
<th>Freq</th>
<th>Call Sign</th>
<th>Location</th>
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<tr>
<td>145.400</td>
<td>ZL4VHF</td>
<td>Dunedin</td>
</tr>
<tr>
<td>145.200</td>
<td>ZL2VHF</td>
<td>Wellington</td>
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<tr>
<td>144.500</td>
<td>VK6RTW</td>
<td>Albany</td>
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<tr>
<td>144.475</td>
<td>VK1RTA</td>
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<td>ZS6LN</td>
<td>South Africa</td>
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<td>Paimerston North</td>
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<td>KH6EQI</td>
<td>Pearl Harbour</td>
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<td>K7IHZ</td>
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<td>TI2NA</td>
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<td>VK8VF</td>
<td>Darwin</td>
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<tr>
<td>52.100</td>
<td>VK0BC</td>
<td>Casey Base t</td>
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<tr>
<td>28.4:</td>
<td>JAs</td>
<td>lower 5 MHz</td>
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</tbody>
</table>

**FROM EUROPE**

- **40 kW — 6 kHz:** BBC-1 Ch. B2 video on 51.75 MHz.
- **10 kW:** Holme Moss 10 kW zero; Fosemarkle 20 kW 66 kHz.
- **5.7 kW — 16.8 kHz:** Dlvls (Nl) 12 kW zero; Redruth 10kW — 20 kHz; Melrose 5 kW.
- **10 kW — 20 kHz:** BBC-1 Ch. B2 video on 51.75 MHz.
- **Itorian Ch. 1A video 53.750 with three transmitters:** on 49.950 MHz.
- **49.750 MHz. Eastern Europe use video carriers on 49.750 MHz.**
- **41.5 MHz:** The England Ch. F2 sound frequency is 41.25 MHz.
- **41.25 MHz:** The next main frequency of note is Ch. E2 for contacts to Australia. There are four main transmitters on Ch. F2 from 0000Z to 0200Z.
- **53.000 MHz:** VK5VF — Mt. Lofly.
- **52.800 MHz:** VK6RTW — Albany.
- **50.110 MHz:** AL7C — Alaska.
- **50.110 MHz:** KG6JIH — Guam.
- **50.104 MHz:** KH6EQI — Pearl Harbour.

**BAND NEVER CLOSES IN VK8**

- **4:5:** VK8GB heard 6 W5 on 50 MHz from 0300Z to 0330Z.
- **4-5:** VK8GB heard 6 W5 on 50 MHz from 0300Z to 0330Z.

**INDONESIA WORKED ON SIX**

- **On 30-4 more DX.** Several meteor enhanced "pings" on 50.110 from W6XJ, 23/02, KG6DX 5 x 9 around 0100Z. At 0156 we had VK5KK 50.110 MHz YB0X (portable DXpedition to Indonesia) worked by VK5KK 519 on CW. Also at 0242 Z SSB contact at 5 x 2. Signals from YB0X substantially strong on 50.110 at this time. Heard VK3ARZ, VK8GB, VK8DI around 0156Z on 52.055 MHz from W6XJ, 23/02. VK8DI 5x9 around 0156Z.

**NEW ZEALAND DXING**

- **50.098 MHz:** K7IHZ from 2230Z to 0110Z. Nowhere near as good as the September openings to VK2. VK5KK, 50.025 to 28 MHz (no signals above 50 MHz yet). VK5KK, 50.025 to 28 MHz (no signals above 50 MHz yet).
- **50.080 MHz:** VL9MF from 2230Z to 0110Z. VK5KK, 50.025 to 28 MHz (no signals above 50 MHz yet).
- **50.060 MHz:** VL9MF from 2230Z to 0110Z. VK5KK, 50.025 to 28 MHz (no signals above 50 MHz yet).

**NEW ZEALAND DXING**

- **Strong signals from VK3DI on 50 MHz both before and after this time. VK3DI worked VK8GB and VK8DI on 2-5. More on 9N1BMK exploits later.**
- **3-5:** Two K5s heard in QSO on 50.125 SSB at meteor scatter position. Also to hand is VK4RO at 2300Z.
- **The England Ch. F2 sound frequency is 41.25 MHz. It is commonly received over vast distances now with increasing MUF. It’s quite common in South Africa and of late has been noted in Australia. Are there any transmitters on Ch. F2 and the ERP of the sound transmitter is quoted?**

**VHF FROM EUROPE**

A copy of a letter has come to me from a source unknown which gives some interesting background to the VHF scene in Europe and nearby areas, and is generally relevant to 6 metre operation, so you may be interested.

**BAND NEVER CLOSES IN VK8**

- **Next few days saw a reduction in openings to the southern States from JA, etc. However in VK4 and VK8 (doesn’t the band ever close there?) things still going strong. JA to VK5 on 2-5 and 35-45 around the magical 0500 to 0600Z. VK8GB and VK8DI on 2-5. More on 9N1BMK exploits later.**
- **3-5:** Two K5s heard in QSO on 50.125 SSB at meteor scatter position. Also to hand is VK4RO at 2300Z.
- **50.010 MHz:** JAs worked VK5KK 519 on CW. Also at 0242 Z SSB contact at 5 x 2. Signals from YB0X substantially strong on 50.110 at this time. Heard VK3ARZ, VK8GB, VK8DI around 0156Z on 52.055 MHz from W6XJ, 23/02. VK8DI 5x9 around 0156Z.

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A WARNING FROM SMIRK

Thanks, David, for your supply of information. Getting a more obvious little problem squelched!" 

50 MHz DUAL

Finally, like to know how VK and ZL are about... A WARNING FROM SMIRK 30/70 A W6 heard JA7s at 0200Z on 4-5 by some form JA1/7 worked on one very early morning, in JA1. don't have a temporary or otherwise allocation on unconfirmed report that VU2RM has been heard in 52.0 MHz, etc., otherwise don't worry about trying. there has been NO changes to VK frequency alloc- 

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50 MHz DUAL

Finally, like to know how VK and ZL are about...
Call sign: YB0X.

operators.

of the Indonesian Amateur Radio Organisation,

Operating Periods: Initially 29th April until 7th

The station has been authorised by the Indonesian

government to carry out propagation tests on

six metres. The station will be operated by members

who have been permitted lor three operating periods.

The news is not quite that good, but six metre

operation by a special station, call sign YB0X, has

been confirmed on 6 metres.

The DXDC Award, which is for 10 countries con-

sidering their propagation performance, has been
given to 7117 km path. KP4ES, KP4Q and KP4AAN all

heard signals from the USA at 1810Z on 13-2, at a world record distance

of 7,117 km. This record stood for three days, until

PE4ROS in SA, to set a new record of 7127 km.

LATE NEWS FROM EUROPE

The 50 MHz band stayed open to South Africa during the first two weeks of March with G3COJ and G3FXB working crossband to ZS6XJ, ZS6ASO, ZS4AUB and ZS6BGO. The African stations listened around 28.333 MHz. The English stations were full of praise for the strong signals being heard from the Canadian beacon VE1SIX on 50.088, which helped with west-east contacts.

SMIRK NEWSLETTER No. 20

What an incredible amount of six metre Information. Ray Clark K4ZMS is to be congratulated on putting it all together. Three closely packed foldout pages of information covering the world-wide contacts being made on 50 to 54 MHz. Most contacts of course are taking place on 50 MHz, being the International segment, so we miss out on much as usual. The news in the SMIRK Newsletter is so vast one just cannot start to take Information from it, it's just an incredible news sheet, to put it mildly!

SEMTHING TO LISTEN FOR

Apparently there is a beacon in Alaska signing K7TCQG on 50.040, which could be useful. Also there is the communications station in Darwin VLSSA on 48.450 MHz, and three USA television video carriers are to be found on 55.240, 55.250 and 55.260 MHz. Being of considerable ERP these three last three would be worth taking a look at from time to time. Bill W3XO of QST World Above 50 MHz mentions a beacon on 50.630 signing K4ERO/ HGI in Quito, Ecuador; also CHOTS on 50.100 from Easter Island.

EME REPORT

Further to the brief note last issue, Chris VK5MC has written confirming his success on 432 MHz EME.

PRC10 ARMY TRANSCEIVERS

Mark VK5AVQ has offered the following Information in an attempt to help anyone having difficulties in getting to grips with the PRC10 transceiver which is being used quite extensively for monitoring 38 to 55 MHz. 1. Circuit diagram, plus basic alignment data and other notes for $1 to cover envelope, copying and postal. Details up to about 30 pages, including the above for $2.50.

I have seen the Information made available by Mark and it Is good value for the money asked. Address your enquiries to Mark Spooner, 30 Milne Street, Vale Park, S.A. 5081.

SMIRK 100 AWARD

Congratulations to David VK9SK who has just re-

certified his success on 432 MHz EME as follows: 21-4: 09020 V7EBBG M/M reports. 09020 JA1CZD O/O reports. 22-4: 1705Z ZE5JJ O/M. 1810Z 15MSSH O/M. 0915Z K3NSS O/O and O9020 K2MWH M/M. His signals were also heard by Ray VK3ATN using a 16 foot disk, and a few odd letters were heard by VK3BEF using a single loop yagi on a 17 to 20 foot boom. Chris reports that all the stations worked have larger antennas than he did, and have been on for some time. He has a few more improvements to make, particularly to his receiving system.

LOCATION OF STATION: Jakarta.

Overview: 50.110 MHz and 50.050 MHz. Beacon Cycle: 30 seconds transmitted followed by 10 seconds listening period.

Modes: CW and SSB.

Rigs: FT625D, FT801H and FT901DM.

Break ins for exchange of signal reports and SWL reports are welcomed. QSLs will be handled by JA1UT. The station will also work Oscar and the HF bands.

This information was supplied by Sawonde YBOAT on behalf of ORARI.

20 DX TO JAPAN

Following last month's announcement of the VK8 to JA 20 MHz contact, Albert VK6WH and Lynn VK9HW have provided us with a little more Information on their contact.

The rig used was a Trio TS700 modified for full coverage from 144-148 MHz, all modes.

The antenna is a home brew eleven element beam with gamma match at approximately 25 ft.

Weather conditions: temperature 28°C, humid, no wind or cloud, the sun had just set.

Lynn VK9HW and Albert VK6WH.

BALLARAT BEACON

A brief message has come through that the Ballarat beacon has been delicensed. At this stage no further Information is available.

Perhaps that is not a good note to close on, but close we must. Thought for the month: "There are three ways to get something done; do it yourself, hire someone or forbid your kids to do it!"

73. The Voice in the Hills.
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- S.W.R. better than 1: 1.05 at resonance
- Covered with highest grade fireproof insulation
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- Available in colours, grey, white, blue, green, burnt orange, brown and black.

AVAILABLE:
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- SKY 40M 7.06
- SKY 20 14.150
- SKY 15 21.100 and up.
- SKY 10 28.5 and up.

PRICE LIST:
- SKY 80 6 feet long 3.5 MHz $28
- SKY 40 6 feet long 7.060 $26
- SKY 20 6 feet long 14.150 $26
- SKY 15 6 feet long 21.100 $25
- SKY 10 6 feet long 28.500 $24
- Swivel mounts and chrome plated springs for all $13

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160-10 METER/2 KW PEP INPUT.

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MODEL 350D HAS THE SAME SPECIFICATIONS AND CHARACTERISTICS AS THE 350B EXCEPT THE UNIT COMES WITH A BUILT-IN DIGITAL FREQUENCY DISPLAY WITH READOUT TO 100HZ.

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350D ...............$669.00
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100MX .............$630.00
1200Z LINEAR ....$485.00
MK II 2kw LIN. ..$950.00
PS-US .............$195.00
ST-3 ANT. TUN. ..$205.00
ST-2 ANT. TUN. ..$240.00
ST-1 ANT. TUN. ..$189.00
DD-76 DIGI ........$220.00
TR-4-HA ANT. ....$200.00
TB3-HA ANT. ....$180.00

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100W PLUS MOBILE SOLID STATE

DEALERS WANTED IN ALL STATES!
Swan's high technology engineering department is challenging the best in the world. In keeping with the master plan of establishing Swan as number 1 in its areas of expertise, two more state-of-the-art transceivers will be announced at the Dayton Hamvention the last week in April.

The first is the microprocessor controlled, digital synthesized ASTRO 150 amateur HF Transceiver. With powerful 235 watt PEP and CW input on all bands, and extended frequency coverage in the 2-30 MHz spectrum, it is bound for instant success. The all electronic tuning VRS (variable rate scanning) and associated microphone remote tuning gives the operator complete and precise control.

**ASTRO 150**

- Microprocessor controlled, digital synthesized operation
- 235 watt PEP on all bands
- Extended frequency coverage in the 2-30 MHz spectrum
- All electronic tuning VRS (variable rate scanning)
- Associated microphone remote tuning

**Standard features include:**
- Full or semi break-in selectable in CW mode
- Narrow band CW filter
- USB/LSB
- VOX/PTT
- WWV reception

NASA (National Aeronautics and Space Administration) has already ordered the ASTRO 150 and 1500Z linear amplifier combination.

**102 BX**

A second state-of-the-art HF amateur transceiver, the 102-BX, is to be announced at the Dayton Hamvention. This unit offers complete base station capability in one chassis. Features include all the standard functions provided by top line equipment plus dual PTO's for true crossband operation — full/semi break-in, variable RF bandpass, IF gain, RF gain and audio passband display.

**TRANSMITTER SPECIFICATIONS**

- **Power Output Ratings:**
  - Minimum 100 W PEP on single sideband and CW
  - All Bands (1.8 to 29.7 MHz) nominal to 30 watts
- **Unwanted Sideband Suppression:**
  - Greater than 60 dB
- **Carrier Suppression:**
  - Greater than 50 db

**STANDARD FEATURES:**

- State of the art design
- State of the art tuning
- Complete solid state
- 10 MHz meters
- USB/LSB CW
- Filter shape factor 1:1:1
- CW monitor with adjustable pitch and level control
- Amplifier relay keying
- Noise Blanker
- 25 K ohm calibrator built in
- Made in the USA by Swan craftsmanship
- Operates from 12 or 24 VDC source negative ground
- Current drain 150 Ma receives, 20 amp maximum in transmit at 13.8 VDC with dual and intermediate lights on current drain is approximately 100 Ma more
- Internal speaker
- Semi CW Break-in
- Mobile mount bracket available

**AVAILABLE NOW FOR ONLY $630.00**

**SPECIFICATIONS**

- **Frequency Range — Standard**
  - 80 meters (3.5 — 4.0 MHz)
  - 40 meters (7.0 — 7.5 MHz)
  - 20 meters (14.0 — 14.5 MHz)
  - 15 meters (21.0 — 21.5 MHz)
  - 10 meters (28.0 — 29 MHz)
- **Extended Frequency Coverage**
  - 500 kHz segments of 10 meter band 28.0 — 28.5, 29.0 — 29.5 MHz
  - 1500Z with optional crystal for desired segment

**Modes of Operation**

- USB/LSB CW
- FF Filter
- 9 MHz quartz crystal filter

**Calibrator**

- Adjustable 2.7 kHz calibrator
- VOX
- Built-in standard
- Noise Blanker
- Built-in standard
- Mobile Mount
- Built-in standard

**WE ARE NOW SITUATED AT PARRAMATTA ARCADE IN PARRAMATTA!!**

**IF YOU DO NOT WISH TO COME TO PARRAMATTA THEN CONTACT VK2UK ON 607 9168 AFTER HOURS SATURDAYS AND SUNDAYS HE CAN HELP YOU WITH ALL YOUR ICOM, KENWOOD, SWAN, LEADER, AND ACCESSORIES, SO GIVE "TED" A CALL AND GET EXPERT ADVICE AND SERVICE.**

MAIL ORDER SERVICE
SEND FOR OUR PRICE LIST & ORDER FORM
ALL ENQUIRIES WELCOME
INTERSTATE CUSTOMERS —
MAIL ORDER SERVICE AVAILABLE.
DURING BUSINESS HOURS.
P.O. BOX 23, POST OFFICE
GUILDFORD N.S.W. 2161

SHOP 11, PARRAMATTA ARCADE,
170-172 CHURCH ST.,
PARRAMATTA
N.S.W. 2150.
REMEmBRANCE DAY CONTEST 1979 — RULES

11-12 AUGUST 1979

A perpetual trophy is awarded annually for competition between Divisions of the Wireless Institute of Australia. It is inscribed with the names of those who made the supreme sacrifice and so perpetuates 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 suitably inscribed certificate.

OBJECTS

Amateurs in each VK call area will endeavour to contact other amateurs:

1. In other VK call areas, P29, and ZL on all bands 1.8 through 30 MHz.

2. In any VK call area (including their own), stations during this period.

CONTEST DATE

11 August 1979 to 0759Z 12 August 1979.

RULES

1. There shall be 3 sections —
   (a) Transmitting Phone.
   (b) Transmitting CW.
   (c) Receiving.

However separate logs may be submitted for sections (a) and (b).

2. All Australian Amateurs (VK call signs) may enter the Contest whether their stations are fixed, portable or mobile. Members and non-members of the Wireless Institute of Australia are eligible for awards.

3. Amateurs may use the following modes:
   Section (a) — AM, FM, SSB, TV.
   Section (b) — CW, RTTY.

However separate logs may be submitted for sections (a) and (b).

4. Cross mode operation is permitted but both stations may only claim points as for a phone/phone contact. Cross band operation is not permitted excepting via a satellite repeater.

5. SCORING Contacts:
   (a) On the 3.5, 7 and 14 MHz bands a station in another call area may be contacted once on each band using mode. That is, you may work the same station on each of these bands on Phone, CW, SSTV and RTTY.

(b) On the 1.8, 21 and 28 MHz bands, a station in another call area may be contacted twice on each band, using each mode provided that not less than 12 hours has elapsed since the previous contact on that band using that mode.

(c) Between 1600 hours GMT and 2100 hours GMT on Saturday, Intra-call area contacts may be made on the 1.8, 7, 21 and 28 MHz band once for each mode on each band.

(d) Between 0300 hours GMT and 0759 hours GMT on Saturday, Intra-call area contacts may be made on the 1.8, 7, 21 and 28 MHz bands, once for each mode on each band.

(e) 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 two hours 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.

(f) All CW/CW, SSTV/SSTV and RTTY/RTTY contacts count double. Note rule 4 re cross mode contacts.

6. Multi-operator stations are not permitted (except as in rule 7), although log keepers are allowed. Only the licensed operator is allowed to make a contact under his/her own call sign. 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 own call sign.

7. Club stations may be operated by more than one operator, but only one operator may operate at any one time, i.e. no multi-transmissions. 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. If separate logs are being entered for sections (a) and (b) then separate cyphers are to be used.

10. ENTRIES must be set out as shown in the example using one side of the paper only. Envelopes must be marked "Remembrance Day Contest", postmarked no later than 3 September 1979 and posted to FCM, Box 1065, Orange 2800.

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.

EXAMPLE OF TRANSMITTING LOG

<table>
<thead>
<tr>
<th>Date/time GMT</th>
<th>Band MHz</th>
<th>Mode</th>
<th>Callsign worked</th>
<th>NR sent</th>
<th>NR rec'd</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>0612 7 P VK5PS</td>
<td>P</td>
<td>VK150 5002</td>
<td>VK6RU</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0615 7 CW ZL2AZ</td>
<td>P</td>
<td>VK150 5002</td>
<td>VK4KI</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0618 14 P VK0ZZ</td>
<td>P</td>
<td>VK150 5002</td>
<td>VK6FU</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1620 28 P VK3NA</td>
<td>P</td>
<td>VK150 5002</td>
<td>VK3NZZ</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EXAMPLE OF RECEIVING LOG, VICTORIAN SWL

<table>
<thead>
<tr>
<th>Date/time GMT</th>
<th>Band MHz</th>
<th>Mode</th>
<th>Callsign heard</th>
<th>NR sent</th>
<th>Station called</th>
</tr>
</thead>
<tbody>
<tr>
<td>0612 7 P VK5PS</td>
<td>P</td>
<td>VK150 5002</td>
<td>VK150 5002</td>
<td>VK6RU</td>
<td>2</td>
</tr>
<tr>
<td>0615 7 CW ZL2AZ</td>
<td>P</td>
<td>VK150 5002</td>
<td>VK150 5002</td>
<td>VK4KI</td>
<td>6</td>
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<tr>
<td>0618 14 P VK0ZZ</td>
<td>P</td>
<td>VK150 5002</td>
<td>VK150 5002</td>
<td>VK6FU</td>
<td>6</td>
</tr>
<tr>
<td>1620 28 P VK3NA</td>
<td>P</td>
<td>VK150 5002</td>
<td>VK150 5002</td>
<td>VK3NZZ</td>
<td>1</td>
</tr>
</tbody>
</table>

SCORING TABLE FOR PHONE CONTACTS — ALL CW/CW, SSTV and RTTY CONTACTS COUNT DOUBLE (VK)

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>VK0</td>
<td>—</td>
<td>6</td>
</tr>
<tr>
<td>VK1</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>VK2</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>VK3</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>VK4</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>VK5</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>VK6</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>VK7</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>VK8</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>VK9</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>P29</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>ZL</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

All intra-call area contacts on 52 MHz and above, or as indicated in Rules 5 (c), (d) and (e), are worth one point.
YOU and DX

Mike Bazley VK6HD
6 James Road, Kalamunda W.A. 6076

HAVE you recently been the lucky recipient of a chain letter that originated from the USA? This writer to date has received three, all from other amateurs who have never been contacted before on the air. Why send them to me? The letter states that if I continue the chain (which is reserved for amateurs only) then I will be receiving upwards of 5000 cards a week. It is only one way to deal with these sort of letters — file them in the WPB after removing the stamps of course, if you are a philatelist like me! The old proverb always holds true: You don't get something for nothing.

QSLs

What is a QSO? Well, if you chase DX and submit your QSLs to ARRL, did you know that they note your old call sign prefix. The exception to the rule (?) is KA2 to KA9, US mainland prefixes remain the same but their old call sign prefixes. The station is located at the Swiss Embassy in Peking. It is rumoured that a Swedish group may put the call ZST on the air from Albania. (Watch those South American countries. This time of the year the darkness path is at its optimum.

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Thanks go to VK4KX, VK4SS, VK6AU, VK6LY, on air reports, "West Gulf DX Bulletin" and G. Watts News Sheet. Happy Hunting, 73. Mike VK5HD

My deadline for September issue is July 26th.

"GHAN" RAILWAY-MOBILE DXPEDITION
A railway-mobile DXpedition is planned from Marea, SA, to Alice Springs, NT. The event, which should take place before the end of September, is to celebrate the Golden Jubilee of the first rail link to Alice Springs. Frequencies in use will be around 3600, 7100, 14270, 21150 and 28400 kHz. Special QSLs will be printed for the occasion.

The station will operate from the famous "Ghan", which departs Marea at 14702 Monday local time, arrives Alice Springs 21302. It departs Alice Springs 10302 Wednesday night and arrives back at Marea 19452 (0515 SAT).

Zone 29 Boundary Award hunters will be interested to know that there will be limited approval of the Commonwealth Railways for the venture is not yet at hand and so firm dates cannot yet be given. Details will be given in WIA broadcasts when available.

(Information supplied by Dick VK5DQ.)

73 ex DE di Mike VK5HD.

Oths You MAY HAVE MISSED
CP0GK — Box 2659, Cochabamba.
FHFSC — PO Box 20, Matotse, via reunion Island.
H729V — PO Box 590, N°2, 99500, Mexico City.
K3AA2 — Box 69, San Francisco, U.S.A.
KZB2U — Via WP0AH.
OAUI — Box 333, Lima.
OSXL — Via SM0GOG.
OH2BP/OHO — PO Box 928, 0101, Helsinki 10.
V12P0D — Via W2OB.
V12PM — Via K5YV.
VRS6D — Via WP0AH.
VRS6H — Via ZL1AD.
V5S0G — Via ZL5VU.
VE1FR — Via WSQK.
Y1ASC — Via PO Box 5846, Baghdad.
Y1NMFQ — Box 4272, Managua.
ZF2D — Via W2OB.
1S10X — VK7BJL, Box 85, Round Comar, NSW 2158.
3H3SK — Via KW1A.
BN1MBK — Via ZL5VU.
9XPM — PO Box 663, Kigali, Rwanda.
A9CS — Via K4CG.
AP5HG — Via N6DP.
CM2HD — Via ON6Y.
FK9CR — Via W1GS.
FPBH — PO Box 89, Saint Pierre et Michelon, North America.
GUSIA — Via N6MA.
HMSAP — Via JH4NPP.
HZ1HP — PO Box 1999, Jeddah.
J2SD — Via K4ZD.
J2D3 — Via K4ZD.
J1RIE/J1DI — Via J1RIEYS.
NSRM/KOSE — Via N3RM.
KX6BO — Via WS1L.
OD5NR — PO Box 718, Beirut.
WAT7JL/SU — Via W7LZV.
SU1DOP — PO Box 138, Ismailia, Egypt.
SVD0A — Via KO7Y.
F5TSP — Via DL7MO.
TK2IUT — Via F6EQQ.
TK7IUT — Via F6RJR.
TK8IUT — Via F6KBB.
V5000 — Via ZL1CC.
W7LHD — Via American Embassy, New Delhi.
YB0ADT — PO Box 2634, Jakarta.
HFEK/3B8 — Via F6KBB.
SW1IX — Via W2OB.
91B1M — PO Box 131, Kathmandu.

QSP
OVERSEAS LICENCE STATISTICS
As at 31st December each year the UK total licence figures for 1978 was 24,711, for 1968 it was 17,338, for 1958 the total was 9,116. The 1976 figure was 29,062, which included 4,636 mobile licences — the present licence combines both fixed and mobile licences into one licence. Radio Communications May 1979.

BREAK-IN March 1979
3.5 MHz Direct Conversion Transceiver; Modification of Pye Cambridge AM100 for 144 MHz; Speech Processes; Yaesu FT227R Memory; Pye Cambridge AM100 Circuit.

BREAK-IN April 1979
Plessey SL600 Transceiver Linear Amplifier and RF Preselector; 1 MHz Tone Base Oscillator and Power Supply; 2 Metre Yaesu FT227R Memory.

QST February 1979
Introducing the INCONs; Upgrading Your SB-220 Linear Amplifier; A First-Class Touch Tone Encoder; A 24-Hour Clock Bonus from the Accu-Memory; A Noise Blanker for the Collins S-Line; A 40 Metre Midget; Digitalized Speech, Part 2; Circular Orbits with Simple Computing Systems; Antenna Accessories for the Beginner; Why QSK?; GRM Communication — Myth or History.

QST March 1979
The Code Speedometer; A CMOS Control Circuit for Receivers; JETT "Soup" for Tired Receivers; A Simple 10 and 15 Metre Converter; A Graphical Look at the L Network; Matching-Network Design; Zip-Cop Antennas — Do They Work? Towel Cleaner - Local-Oscillator Chains — Spectral Purity; ARES and You; Saturday Morning Follows; 1978 CAN-AM Contest Results; April CD Party — All ARRL Members; FMT Results; RFI — Let Your Voice Be Heard; Hams can Influence FCC's FRI Inquiry; UTU Lays Technical Foundation for WARC 79.

QST April 1979
A Low-Cost PC-Board Duplexer; The SHARC Audio-Circuit Meter; The Whys and Hows of Bilateral Filament Chokes; Save Money — Build Your Own RF Choke; A Big Signal from a Small Lot; Some Commonly Asked Technical Questions and their Answers; A Simple CW Audio Filter; Putting the Boots to Your HW-8 QRP Transceiver; Amateur Radio at the Bottom of the Earth; Public Service Before Disaster Strikes.

RADIO COMMUNICATION May 1979
A Frequency Counter for a 144 MHz Transmitter; An Inexpensive High-Z Accurate Transistor Voltmeter; Application of the G22ZS Digital Morse Code Generator; The "Miracle" Sky Hook.

CONTESTS
Wally Watkins VK2ZWN/NCU
Box 1065, Orange 2800

July:
14/15 IARU RADIOSPORT CHAMPIONSHIPS
August:
11/12 REMEMBRANCE DAY CONTEST
11 ZL QLF PARTY

October:
6/7 VK/ZL/OCEANIA DX CONTEST PHONE
13/14 VK/ZL/OCEANIA DX CONTEST CW

Contestants are reminded to read the rules for the "RD" contest carefully this year as certain changes have been made. Logs without a front sheet will be automatically disqualified, as will unscorred logs.

EXPIRY OF LICENCE
Ham Radio April 1979 quotes the FCC as now allowing amateurs whose operators' licences expire five years instead of one year In which to renew them without taking the examinations.

US LICENCE FIGURES
April 1979 QST quotes the FCC as having 356,356 amateur licences issued by the end of 1978, representing an 8 per cent increase over the end of 1977 figures. Novicees represented 62,856 of the total.
IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC

AWARDS COLUMN

Bill Verrall VK5SWV
7 Lilac Ave., Flinders Park, SA

NEW AUSTRALIAN AWARD

I have received details of a new award available in VK and issued by the Royal Naval Amateur Radio Society. The Society already sponsors two awards, the “Mercury Award” for contacting members of the Society, and the “Hampshire Award” for contacting amateurs in the English County of Hampshire.

The Society has announced a third award called the “Endeavour Award” for contacting RNARS members residing in Australia. The title of the award links the Royal Navy with Australia.

RULES OF THE “ENDEAVOUR AWARD”

1. The name of the award shall be the “Endeavour Award” and shall be open to all radio amateurs.

2. Applicants must establish two-way amateur communications with RNARS members residing in Australia. Points will be awarded on the basis of one point per VK RNARS member worked per band after the commencement date of January 1st, 1979.

To qualify, the following is required —

For amateurs residing in Australia: 15 points.
For amateurs residing inside Oceania: 10 points.
For amateurs residing outside Oceania: 5 points.

In addition, for amateurs residing outside Oceania, contacts with VK RNARS members on the 3.5 MHz band will count double points. For the purposes of this award, any RNARS maritime mobile member when located inside Australian waters may be counted as a VK member.

3. The award will be endorsed only on the request of the applicant and the following endorsements are available: “ALL CW”, “ALL SSB”, “ALL 3.5 MHz”, “ALL 28 MHz”, “ALL NOVICE”. The last endorsement is for gaining at least five points on each of the five high frequency bands.

4. To claim the award, no QSLs are required. However, full log details showing the VK member (OR/MM plus QTH) worked, their RNARS number, date, time, frequency, mode, plus an application fee of $1.50 Aust. or 7 IRCs are to be sent to the Endeavour Award custodian, Mr. R. Baty, 43 HMAS Australia Road, Henley Beach South, SA 5022, Australia. Please ensure all cheques are in Australian currency and are made payable to “R. BATY”. Certificates to successful applicants will be forwarded by airmail as soon as possible after the claim has been checked.

The certificate measures 250 x 195 mm, printed in three colours on high quality parchment. Society name and logo in royal blue, title in deep red, remainder black.

VK RNARS lists are available from the custodian or the Australian organiser, or use the general RNARS list from G3HZL-QTHR.

NEW EUROPEAN AWARD

“Brussels Millennium Award”.

The Brussels Millennium Award committee has announced that this award will be issued on the occasion of the Brussels Millennium Celebration (979-1979), which commenced on 1st January, 1979, and continues to 31st December, 1979.

Contacts must be made with amateur stations from Brussels with the special prefix OS (1, 4, 5, 6, 7, 8). Contacts can be on any authorised mode in the bands 3.5 to 29.7 MHz. Operators from VK are required to work 10 stations from Brussels.

The award is also available to SWLs, who must submit reports of 10 OSOs between stations from Brussels and outside Brussels. Contacts during contests are not valid.

To obtain the award, forward a log extract and 3 IRCs to Brussels Millennium Award, PB 1000, BP 1040, Brussels 4, prior to 15th February, 1980.

Amateur Radio July 1979 Page 43
Simple procedural signals are covered, along with the alphabet and the numbers. These are important to a beginner as they are in constant use but are often left out of many simple books.

An easy to follow booklet which would complement a set of practice tapes.

Available from the VK6 Division Education Service, together with the morse practice tapes on C60 cassettes.

VK3AUI.

Sorry the wrong price got in for the right book, "Radio Frequency Interference How to Identify It and Cure it" by ARRL. Page 24, May AR. Price $3.70 plus post (150g), instead of $2.60.

**HAMADS**

- Eight lines free to all WIA members.
- $9 per 3 cm for non-members.
- Copy In typescript please or In block letters to P.O. Box 150, Toorak, Vic. 3142.
- 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 the advertiser's name and address are correct in the current Wire Radio Amateurs Call Book.

**FOR SALE**

**TS500 Transceiver c/w power supply, $350; 14 AVQ vert. ant., $55; X beam, $40. VKAGS, QTHR. Ph. (02) 438 9296 Bus.**

**ICOM IC502 6 m SSB Transceiver, excellent cond., with home brew 40 W valve line, $200. VK3BHH, Ph. (02) 476 2818.**

**CMOS Keyer, built in padded, dark green heavy case, variable speed, perfectly formed and spaced morse. **

**TS520, AC-DC, 1977 model, good cond., $350, ONO; FT7 with car transmission lump mount, 2 months old, $400, ONO. VKAZ2T, Cootamundra. Ph. (062) 49 75 75.**

**Heathkit SB610 Monitorscope, $200; Drake RAC Rx with noise blanker and extra xtal for 160, 31, 25 and CB, $600. VK3AIF, QTHR. Ph. (03) 857 5401.**

**Yaesu 1B1 Transceiver with CW filter; will exchange for FT7 or FT7B, or sell $600, ONO; Icom 22 FM transceiver, sell with Ch. 40, 50, repeaters 42, 44, 46, 48, 74, $150. VK4PM, QTHR. Ph. (074) 62 0211.**

**Icom IC 260 2m FM Transceiver, power output about 15W, exc. cond., $400. One condition — proof of a licence or operator's certificate or NO SALE.**

**Graham VK3ZPR, Laverton. Ph. (03) 399 1937.**

**Two VHF-4 transceivers in states of disrepair, good for lotting or maybe getting one on 50 MHz, $15 each. Graham VK3ZPR, Laverton. Ph. (03) 399 1937.**

**Unaglo Shack Cleanout: TAK 55B/CW 200W DC input tx and AC power supply, Drake R4A Rx with Drake noise blanker and Drake filters, matching Drake MS-4 spkr, Drake MK-4 ant. matching net- work, RSL-3 SWR, SWR, RSL-4 Dynamic desk mic, complete owner's manuals, mint cond, any inspection**

**Graham VK3ZPR, Laverton. Ph. (03) 399 1937.**

**FTDX401, new spare finals, Shure mic., good order, $200; ONO; all items must go! VK2BXF, QTHR. Ph. (02) 888 2981 A.H.**

**Microprocessor Course and Hands-on Trainer, sure way to learn machine language programming and interfacing, mint cond.**

**Heathkits E4001 course, ET4001 course, $300, ONO; Kyokuto FM144-2m transceiver, $95, 5W power output, $105 SXR11 Handbook, mic., mobile and shack mounts, 10W swr, little used, $200; Akai 4000DS Mk II stereo reel recorder, $150; two labelling tapes, $20, ONO; all items must go! VK2FXF, QTHR. Ph. (02) 888 2981 A.H.**

**Kenwood T8202, with factory installed digital readout, CT 1000A, VFO, $500; mic., ext. VFO (VFO $200) and shack mount. In original carton, reluctant forced sale, $1,000. B. Bathols VK3UV, QTHR. Ph. (03) 90 6424 A.H.**

The Famous Novice Kit, contains morse and theory texts, tapes and 1,000 typical exam questions only $15 posted. K. Wilson, VIA VK2 Education Service, PO Box 109, Toongabbie 2146.
Yaesu FT1010 80-10m, $500; FV110B, $100. VK4TT, 1724 Mi, Cotton Rd., Burbank, Old. Ph. (07) 39 2180.

Trio TS500 80-10m HF Transceiver, exc., cond., all modes used, $400. ONO. VK2ZSC. Ph. (02) 674 2104, Steve, after 1730 EST.

Learning Morse? Need a Set Speed Tape? You nominate any speed between 4-20 w.p.m., we will send you a C60 tape for $2. Fred Santos, VK2K, 8 Cooper Street, Blacktown 2148.

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Ext. VFO (VFD 829), suit Kenwood TS820/820S, perf. cond., $130. B. Bathols VK3QVH, QTHR. Ph. (03) 550 3521.

Edison Home Phonograph and 42 Cylinders, will not separate, can arrange inspection in Melbourne, what offers? H. CIII VK3HC, QTHR. Ph. (052) 52 1608.

Argonaut 509 HF Tvr., new, cond., operates well, $350; Drake comms Rx, SSR-1. $200. Will deliver for less. VK2YN. QTHR. Ph. (03) 52 1608.

Kenwood TS200S, new and mint, still in box, $50. ONO. VK4TT, Box 1140, Casuarina 5792. Ph. (089) 27 1895 A.H.

Galaq FT101, working or not, VK3NVJ, 69 Edward St., Tamworth. Ph. (067) 77 9945.

High Voltage HF Block Mica Capacitors, .001 to .005 microF, also one six ft. standard PMG rack with base. VK3ACA. QTHR. Ph. (03) 306 2069.

Reasonably priced new or secondhand microphone controller CW/RTTY/A5CII generating keyers, $25;コラック, $75. One lot $150. VK2V, 41 Lonsdale St., via Melbourne. Ph. (03) 306 2069.

FT101, good working cond., bands 80, 40, 20, 15, 11, 10, 2400 AC or 12V DC operation, complete with both operation manuals, std. and English manual, $600. VK3QVH, QTHR. Ph. (03) 550 3521.

Atlas 215X/MB 160-15m, all solid state, C/W Atlas frequency display, crystal lock adapter, mobile bracket and AC power supply, $550; Trio-Kenwood TS-820S with CW filter and DC supply, $850; Icom IC-215 C/W nicad batteries and charger, $170. A. Nutley VK2BNA. Ph. (02) 230 5122 Bus.

Trio TS500, model 250W PEP, Yaesu's top line Tx-Rx, $995; will take FT7150 or FT1310 as part payment. VK4UX, QTHR. Ph. (07) 62 2596.

Kenwood TS200S, absolutely new, never used and still in warranty, $650. 17 William St., Henley, via Gladesville 2111. Ph. (02) 89 2530.

Remote VFO, external speaker, Yaesu antenna tuner, all for FT101E, and manual for FTDX 400. VK4QZ, 14 Alice St., Townsville. Q. 4814. Ph. (077) 79 9945.

Any Information or specifications for an AWA VHF Comm. Rx type CS51971, DCA type R-30, covering the aircraft band, VNIM, 21 Foxall St., Holder, ACT 2651.

Galaga Fita, working or not, VK3NVJ, 69 Edward St., Tamworth. Ph. (067) 77 9945.

High Quality Horizontal Oscilloscope, 1+1 to .005 microF, also one six ft. standard PMG rack with base. VK3ACA. QTHR. Ph. (03) 306 2069.

Reasonably priced new or secondhand microphone controller CW/RTTY/A5CII generating keyers, $25;コラック, $75. One lot $150. VK2V, 41 Lonsdale St., via Melbourne. Ph. (03) 306 2069.

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For many years he has lived at East Warburton, farming part-time and also working as a Councillor for the Brighton City Council in connection with Uniform Building Regulations — another field in which he was expert.

Arthur was a man of great integrity, he had a wonderful personality, and was a true friend who will be sadly missed.

Contributed by Athol Pritchard VK3CP (a close friend for 50 years).

FREDERICK GEORGE BAIL VK3YS

Although Fred began his days in the workforce as a carpenter, his real interest was wireless, he had captivated him. By 1938, at age 20, he had obtained an amateur licence and when war broke out It was his wish to work as a Consultant for the Melbourne University. Although Fred began his days in the workforce as a carpenter, another interest, wires and cables provided the HT, and quite a potent signal.

Fred has been a frequent visitor to the Victorian Division and will be remembered not only by those privileged. His friendship and caring contact with several electronic manufacturers. He brought back with him a 20W SSB transceiver made by Yasui. A 20W vhf receiver became the world's shortest wire and Fred and Jim launched a small enterprise that developed into one of Australia's largest suppliers of amateur equipment — Ball Electronic Services.

Fred was a frequent visitor to country and interstate areas, firstly as a member of the Victorian Division and later with trade displays.

In spite of an obviously busy life he found time to encourage youngsters who showed interest in the hobby that had given him so much pleasure. Quite a few amateurs have gained their licence because of "Uncle" Fred's interest and assistance.

Fred died suddenly on 26th May. To his wife, Gladys, and to Jim, we extend our sincere sympathy.

(VK3AFW)

VALE

MARY CLARA WILLIAMS BLACK

With the sad passing of Mary Black at the age of 55, the AR community has lost a true friend who will be sadly missed.

It is with deep regret that we record the passing of —

Mr. J. C. BATCHLER VK7JB
Mr. F. G. BAIN VK3YS
Mr. M. Barry-COTTER VK3SW
Mr. M. J. MacGAVIN L3BHT
Mr. A. I. BERRY VK3CZ
Dr. R. M. IRWIN VK4FI
Mr. M. L. CONWAY VK7CL
Mr. H. J. W. HALL VK3EK

CLIFF EVANS VK6BZX

HAM EXTRAORDINARY

Almost everyone who has any interest in DX or International Awards Programmes will have heard, by now, of the death on 30-7-79 of Cliff Evans VK6BZX — the Old Man as he was known to Hams in almost every corner of the world. This outstanding and controversial character was a Ham for 65 years and, as another, he called from some 22 dozen countries spread around the globe. In all, he used over 40 different prefixes.

After retiring from the Navy with the rank of Commander, where he was for twenty-three years a naval aviator, he finally settled in Bonita in South California. Here, amongst his other activities, he proposed to create the biggest Awards Programme that Hamdom has ever seen and is likely to see. His CHC (Certificate Hunters' Club) has Chapters in over one hundred countries. He also established a large FHC (Flying Hams' Club), the IARUS (International Amateur Radio Society), etc. On the journalistic and editorial side, he produced quarterly the BIG "D" (a directory of awards) and the EXTRA NL. He also wrote countless articles on every subject pertaining to AR.

Besides the CHC and FHC Awards Programmes, he adopted the role of one of AR's most vocal critics. He voiced his opinions on any one, body or group, via his newsletter, in a blunt and forceful journalistic style — naturally, these public comments and exposures were not well received. However, his fan mail never diminished and the various Chapters of CHC, in most countries, yearly increased in membership.

You may have corresponded with the Old Man for over fifteen years, mostly on matters pertaining to awards. It is impossible to know anyone this long, even through correspondence, and not begin to know the real Cliff Evans. Like all of us, he had his "warts", but under that rather blunt exterior there were some soft spots — one being his concern about the charitable attitude to AR's "limping men". It was part of his programme that any blind, handicapped, or permanently ill Ham could participate in the Awards Programme with no monetary costs whatsoever; and he saw to it that as many as possible received free magazines and call books, etc.

Together with AR and a distinguished naval career, he found time to take degrees in Political Science, Radio Engineering, Psychology, and was a member of the USA Journalistic Society, viz., Sigma Delta Chi.

He was a man of outstanding ability and had a driving force that enabled him to achieve in a short time what three men in his position could have done in a lifetime. As long as AR remains as it is, the corner of the world. This outstanding and controversial character was a Ham for 65 years and, as another, he called from some 22 dozen countries spread around the globe. In all, he used over 40 different prefixes.

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He was a man of outstanding ability and had a driving force that enabled him to achieve in a short time what three men in his position could have done in a lifetime. As long as AR remains as it is, the call sign EVANS VK6BZX will be permanently part of it.

A. Shawsmith VK4SS.
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AUGUST 1979
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Cover Photo

The Rt. Hon. A. A. Staley, Minister of the Postal and Telecommunications Department, addresses WIA Councillors and Delegates at the 1979 WIA Federal Convention held in April this year in Melbourne.

Also shown at the Official Table are David Wardlaw VK3ADW, WIA Federal President (left), Michael Owen VK3KI (right), and First Assistant Secretary of the P. and T. Dept., Mr. Jim Wilkinson (extreme right).

Mr. Staley gave a spirited and humorous lecture which was much appreciated by all present. Refer to last month's AR for details.

Note also the new WIA banner displayed on the rear wall (partly obscured). The banner is now available to Divisions for display at major amateur events.

(Photo by VK3UV)
ADVERTISERS' DONATIONS TO WARC '79

The Federal President wishes to extend grateful thanks to our advertisers for generous donations towards the expenses of WARC representation:

MARCH 1979

<table>
<thead>
<tr>
<th>Company</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dick Smith Electronics</td>
<td>$500</td>
</tr>
<tr>
<td>Vicom International</td>
<td>$1000</td>
</tr>
<tr>
<td>Ball Electronics</td>
<td>$500</td>
</tr>
<tr>
<td>Chinside Electronics</td>
<td>$100</td>
</tr>
<tr>
<td>Scalar Industries</td>
<td>$50</td>
</tr>
<tr>
<td>Elmeasco Instruments</td>
<td>$25</td>
</tr>
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</table>

These are entitled to the use of the WIA emblem and the words: "WARC Amateur Supporter" in their advertising displays.

WIANEWS

EXAMINATIONS

The following is the text of letter 53.2.6 of 12th June addressed to the Institute by the Assistant Secretary, Licensing Policy and Operations, P. and T. Department:

"Following recent negotiations between representatives of the Institute and Departmental officers, I have pleasure in forwarding several copies of the AOCP/AOLCP examination syllabus in its final format. I would also like to confirm that commencing with the August 1979 examination, a 50 question, 1½ hour, multi-choice paper is to be introduced for Section "M" (Theory). Several copies of a sample paper are enclosed and quantities of both documents will be available for general distribution in the near future.

"It is intended that all future AOCP/AOLCP section 'M' (Theory) examinations will be multi-choice. However, for the August 1979 examination, papers in both old and new formats will be available so that candidates who have prepared for the usual seven question written essay type paper will not be disadvantaged by too little notice. All candidates will be advised of this arrangement by letter and will have the opportunity to choose either paper on the day of the examination.

"It would be appreciated if you could arrange for the above matters to be publicised through the Institute’s normal channels as soon as practicable.

"Finally, I would like to thank those members of the Institute who gave assistance in the preparation of the AOCP/AOLCP syllabus and in particular your Federal Education Co-ordinator, Mr. G. Scott."

AMATEUR ADVISORY COMMITTEE

Another letter from the Department (51/1/1 of 11th June) sent forward a proposed draft constitution and rules of operation of Amateur Advisory Committees for Institute comments. This is designed to replace the original terms of reference dating back to the late 40s/early 50s.

Amateur Advisory Committees seem to have been originally seen as a buffer between the individual amateur and the Department in respect of minor infringements. The financial and staffing situation in the Department, following the disbandment of the old PMGs Department, has meant the discontinuance of the Amateur Advisory Committees in some States. In some others this particular service fell into disrepute amongst some amateurs by reason of individual misconceptions.

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The Executive must now give thought to the whole situation because this Committee service, or something for this purpose, is an essential part of the “self-regulation” of the amateur service. “Private” self-regulation by amateurs is preferred by most people instead of official citations, and that is the key to success, given responsible behaviour by those who are charged with operating whatever scheme is devised: and also, given acceptance by the amateur concerned, that he does need to re-examine his own equipment or procedures.

As mentioned in July WIANEWS, work is still proceeding on the revision of the Handbook.

Input for the 1979 Call Book closed off at the end of June. This proved possible by reason of a small extra edit and up-date of the EDP programme. If everything proceeds smoothly, distribution by mid-August comes closer to a reality.

WARC 79 DONATIONS LIST No. 4
The Executive wishes to acknowledge with grateful thanks the receipt of the following donations from members for WARC 79:

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- Anon.— VK6 ........................... 10.00
- (VK7DG $3.16 instead of $5.00)

QSP — GET WITH THE STRENGTH
I make no apologies for the title, but I believe that we, as concerned amateurs and members of the WIA, must do all we can to increase the percentage membership of "our Institute".

The simplest, and most effective method is to "tell a friend" and the best way to start is to seek out local amateurs (or prospective amateurs) who live in your area. The 1979 WIA Call Book will assist in this.

As we gain strength in the Institute our combined voice will then be heard by more in the various spheres which concern us. Also the greater our strength the greater the number of talents we can call upon, enabling us to venture into areas of responsibility where the Institute should be, but cannot do so at this time due to lack of numbers.

Hence let us increase our membership and get with the strength.

F. S. PARKER VK2NFF, VK2 President.

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FEATURES:
- Just one piece of equipment can handle receiving AND sending in CW, RTTY and ASCII
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- Built-in active filter type demodulator for high performance.
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- Automatic scrolling and built-in cursor control.
- Non-volatile memory.
- Pre-loading function in buffer memory.
- Rub-out facilities.
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- An auxiliary tape-recorder can be used as an external memory device.
- Variable CW weights.
- Automatic CW available.
- Output ports (with strobe) for parallel ASCII.
- Can be interfaced with a microprocessor.
- Backed by VICOM 90 day warranty.
- 1024 Character display.

SPECIFICATIONS
1. Code: CW, RTTY (Baudot code), ASCII
2. Character: alphabet, figures, symbols, special characters
   (automatic follow) transmitting: 17—176 characters/min.
   RTTY 45.45 baud, 50 baud, 56.88 baud,
   74.2 baud
   ASCII 110 baud, 300 baud
4. Input:
   AF input CW, RTTY
   ASCII Input Impedance 500 ohms
   TTL Level Input (common to CW, RTTY and ASCII)
   TTL Mark: 2125Hz
   Space: 2285Hz, 2550Hz, 2975Hz changeable
   in the NORMAL state
   ASCII Mark: 2400Hz
   Space: 1200Hz
5. AF Input frequency:
   CW 830Hz
   RTTY Mark: 2125Hz
   Space: 2285Hz, 2550Hz, 2975Hz changeable
   and Fine Tuning in the NORMAL state
   ASCII Mark: 2400Hz
   Space: 1200Hz
6. Output:
   Keying
   CW KEYING (1) 2000mA, 150V
   CW KEYING (2) 150mA, 300V
   FSK KEYING (3) 150mA, 300V
   FSK KEYING (4) 150mA, 300V
   AFSK output Output Impedance 500 ohms
   TTL level Fan-outs 5 (standard TTL)
   CW 830Hz
   RTTY Mark: 2125Hz
   Space: 2285Hz, 2550Hz, 2975Hz changeable
   in the NORMAL STATE
   ASCII Mark: 2400Hz
   Space: 1200Hz
   VHF Australian CH4, Output Impedance 75 ohms
   Composite video signals, Output Impedance 75 ohms
   Data; 8 bits, Fan-out 1 (standard TTL)
   Strobe; 1 bits, Fan-out 1 (standard TTL)
   512 characters (32 characters x 16 lines/page)
   x 2 pages (total 1024 characters)
   32 characters x 7 channels
7. AFSK output frequency:
   12. Buffer memory:
   13. Output for
   14. AF output:
   15. Power source:
   16. Dimension:
   17. Weight:
   6. Output:
   Keying
   CW KEYING (1) 2000mA, 150V
   CW KEYING (2) 150mA, 300V
   FSK KEYING (3) 150mA, 300V
   FSK KEYING (4) 150mA, 300V
   AFSK output Output Impedance 500 ohms
   TTL level Fan-outs 5 (standard TTL)
   CW 830Hz
   RTTY Mark: 2125Hz
   Space: 2285Hz, 2550Hz, 2975Hz changeable
   in the NORMAL STATE
   ASCII Mark: 2400Hz
   Space: 1200Hz
   VHF Australian CH4, Output Impedance 75 ohms
   Composite video signals, Output Impedance 75 ohms
   Data; 8 bits, Fan-out 1 (standard TTL)
   Strobe; 1 bits, Fan-out 1 (standard TTL)
   512 characters (32 characters x 16 lines/page)
   x 2 pages (total 1024 characters)
   32 characters x 7 channels
   23 characters
   Output Impedance 1 megohm
   150mW (DC 12V), Output Impedance 8 ohms
   DC +12V 1A, or DC +5V 1A
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A 40 CHANNEL DIGITAL SYNTHESIZER WITH 25/50 kHz STEPS FOR 2m FM

Lou Destefano VK3AQZ
13 Moody Place, Endeavour Hills 3802

This article describes a 40 channel synthesiser suitable for many of the older style crystal locked transceivers on 2m FM.

INTRODUCTION
With the proliferation of modern synthesised transceivers on two metres, it was becoming obvious that we were missing out on a lot of potential QSOs. Having a crystal locked rig with a mere 5 channels, a few quick calculations for 75 more sets of crystals and an 80 position switch caused calculator overflow, temporary blackout, and words to the effect “you must have rocks in the head”. Rather than be left out on the rocks it was decided that a digital synthesiser was the logical answer.

Being an ardent home brewer it was decided that rather than succumb to temptation and buy that you-beaut rig, it was far better for the soul to embark on a home brew contraption. Using my usual design techniques for home brew projects — first how much? then a bit from this circuit, some from that circuit, and a small smattering of original brain shattering concepts, I embarked on the design (3 min. 15 secs.), construction (33 min. 23 secs.), and final debugging (33 hours 10 min.) of the unit about to be described.

The basic concept was that it had to interface directly into my existing rig — preferably without wires. This being impractical it was accepted that some minor mods would be required but these were to be absolutely minimum and done only whilst the rig was asleep. The rig consists of a Hepburn-Jenkins Carphone transmitter with 12 MHz crystals, and a copy of the MTR43 commercial receiver with 34 MHz crystals. The Hepburn-Jenkins transmitter uses a Colpitts harmonic multiplier for 36 MHz output. The receiver uses an MPF121 Colpitts oscillator, followed by an MPF121 quadrupler for mixing down to a first IF on 10.7 MHz. Both these circuits have proven to be easy to drive at 36/34 MHz by disconnecting the capacitor from base/gate to emitter/source, and feeding directly into the base/gate via a crystal socket.

CIRCUIT DESCRIPTION
Fig. 1 shows the block diagram of the synthesizer. Fig. 2 shows the main part of the synthesizer containing the digital phase locked loop. The heart of the phase locked loop is the phase detector contained within the SCL4046.

THE PHASE DETECTOR
The phase detector compares 2 input square waves for frequency and phase and gives an output whose average DC component is proportional to the difference. A lowpass filter on its output gives smooth DC for controlling the frequency of one of the input signals. If one input is crystal-derived and the other is variable by means of the phase detector output, then when the loop is locked, the variable becomes as stable as the crystal. A simple numerical example will illustrate the use of this fact in a digitally controlled phase locked loop. If we have a 1 MHz crystal-locked signal into one input, and a 1 MHz VFO with varicap diode control into the other input, then if the VFO is high in frequency, the phase detector will give a low average DC output. This when fed into the varicap of the VFO will cause it to shift low in frequency until the VFO is exactly on the same frequency as the crystal oscillator. The VFO becomes as stable as the crystal. If we now introduce between the VFO and the input of the phase detector a digital divider and arrange it to divide by 2, the input to the phase detector will become 500 kHz. The other input will still be 1 MHz from the crystal. The phase detector now gives a high average DC output because of the frequency difference. This in turn shifts the VFO UP in frequency until the phase detector has again 1 MHz from the digitally divided VFO into it. This means of course an actual VFO frequency of 2 MHz as we are dividing it by 2. If the division is changed to 3, the VFO will move up to 3 MHz and again it will be as stable as the crystal. Thus by varying the division ratio it would be possible with the correct type of varicap to shift the VFO up in steps of 1 MHz. The crystal oscillator input is called the reference frequency whilst the controlled VFO is called a "voltage controlled oscillator" or VCO. The reference frequency determines the step distance frequency whilst the digital division determines the number of steps (along with the range of the varicap in the VCO). The stepping distance can be 1 MHz as shown, or as low as 1 Hz.

The conventional phase detector gives an output which is a square wave whose period varies according to the frequency/difference. This square wave is filtered by a lowpass filter which generally would have to start attenuating at about one tenth of the reference frequency for good locking. A notch filter at the reference frequency may also be included to reduce the noise. The lockup time, capture range, and lock frequency range are highly dependent on this low pass filter design. The phase detector in the 4046 is of the digital memory type which only gives an output whilst the loop is unlocked. When the loop is locked or near locked, its output is an almost smooth DC. This means that a low-pass filter of greater bandwidth can be used resulting in fast response, wide locking range, and clean output. The 4046 also contains an emitter follower which in this circuit is used between the low pass filter and the VCO for added isolation. The IC also contains its own VCO but this is not used because it can only operate at

FIGURE 1: Block Diagram.
TABLE 1: PROGRAM CODES

<table>
<thead>
<tr>
<th>Chn</th>
<th>Status</th>
<th>Tx O/P Freq</th>
<th>VCO O/P on Tx Mode</th>
<th>Rx Injection Freq (10.7 MHz IF)</th>
<th>VCO O/P on Rx Mode</th>
<th>( \text{VOL} ) on Rx Mode</th>
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<td>4.055 555 6</td>
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For 50 kHz spacing at 2m, the 4 MHz VCO must shift 50 kHz divided by our multiplication factor of 36. Thus to go from Ch. 40 to Ch. 41 on transmit, the VCO has to move from 4.055556 MHz to 4.056944 MHz—a change of 1.3888889 kHz. This is the frequency we step the VCO by to go from one channel to the next. The same applies to the VCO frequencies on receive if the total multiplication is also 36 times. From our initial discussion on stepping a VCO in a phase locked loop, it means the crystal reference frequency must be 1.3888889 kHz. If the multiplication factor from the VCO frequency to the final 2m frequency is different, or we wish to step in different increments, then a different reference frequency is needed. If we step in increments of 25 kHz on 2m with 36 times multiplication, our reference frequency would need to be 25 — 36 kHz = 0.6944444 kHz. The lowpass filter after the phase detector is determined by the reference frequency and in my case it has a cutoff frequency (—3 dB point) of around 330 Hz. The VCO itself is a Hartley oscillator with high L to C ratio. The frequency is controlled by a pair of BA102 varicaps. These enable the VCO to be voltage controlled from 3.7 MHz to 4.2 MHz. The Hartley oscillator is the best circuit for such high L to C ratios. The VCO is brought to the centre operating frequency (with 5V DC on the varicaps) by adjusting the inductance. No trimmer capacitor can be used across the coil as this will considerably reduce the range of the varicaps.

The VCO is also fed with audio from a microphone amp. A few millivolts of audio is sufficient to deviate the VCO the full 8 kHz on 2m. The quality of the audio with such a modulator is very good and there is no sign of loop instability with speech. Those rigs which use a direct FM modulator by varying crystal reactance will have to either modulate the synthesizer as done here, or build a phase modulator into the rig just after the original crystal oscillator. Rigs already having a phase modulator after the original crystal oscillator need not modulate the synthesizer. The original mic. amp. in the rig can be used and fed back to the synthesizer or a simple amp. used as shown in Fig. 6. This consists of Q17 which matches my rocking armature mic. to the VCO. A small trimpot sets the audio level or deviation and a lowpass filter reduces the higher frequency FM sidebands. Clipping was not included as I speak softly. You can also try connecting a 50k mic. directly to the loop via a small 50k trimpot and a 0.0022uF directly across the mic. to limit the top end of the speech. Most 50k mics have more than enough level to drive the loop directly.

The output of the VCO feeds a tuned amplifier with a low Q tuned circuit to ensure a bandwidth from 3.7 MHz to 4.2 MHz. The tuned amplifier feeds two emitter followers—one feeds the digital divider via a squaring amp. (Q5) and the other goes to the frequency multipliers.

THE VCO

To allow the synthesizer to be used with some of the older style rigs it was necessary to have a VCO around 4 MHz. This also enabled the use of low noise, low power CMOS devices in the divider. The frequencies finally chosen for the VCO on transmit and receive are shown in Table 1. For Ch. 40 transmit simplex, the VCO frequency is 4.055556 MHz and on receive, for a 10.7 MHz IF, it is 3.7583333 MHz. These frequencies are multiplied by 36 times to give the required outputs for receive and transmit on 2m. For my set-up, 9 times multiplication is done in the synthesizer unit after the VCO. For those rigs with IFs other than 10.7 MHz, the receive VCO frequency will have to be different and this is achieved by altering the division codes in the divider.
FIGURE 2A: 40 channel phase locked loop circuit for 2 metres FM.

FIGURE 2B: Phase locked loop coil details.
FIGURE 3: Circuit for 40 channel automatic scanner with one priority channel.
FIGURE 4: Simple diode-matrix channel select using two-pole switch.

Any low power RF transistor may be used in this section. The 56k base bias resistors are selected to give 5V DC (+ 0.5V) at the emitters of the emitter followers. These resistors may need to be altered depending on the DC current gains of the transistors.

THE VCO DIVIDER

The output of the VCO feeds the digital divider via the amplifiers. The digital divider then feeds one input of the phase detector. The one used is the CD4059AE, which is a five decade BCD programmable divider capable of operating up to 4 MHz with a 10V rail and 6 MHz with a 15V rail. It divides the VCO down to the reference frequency for comparison in the phase detector. Table 1 lists the divisions need on Tx and Rx for moving from Ch. 40 to Ch. 80 in 50 kHz steps. The division ratio in IC3 is selected by putting logic highs (10V DC) and logic lows (0V DC) on the appropriate pins of the IC. E.g. to divide by 2920, the first decade must be programmed for 0, the next for 2, the next for 4, and the last for 9. The first decade in the chip, or the one closest to the VCO input, is programmed for the least significant digit which is zero in our example.

Its programme pins are labelled A1, B1, C1 and D1. The number one after the letter represents the least significant digit whilst the letter A signifies the least significant bit of the VCD code for that digit. The letter D signifies the most significant BCD bit of the digit. The least significant digit of 2920 is “0” and thus we must put the BCD code for 0 on pins 6, 5, 4 and 3, which is “0000” or all at 0V DC. The next digit must have the BCD code for 2, which is “0010”. Thus pin 21 must have 10V DC on it, whilst pins 22, 20 and 19 have 0V DC on them. The third digit pins must have the BCD code for 9 on them, which is “1001”. The most significant digit pins must have the BCD code for 2 on them, which is “0010”. The fifth decade is disabled. It is the function of the channel select or programmer circuit in Fig. 3, Fig. 4 or Fig. 5 to provide these BCD codes to the divider for channel selection.

THE REFERENCE OSCILLATOR

IC1 is the crystal oscillator, which uses standard CMOS inverters with the crystal in the feedback path.

The output of the oscillator feeds another programmable divider the same as the VCO divider. The divider is programmed on the circuit board to give the correct reference frequency with almost any crystal in the range from 100 kHz to 4 MHz. A slight pulling of the crystal will cause the crystal which when divided by 1548 gives 1.3888889 kHz. This approach allows greater flexibility than using discrete ICs and a crystal made to order. It works out cheaper also. The crystal oscillator contains VXO circuitry to enable it to shift the VCO for a 25 kHz offset on 2m (Ch. 40 to Ch. 40A). By altering the reference frequency by 0.238 Hz, the VCO moves 25 kHz on 2m. This represents a shift of 368 Hz at the crystal frequency of 2.15 MHz. Because the reference is actually shifted, the offset will not be exactly 25 kHz on all channels. The 50 kHz steps will be precise, but the offset will vary, being about 1.25 kHz out on the lowest channel (Ch. 40 Rx) and the highest channel (Ch. 80 Tx). This is a limitation of using this method. The offset is achieved by switching a capacitor in and out with a switching diode connected to a toggle switch. A decimal point on the display or an LED is used to show on the display or an LED is used to show when the offset is in. When the switching diode is conducting, the reference frequency is for 50 kHz steps. The capacitor values used are for my crystal and these may have to be altered to suit your crystal. A varicap diode is also used for giving 5 kHz offset via a variable control.

CHANNEL SELECTION CIRCUITS

Figs. 3, 4 and 5 show alternative methods of deriving the BCD codes for channel selection. Fig. 3 shows a digital scanner circuit which is used for my base rig. This consists of a scan oscillator with auto stop from the receiver mute signal. The scan oscillator (IC5) gives pulses variable from about 3 per second every 3 seconds. The scan oscillator is stopped by putting an earth on pin 4. This occurs the moment the mute is opened by a signal. On my rig, the mute signal goes from 0.3V no signal to 1.5V with signal. This is buffered with an emitter follower in the rig and feeds Q7. From here it goes via amplifiers to IC5. A retriggerable delay is included to allow for breaks between overs. The delay occurs only when the mute closes. This delay is obtained from the capacitor across Q7. When the mute signal fails, the capacitor starts to charge towards the rail, and via the source follower, it removes the earth from pin 4 after about 12 seconds. If the mute opens during this 12 seconds the capacitor is discharged again by Q17, thus forming a retriggerable time delay. Note that on transmit, the oscillator should be stopped.

The output of the scan oscillator goes via the manual/auto switch to a 2 decade presettable counter. The counter output is in BCD form and increments one number on each positive edge of the scan pulse. The counter starts at “00” output for Ch. 40 and goes to “40” for Ch. 80. The counter resets on the count of 41 via IC1A. The counter feeds BCD to 7 segment decoder drivers which feed common cathode LED displays. The driver for the most significant digit has the number “4” permanently added by Q12 so that “40” is displayed when the counter output is “00”.

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The ICs used in the counter are presettable with a BCD code such that when the "load" input (pin 11) is set to logic low, the output disregards the pulses counted and immediately goes to the code on the preset inputs. This allows for selection of a priority channel. When power is first applied, the scanner always goes to the priority channel first. The priority code switch on my unit consists of an 8 way DIL switch mounted on the front panel. These inputs can also be used to select channels via a small calculator keypad.

The output of the scan counter feeds a group of normal binary coded decimal adders (NOT binary only adders). The adders are devices which add two BCD numbers giving a BCD result. They also contain a carry input and output for cascading. One set of inputs is fed from the scan counters whilst the other sets are fed from a small diode programmed matrix. The matrix is set up so as to give the channel select code to the VCO divider. An example will illustrate. On Ch. 40 Tx, we want the VCO divider to divide by 2920. For Ch. 40, the scan counter output will be "00" and thus we need to add the number 2920. If you study the code table for transmit, you will notice that the code number from Ch. 40 to Ch. 80 only changes in the two least significant digits, i.e. from 2920 to 2960. So for the 2 most significant digits we can permanently apply the BCD codes for 29. Thus all we need to do is add the number "20" for the two least significant digits, for all the transmit simplex channels. The number "20" is added by putting the appropriate logical levels on pins 14, 2, 4 and 6 of ICs 10 and 11. Logic zero is obtained via the 10k resistors to earth whilst logic high is via diodes and the mode switch. On receive, we need the BCD code for 2706 on Ch. 40 and 2746 on Ch. 80. Again, only the least significant digits change. On receive we need to add "06" to the scan counter output on all channels. Between Rx and Tx the most significant digit does not alter, thus the VCO divider pins can be hard wired for the number 2 (code word = 0010). The second most significant digit has to change from 9 on Tx to 7 on Rx and this corresponds to a code change from 1001 to 0111. This is done via the Tx/Rx relay. The change from 20 on Tx to 06 on Rx for the two least significant digits is done by selecting a different set of diodes in the matrix via the mode switch and the Tx/Rx relay. The same principle is used to select the different codes for repeater offsets. E.g., if we are listening on Ch. 54 repeater, the receive code we have is 2720. The scan counter is giving 14 and the matrix is adding 06. We now have to transmit 600 kHz lower to access the repeater. This represents Ch. 42 on Tx which has a code of 2922. Thus instead of adding 20 on Tx, we need to add 08 (14 from scan counter plus 08 = 22). Similar things happen on shifting +600 kHz on transmit and here we add 32. One point to note is that if the code required to the VCO divider changes in the third digit during scanning or channel selection, then a third NBCD adder or a transistor is needed. The PCB layout has allowed for this. This could happen with
Fig. 4 and Fig. 5 show two alternate and cheaper methods for selecting channels. Fig. 4 uses a standard two pole switch plus diode matrix. The diode matrix selects the correct code for the least significant digits. A single pole switch can also be used if adders are incorporated to give the required offsets. A mode switch will reduce the number of positions needed. This is the method used in the IC22S. No display is used apart from the switch position as this could mean extra adders. Fig. 5 uses standard BCD thumbwheel switches. In this case, the display is on the switches and the code would go from "40" to "80", thus adders are needed to give the correct codes as well as provide Tx/Rx offsets, etc. Note carefully that with offset facilities it is possible to transmit outside the band. The necessary circuits for inhibiting transmission under these conditions can be complex and have not been used in my set-up.

**THE FREQUENCY MULTIPLIERS**

Fig. 7 shows the frequency multipliers used, these acting as triplers in my unit. Two are used in cascade with modified coils for the second tripler so as to arrive at 34/36 MHz. The circuit can also be used as a doubler if needed or just the buffer amplifier used. It depends on what frequencies you need for your rig. It is best to try and make the Rx and Tx multiplication factors the same as only one RF cable is needed to the set. If you have a rig with 4 MHz crystals on Tx, you can try driving the Tx circuit directly from the VCO buffer and use the required multiplication stages on Rx. Transmitters with 9 MHz or 18 MHz crystals are best retuned in the oscillator output to take 12 MHz or 24 MHz drive. For 24 MHz drive, the second multiplier would be used as a doubler by altering the coils slightly. FETS are used to ensure easy and clean tune-up. By-passing is critical as it is possible to generate unwanted frequencies. All the tuned circuits have their Q lowered with 6k8 resistors to ensure they cover the Tx/Rx range. With some rigs it may not be necessary to employ frequency multipliers. In my case I could have used a 34/36 MHz VCO with a high speed TTL divided between it and the programmable divider. This divider would be set for a constant division by 9. The programmable divider would thus see the original design frequencies and all the programme codes shown would apply. This means a saving in space and less tune-up. It does need a 5V supply and transistors to get back to 10V logic levels. Very careful screening would be needed to stop the tenacious TTL pulses from generating noise. The choice is yours.

**FIGURE 6 (Left): Interconnections.**
INTERCONNECTIONS

Figure 6 shows the general interconnections between circuits. Power is fed to the unit via an 8 or 6 volt regulator biased for 10V output. The PTT on the microphone activates a small 12 volt battery relay which selects the correct codes for Rx and Tx. On Tx, the lock circuit feeds Q18 and Q19 which operate the transceiver PTT via the original mic. socket, if the loop is stable. A mic. amplifier (Q17) matches my mic. to the loop. If you wish, the mic. circuit in the rig can be used by feeding the loop via a socket and screened cable. RF is fed via a single coax. cable to the rig where it goes to an uncrystalled position of the original channel switch. It feeds the Rx Colpitts oscillator directly and in fact in my unit I did not have to remove the gate to source capacitor. It also goes to the Tx oscillator which, with the removal of the base emitter capacitor, becomes a straight 36 MHz amplifier. A 56 ohm resistor drops the level so as not to overdrive this amplifier. The original modulator will need to be disconnected if it frequency-modulates the oscillator directly. In my unit, going to an uncrystalled position automatically disables the internal modulator. Some rigs phase modulate the sinewave from the oscillator at the oscillator output tuned circuit. These should not need modulation of the synthesizer as they should modulate any signal passing through them. This means that the original mic. socket is used for the mic. In this case the PTT on the mic. will have to go to the synthesizer via another socket. With my set-up I can go back to crystals by simply reconnecting the Tx base emitter oscillator capacitor and disconnecting the plugs.

CONSTRUCTION

The basic loop is built on PCB1 which is double sided. One side is used as a ground plane whilst the other side has the tracks. The foil side is printed whilst the other side is protected during etching with masking tape. The component holes are then drilled and copper is cleared on the component side with a small drill. Those holes going to earth are not cleared and the component leads are soldered on both sides so as to tie the earths to the ground plane. Most of the components are mounted vertically to conserve space. Molex pins are used as IC sockets. The whole PCB is mounted in a small PCB box and all non-RF connections made via 0.001 µF feedthrough capacitors. Don't use a PCB without this ground plane as earthing in any phase locked loop is very important if noise is to be low. The coil base diagrams shown are for my layout and are viewed from the bottom. The components shown with these diagrams are mounted in the cans and must be miniature types. The RFCs are miniature Japanese upright types and the exact values are not really critical. One of the frequency triplers is also included on this PCB. The coil slugs are locked in place with correcting fluid, the VCO coil being the most critical. Vibration in this coil will cause microphonics.

PCB2 has the scanner circuit on it and this is single sided with wire links to simplify the foil pattern. The scanner ICs have 0.01 µF disc ceramics across the supply pins under the board. Others are placed liberally around the board across the rails. The 10k resistors for the preset inputs of the scanner ICs are mounted near the LIL switch. An alternate arrangement for this section of the circuit is to use wire-wrap techniques.

The mic. amp., lock circuit, displays, etc., are all mounted on small pieces of

FIGURE 7: Frequency multiplier.

FIGURE 8: Component layout, phase locked loop.
ALIGNMENT

Tuning up the synthesizer is relatively easy. A frequency counter will help but is not essential. After applying power ensure that the regulator is giving 10V output by adjusting the trimpot. Next check the scanner or code circuit and dial up one of the scanner output frequencies. Make sure you have the correct code by checking with a multimeter on the VCO divider. Close the switch to the crystal VXO so that you don’t have the 25 kHz offset, and set the frequency control midway. The next thing to do is ascertain you have the correct reference frequency or close enough to hear signals. This is best done with a frequency counter connected to pin 4 of IC1. Adjust C1 for the required crystal frequency. If you don’t have a counter, don’t despair as in all probability you will hear signals in the receiver once you have aligned the frequency multipliers — even if you have to swing C1 back and forth during alignment. Next adjust the VCO coil so that you don’t have the 25 kHz offset, and adjust the coil for maximum signal without over-driving the mixer. Over-driving the mixer will increase intermod and spurious responses. Use a resistor pad if you have too much drive. You should now be able to set the reference frequency more accurately for cleanest audio. A centre zero meter on the discriminator will help while listening to a repeater which you know is on frequency. This has now set the synthesizer for all the 50 kHz channels. Now check that the loop works over all channels and remains locked for both Tx and Rx codes.

A multimeter on Pin 10 of IC4, you should get about 2.5V on Rx and 7.5V on Tx. These voltages will depend on the range of your varicaps and the setting of the VCO coil. The greater the varicap range, the closer to 5V they will be. Loss of lock at the band edges will require another pair of diodes or more careful setting of the VCO coil. When I first got the loop going I had very limited lock range. This was traced eventually to the unbypassed VCO in the 4046. Bypassing it cured the problem along with severe microphonics.

Now check for the 25 kHz offset. You will probably need someone with a synthesized rig to check this or a good frequency counter. Juggling the values of C2 and C3 will enable you to get the required offset. You may have to reset C1 for the 50 kHz channels. Patience is needed — or a good frequency counter. Some crystals
may not VXO much so be careful and ensure the oscillator remains stable. Having set the frequency steps and offsets you can check the various other circuits such as the mic, amp, and the lock circuits. The collector of the mic. amp. should be between 4 and 6 volts. If not, vary the base bias resistors till it is. Do a final alignment of the frequency multipliers on transmit with a dummy load. Recheck the receive sensitivity and juggle the tuned circuits for best overall.

For those contemplating using the synthesizer in a new rig I would recommend the use of the building blocks circuit (AR October 1975). Purchase one set of crystals and get the receiver working first — then interface the synthesizer. On the air test showed the output to be clean. Don't be fooled when getting reports from people using 60 kHz wide receive filters — they will tell you they can hear you on 3 channels! When going between Tx and Rx, the reference frequency may be audible for a short instant. I suspect this is because the loop is underdamped.

All the components with the exception of the CD4059AE are easy to get. The CD4059AE is an RCA device and is handled by AWA. In Melbourne it can be ordered from Miles Street, Mulgrave. Cost is $10.00, including tax, for one off. All-up cost is about $50. Use only the "SCL 4046" for the phase detector. Other makes which I tried had too much voltage drop across the emitter follower. I have built two units, one with a scanner and one with thumbwheel switches, and both are working satisfactorily.

**MODE SWITCH S1 (See Fig. 5)**

Pos. 1: Tx is shifted up by +600 kHz (Repts. 9-12).
Pos. 2: Simplex Mode.
Pos. 3: Tx is shifted down by 600 kHz (Repts. 1-8).

For all three positions, "06" is added to the automatic scanner to give correct Rx code.

For Tx +600 kHz, "32" is added to the scan counter output.
For Tx — 600 kHz, "08" is added to the scan counter output.
For Tx Simplex, "20" is added to the scan counter output.

Scan counter output is "00" on Chn 40 and "40" on Chn 80.

For simplicity not all VCO frequencies shown.

\[
\begin{align*}
\text{freq on 2m} & = \frac{\text{fvco on Tx}}{36} \text{ MHz} \\
\text{freq on 2m} - 10.7 & = \frac{\text{fvco on Rx}}{36} \text{ MHz}
\end{align*}
\]

**QSP**

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An early reminder: The 22nd JOTA will be held over the weekend of 20th-21st October, 1979, from 0001 hrs. EAST on 20th October to 2359 EAST on 21st October.

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Noel Lynch VK4ZNI, Nat. Organiser.

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Those interested in VHF/UHF will know of the record breaking contacts between Reg 5QR and Wally 6WG on the 23 and 13 cm bands and will realise the difficulties involved in generating a CW signal at these frequencies, let alone SSB. Most will also realise that while it is a relatively simple matter to varactor multiply a VHF CW or FM signal to any of the UHF bands any attempt to do this with a normal SSB transmitter results in a multiplied signal that little resembles single sideband and resembles it less the more it is multiplied. To find out the reason for this you might refer to the reference noted at the end of the article.

In order to be able to multiply an SSB signal its FM and AM components must be separated, its FM component divided by the amount it is intended to multiply to the final frequency, and the two components then combined again. This can be done at low frequencies and the result mixed to a suitable frequency from where it can then be multiplied to the required UHF band. This method of UHF SSB generation was originated by K. Meinzer DJ4ZC and is the method used by VK5QR to generate SSB on both 1296 MHz and 2304 MHz. Figs. 1 and 2 show the methods used to achieve this. The first is essentially the scheme used by DJ4ZC in his original article. The second is the method used on 2304 MHz and has the advantage of using the more normal 28 MHz SSB source. Both of these schemes work quite well and I can testify to the fact that they are both indistinguishable from normal SSB signals on air.

Reg tells me that the secret of getting it working is the extensive filtering between mixing and multiplying stages. Since this isn’t a constructional article I’ve left the filtering out of the diagrams in the interest of simplicity.

The third diagram (Fig. 3) is distinct from the first two in that it has never been built and is only one of many possible schemes for generating 3.5 or 10 GHz SSB. It shows that generating 10 GHz SSB is only a little more complex than generating 2.3 GHz SSB. Having generated 10 GHz SSB only one small problem remains (and this becomes apparent when you search the literature) a crystal locked 10 GHz converter. But this isn’t an insurmountable problem.
As you can see it’s not Impossible to generate SSB on 3 cm at levels of one or two watts. Considering that most work on 3 cm at the moment is wideband using milliwatts of power from free running GUNN DIODES, it can only be a matter of time before more records fall to this method of generating a microwave SSB signal.


FIGURE 2 (Right): The DJ4ZC method of generating UHF SSB as applied by VKSQ to 2304 MHz SSB.

WEATHER RTTY

Alex Lutkewich VK6EZ

No doubt all of us at some time whilst tuning the band have come across a signal which to much annoyance turns out to be a weather transmission consisting of groups of 5 numbers and to cap it all, it’s probably the strongest signal around.

These broadcasts appear anywhere from 3 to 26 MHz and although they are of little use to us except for checking the machine at 50 bauds, they provide a vital service and their consequences affect our lives every day.

Every six hours meteorology stations throughout the Australian continent and neighbouring islands collect information regarding temperature, atmospheric pressure, cloud cover, etc., and send this information to a regional office. This eventually ends up as a weather map of the continent. To send the Information in the quickest way, it is sent in a code, i.e., a series of numbers, which is interpreted as a weather report by those interested.

No doubt we have all heard such reports on the radio with the temperature in degrees Fahrenheit, pressure in millibars, etc., but let us try to decode it.

96995 22304 98506 08030 753// 24/// 87608 22/// 3316/ 41992 529//

This code when gathered and collated with the three hourly satellite pictures gives a complete weather picture to services that rely on the Information, such as shipping, aviation, etc. Despite this, aircraft still manage to fly into “Cumulo Nimbostratus” and reach the destinations they are programmed to.

These parameters can be broken down into more detail such as the type of cloud at various heights from ground to 50,000 feet or the temperature every 1,000 feet to 50,000 feet. To standardise the names of the various phenomena it is sent in a standard format. The first 5 characters are the station ID, second 5 are cloud cover expressed eights of cover, with 8 being completely covered and 1 being clear.

The third group is horizontal visibility, past present weather, the fourth group being the ground pressure and temperature. The following groups indicate special phenomena and type of cloud at different altitudes, state of the sea, type of rainfall and the temperature of the ground. There are 8 groups in all and these groups are preceded by an indicator.

2 — lowest cloud and associated pressure change.
3 — state of the sea and direction of any swell.
4 and 6 — rainfall group indicators.
5 — temperature groups.
7 — ground temperature.
8 — coverage and types of cloud.
9 — special phenomena.

Confused??? You haven’t seen anything yet. Let’s take an example and try to decode it:

96995 22304 98506 08030 753// 24/// 87608 22/// 3316/ 41992 529//

First comes the station ID, the 96 is the NW quadrant of Australia up to Indonesia and 995 is Christmas Island. The next group, 22304: 2 is 2/8th cloud cover, 3 is direction of wind 230 degrees true, 04 is the speed in knots. 98506 decodes as 98 visibility which is 20 km, 50 which is present weather and that is drizzle, and 6 which is past weather which was rain. 08030 is pressure in millibars (1008.0) and temperature at 30° C. 753// is 7/8 low cloud, type 5 cloud (low), height 3 (650-1,000 ft.) and the // is where the middle to high cloud would have been, but with 7/8 cloud cover it wasn’t observed and a filled triangle. 24/// is the Dew point or the point at which the air cannot hold any more moisture, and the pressure tendency which was not measured and therefore ///. 87608: 8 is the significant cloud group, 7 is the coverage of the significant cloud which is 5/8 cover, 6 is the type of cloud, in this case stratocumulus, and 8 is its height — 800 ft. 22///: 2 is the group indicator and the second 2 is the cloud direction (East) and the next three numbers would have been the corrected pressure tendency had this station been one that reports it. Correction is only required at stations well above sea level.

3316/: The first 3 is an indicator followed by a 3 indicating that the sea is slight, 1 being a low swell and the 6 showing the direction of the swell in 1/8ths of the compass, this being west. The / is the end of block. 41992: The 4 is the group indicator and the 2 indicates the elapsed time since the last measurement. The 992 is the amount of rain recorded, this being 0.2 mm. Finally 529//: the 5 is the group indicator for temperature, and the 29 is the maximum recorded since the last reading. The last two figures would have been the minimum, but as this reading was at 3 p.m. there has been no minimum since 9 a.m.

This completes one line of Information which may seem confusing but a Met man can decode this in seconds, but it takes a little space to explain to the layman, and if you have understood this explanation then you are on your way to being a meteorological observer. As for me, I’m going to stay away from all such signals.

From AARTG, No. 12.
EARLY DAYS IN RADIO

L. P. McGuire VK6MG ex VK3KM ex VK3LX

Well do I recall some of the earlier days of Amateur Radio.

The old reliable UV, later UX201A which, with a filament rating of 5V at .25 amp., was used as a self-excited oscillator, using mostly the TPTG system of feedback.

Because of non-availability of resistors suitable for the purpose, it was a common practice to hold an automobile headlamp under water and break off the exhaust tip which was on top of the bulb. This would cause the bulb to fill with water and was used as a grid leak. It was rewarding to see the bubbles forming around the burnt out filament supports. Later when the technology advanced a second 201A was added to constitute the popular MOPA.

Types of modulation being to wire a small audio transformer in series with the grid return and so modulate the grid.

Another poor man's modulation was to wire a carbon mike in the earth lead of the radiating system.

With the average mains being 240V DC rechargeable cells called B Batt's were available and were a series of glass tubes with lead plates and H2SO4 electrolyte.

Many was the Marmite jar saved by Mum or scrounged from the tip, and from the plumber strips of lead to fashion home brewed B Batt's, which were charged from the DC mains via a lamp.

Eventually the 201A PA was replaced by the 210, which gave somewhere around 10 watts, and if you aspired to the UX250 you were really in business. Soon the Quartz Crystal came along and made life easier.

It wasn't long before the shrewd amateur found that the lenses used in vintage spectacles were of quartz, and some opticians had them by the gross, and if you were lucky to find a source you could take them off their hands for a few quid a gross.

VHF was attracting some interest, and to get going on 5 metres or below (if lucky) the base would have to be removed from the glass envelope of the valve to bring the lead length to a minimum.

Underneath the operating bench would be a series of "slop jars" which could be used as rectifiers or, alternatively, as electrolytic condensers, depending on the application.

When valves were built with a suppressor grid, it wasn't long before it was used as a modulation grid, which also was very modest in its driving requirements.

With these various methods of modulation, the requirement was to avoid any change in oscillator frequency with modulation, in other words, FM. Of course both the crystal and the power amplifier helped in this respect. When crystal mikes came on the market, the D104 became popular with many amateurs.

 Receivers were very simple, possibly what was termed 1V1, or one of RF, one detector and one audio. This was, with the use of phones, quite capable of dragging in good DX. The current RST report for CW used to be QRT and it was common to hear a report given as Q5 R9 T9X, the X denoting a signal of high order of stability, no chirp and rock steady.

A note with a percentage of ripple on it lent itself to good copy, indeed some have used, including yours truly, a Ford Model T trembler coil as a source of HT, with reduced primary voltage of course.

CW from such a rig was quite pleasant copy. Those were the days.

AMATEUR RADIO WEEKENDS

Sam Voron VK2BVS
YRS Magazine Publicity Co-ordinator
2 Griffith Ave., East Roseville 2058
phone 407 1066, evenings 7 to 9 p.m.

SECOND WEEKEND IS AT SPRINGWOOD
Friday, 2nd November, to Sunday, 4th November, 1979, at the Blue Gum Lodge Youth Centre, Springwood.

Send bookings to Amateur Radio Weekend, WIA Education Service, PO Box 52, Asquith 2076, or telephone Sel VK2NOK/YLS on (02) 827 3589, Ken VK2NWK on (02) 636 1687, or Les VK2NMY/YMY on (02) 477 3044.

THIRD WEEKEND IS AT PORT MACQUARIE
Friday, 9th November, to Sunday, 11th November, 1979, at the Wauchope Showground Hall.

Send bookings to Radio Weekend, Oxley Region Radio Club, PO Box 712, Port Macquarie 2444, or telephone Frank VK2NUG on (065) 83 1256.

The cost covers all meals and accommodation, although sleeping bags or sheets and pillow cases are required. Beds are provided.

Get all your family and friends together and book early so you don't miss out.

Dick Smith has kindly donated over $60 worth of amateur products, including a short wave antenna kit, an Oscar satellite tracking kit, a multimeter, a two metre converter kit, and the Australian amateur radio handbook for a previous amateur weekend. The formation of regular Dick Smith amateur radio incentive awards is under discussion; a vote of appreciation was recently moved expressing thanks to Dick for his support of these weekends.
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MF-961 1.5KW Ant, coupler/6 Pos Co-Ax SW for Bal and Un Bal Line (Inc. Balun) $179
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MF-948 300W Ant, coupler/SWR/Meter Co-Ax SW for Bal and Un Bal Line (Inc. Balun) $109
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MF-901 200W Ant, coupler Bal and Unbal Line (Inc. Balun) $93
MF-902 200W Ant, coupler for Bal Line (Inc. Balun) $219
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- VS-2IL 9 element 2m Beam: $66.00

### HF MOBILE ANTEENNAS
- AS-2HRF %-wave cowl mount type: $39.00
- VS-07MG 70cm Mag Mount ½ wave: $19.00
- HOPE-2R 2 metre gutter mounted helical, only 22 cms long. incl. co-ax connector: $26.00
- VS-TOWN 2 metre flexible helical on PL-259: $19.50
- VS-MM, magnet mount for VS-TOWN, incl. co-ax: $20.00
- HU-2HR Hidaka 2 metre ½ wave 6 m ¼ wave gutter mount incl. co-ax and connector: $39.00

### OTHER ACCESSORIES
- EKM-1A Audio Morse CP Osc with speaker, one transistor, and tone control, requires one UM3 cell, in metal case 3" x 2V x 1'/4": $16.90
- TC-701 Morse Practice Osc. with built-in key and spkr. Inc. battery and auxiliary earpiece. Copy of morse code on case. Two can be wired together to form a practice communication set: $19.50
- DENSO 430 anti-corrosive compound for jointing antenna and beam elements (as used by electrical authorities). Per tube $2.90.

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### Specials and Limited Stock Items

**FT-7B TRANSCEIVER**, 80-10m, for mobile use 100W peak solid state. $629.

**FT-227R** 2mx. 10W FM Tcvr, 800 Ch, with Dig. Readout memory, rev. etc. $319.

**YC-500S 500MHz FREQ. COUNTER**: Accurate to 1ppm. $499.

**SR-C146A** 2m hand held 5 chan. 2W transceiver, inc. carrying case and 3 chns. $199.00

**STANDARD ACCESSORIES**
- CMP08 Hand mic. for SR-C146A and SR-C432: $25.00
- CAT08 Rubber antenna (helical) for SR-C146A: $25.00
- Heavy Duty Carrying Case for hand held units: $16.50
- GSA AC Adapter and charger for hand held units: $25.00
- Mobile Adapter for hand held units: $14.50
- AC Charger only: $11.00
- Ni-CAD Penlight Cells, type AA: $2.90

**EXTRA SPECIALS**
- LP-30TVI Filter low pass: $1.90
- Lighted DUMMY LOAD: 80 cents

All prices include sales tax. Freight is extra. Prices and specifications subject to change without notice. Allow 50c per $100 for insurance. Availability depends on stock position at time of ordering. Send 50c postage for latest Yaesu catalogue.

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60 Shannon St., Box Hill North, Vic., 3129. Phone 892213
Distributors in all states and N.T.
TUNING AND OPERATING THE TRANSCEIVER

If you have an older model transceiver and do not have tune-up instructions in the handbook this will help you.

(a) Adjust the preselect for the loudest signal in the band that is to be used. The preselect may also be known as the drive.

(b) Turn the mode switch to the tune position and advance the carrier control to the halfway position.

(c) Set the plate to the desired band segment, and position the load control to the approximate setting for the band. This can usually be determined by consulting the operator’s manual. If the manual is unavailable, then a midway position will suffice.

(d) Turn the meter switch to IP or IC position.

(e) Switch the transceiver to the dummy load.

(f) Hold the mike button in and quickly adjust the PLATE for a dip (minimum reading on the meter).

(g) Turn the meter switch to RF or PO position.

(h) Hold the mike button in once more and adjust first the PLATE then the LOAD for a maximum reading on the meter.

(i) Turn the meter switch to ALC position, hold the button down once again and adjust the DRIVE or PRESELECT for maximum output. The transceiver is now pretuned.

(j) Turn the carrier control to full and repeat steps (b) and (h) once more to provide maximum output from the set.

(k) Switch to the aerial, check that the frequency is clear, and repeat (j).

(l) Turn the mode switch to USB (for 20, 15 and 10 metres) or LSB for 40 and 80 metres and turn the carrier control completely off.

(m) Turn up the mike gain and with the meter switched to the ALC position, speak into the microphone adjusting the gain until the needle deflects into the end of the ALC scale.

Note: Kenwood equipment has a tune position with reduced carrier and must be peaked in the CW position.

After a period of operation, possibly an hour or so, it may be noted that the ALC reading has become sluggish on transmit. If so the set should be retuned for peak output, or if the operator has shifted some distance down the band from the original tuning position, the set should be retuned at the new frequency.

Experienced operators generally retune every 25 kHz or so. An unresonant transceiver is very prone to cause TVI and considerable care should be taken over the tuning procedure.

If a dummy load is unavailable always, always, check that the frequency is clear before tuning up on the band.

SPEECH PROCESSING

There is a mistaken impression amongst many operators that processing increases signal strength.

The signal may appear to increase marginally, however the most noticeable effect to an operator on the other side of the world will be an increase in audio output.

Your signal will SOUND louder and have more punch. It will of course lose some of the natural tone, but this will be an advantage during pile ups and bad QRM, and may make the difference between being heard or not.

Caution must be taken to avoid too much processing as the result may be a signal that splutters a considerable distance up and down the band, thus causing annoyance to other operators, and distorting your signal to the station you are trying to work. Background noise (fans, etc.) can be amplified too much if a lot of processing is used. Readability will suffer.

Checks from local stations to ascertain the best settings are essential but on average a station a mile or two away should not hear you more than 5 kHz either side of your transmitting frequency.

NEUTRALISATION

If for any reason you change the final valves in your transceiver the set must be neutralised by a competent amateur, or by strict adherence to the instructions in the manual if you feel you can attempt the procedure yourself.

A set that has not been neutralised may be a very probable cause of TVI.

From CQDX Radio Handbook — by Trevor Reid VK3NRR.

Assuming the transmitter to be VFO controlled with the switches set “so”, he proceeded to “tune-up” on 160, 80 and 40 metres and give a hearty old “CQ, CQ”, complete with call sign, at each point. Unbeknown to him, the rig was constructed along lines which were popular in the past: tunable RX and crystal-locked TX, which complied with regulations and ensured that the TX frequency stayed where it was supposed to be (or close to it with FT243 xtal!) and changed by selecting the appropriate crystal with a switch. In this case, an Amateur call sign had a good airing on 2524 kHz, the Small Ships Channel— which caused a certain amount of consternation amongst the people who like “muckin’ about in boats”.

Fortunately, there were no repercussions that we know of, which rather highlights the worth of the old saying (translated) about fundamental orifice beating class any day. There is a lesson there for our less experienced operators, however, and it is this — NEVER EVER put a transmitter or transceiver to air until you are certain that the signal will come out on one of the bands you are licensed to use. When confronted with a strange piece of gear, first find out what it is supposed to do; and don’t take anyone’s word for it, particularly that of non-technical people. If in doubt, consulting someone with practical experience in servicing the equipment is the safest course to take: thinking you know isn’t good enough, even though the temptation to give it a go is great indeed. Taking it a step further, this is also sound advice with any surplus or discarded equipment which may or may not still have crystals fitted: many services, particularly Marine or Aircraft where lives may be at stake, do not take kindly to strange call signs appearing out of the blue — and remember that your call sign, being unique, is relatively easy to trace. Play it safe — leave that tempting box switched off until you know a lot more about it.

From Smoke Signals, April ’79

QSP

HEALTH, SUNSPOTS AND SOLAR FLUX

There is a strange but strong correlation found between sunspot maxima and virulent flu epidemics writes Pat Hawker in TT Radio Communications May 1979. Other medical researchers appear to have found equally odd and inexplicable links between solar activity and health matters. For example, he quotes a report on an apparent link between the daily number of admissions to the cardiac thoracic wards of two hospitals in India and geomagnetic data in the form of daily sums of the planetary index of geomagnetic activity normally used as a measure of the effect of solar particle flux.

NEW PREFIX

According to Radio Communications March 1979 the ITU has provisionally allocated the call sign series HTA-MHZ to the Republic of Cyprus.
NEVER TOO OLD
Bert Shire VK5NMS was licensed in early 1979 at the age of 74. Prior to that he was and still is an active SWL, being an official monitor for HCJB and Deutsche Welle. Later this year he will have completed 10 years continuous monitoring for Deutsche Welle and will be awarded an official service plaque.

Bert happened to read about a new class of amateur licence in the paper and decided to give it a go. After some disappointment with his application being mislaid and having to travel 200 miles each time to attend the exam, Bert was successful in passing all three, and was in due course allocated a call sign. Not a particularly noteworthy achievement in itself, but at 75 I think one worthy of some merit. It now provides him with a rewarding hobby (when he has time between his other activities) in his den on the seafront at Tumby Bay.

— From Greg Nixon VK5ZER/NGN.

Who is this trying to hide behind his car? None other than Darryl VK3NEX. Darryl is renowned for his mobile contacts, especially on 10 metres and 80 metres with a commercial helically wound mobile whip.

At home, in the north of Melbourne, Darryl runs a TS520 and a parasol beam and has many DX contacts to his credit.

Who is this trying to hide behind his car? None other than Darryl VK3NEX. Darryl is renowned for his mobile contacts, especially on 10 metres and 80 metres with a commercial helically wound mobile whip.

Portable Amateur Radio as shown by Reg Blackshaw VK3ARB. Reg has had his licence for many years now and is always active in introducing newcomers to the art of Amateur Radio, particularly CW, as this is Reg’s favourite mode. Reg has many friends world-wide through his sole CW contacts.

Werner Wulf VK3NCW is one of the very active DXers on 15 metres. Werner is originally from Germany and has many awards for working German stations. Recently Werner has been producing home brew yagis for either 10 metres or combination 10 and 15 metres. With his TS520 and 3 element tri-band yagi on a home brew tower, Werner’s signal is one of the best Novice signals on the band.

QSP
REALLY RADIO ACTIVE!
The March 1919 issue of the "Electrical Experimenter" featured some interesting advertisements. For only 50 cents you could buy a "generous piece of Carnotite, a Radium ore, "enough to conduct experiments, such as affecting photographic plates through opaque material". Also included, at no extra cost, was a glass phial containing an ore which was 35 per cent radio active Uranium. Hope they disposed of these items properly; perhaps they are still lying in someone's attic!
REPEATERS
Peter Mill VK3ZPP

FEDERAL NEWS
At the recent Federal Convention the band plan, which was published in June 1978 AR, was adopted. The only change being that the ATV liaison repeater frequency is on 147.9/147-3 MHz.

After many years of discussion the channel numbering system has been changed and is now based on frequency. With the increased use of synthesised transceivers this has become necessary. The repeater channels will now be identified by the output frequency.

EXAMPLE:
146.5 Ch 50 — 6500 Ch 2 — 6700
146.55 Ch 51 — 6550 Ch 5 — 6850

It is realised that in practice the repeaters will still be Ch. 1-8.

The 70 cm band plan was also modified to conform with this principle.

EXAMPLE:
439.000 MHz — 900
2m FM channels from 6000-8000
70 cm FM channels from 8001-9999

STATE NEWS —
A.C.T.
The Mt. Ginini repeater (Ch. 6950) is operational again. Since it first went back on the air, the aerial has been changed to a nine element coaxial collinear. Its performance appears to be as good or better than the aerial used on the original repeater. The installation is housed in the VK1 Division's new building on Mt. Ginini.

VICTORIA
The Mt. Macedon repeater (Ch. 6850) is back on the air. It is using a 3 dB aerial on the top of the tower for the transmitter and a 6 dB on the receiver. The receiver aerial is upside down and on the west side of the tower, which shields it from the Hume Highway area. The transmit power is 8 watts to the aerial. When the duplexer is finished the 6 dB aerial will be installed on top of the tower.

The new Melbourne 70 cm repeater is expected on air soon. Its call sign is VK3ROU and is located on Mt. Dandenong. Operating frequency is 433.225/438.225 MHz (Ch. 8225).

The Bendigo repeater (Ch. 6800) has recently changed its call sign from VK3RAM to VK3RCV. Since the aerial on top of the TV tower was hit by lightning the repeater's range has been reduced due to a temporary aerial being placed lower down the tower.

Any information for AR or the Federal Repeater Sub-Committee should be sent c/- the Federal Office in Toorak.

Peter VK3ZPP.

BAND PLAN FOR 2m FM — 146-148 MHz

<table>
<thead>
<tr>
<th>Sub-band</th>
<th>Recommended use for specific channels</th>
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<tr>
<td>Repeater inputs 146.025-146.400</td>
<td>50 kHz channels to be preferred where available</td>
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<tr>
<td>Repeater outputs 146.625-147.000</td>
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<tr>
<td>Simplex (8 channels) 146.425-146.600</td>
<td>146.500 calling channel (national)</td>
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<td>146.450</td>
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<td>146.550</td>
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<td>146.600</td>
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*RTTY channel is an exception to the recommended rule of allocating special purpose nets above 147 MHz as it is a well established and populated channel.

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<tr>
<td>Repeater outputs 147.025-147.375</td>
<td>147.325/147.925 RTTY (national)</td>
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<tr>
<td>Simplex (9 channels) 147.400-147.600</td>
<td>147.400 ATV liaison</td>
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COMMERCIAL KINKS
Ron Fisher VK3OM
3Fairview Avenue, Glen Waverley, Vic.

AUTOMATIC REPEATER OFF-SET SWITCHING FOR THE IC-22S
John Miller VK3BFM has come up with this nifty idea to save confusion with the off-set switching on the 22S.

Over to John to tell the story.

Have you ever forgotten to flick the switch on your IC22S when QSYing to, or checking the freedom of, simplex channels? If your memory whilst driving (or at home) is anything like mine the answer could well be YES! This little circuit was designed to overcome this operator malfunction, whilst still enabling the IC22S to be used normally for listening on input frequencies, or working reverse on locally unused repeater channels.

Only one wiring change is necessary to utilise this circuit. The wire from the wiper of the duplex switch to the programming matrix board is removed and re-routed to one of the inputs, whilst the output of the unit is connected to the duplex position on the board.

The second input is derived from the switched 9V available at the edge of the matrix board using diodes, as supplied for programming the rig, so that you do not fire up on two channels at once, or rather some peculiar frequency. When both inputs to gate 1 are high (repeater channel selected and +9V receive) the output will...
be low. This is then inverted by gate 2 to provide a high output to the duplex circuitry. On transmitting, the +9V from the duplex switch will disappear causing a high level on the output, once again inverted by gate 2 to return the set to its programmed frequency. On duplex B the +9V appears on transmit to shift the frequency up 600 kHz.

Should you desire to listen on the input, to find out if you are within simplex range, just move the duplex switch in the normal fashion.

A CMOS IC was chosen partly because it was available but mainly because it could provide the required 9V level with no interface circuitry. So there you have it, a simple way to add automatic duplex switching to the IC22S.

THE WESTLAKES RADIO CLUB

Ken Hargreaves VK2AKH, State Supervisor YRS, co-author of "1000 Questions for Novice Candidates" and several other YRS publications.

Jamie Campbell VK2YGL, the builder of the Channel 10 repeater on Watigan Mountain. The repeater is solar powered and popular in both Sydney and Newcastle.

Lew VK2BPR giving a lecture at Westlakes Radio Club on one of his two dozen antique radios.

Photos and details by Les Daniels VK2AXZ.

Keith Howard VK2ARX. Keith has been putting people through the AOCP for many years now. He is the author of the well known "Questions and Answers for the Novice Licence" and is the Director of the Westlakes Radio Club.

Ces Butterworth VK2BU, first licensed 1929, and now usually on 40m during lunch times. With Sir Allan Fairhall VK2KB, helped put broadcast station 2KO on the air.

Join the I.W. net at 2300Z on Thursdays on 14165 kHz when you have intruder information.

SUPPORT OUR ADVERTISERS
Presenting: A Symposium on 'Future Amateur Communications Techniques'

The 1979 F.A.C.T. Symposium

to be held over the weekend 29-30th September - 1st October
in congenial surroundings at Noah's Northside Gardens Hotel
(52 McLaren St, North Sydney NSW)

Following the highly successful and enthusiastically attended 1978 Symposium held in May last year, the organisers are planning another event to stimulate and enthuse. The theme for this year's Symposium will be "Propagation and Circuit Techniques".

The series of lectures and workshops planned will cover the following topics: The coming solar cycle peak; Propagation research in Australia; Long distance VHF work; Practical SSB equipment; Circuit design and analysis using a computer; Amateur microwaves; Amateur applications of microprocessors; Building and using test equipment. A trade display is also planned.

For a registration fee of only $20 you can enjoy two and a half days of stimulating lectures and discussions from well-known amateurs — lunches and coffee breaks included! Those attending will receive a bound copy of the Symposium 'Proceedings'.

For further information, registration forms etc; contact: THE FACT SYMPOSIUM ORGANISER
c/o ETI, 15 Boundary St
RUSHCUTTERS BAY NSW 2011

Organised by Roger Harrison VK2ZTB and a committee of amateurs; sponsored by Ansett Airlines of Australia and Electronics Today Magazine.

10.7 MHz CRYSTAL FILTERS FOR FM

SYNONYMOUS FOR QUALITY AND ADVANCED TECHNOLOGY

MATCHING CRYSTAL DISCRIMINATORS

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<th>XF107 E</th>
<th>XF107 SD1</th>
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Oscillator Crystals 50 kHz through 150 MHz available to order. Parallel resonant (30 pf) to 20 MHz, series resonant above 20 MHz. Write for quotation to your requirements (include mechanical size & frequency).

SPECTRUM
INTERNATIONAL INC.
Box 1084A Concord
Massachusetts 01742 USA

Shipping weights: Filters 2 oz. ea., Crystals ½ oz. ea.
Registration Fee: $2.00; Air Mail: 31c per ½ oz.
All Prices in U.S. Dollars.
“We will match any genuine price on Yaesu and now on Hy-Gain antennas if it is to the benefit of our customers.”

Reinforcements are on the way!! Yes, to help in the war we have sent for reinforcements. The long awaited FT-625R (6m all mode transceiver) should hit the beaches mid August.

After the loss of the FT-7, the more powerful FT-7B has joined the war to fill the gap for a good mobile transceiver (available mid August).

YOU REAP THE BENEFIT!

This may be your last chance to buy a fully guaranteed, factory-fresh Yaesu at a true bargain price. Don’t say we didn’t warn you after the white flag has been waved!

HERE ARE OUR YAESU PRICES:

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
<th>Category</th>
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<tbody>
<tr>
<td>FT-101E 80-10m HF transceiver</td>
<td>$789.00</td>
<td>Cat D-2860</td>
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<tr>
<td>FT-301 Solid State HF transceiver</td>
<td>$795.00</td>
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<td>FT-7B Mobile HF transceiver</td>
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<tr>
<td>FT-227 2m FM transc with memory</td>
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<td>FC-301 Antenna tuning unit</td>
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<td>$189.00</td>
<td>Cat D-2884</td>
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<tr>
<td>FRG-7000 Digital HF rcvr</td>
<td>$599.00</td>
<td>Cat D-2848</td>
</tr>
<tr>
<td>YC-500S 500MHz Freq. Counter</td>
<td>$475.00</td>
<td>Cat D-2862</td>
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</tbody>
</table>

We believe that the prices above are better than any supplier in Australia. If you find someone cheaper for the same goods, tell us! For us to better any price, simply show us the advertisement from any Australian company. After checking that they have stocks available at that price we will sell it for a lower price. Offer remains open while present stocks last.

NEW HY-GAIN HF ANTENNA PRICES:

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
<th>Category</th>
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<tbody>
<tr>
<td>TH6 DXX SLASHED BY $104.00 TO ONLY</td>
<td>$295.00</td>
<td>Cat D-4308</td>
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<tr>
<td>TH3Mk3 BEAM:</td>
<td>$249.00</td>
<td>Cat D-4306</td>
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<tr>
<td>TH3JR BEAM:</td>
<td>$199.00</td>
<td>Cat D-4304</td>
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<tr>
<td>18AVT VERTICAL SAVE $14.50</td>
<td>$135.00</td>
<td>Cat D-4302</td>
</tr>
</tbody>
</table>

HY-GAIN VHF ANTENNAS ALSO IN STOCK. ASK OUR PRICE!
All prices in this advertisement concerning Yaesu, Kenwood and Icom equipment are only a guide, to obtain our firm price please ring us on £03726 7353.

**NEW!!**

**CHIRNSIDE MOBILE ANTENNA**

6 feet long with 3/8 24 tpi thread

<table>
<thead>
<tr>
<th>Model</th>
<th>Specifications</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>TS-205</td>
<td>160-10 M. Transceiver AC</td>
<td>£POA</td>
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<tr>
<td>VFO-2050 Ext. VFO</td>
<td>£163</td>
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<td>DF-1A DC-DC for TS-500</td>
<td>£78</td>
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<tr>
<td>TS-180</td>
<td>160 M. Transceiver</td>
<td>£130.00</td>
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<tr>
<td>VFO-820 Ext. VFO</td>
<td>£195</td>
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<tr>
<td>TS-1505</td>
<td>80-10 M. Transceiver</td>
<td>£148</td>
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<tr>
<td>PS-50</td>
<td>Power supply for 120</td>
<td>£110</td>
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<tr>
<td>SP-120 Ext. speaker TS-120</td>
<td>£60</td>
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<tr>
<td>TL-922 Linear Amp.</td>
<td>£129</td>
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<td>SM-220 Station monitor scope</td>
<td>£179</td>
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<tr>
<td>BS-5 Panoramic adapter for 5005</td>
<td>£66</td>
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<tr>
<td>BS-5 Panoramic adapter for 8055</td>
<td>£66</td>
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<tr>
<td>AT-200 SWR meter antenna coupler</td>
<td>£185</td>
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<tr>
<td>RD-300 Dummy load 150 Hz-300W</td>
<td>£79</td>
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<tr>
<td>TM-7125 2 M-25 W. Digital</td>
<td>£175</td>
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<td>MC-10 Hand mic.</td>
<td>£21</td>
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<tr>
<td>MC-355 Hand mic. noise cancel</td>
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<tr>
<td>MC-100 Desk mic.</td>
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<tr>
<td>MG-1395CW Filter for TS-705</td>
<td>£59</td>
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<tr>
<td>YG-13B CW filter for TS-820</td>
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<tr>
<td>YK-13B CW filter for TS-1020</td>
<td>£38</td>
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**NEW!**

**TS-120**

**KENWOOD**

**LEADER Dip Meter** £89.--

<table>
<thead>
<tr>
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<th>Price</th>
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<tbody>
<tr>
<td>SWR-2000</td>
<td>Large dual meter SWR, 400, 800, 1600, 500 Ohms</td>
<td>£75.75</td>
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<tr>
<td>SW-905</td>
<td>9 position coax switch</td>
<td>£39.75</td>
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<tr>
<td>Diwa 2 Pcs. Coax Switch</td>
<td>£29.50</td>
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<tr>
<td>LP-47, Drake Low Pass Filter, 200W.</td>
<td>£15.00</td>
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<tr>
<td>TWS-120, 2 Position slide coax switch</td>
<td>£24.50</td>
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<tr>
<td>M330, Diwa Mic. compressor</td>
<td>£94.50</td>
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<tr>
<td>5D-fb, Foam filled coax, double shielded 3.2 dB loss</td>
<td>£1.20 per metre</td>
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<tr>
<td>PL-254</td>
<td>$59.50</td>
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<tr>
<td>FS-501DX Low Pass Filter</td>
<td>£40.00</td>
<td></td>
</tr>
<tr>
<td>Bumper Mounts 3-Axis 24 Thread</td>
<td>£10.00</td>
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<tr>
<td>Width Range of Coax Cable and Connectors in stock.</td>
<td></td>
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<tr>
<td>MC-440, RF Speech Processor</td>
<td>£135.00</td>
<td></td>
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<tr>
<td>Porcelain Dip Insulators</td>
<td>£50.00</td>
<td></td>
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<tr>
<td>CN-620 DIAM, Coax Meter</td>
<td>£99.00</td>
<td></td>
</tr>
<tr>
<td>WESTON trap-set 80-10 M, incl. balun</td>
<td>£50.00</td>
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<tr>
<td>Hi-Q Balun 11</td>
<td>£15.95</td>
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</tbody>
</table>

We handle and stock most Yaesu, Kenwood, Icom Equipment.
AMATEUR SATELLITES

Bob Arnold VK3ZBB

OSCAR 7

OSCAR 7 keeps appearing in working order although there are occasions when the beacons are not operating and it is necessary to call through the satellite to ascertain whether it is working. At the present time OSCAR 7 is flying in long periods of darkness and therefore the battery recharging facilities may not be available and at this time we may find that communication through the satellite is not possible.

OSCAR 8

OSCAR 8 continues to work satisfactorily and many contacts are heard on both Mode A and Mode J.

PREDICTIONS

As will be noted this month’s edition does not include the predictions for September, i.e., the month after publication. The reason for this is that the orbital parameters of OSCAR 8 in particular are changing slightly and it is not possible to determine accurate reference orbits three months ahead. Although it may cause some inconvenience I propose for the time being to revert to publishing the orbital data for the month in which the journal is published. This will mean that if there is any delay in receipt of the journal, interested operators will have to do their own calculations for a few days at the beginning of each month; this should not prove difficult as the movement in each day’s time is constant enough for reasonably accurate predictions.

It would appear that the predictions given for August in last month’s copy of “Amateur Radio” are between four and five minutes late; therefore, to obtain the correct time add, say, five minutes to those predictions. As mentioned, I am not too sure what is happening and this correction may be even a little longer when we reach the month of August.

AMSAT NEWSLETTER

The saga of the missing copies of the September and December issues of AMSAT Newsletter continues and the mystery deepens. A letter from Perry Klein, President of AMSAT, quite positively states that the Newsletters were sent In bulk to Australia for redistribution to Dave Hull VK3ZDH who, for many years, has been responsible for the re-direction of bulk posted mail and assures me they were not received by him. I am quite confident that this would be so as I have spoken with Dave on a number of occasions and we have both expressed concern at the non-delivery of these letters. One can only presume that the parcels went astray in the post.

I will continue to pursue the matter and hope that eventually the subscribers will receive the missing editions.

As from the March 1979 edition the beacons are being posted direct from the USA by air mail to Life Members and sea mail to Annual Members, unless an additional $3 has been forwarded for the extra cost. All VK AMSAT Members should have received the March edition by now; if not I suggest you write direct to AMSAT.

BRITAIN’S FIRST AMATEUR SPACECRAFT

I am indebted to M. N. Sweeting G3YJO and “Radio Communication”, the journal of the RSGB, for the following information on a proposal for a British amateur spacecraft. This satellite, known as UOSAT, is a joint venture of the University of Surrey and AMSAT, backed by British industry, and it is hoped that the spacecraft will be available for launch into polar earth orbit in 1981-82. The proposed spacecraft will be a departure from the traditional OSCAR satellites which have been oriented predominantly towards providing improved long distance communications for amateur operators. UOSAT will complement the OSCAR series as an experimental and scientific amateur spacecraft.

In the past, frequencies used in amateur satellites have been in the VHF and UHF areas of the spectrum and it is proposed that UOSAT will be used to explore satellite communication at other frequencies.

The proposed experimental modules aboard the satellite will include:

1. Ionoospheric studies experiment:
   Phase referenced HF beacons on 7, 14, 21 and 28 MHz.
   Magnetometer.
   Radiation counters.

2. Education experiment:
   Earth-pointing slow-scan TV camera.
   Synthesized voice telemetry system.

3. Future systems experiments:
   SHF beacons on 1.296 and 10.47 GHz.
   Expanded CODESTORE system.
   Microprocessor housekeeping system.
   Two-axis stabilization system.

The spacecraft will be constructed in modular form commencing with the service modules and then progressing through the simpler experiments, i.e., the HF beacons, to the more complex items until resources and/or time run out. The resources necessary for this project are of considerable magnitude and may be of interest. A sum of $160,000 has been raised to support personnel, components and travel, the major components including 4000 solar cells, batteries, magnetometer and antenna deployment mechanisms have been located, sophisticated test facilities have been arranged and construction facilities have been provided by the University of Surrey. It is proposed that there will be a Project Manager with a full-time assistant, together with a group of at least ten amateur and non-amateur staff who will contribute on a part-time basis.

It is hoped that much of the spacecraft will be built at the University and it is anticipated that interested groups of amateurs will contribute specific experiment modules.

It will be seen from the above notes that the experiments proposed from UOSAT will be of considerable interest to specialised groups of amateurs in Australia, including amateur TV operators. Early notice of this experiment will also give local amateurs an opportunity to develop their 1.3 and 10.5 GHz equipment so that it will be available in time to listen to UOSAT during its early orbits. This is new ground for many amateurs who, to date, mainly confine their activities to discussion and it should be a means of promoting SHF experimentation in this country.

TECHNICAL CORRESPONDENCE

The Editor,

Dear Sir,

I recently bought two wind your own balun kits from a well known electronics supply house.

As I studied the printed design leaflet supplied with the kit it seemed to me the information portrayed could have been presented in a simpler form and contained an error in Figure 10.

As the information in the leaflet came originally from the ARRL Electronics Data Book, I found this hard to believe but practical application of my ideas proved me right.

In the interests of others who may be led astray by the wrong circuit shown, I supply the following reasoning and corrections.

Firstly the wrong circuit as printed in the leaflet.

![FIG 10: Original.](attachment:image.png)
True, there may not CURRENTLY be any VK0 activity on 6m but does this mean that you delete an award because ONE year no one takes 6m equipment?

Such a suggestion is obviously ridiculous. There is every reason to be optimistic that there will be future operation on 6m and VK0. It should be made available to VK0 to VK4 as the many VK0's from Macquarie Island were during a sunspot minima period, not the type of conditions we are experiencing now. The mere fact that an award of this type is offered itself provides incentive for 6m operation from VK0 where little if any incentive existed before. Surely that alone is a very important reason for maintaining the award.

Currently there are only THREE awards available to VK0 operators from the WIA. These are the Worked All States, VHFC and WAVCKA (VHF) awards. With so few Incentives for VHF operating I would hope those who have mastered 6m would consider increasing rather than decrease the number. If the number of awards issued is to be the criteria for keeping them it would seem logical to examine the number of certificates issued for the other two awards and consider deleting them, too. What rubbish! I would ask how many operators licensed since 1972 aware of our VHF awards? Very few I would guarantee. This cannot be blamed on VHF operators.

To say that VHF operators "will never now be able to qualify for this award because of their location" is piped rot. The only way that VK5G and VK9* is utter nonsense. Has Bill Verrall read or heard of what is taking place on 6m? After making that statement I can only conclude that he can't do what is happening. In recent correspondence he told me that he wasn't active any more on 6m and not likely to be active again, therefore can the VK5G and VK9* statements about 6m operation and what is possible? I can't really see how he can.

One reason that few awards have been issued is that the first eight people to qualify for the certificate didn't receive theirs until almost FIVE YEARS later. As an exercise in how to win friends and influence people the WIA must have set some sort of record in this matter. To add insult to injury, the quality of the award compared with overseas equivalents is quite pathetic.

It is impossible to write rules for an award that will give "an even chance" to every applicant. Invariably someone will be at a disadvantage somewhere no matter how hard you try to do your best in giving everyone the same chance. However in the long run these problems are almost always surmountable and those who really try make the grade. There is little point in having an award that is too easy, as obtaining such an award really proves nothing and requires no skill, effort or determination. Any award of value should prove that the recipient has done something that will give the Incentive to try and do more. As an example of this the WAVKCA (VHF) Award Is too hard. No one has ever suggested deleting band beacons was adopted with a reminder to novices to leave the beacon frequencies as far as possible (28.2-28.3 MHz segment)" unquote.

As the novice does not have sole occupancy of this section of the band, I wonder why we were singled out in this manner. Perhaps some information on these "beacons" may help us to understand your comment.

Yours faithfully,

Peter Lord VK3NPL
Victor Kilo 3 November Papa Lima
NOT
Venezuela Kenya Nicaragua Pakistan Luxembourg.

The Editor,

May I make a plea for the correct use of phonetics in call signs and general conversation. I have found it very confusing to hear the names of countries used in phonetics. Here are some examples from the alphabet. I may be a voice in the wilderness, but I feel strongly that phonetics is a tool to help even the most inexperienced operator make the grade. There is absolutely no reason why anyone should have to struggle trying to remember how to say the names of many countries. Here are some suggestions for the WIA states. The following are a few examples from all over the world, e.g. Argentina to Venezuela.

Argentina Austria Bahamas Belgium Brazil Burma Canada Chile Colombia Costa Rica Cuba Dominican Republic Ecuador El Salvador Equador Finland France Germany Ghana Greece Guatemala Honduras Indonesia Ireland Iceland Iran Iraq Italy Jamaica Japan Jordan Korea (North and South) Kenya Kuwait Lebanon Luxembourg Madagascar Malaysia Mexico Morocco Mozambique Netherlands New Zealand Nigeria Norwegian Oman Pakistan Peru Philippines Poland Portugal Puerto Rico Romania Saudi Arabia Singapore South Africa Spain Sri Lanka Sweden Switzerland Tajikistan Tanzania Thailand Togo Turkey UK USA USSR Vietnam West Germany Yugoslavia Zambia

The Editor,

Dear Sir,

I wish to comment upon and draw attention to the statements by the WIA Federal Awards Manager relating to the "Worked All VK Call Areas (VHF) Award" in May 1979 AR.

To start with, the fact that the majority of the awards issued have gone to stations in VK2 and VK3 is only to be expected. A check with the number of licences alone would suggest that out of 12 certificates issued the majority would come from these two areas.

As for operators not being interested in the award, how could they possibly be expected to be? Since 1973 all the WIA Awards have received virtually no real publicity at all. If you fail to tell people that these awards are available you can hardly expect to have them clamouring for them.

The comments about no VK9 activity are totally incorrect as any active 6m operator will confirm. If this isn't so, how come that the VK9 call area has been worked by stations in Japan and the USA? VK8ZR alone worked over 500 stations on 6m during the Mellish Reef operation.

Figure 10: Corrected.
LET'S TALK TWO METRES

Seeing the ionosphere has tuned down a bit, David turned his Interests to 2 metres which, as usual, didn't let operators down in winter. From 30-9 to 3-6 rather good tropospheric conditions existed out and about around VK with all sorts of things going. Like Repeaters DX and 144 SSb and DX in the other States, don't overlook 432 MHz, there are a number of stations quite capable of sending a good signal, even VK5SLP has 100 watts output on 432, with the set up he has set up, they have been heard in the US.

Small openings then to 21-6 with more tropo-conditions are less than favourable, though time, perhaps this time on tropo and not Es!

**MORE ON TWO METRES**

Two metres in the southern areas of VK may start to provide more consistent operating with the emergence of Dave VK5CK on Piccadilly, who in a short time since becoming fully operational on 144 MHz has made his name and call sign known in a lot of shacks to the East, and will be a force to be reckoned with in the future. The Adelaide Plains area in the past has had only a few operators able to successfully get over the Mt. Lofty Ranges with any degree of consistency, mainly Mick VK5ZDR, Col VK5RO, Roger VK5NY, Peter VK5MM, John VK5CZ, and David VK5KK both at Wasleys, about 35 miles north of Adelaide, came to the fore and are still there, but are further away from eastern contacts when the tropo conditions are less than favourable, although they don't miss too much from their excellent open plans location! And now to keep adding to the DX from this comes Dave VK5CC, who is keen and should have a reasonable degree of time to operate. He can run either 3 watts or 60 watts of ssb to a pair of 13 element KLM type yagis, and this set-up should give him the distance capability. So now we look to the VK2, 3 and 7 end of the Continent to do their share and look this way with more regularity. Contacts on 144 will be aided by the many repeaters currently operating, when early warning will be given by their reception, and giving an opportunity for open up DX contacts also. Like Repeater DX and 144 SSB opening DX, in the other States, don't overlook 432 MHz, there are a number of stations quite capable of sending a good signal, even VK5SLP has 100 watts output on 432, with the set up he has set up, they have been heard in the US.

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There hasn't been a lot of response to this suggestion yet. Gil VK3AUI has offered help, and a letter from VK3NQG (note the kindness of a Novice who is more than generous) has already been accepted, especially those in VK3 and VK7, which operation from the south will obviously suit best. Write a letter to me indicating what you are prepared to give in the way of financial support. For further information I refer you to the original article in May 1979 AR.

FM BEACON

In a departure from the usual, Barry VK2AAB has written to sagen the Hornby and District Amateur Radio Club has made a project to construct a beacon, mainly for mose training, but useful for other purposes. It is operational 24 hours a day on the frequency of 146.825 MHz, with a 1300 watt amplifier feeding three 3/4 wave verticals.

MICROWAVE NEWS

Lyle VK2ALU via "The Propagator" indicates enthusiasm for the new microwave beads to locate amateurs presently interested in getting on the 10 GHz band. So far the following have been found in VK2: VK2ACH and VK2GRW, and in Victoria, a report of a new 10 GHz station. VK3BBY and VK2ZP are using QG elements for future use on 10 GHz; VK2ZAC with Gunplexers for future use on 10 GHz; W52AC with ground equipment being made up for reception or transmission on 10 GHz. VK37X is using a "X" band gear, but not operational to transmit or receive in the Amateur 10 GHz band. Lyle would be interested to hear from any amateurs in VK2 who are working on equipment to get the band going in the 10 GHz band. The winter conditions have shifted emphasis to the new band, and this month is generally the stopping point for so many amateurs. This month is the best for operating on 10 GHz, and I would think he would be very happy to swap experiences with others who may be heading towards that band from other areas of VK4.

STOLEN

While attending the Mt. Gambier Convention over the weekend of 16th and 17th June, Mark VK5AVQ had his FT221 Yaesu 144-146 MHz transceiver stolen by a thief who had come in the front entrance of the Hotel. When stolen it had an Icom (202 style) microphone and normal DC cord but no AC cord. The rig has some features of modern design which are apparent to the astute eye. This includes a U30T FET pre-amp. Any information to be passed on to the Mt. Gambier Police or VK3AQR or to VK9HSD via QSL. The Mt. Gambier Police will be heading towards that band from other areas of VK4. The Mt. Gambier Police will be heading towards that band from other areas of VK4.

Tessa News

From "Radio Communication" of June 1979 comes the following which will be of interest to many, especially those concerned with 432 MHz records.

"Following the success of the 144 MHz and 432 MHz operations by the Tessa Group, ZE2JU has begun beacon transmissions on 432 MHz. He is now transmitting on 432 MHz from his site in Athelstone, near Adelaide, and has built a very strong signal. Those interested may receive signals from 432 MHz around 432 MHz, which appears in quite a number of locations. As reported in last month's 4-2-70, these signals have already been received by General Signal in Athelstone and a distance travelled of approximately 1600 miles."

GENERAL NOTES

I was surprised to see the May 1979 Issue of "Break-In" does not contain any VHF notes! I cannot recall ever seeing an issue during the past 16 years which has not contained such notes. I hope this is not an indication of likely 150 and 144 MHz Interest in the future over there. It seems as though we are getting closer to those interested of what their thoughts are on changing their repeater offset from 700 kHz to the more usual standard (and that used in VK) to 800 kHz. This change will appear unlikely any changes will be made, however.
YOU and DX

Mike Bazley VK6HD
6 James Road, Kalamunda W.A. 6076

Apologies for the fact that there was no DX column in the June issue of AR. Bill's column, VK4KRO, that appeared in May was sent by mistake and has now been replaced by the one appearing in this issue.

DXpeditions are considered by some to be the lifeblood of DXing. How, they ask, is one able to contact those uninhabited islands unless someone takes the trouble to go there and put them on the air? This is, of course, but it does raise the point if they are uninhabited why should they count as DX countries? Is there any real justification in calling a rock that is just above the ocean eight hours out of twelve a country? The recent 7J1 DXpedition is a case in point. This, though, is no reason for complaining about a DXpedition — if someone wants to work all the uninhabited islands on a DXpedition let him, provided he does not cause too much interference to others who have not the same interest. It is in this area that I believe the DXpedition does a disservice to Amateur Radio.

Let's be honest. Have you ever heard a DXpedition, on say 14195, stating that he was tuning 14200-220? Without any further thought on your part you have swung your VFO into some area of that frequency range before listening to see if the channel was occupied by someone in QSO? I have! As I said, let's be honest! Your answer may be "Well everyone knows that 14195 is a DXpedition transmitting frequency and that you must listen 5 to 25 kHz abave". True — but what happens when the DX station says he listens 14200-250 and then changes that 30 minutes later to 14140-14150? Well then you wish you had only to be listening to 14195! Well this writer heard the recent 7J1 DXpedition listening for 40 metres and moving his listening range between 7175 and 7250 in the space of 15 minutes. Imagine what that did to local and other QSOs in the States.

After all the above, I suppose I am making a plea to DXpeditions to consider other users on the bands and the havoc that they can so unwarrantly cause. As an example, at the same time we, the chasers, should also remember others.

The state of stations signing with the ITU suffix recently were in connection with the ITU contest. Those with prefixes EJ, EE and EF prefixes via the EA bureau, TK via REF and 8J via JARL, (EE4 operating from EA4, EF6 from EA6, TF from F and 8J3 from JAS, etc.)

The following items come information that VR1P and KB8 (both the same island but counts as two countries!!) will become part of Kiribati, the new name for the Gilberts, in 1990. So there's two more off the countries list.

Useful DX has been heard/worked from VK on the CW mode during the past four weeks (May 25 - June 21) and may be of interest to those chasing DX on bands other than 20. At least you know what is active, for example, from the lists received comes the following, all CW 3.5 MHz, 77CAHCH1, KLTAF, SW18X, 7 MHz, FR7BW, GUA4EON, HD1A, J7DO, LU5ZH, UK3AL, VK90K, VE3H, ZE5LU, 21 MHz, CO3P4, C7GPY, CR9AJ, HD1A, H1L6C, KV4KK, KZ3SN, SV6A/S, 43TRM, 5ZCW, 9G1LR; 28 MHz, FB8XV, FR7BW, FW90W, WAIJRL/SU.

Those WP4AM/D QSLs are now reported to be sent on their way at long last.

LUS3Y will still be reported in the States as showing on 21035 after 2330Z.

If you need Franz Joseph Land, UK1PAA is regularly QRV on 14030 from 1400Z.

Amateur Radio August 1979 Page 37
DX YOU MAY HAVE MISSED
JF1IST/7J1 — Okino Torishima — QRV June 11th–
F7WWM — QSL via W9GW.
D1W/BB60 — QSL via DJ0LC.
VE1AIH/1 and VE1AST/1, Sable Island — QSL both
via VE1AIH. They will be back on Sable Island
in July.
RUMOUR CORNER
There may be some operation from CEDX within
the October-November period, also strong rumours
of activity from V7. Others are looking at the posi-
Sibility of an extended 601 operation and there
are rumours of a West Africa OP expedition
covering TL, TN and TT. I would suggest that you check
14195 and 14025
regularly. The chances are that one of these will show.
In a QSO with SV0AA recently I was told by
Jack that he would definitely be on from Rhodes
again this year (SV8). Possibly in October-
November, with a view to catching one of the big
CQ contests.

Apologies for such a small offering this month
but work QRA has been amateur radio. With
those long path openings August-September, very
many thanks to BERS 195, VK4XX, VK6AJ, VK6LK
and ZL2MM for information. Happy hunting, 73
Mike.

QTHS YOU MAY HAVE MISSED
4XQY — Via K2RV.
CPSKG — Box 2659, Cochabamba.
FH8CL — PO Box 20, Mayotte, via Reunion Island.
N0DX/H44 — Via W0PAH.
HD1A — CW operation, via K7CA/HC1.
J7DD — Via W2O8.
K9SAA — Box 69, APO San Francisco 96305.
K0BO/K8H — Via W0PAH.
K2SU8 — Via W0PAH.
Q4U8 — Box 538, Lima.
QD5LX — Via SMOON.
OH2BP/0D9 — PO Box 928, Oulu, Helsinki 10.
WA7JLS/J — Via W8LZT.
VP2OMC — Via K2YY.
VP500 — Via KB8OA.
V8D8X — Via W0PAH.
VR6H8 — Via ZL1ADI.
XE1PR — Via W8OK.
YJ0BT — Via VK6QY.
ZF2C1 — Via DK7PZ.
5H3GK — Via S/MSAW0.
9N1BMK — Via J22MM.
9X5PM — PO Box 863, Kigali, Rwanda.

EXPEDITION MONACO 1979

Date: 30.9.1979–12.10.1979.
Call: 3A0JU.
QRZ — QRM.
QSL only via HB9 OSL Bureaux, PO Box 9,
Ch. 4900, Langenthal, Switzerland; or direct to
ASU, KSLD, Spreitenbach, Hopfenstrasse 4,
Ch. 4900, Langenthal, Switzerland.

LETTER RE F8DW
A letter from Dennis Rogers VK5NOK dated 19-6-79
mentions the following:—

On 13-5-79 I made contact with F8DW Doc
Gibert — a real OT. The conditions were really
excellent, and we were both excited to have such
good signal reports. Dr. Paul Gibert’s personality
came across with remarkable clarity. I think many
VK amateurs will have worked this splendid old
enthusiast, however for those who do not know
him, please allow him to introduce himself in his
own words:—

“I am a real OT — using a coil from a model T
Ford transmitted 50 miles in 1920! I was able to
copy W1BCG. Had contacts with several “spark
stations” late 1923 (three transmitters, six antennas).

“I am an old airman and flew prototypes, won six
races. I have had 60 cars since 1928, a dozen
Harley Indians — still got the last XL
1000 cc Harley.

“I am 90 years of age, weigh 102 kg, no white
hair, and all my teeth. I Like hunting, drinking,
sleeping and talking to a young girl — a thing of beauty
when she is paying cash for the transmitter, and
the expense of keeping my pipe going!”

“73 from the Old Bug O’ De Woods, Doc
Gibert.”

I think you will agree that this is indeed a
“rare old bird” and as a young novice (albeit 60
years old) I feel privileged to have met him.
VK5NOK.

48,100 QSOs in 1978
With a last minute spurt on December 30th and
31st which netted 540 QSOs, Dick KV4AA wound
up 1978 with a total of 48,100 contacts. This
was an average of 131 per day or one QSO every
11 minutes of 1978.

About 85 per cent of the contacts were on CW
with the balance on SSB. A total of 199 countries
were worked with only a couple of them being
“chased”. Assorted equipment held up nicely as
Dick’s 70-year-old health except for a “sticky”
attack of shingles, last May, which slowed opera-
tions only slightly.

Continuous calling by European stations on CW
(even during QSOs) and the co-operation of USA
SSB ops, plus contest operations, made large totals
easy. KV4AA took part in just about every contest
that turned up, including a few where the origin
is not known. Otherwise QSOs, although sound,
were not of the “contest” or “DXpedition” variety.
This makes a difference of three QSOs per minute
versus one every three minutes when things are
hurrying.

All this started in 1976, when Dick’s AJ3AA
bicentennial call resulted in 35,335 QSOs or an
average of 96 per day. A goal of 36,500 contacts
was set for 1978, 100 per day. When this was
passed on October 19th a new goal of 45,000
was set. This was met on December 14th, and another
3,100 were worked.

Thus a total has been set for whatever it’s worth.
It is realised that certain factors are a “must” for
such totals like a fairly “exotic” call and plenty
of time. This will limit most. KV4AA was not on
SSB ops, plus contest operations, made large totals
easy getting used to”. •

INTERNATIONAL NEWS

April 1979 QST advises that Bud Panchard VE3UD
has been nominated to the Canadian delegation for
WARC 79 by the Canadian Administration. He is
well qualified to represent Amateur Radio on the
dlegation.

Fiji
News has been received that the Fiji Association
of Radio Amateurs has been re-started. President is
3D2CM and Joint Secretaries 3D2UP and 3D2BM.
The address for the Society and QSL bureau is
PO Box 184, Suva, Fiji.

SEANET CONVENTION
Will be held this year in penang, Malaysia, from
30th November to 2nd December. MARTS states
hotel bookings are heavy at that time of the year
and they ask that details be sent to them before
the end of August. The venue is the Eastern and
Oriental Hotel, 10 Farquhar Street, penang. MARTS’
address is PO Box 725, Penang.

QRP OPERATORS
There has existed since 1972 the G-QRF-Club, with
over 50 members in 25 countries, to promote in-
terest and growth in low power (5W DC or
P EP and under) communications. Membership is
open to any amateur or SWL and the annual sub
is only £2 or $US3, for which you receive their
quarterly magazine “SPRAT” containing QRP tech-
nical circuits and other useful items. International
QRP calling frequencies are — for CW 3550, 7030,
14050, 21080 and 28805. For further details write to the
G8BUE, “Alamosa”, The Paddocks, Upper Beeding,
Stein-

RECIPROCAL LICENSING
The number of enquiries about reciprocity of
licensing seems to be on the increase. Please see
AR January 1978, page 25, for details.

QSP

RESIDENTIAL AREAS BAN ON TXS
A prohibition of radio transmissions in residential
areas is under consideration by the Senate of
Oregon State. The Government Affairs Co-ordinat-
or for the Oregon Environmental Council said
that medical studies “have found that persons living
next to electromagnetic sources often experience
serious health effects, including rashes, headaches,
dizziness and tingling sensations”. —Ham Radio
MML 144/25 25 WATT 144 MHz LINEAR POWER AMPLIFIER & LOW-NOISE RECEIVE PREAMP

- RUGGED 65W DISSIPATION PA TRANSISTOR
- ULTRA LOW-NOISE RECEIVE PREAMPLIFIER
- EQUIPPED WITH RF VOX AND MANUAL OVERRIDE
- L.E.D. STATUS LIGHTS FOR POWER & TRANSMIT
- SSB/FM, AM and CW

**SPECIFICATION**

**LINEAR AMPLIFIER**
- Power profile: 25 watts typical output for 3 watts input
- Frequency bandwidth: 144.148 MHz at -1 dB
- Power: 13.8 volts at 2.8 Amps
- Requirement: for 25 watts output
- Quiescent current: 75mA nominal at 13.8 volts

**RECEIVE PREAMP**
- Overall gain: 10dB typical
- Overall noise figure: Better than 2.5 dB
- Frequency bandwidth: 144-148 MHz at -1 dB
- Weight: 300g
- Overall size: 150 x 65 x 47 mm

---

MML 144/100 100 WATT LINEAR POWER AMPLIFIER

- 80 watts minimum RMS output 100 watts RMS typical.
- Fully protected against poor load VSWR overheating and excessive or reverse supply rails.
- Equipped with RF VOX and manual override.
- Frequency bandwidth 144 - 148 MHz at -0.5 dB.
- 10 watts nominal for 80 watts output.
- Weight 4 Kgs.

**PRICE AMATEUR NETT $295.00**

---

**MML 432/100 100 WATT 432 MHz LINEAR POWER AMPLIFIER**

- 100 minutes minimum output 10 dB minimum gain.
- Fully protected against poor load VSWR, overheating and excessive or reverse rail.
- Equipped with RF VOX and manual override.
- Frequency Bandwidth 435 MHz - 15 MHz @ -1 dB.
- 10 watts nominal input for 100 watts output.
- Weight 4 Kgs.

**PRICE AMATEUR NETT $435.00**

---

**MML 432/144’S’ LINEAR TRANSVERTER**

**UTILIZING an IF of 144MHz * 10 WATTS DRIVE of ½ WATT * VOX OPERATED, TWO SELECTABLE RANGES 432-434/434-436 MHz.**

**FEATURES EXTENDED COVERAGE FOR OSCAR 8**
- High quality double-sided glass fibre printed board * Highly stable zener controlled oscillator stages * PIN diode aerial changeover relay with less than 0.2 dB through loss * Extremely low noise receiver converter, typical 3 dB * Separate receive converter output gives independent receiver facility * Built-in automatic RF VOX with override facility * Built-in 10 watt 144 MHz converter, selective attenuator for ½ watt * Use of the latest state of the art Power Amplifier transistors provide reliable 10 watts continuous output.

**PRICE AMATEUR NETT: $335.00**

---

**MML 432/28’S’ LINEAR TRANSVERTER**

**FEATURES EXTENDED COVERAGE FOR OSCAR 8**
- Second Crystal Oscillator gives two ranges: Low 432-434 MHz -- High 434-436 MHz programming available to either Transmit receive both Low, both High, or a mixture of the two. Adjustable Drive Level is now provided by an input potentiometer. Optional RF VOX. Power output 10 watts minimum * 28 MHz IF * Drive 1 mW to 500 mW * Aerial Changeover by PIN diode switch * Modern Microstrip Techniques * Power requirements 12 volt nominal at 150 mA 2.5 amp peak * Case size 187 x 120 x 53 cm.

**MODEL MMT 432/28 ’S’ PRICE AMATEUR NETT: $265.00**

---

**NEW READY-TO-OPERATE MODULES AVAILABLE IN THE SALES PROGRAM OF VHF COMMUNICATIONS.**

All modules are enclosed in black cast-aluminium cases of 13cm by 6cm by 13cm and are fitted with BNC connectors. Input and output impedance is typically 50ohms. Completely professional technology, manufacture, and alignment. Extremely suitable for operation via satellite or for normal VHF/UHF communications.

---

**MML 144/28 144 MHz LINEAR TRANSVERTER**

**FEATURES:**
- Low noise receive converter 2.5 dB noise figure
- Highly stable zener diode controlled 116 MHz oscillator
- Rugged highly reliable PA transistor rated at 25 watts output
- Frequency Coverage: 144-148 MHz -- Input frequency range: 28-30 MHz
- DC power requirements: 11 - 13 volts (12 volts nominal)
- Current Consumption: 300 mA quiescent 2.1 Amps peak

**SPECIFICATION**

**TRANSMIT SECTION**
- Input Impedance: 50 ohm
- Input Modes: SSB, FM, AM, or CW
- Input required for full 5mW to 500 mW (variable input attenuator)
- Power Output: 10 watts continuous output
- Overall gain: 50 ohm

**PRICE AMATEUR NETT $197.00**

---

**MML 144/25 25 WATT 144 MHz LINEAR POWER AMPLIFIER**

- 25 WATT 144 MHz Linea Amplifier
- Frequency: 25 WATT
- Power: 144.148 MHz at -1 dB
- Power: 13.8 volts at 2.8 Amps
- Requirement: for 25 watts output
- Quiescent current: 75mA nominal at 13.8 volts

**PRICE AMATEUR NETT $47.00**

---

**20 WATT 144/236 CONVERTER**

- Noise figure typ. 2.5 dB
- Overall gain typ. 30 dB
- Power requirements 11-13 volts, 12.5V nominal, Current consumption 50 mA maximum
- PRICE AMATEUR NETT $67.00

**MML 1296 MHz CONVERTER**

- Microstrip, Schottky diode mixer. IF: 28 - 30 MHz or 144-146 MHz
- Noise figure: typ. 8.5 dB
- Overall gain 25dB. Power requirements: 12 volts DC ± 25% at 50 mA
- PRICE AMATEUR NETT $85.00

**VARACTOR TRIPLER 432/1296, Max. input at 432 MHz. 24 W (FM,CW) -- 12 W (AM) Max. output at 1296 MHz. 14 W.**

**PRICE AMATEUR NETT: $74.00**

---

**500 MHz COUNTER 6 DIGIT LED DISPLAY**

- Two ranges 0.45-50MHz, sensitivity. Better 50mV. 50-500 MHz, sensitivity better 200mV
- FEATURES: Low noise performance
- Power requirements 11-15 Volts DC at 300 mA approx

**PRICE AMATEUR NETT: $1,450.00**

---

**2 METER MOSFET CONVERTER**

- Noise figure typ. 2.5 dB
- Overall gain typ. 30 dB
- Power requirements 11-13 volts, 12.5V nominal, Current consumption 50 mA maximum
- PRICE AMATEUR NETT $47.00

---

**CONVERTERS**

- **PACK & POST**
  - **AMATEUR ELECTRONIC IMPORTS IS THE EXCLUSIVE AUSTRALIAN DISTRIBUTORS FOR ALL MICROWAVE MODULES LTD.**
  - **ALL PRICES F.O.B. SYDNEY**

---

**NEW READY-TO-OPERATE MODULES AVAILABLE IN THE SALES PROGRAM OF VHF COMMUNICATIONS.**

All modules are enclosed in black cast-aluminium cases of 13cm by 6cm by 13cm and are fitted with BNC connectors. Input and output impedance is typically 50ohms. Completely professional technology, manufacture, and alignment. Extremely suitable for operation via satellite or for normal VHF/UHF communications.
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$1000

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TS-200 $135.00
TS-20 T $135.00
TS-40 T $135.00
SM-220 Station Monitor - $299.00
SM-320 Station Monitor - $299.00

Coaxial Switches
CS-201 2 position, high power, $239.00
CS-401 4 position, high power, $259.00

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Gold Coast 32 2644
Melbourne 836 8635
Hobart 43 6337

Adelaide 43 7981
Canberra 31 6685
Perth 321 3047
Calais 54 1035

Rockingham 28 2643
Geelong 78 6600
Newcastle 69 1222

Duncan Baxter, VK3LZ.
Customer Service Manager.

Ph: (03) 699 6700

VICOM
68 Eastern Road
South Melbourne
Victoria 3205

Duncan Baxter, VK3LZ.
Customer Service Manager.
GOOD NEWS FOR TRANSCEIVER BUYERS! Our trio TS-120V and Kenwood TS-520S, both from the Trio-Kenwood stable, and the Yaesu-Musen FT-7 are at low prices and supported by 90-days warranty and after sales service. Arie — VK-2AVA — is in Europe operating from DL-3 at the time of writing. Poor bloke lost all his possessions in transferring planes when the DC-10s were grounded. He's most likely down to his last half million, so buy a transceiver and help him out.

ROY LOPEZ

HY-GAIN ANTENNAS

<table>
<thead>
<tr>
<th>Antenna</th>
<th>Frequency</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH6-DXX 10-15-20M 6-el yagi</td>
<td>$275</td>
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</tr>
<tr>
<td>TH3-MK3 10-15-20M 3-el yagi</td>
<td>$240</td>
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<tr>
<td>TH3-JR 10-15-20M 3-el yagi</td>
<td>$160</td>
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<tr>
<td>18-AVT/WB 10-80M vertical</td>
<td>$110</td>
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</tr>
<tr>
<td>204-BA 20M 4-el Tiger Array</td>
<td>$200</td>
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</tr>
<tr>
<td>12-AVQ 10-15-20M vertical</td>
<td>$50</td>
<td></td>
</tr>
<tr>
<td>2M 5-el yagi w/balun 6’3” boom</td>
<td>$25</td>
<td></td>
</tr>
<tr>
<td>2M 8-el yagi w/balun 12’5” boom</td>
<td>$30</td>
<td></td>
</tr>
<tr>
<td>BN-86 balun for beam buyers</td>
<td>$20</td>
<td></td>
</tr>
</tbody>
</table>

HY-Q (USA) 50-ohm 1KW balun | $15

HY-Q (USA) multiband 10-80M dipole kit, wire, balun insulators, spreaders, etc | $45

ROTATORS & CABLES

All rotators now come with bottom brackets and control-indicator boxes wired for 28V AC operation

<table>
<thead>
<tr>
<th>Rotator</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEN KR-400 medium duty</td>
<td>$110</td>
</tr>
<tr>
<td>CDR BT-1A light duty 4 position push-button programmable</td>
<td>$90</td>
</tr>
<tr>
<td>CDR Ham III heavy duty</td>
<td>$175</td>
</tr>
<tr>
<td>CDR tail-twister extra H.D.</td>
<td>$225</td>
</tr>
<tr>
<td>KS-065 stay-thrust bearing</td>
<td>$25</td>
</tr>
<tr>
<td>RG-58U coax cable, per yard</td>
<td>30c</td>
</tr>
<tr>
<td>RG-8U foam coax cable, per yard</td>
<td>80c</td>
</tr>
<tr>
<td>8-cond. rotator cable, per yard</td>
<td>60c</td>
</tr>
<tr>
<td>3/8&quot; H.D. VHF/UHF coax, per yard</td>
<td>$3</td>
</tr>
</tbody>
</table>

Cable cutting & packing, per length | $1.50

ACCESSORIES

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>Voltage regulator 18V AC input</td>
<td>$23</td>
</tr>
<tr>
<td>12V DC 3A output</td>
<td>$23</td>
</tr>
<tr>
<td>240/18V AC transformer</td>
<td>$10</td>
</tr>
<tr>
<td>5 meter RG-58U coax cable with PL-259 one end</td>
<td>$2.50</td>
</tr>
<tr>
<td>Mobile bumper mounts 3/4&quot; 24 thread</td>
<td>$5</td>
</tr>
<tr>
<td>Mobile gutter mounts 3/4&quot; 24 thread</td>
<td>$3</td>
</tr>
</tbody>
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TRIO-KENWOOD PRODUCTS

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-520S 10-160M transceiver</td>
<td>P.O.A.</td>
</tr>
<tr>
<td>TS-120V 10-80M 12V transceiver</td>
<td>P.O.A.</td>
</tr>
<tr>
<td>TL-922 10-160M linear amp</td>
<td>$1,100</td>
</tr>
</tbody>
</table>

All further Trio-Kenwood accessories and transceivers at competitive prices

CO-AX CONNECTORS

<table>
<thead>
<tr>
<th>Connector</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL-259-SO-239-cable joiners ea.</td>
<td>75c</td>
</tr>
<tr>
<td>Right angle &amp; T connectors, ea.</td>
<td>$1.50</td>
</tr>
<tr>
<td>GLP right angles RG-58U to SO-239 w/lock nut &amp; cap, ea.</td>
<td>$2.50</td>
</tr>
<tr>
<td>Double female connectors, ea.</td>
<td>$0.80</td>
</tr>
<tr>
<td>MLS right angles RG-58U to PL-259, ea.</td>
<td>$0.90</td>
</tr>
<tr>
<td>In-line mike sockets 3 &amp; 4 pin, ea.</td>
<td>75c</td>
</tr>
<tr>
<td>Mike sockets 3 &amp; 4 pin, ea.</td>
<td>75c</td>
</tr>
</tbody>
</table>

YAESU MUSEN PRODUCTS

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT-7 10-80M 12V DC transceiver</td>
<td>$400</td>
</tr>
<tr>
<td>FT-301S 10-160M 12V DC transceiver</td>
<td>$500</td>
</tr>
<tr>
<td>FRG-7 .5 to 30 MHz receiver</td>
<td>$300</td>
</tr>
</tbody>
</table>

NOVICE SPECIALS — TRANSCEIVERS

<table>
<thead>
<tr>
<th>Transceiver</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>10M Sideband SE-502 USB/AM 15W PEP-240V AC 12V DC-inbuilt SWR/RF meter 28.3-28.6 mhz-clarifier tuning transmit and receive</td>
<td>$125</td>
</tr>
<tr>
<td>10M Universe 224-M USB/AM 15W PEP 12V DC 24-ch. 28.480 to 28.595 mhz, 5-khz steps-clarifier tuning transmit and receive</td>
<td>$100</td>
</tr>
</tbody>
</table>

CONVERSION CRYSTALS for amateur licence holders — set of 8-crystals to convert 23-ch. 27-mhz CB units to 28-mhz. Suitable for Kraco, Sideband, Universe, Hy-range V etc., converts as per Universe 10M above — CRYSTALS and instructions | $40 |

KYOKUTO FM-2016A 800 channel

<table>
<thead>
<tr>
<th>Transceiver</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 meter FM transceiver with 4-channel memory &amp; scanner</td>
<td>$360</td>
</tr>
</tbody>
</table>

All Prices are NET, ex Springwood, NSW, on a pre-payment with order basis. All risk insurance is free of charge, allow for freight charges by air, road, rail or postal, excess will be refunded. Prices are subject to change without prior notice. All orders cleared on a 24-hour basis after receipt of order with payment.

Arie Bles (VK2AVA) Proprietor
Roy Lopez (VK2BRL) Manager
**AWARDS COLUMN**

**Bill Verral VK5WV**
7 Lilac Ave., Flinders Park, SA

**MEXICO DX AWARD**

This award is issued by the Mexico DX Club for confirmed contacts with Mexico DX Club member stations.

Overseas stations are required to complete 3 QSOs with Club members. There are no band or mode restrictions to this award and all contacts must have been made since 1st January, 1973.

To apply, prepare a list showing the log details of the required 3 QSOs, plus the QSL cards, and forward to Mexico DX Club, PO Box 21-167, Mexico 21, DF, Mexico.

To cover the cost of return of your QSL cards and the award, please send 10 IRCs or US$5.00. There is no fee payable but sending IRCs or money will ensure the return of your QSLs and the award.

Note: Some members of the Mexico DX Club sometimes check into the PK9JS DX net on 14220 kHz at 0700Z daily. Keep an ear on this net and you may be lucky to qualify for this award.

**WORKED ALL MALAYSIA AWARD (WAMA)**

The Malaysian Amateur Radio Society has announced a change in name and requirements for the WAMA Award.

The Award will now be known as the Worked All Malaysia Award (WAMA) and the rules are as follows:

1. All applicants for the award will submit a log extract witnessed and certified by another two members of the WIA or by any two council members of the WIA, one of which may be the Awards Manager of the WIA.

2. The award is also available to SWLs, who must submit a log extract of QSOs heard as detailed in rule 3 and certified as in rule 1 above.

3. The log extract shall show details of two-way contacts between the applicant's station and that of 10 (ten) SM2 stations, 2 (two) SM6 stations and 2 (two) SM8 stations. The previous requirements of ten SM2, ten 9V1, one each of SM6, SM8 and V5S will stand till the 31st August, 1979, for the WAMA Award.

4. All applications must be accompanied by 10 (ten) IRCs to cover post and packing.

Anyone submitting SEANET Contest results may state if he is claiming the award if he wishes as this can be verified by checking with the logs of the Malaysian stations entering the contest. However, 10 IRCs should be enclosed in the contest logs.

Applications for the award should be addressed to Hon. Secretary, Malaysian Amateur Radio Transmitters Society, PO Box 777, Kuala Lumpur, Malaysia.

Note: With the introduction of GCR rules, this award should appear more attractive to our novice operators as well as the established award hunter.

**VIII MEDITERRANEAN GAMES AWARD**

Here are the details of a once only award which should appeal to our 20 metre award hunters.

On the occasion of the VIII Mediterranean games taking place in Split from 15th September, 1979, to 29th September, 1979, radio clubs "MURIAN" and "ANTE JONIC" sponsor the award named "VIII Mediterranean Games". The rules for the award are as follows:

1. This award is available to any licensed radio amateur or SWL.

2. Only contacts with amateur radio stations from countries participating in the VIII Mediterranean Games are valid. Countries participating are — CN, EA, EA6, EA9 (Ceuta and Melilla), F, PC, I, ISO, OD, TA, SU, SV, SV9 (Crete), SV5 (Dodecanes), YK, YU, 3A, 3V, 5A, 7X and 9H.

Amateur Radio August 1979 Page 43
FROM THE OVERSEAS ADS

Quite a bit of activity as many new products are introduced and many new models are released.

Tri-con Kenwood have released a new transceiver, the TS180S, which is a new all solid state transceiver in the same class as their TS820.

Swan have released the Swan Astro 150, which is a new synthesised transceiver which owes much to both Swan and Astro. A very neat looking rig.

Denton have released their HF200A HF SSB transceiver.

Comtronix are advertising their FM80, which is a synthesised 80 channel 10m FM transceiver.

22 June 1979

The pulse is transmitted at 26 to the second

24 August 1979

29'30th SEPT., 1979

TRADE DISPLAYS

Enquiries: P. PAGE VK2APP
'Stoneridge', Monteagle
N.S.W. 2594
(063) 83 6206

QSP

CALL SIGNS

It is strange how some amateurs misuse their call signs by writing VK9-ZZ or VK9.Z.Z. or VK9.Z.Z.Z. The suffix — i.e. "ZZZ" — is merely an alphabetical selection and therefore should not be differentiated from the remainder of the call sign. On occasion, the letters of the suffix have some significance, if the licensee has any choice at the time they are issued. Otherwise the letters are merely the next vacant ones in the alphabetical list kept by the issuing office.

CONTESTS

Wally Watkins VK2ZNN/NCU
Box 1065, Orange 2800

SEPTEMBER

8/9 EUROPEAN PHONE CONTEST
15/18 SCANDINAVIAN CW CONTEST
22/23 SCANDINAVIAN PHONE CONTEST

OCTOBER

6/7 VK/ZL/OCEANIA PHONE
13/14 VK/ZL/OCEANIA CW
13/14 RSGB 21/28 MHZ PHONE
20/21 RSGB 7 MHZ PHONE
27/28 CQ WW DX PHONE

NOVEMBER

3/4 RSGB 7 MHZ CW
24/25 CQ WW DX CW

20th All Asian DX CONTEST CW SECTION
Period: 30 hours from 10002 25 to 1600 Z on 26th August.

Operation on all bands.

Contest call: CQ AA.

Exchange: RST plus 2 figures denoting operator's age if male; RST plus 2 figures if female.

Point and multiplier: A perfect contact with an Asian station will count one point. The number of different Asian prefixes, per WPX rules, worked on each band is the multiplier.

Scoring: The sum of the points on each band multiplied by the sum of the multipliers on each band.

Note: Contacts with KA stations are not eligible; they are considered military stations.

Logs must be kept in Z (GMT) time.

Logs and summary sheets to JARL, Box 377, Tokyo Central, Japan, by November 30.

Full details from FCM. Please send SASE.

CW TAPE REVIEW

LEARNING MORSE CODE KIT

Recently we reviewed the booklet "Learning Morse Code" by Rex Black VK2YA, which is published by the NSW Division of the WIA. Since then we have received a complete "Learning Morse Code" kit. This contains the booklet plus two C60 cassette tapes.

After spending some time both reading and listening it was obvious that this is an excellent kit and provides the nearest thing yet to painless learning of the code.

INTRUDER WATCH

All Chandler, VK3LC

2-Z CODE FOR POINT-TO-POINT SERVICES

For those members who are observing intruders in our HF bands the following samples of the Z Code will be of interest as many CW (A1) and FT stations are using it, especially the Iron Curtain countries—

(Asterisk indicates US Military Usage)

*ZAA — YOU ARE NOT OBSERVING CIRCUIT DISCIPLINE

*ZAB — YOUR SPEED KEY IMPROPERLY ADJUSTED

*ZAC — Advise (call sign of) frequency you are reading.

*ZAY — Send on (kcs). Will confirm later.

*ZBI — Listen for telephony.

*ZBO — I HAVE TRAFFIC.

ZCF — CHECK YOUR CENTRE FREQUENCY. PLEASE.
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FULL COLOUR
FOR ALL QUOTES
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PTY. LTD.
P.O. BOX 21
GYMPIE, Q. 4570
Telephone: (071) 82 1844

MINIMUM: 1,000 PER DESIGN
Larger quantities for clubs at reduced prices.

OVERSEAS SOCIETY SUBSCRIPTIONS
The RSGB membership subscription rate will become $10 instead of $8 from 1-1-1979. The ARRL membership dues became $18 from 1-4-1979. The RSGB membership subscription rate will be $12. All are for one year. Radio Communications March 1979.

COMPLEX EQUIPMENT
Writing in TT Radio Communications May 1979 Pat Hawker comments that the advice “Keep it working” becomes increasingly more difficult as equipment becomes more complex — and also, paradoxically, as components become more reliable. In the old days a high percentage of all faults could be traced and cleared by the straightforward process of “valve pulling”. Today more and more of the equipment breakdowns can be traced to what are basically mechanical faults. Good mechanical design ceases to play its old hands on how good the ingenuity of modern electronics of modern equipment.

HAMADS
• Eight lines free to all WIA members. $9 per 3 cm for non-members.
• Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
• 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 the advertiser’s name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE
FT-7, 4 mths. old, in excellent cond., with mobile cradle and original box; $340; Kraco 10m transceiver, 24 channel, with VXO, 15W output, In v.g.c., $100. Must sell both these rigs. G. Cooke, Ph. (03) 31 7222, ext. 1919, B.H.

Yaesu FT2100B, 1.2k linear, mint cond., multi-band op., few weeks old, $450; power supply, 12A, very suitable for use with Yaesu FT7B, $80. Ph. (03) 341 5913 Bus.

Yaesu 101B, one owner, pluggs, handbook, matching mc, etc, no mods., $550; ext. VFO FU101B, $135. Ph. (02) 631 7588 Bus. (02) 84 7170 A.H.

Katsumi Electronic Keyer EK-127, $35; Katsumi electronic keyer with memory, MK-104, $120; two speed, reel, stereo tape recorder, Paros, $65. VK3ZAN, QTHR. Ph. (03) 306 9380.

Yaesu FT-250 2m Transverter, brand new, never used, $200; Yaesu YG601 digital readout, excellent cond., $125. Ph. (02) 888 2475.

Yaesu FT-301 Digital Tcvr, fully solid state, 160-10m, 100W PEP output, 2 yrs. old, scarcely used, with FP-301: deluxe power supply containing 12-24v dig. clock and auto CW idnet, also with matching FL-301 remote VFO, the lot at $1100, ONO. Must sell. VK3AVE. Ph. (03) 54 2525 Bus., (03) 311 2699 A.H.

Shack Clearance: Yaesu FT801DM with SP901 speaker and YD148 desk mike, 3 mths. old; Icom IC211, as new, complete In orig. pkg., $600, ONO; Yaesu YC350O freq. counter, $100, ONO; COE Ham II 10m, $100, ONO; microlink ATV 16W Tx, ATV microlink converter, power supply, 12 el microlink 70 cm beam, BM8 8/70 cm Jay beam, $300 the lot; SP500 speakers, $25. Greg McNamara VK3BB. Ph. (055) 65 8593 Bus.

Complete RTTY Station — model 19 Page printer, $70; model 14 tape distributor, $20; model 14 typing perforator, $20; motor and loop supplies, $40; EA terminal, $50; the lot, $170; all in perfect working order. VK3BLK. Ph. (055) 64 1238.

Pye Victor 2m Car Transceiver, 10W FM xtls 37, 50, 51, Simplex 2-8 repeaters, full handbook, $75, ONO. Allan Crewther VK3SM, QTHR. Ph. (03) 388 4406 A.H., (03) 630 5794 Bus.

Video Tapes, 1/2 in. on 7 in. spools, Scotch brand, $8 ea. VK2ZMH, QTHR. Ph. (02) 406 5338 A.H.

Hammarlund HQ 110 Rx, amateur 1.8 MHz to 54 MHz, AM, SSB and CW, also has variable bandwidth, $250, or best offer; Tria general coverage Rx, ideal for beginner, or for use as a tunable IF. 840 kHz 30 MHz, $190; spare tubes available for both. Contact John Blyth VK3BKT. Ph. (03) 62 4576, ext. 233, Bus., or (03) 288 2346 A.H.

FT75 Yaesu Transceiver, 60W, 5B, matching AC and DC supplies, matching VFO, 12 VXO xtls, mobile mount, clean, excellent working order, $350; second FT75crr, matching AC and DC supplies, HBF VFO, 12 VXO xtls, spare tubes, top working cond., $200; sturdy 4B trap vertical, Hustler, with radials, used for 1 month while TX was repaired, $85; genuine Vibroplex Semi-automatic Key, standard Morse key and buzzer on sounding board, $5. VK3AFB, QTHR. Ph. 579 5600 A.H.

Yaesu Mobile Antennas: RSE-2A stub for 144 MHz, $150; Yaesu Mobile Antennas: RSL-3.5 for 80m, RSL-21 for 15m, and RSE-2 gutter mount base; they work excellently, in good op., few weeks old, $485; power supply, 12A, very suitable for use with Yaesu 101B. Ph. (02) 239 5267 Bus.

Yaesu Mobile Stations: RSE-2A stub for 144 MHz, RSL-3.5 for 80m, RSL-21 for 15m, and RSE-2 gutter mount base; they work excellently, in good cond., not used much, but want to sell, were $85 for the lot, sell for $60. John Bereton VK3NHB, 27 Kent Ave., Brahma Lodge 5109.

Triband Beam TH3JR, as new, 20, 15, 10m, $140; Unlden 2020 txcvr and ext. VFO 80-10m, SSB/CW; FV50 ext. VFO for Tx, complete SSB HF station, suit novice, what offers; also Yaesu FT901DM with SP901, FT-301 Digital Tcvr, fully solid state, 160-60W, 5B, matching AC and DC supplies, memory, 2 yrs. old, scarcely used, with FP-301: deluxe power supply containing 12-24v dig. clock and auto CW idnet, also with matching FL-301 remote VFO, the lot at $1100, ONO. Must sell. VK3AVE. Ph. (03) 64 2525 Bus., (03) 311 2699 A.H.

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Have you checked your Call-Sign on the Address Label?
IZNIBS — Why the small print you ask. Well, we figure that advertising sometimes needs a variation from photos and prices. Having read the editorial, why not a little relief in a paid advert, while you wait for the tram or train that never comes? We at Vicom are pretty excited at some of the new projects and lines scheduled for the months ahead. With 4 amateurs in the firing line and 3 others due to take their turns in August, it’s difficult not to be otherwise when you see what’s coming up! Reaction to the new TONO — 7000 CW/RTTY do-everything except keep-the-log has been tremendous and the excitement in seeing hitherto meaningless CW appear on a TV screen is just as fulfilling as your first QSO. Any TV will do from 1 to 27 inches. For those wanting to interface for hard copy provision is made and even the log keeping can be done if you have a personal computer — it’s all there! On the transceiver side the new ICOM 511 for CW has the opposition licked. AM/FM/SSB, a couple of memories and a scanning function all built in must stimulate the enthusiasm for the next summer season. Apart from that it looks line up with the 701 for HF. Maybe you’ll have to get an extension on the operating table — but why not? Drop in and see it all in operation if you’re in Melbourne or get the details from your nearest dealer. 73 IZNIBS

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★ NEW WORLD CRAZE — 10 Mz FM
★ REVIEW — THE DRAKE TR7
★ EARS FOR THAT DEAF FT101B RECEIVER
★ HAM RADIO FOR REHABILITATION
★ GETTING INTO JAMBOREEE ON THE AIR
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Australian designed & made

Check these features:
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Frequency Range: Tx 433.025MHz to 434.000MHz & 438.025MHz to 439.000MHz
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Call Sign ...................................

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or

Please debit my Bankcard No ..................................

Expire Date ...................................

for $ ................................ Signature ..................................

* Add $4.00 for packing and postage.
amateur radio

SEPTEMBER 1979
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(Sent free and post paid to all members)

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of any material, without specifying a reason.

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overseas organisations in this Journal, Customs import duties and Sales Tax may be
levied on the goods at the time of importation. These amounts, if any, are payable by
the purchaser unless the terms of sale state otherwise and the seller has made specific
provision to this effect in his quotation to the buyer or unless other prior arrangements
are in force between the buyer and the seller.

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Cover Photo

HAM RADIO FOR REHABILITATION

Left to right: Don Pugh VK6DN, Bruce Jacobs VK6ZAT and Bob Wynn
VK6WY discuss amateur radio at the Royal Perth Rehabilitation Hospital —
see our special article on page 23.

Photo courtesy West Australian Newspapers Ltd.

Amateur Radio September 1979 Page 3
WIRELESS INSTITUTE OF AUSTRALIA

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Federal Council:
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VK2 Mr. T. I. Mills VK2ZTM
VK3 Mr. A. G. Williams VK3ZW
VK4 Mr. A. R. F. McDonald VK4TE
VK5 Mr. C. J. Hurst VK5SHI
VK6 Mr. N. R. Penfold VK6NE
VK7 Mr. R. K. Emmett VK7KK
Staff: Mr. P. B. Dodd VK3CIF, Secretary.
Part-time: Col. W. E. Perry, Mrs. J. M. Seddon and Mr. Mark Stephenson (AR advertising).
Executive Office: P.O. Box 150, Toorak, Vic., 3142.
Divisional Information (all broadcasts are on Sundays unless otherwise stated):

ACT:
President — Mr. A. Davis VK1DA
Secretary — Mr. F. Robertson-Mudie VK1NAV

Broadcasts — 3570 kHz and 2m Ch. 6 (or 7): 09.00 EST.

Gen. Mlg. — 3rd Friday.

SA:
President — Mr. I. J. Hunt VK5QX
Secretary — Mr. W. M. Wardrop VK5WWM

Broadcasts — 1820, 3550, 7095, 14175 kHz; 28.485, 52.290 MHz. 2 metres Ch. 2 Perth, Ch. 6 Wagin. Time 0102Z.

Gen. Mlg. — 3rd Tuesday.

TAB:
President — Mr. R. F. Parker VK7PPF
Secretary — Mr. P. T. Blake, VK7ZPB

Broadcasts — 7130 (AM) kHz with relays on 2m Ch. 2 (3), Ch. 8 (N), Ch. 10 (W), 09.30 EST.

NT:
President — Dick Klose VK8ZDK
Vice-Pres. — Barry Burns VK8DI
Secretary — Graeme Challinor VK8GG

Broadcasts — Relay of VK5WII on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8FA on 3.555 MHz at 0002Z almost every day.

Postal Information:
VK1 — P.O. Box 46, Canberra, 2600.
VK2 — 14 Alstonia St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).

QSL — “DOINGS” (ACTIVITIES, DEEDS, BEHAVIOUR)

When visiting various Clubs, Zones and attending workshop meetings, I have been struck by the eagerness of a few individuals to DO whatever they can to help in the organising and running of the Club, Zone or events conducted by one of these. In so DOING, they further the spirit of universal friendship that develops through Amateur Radio.

Unfortunately, lately these few, in the VK3 Division at least, have become even less in numbers. I suspect this may be due to decreasing social contact between Divisional members, particularly those who are not also members of a regional club.

The Victorian Division’s Council wants to DO something positive and to re-establish a level of social contact between members. One proposed way of doing this is to conduct an ANNUAL VICTORIAN CONVENTION. Old friends will have an opportunity to rebuild links forged in the past and newcomers will be able to meet others of similar interests.

Other Divisions provide similar forums; this requires a LOT of hard work for a SMALL team or a FEW tasks each for a large team.

Do you have a special skill that may help your Division with their social activities? Can you spare a little time to help with the many SMALL jobs that must be done? Your Division could DO with your valuable help; DOERS are very hard to find as it means doing a deed to the aesthetics of the architecture. While long-range planning is hardly an exact science, it is possible — states the editorial — to anticipate some of the problems, to perceive certain distant opportunities and to develop appropriate recommendations. In planning, positive results require much effort on a continuing basis by a large number of concerned amateurs.

QSP — ARS AND THE FUTURE

Much thought is being given in many places to where the amateur radio service should be in the coming decade — i.e. post-WARC. The Executive of the WIA has this in mind, the main editorial in July AR by VK1DA gives this a highlight, the ARRL in January appointed a Long-Range Planning Committee to review and make recommendations concerning programmes which the ARRL is and should be providing to its members and to the amateur radio service, and the editorial in Ham Radio for June 1979 takes up the theme. The last-mentioned editorial makes the point that amateur radio in the past is like the proverbial “house that Jack built” with rooms added as they required, with light thought to future construction — or indeed to the aesthetics of the architecture. While long-range planning is hardly an exact science, it is possible — states the editorial — to anticipate some of the problems, to perceive certain distant opportunities and to develop appropriate recommendations. In planning, positive results require much effort on a continuing basis by a large number of concerned amateurs.

WHAT KIND OF A CLUB MEMBER ARE YOU?

An Oldie.

Some members are like wheelbarrows — no good unless pushed.

Some members are like canoes — they need to be paddled.

Some members are like kites — if you don’t keep a string on them, they fly away.

Some members are like kittens — they are more contented when petted.

Some members are like footballs — you no good unless pushed.

But some members are like gems — they glow and become more valuable every day.
Gerald R. Ford, delivered the card to former operators and are well known to VK amateurs.—President basis later this year in exchange for 420-430 MHz 900 MHz AMATEUR BAND In Japan.

amateur HF bands at 10, 18 or 24 MHz seems to possibly, before present users can be moved out before amateurs could be allowed In. •

As at 31.3.1979 there were 11,400 amateur licences in ACT. In the two largest States there were 2,035 territories. The State breakdowns were 3,842 In SA and NT, 819 in WA, 386 In Tasmania, and 248 In ACT. In the two largest States there were 2,035 full calls in VK2, 1,545 in VK3, 871 and 1,027 limited and 936 and 660 novices respectively. Out of the total 179,332 CB licences Issued 1,084 in SA and NT, 819 in WA, 386 In Tasmania, and 248 In ACT. In the two largest States there were 2,035 full calls in VK2, 1,545 in VK3, 871 and 1,027 limited and 936 and 660 novices respectively. Out of the total 179,332 CB licences issued 1,084 were for UHF.

AUSTRALIAN LICENCES

As at 31.3.1979 there were 11,400 amateur licences issued in Australia, of which 5,717 were full calls, 2,973 limiteds and 2,690 novices, plus 20 in other territories. The State breakdowns were 3,842 In NSW, 3,232 in Victoria, 1,461 in Queensland, 1,392 in SA and NT, 819 in WA, 366 in Tasmania, and 248 In ACT. In the two largest States there were 2,035 full calls in VK2, 1,545 in VK3, 871 and 1,027 limiteds and 936 and 660 novices respectively. Out of the total 179,332 CB licences issued 1,084 were for UHF.

WIA NEWS

CALLBOOK

By the time this appears in print the 1979 WIA Amateur Radio Call Book should have been on sale for a week or two. The Call Book Editor is well aware that there will be errors and omissions despite every effort by a great many people (including the P. and T. Department).

Addresses and other details, for WIA members, some 7000 of them, will be correct up to 1st July, with only a dozen or so exceptions. It was not possible, in a publication of this nature, to indicate who are members and who are not. Dissemination, amongst Divisions, of computer printouts, takes care of this. These printouts are provided in call sign, alphabetical, postcode, grade and other formats for both members and non-members and include details of financial status as well.

Thanks to most valuable co-operation from the Department the call sign lists back to 1978 have been incorporated into the WIA computer file. Earlier than 1978 the degree of error and omission increases as the Editor discovered after distributing the 1977 edition. It is known that some 300 non-members' addresses were not correct in October last year because this was the quantity of WARC 79 Fund Appeal letters which were returned to the WIA address (etc.) unknown. A few of these have since been corrected, but unless non-members or their friends send their call sign details to the WIA Executive office there is no way to ensure accuracy.

According to the computer totals there are nearly 13,000 entries in the call book listings. These are on the WIA's file which produced the call sign lists. The full list was processed on to a computer tape which was used by Valentine Computer Services in Melbourne to produce, by phototypesetting, bromides ready for the printer. The phototypesetting machine, a Photon, uses one of a selection of type fonts, in conjunction with the data on the computer tape, to feed the Information through a display tube direct on to bromides ready for immediate use. Whatever is on the computer tape is printed out photo-electrically in a few minutes. The speed of such printing seems to be in the order of nearly 1000 lines of call sign data per minute and is greatly superior in quality to ordinary computer printouts of the kind used for the 1979 Call Book.

To ensure the success of this operation a great many tests had to be made beforehand to achieve compatibility for a particular end-purpose. Thanks must go to both Valentine and the Monash ADP centre for their advice and patience during these tests, as well as the printers for valuable advice and assistance in proving the systems along the way.

Little details of all kinds posed problems. An early sample of phototypeset bromide was produced with only 1 pt. of spacing between lines. This made it hard to read each line so a wider spacing was settled on. But a wider spacing reduces the number of lines on each finished page and when you are looking at a web offset print you have to think in terms of 8 or 16 page plates for the final product.

Similarly a close look was made of line lengths. It was eventually possible to keep these down to no more than 80 character spaces. This is a function of the computer programme itself as well as the way in which separate parts of the data are separated from each other. As examples, how much space between the call sign and the person's name and between the name and the address.

Input of information on to the WIA computer file is done manually — it is, by comparison, a very small file; many experts have said the file is too small for computer work! However, the file takes care of 4 main functions: The Call Book, AR address labels, subscriptions listing and production once a year of subs notices and listings of member (as well as non-members) for everyday use at the Division and Federal levels.

Back to the 1979 Call Book from this digression. The phototypesetting used the smallest type face fount available but even this was found to be too large to fit two columns on to a finished
ADVERTISERS’ DONATIONS TO WARC ’79

The Federal President wishes to extend grateful thanks to our advertisers for generous donations towards the expenses of WARC representation

MARCH 1979

Dick Smith Electronics .......... $ 500
Vicom International ............ 1000
Ball Electronics ................. 500
Chirnside Electronics .......... 100
Scalar Industries ............... 50
Elmeasco Instruments .......... 25

These are entitled to the use of the WIA emblem and the words: “WARC Amateur Supporter” in their advertising displays.

page without photo-reduction by the plate-maker. Naturally the editor wanted characters as large as possible. Only one column per page would have involved a book containing many more pages than the 1977 edition because of the increase in numbers since then. Options were examined and rejected—smaller pages, cross-wise printing instead of vertical, thinner paper, and so on. Costs had to be kept in mind all along the line. A 10,000 run is not cheap in any language.

A small photo-reduction was eventually agreed on in order to fit two columns on to each page of the existent size, which seems to have found favour by users in recent years. Those who have seen photocopies of a sample of the finished product agree it is readable except by anyone with very poor eyesight. Furthermore, the line format is much preferred to the 1977 edition. The character size is larger than the one in the International Call Books, is similar to that in the UK Call Book and slightly smaller than the type in the ZL Call Book. It might have been even better if upper and lower case could have been used. That is something for the future because it affects the formatting of the computer output itself. Changes to computer programmes cost money even if any particular facility can be provided.

Anyway, most users of the WIA Call Book will surely approve this presentation as an improvement. Constructive comments would be welcome. Indeed, many such comments were taken into consideration after the last edition and will be needed for any bigger and better 1980 edition.

Finally a reminder to members. Please promote the WIA Call Books. It is your money backing them. Dust gathering on unsold stocks earns no money. Up to date, no dust has gathered because there are no unsold stocks of past Call Books—and Magpubs books either, come to that.

It must be confessed, however, there are stocks (not excessive) on hand of old ARs despite every precaution to keep print runs down to the barest minimum. Some months many copies go astray in transit and have to be replaced: Sometimes there are collating errors—half the pages are missing or duplicated: New members in greater than usual numbers (or un-financials becoming financial) use up the “overs”: All these happenings mean you cannot merely print enough only for the quantity of address labels. For some months, since 1972, there are no spare copies on hand, for others there are still stocks on hand—good material for recruiting hand-outs.

MEETINGS

There was one meeting of the Executive during July and one meeting of the Publications Committee. A decision was made to increase the “cover price” of AR from 1-1-1980 to $1.20 per copy.

Page 6 Amateur Radio September 1979
in place of the present $0.90. Basically this affects only direct subscribers, namely overseas readers and local organisations such as Government Departments, libraries and schools. At the same time a modest increase in advertising rates was agreed; the last increase was in 1975.

EXAMINATIONS
The Victorian Division put forward an interesting proposition that for the purpose of examination exemptions the morse code section should be split into sending and receiving. Thus, any candidate obtaining a pass in, for example, the sending test would only be required to sit for the receiving part at the next examination.

PHOTOGRAPHS
Photographs of amateur subjects are still urgently required for AR.

WARC 79
The all important World Administrative Radio Conference (General) relating to the future of the entire frequency spectrum throughout the world opens later this month. Everybody wishes all amateur delegates and observers at this Conference every success, and in particular the WIA delegates included in the Australian delegation, the Federal President, Dr. D. A. Wardlaw VK3ADW, and the WIA IARU Liaison Officer, Immediate Past Federal President, Mr. M. J. Owen VK3KI.

The Executive wishes to acknowledge with grateful thanks the receipt of the following donations from members towards WARC 79 expenses —

<table>
<thead>
<tr>
<th>Division</th>
<th>Donation</th>
</tr>
</thead>
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<tr>
<td>VK3ALG</td>
<td>$3.00</td>
</tr>
<tr>
<td>L5035S</td>
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</tr>
<tr>
<td>VK4ABG</td>
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<tr>
<td>VK3FH</td>
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<tr>
<td>VK3RG</td>
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<tr>
<td>VK3DS (per AR Ltd.)</td>
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<td>VK3ADY (per AR Ltd.)</td>
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<tr>
<td>WIA Tasmanian Division NW Branch (per VK7ZOA)</td>
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<td>VK2NSA (per Hunter Br.)</td>
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<tr>
<td>VK3BIP</td>
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<td>VK2NUK</td>
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<tr>
<td>Geelong AR-TV Club (per VK3CM)</td>
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<td>$10.00</td>
</tr>
<tr>
<td>VK3BRI</td>
<td>$10.00</td>
</tr>
<tr>
<td>VK5 Division (per VK5HI and includes one anonymous donation of almost $900 in memory of the work that the late John Moyle made in 1959 to the Amateur Service at a similar WARC). Includes donations from: VK5FG, VK5AMS, VK5KL, VK5WA, VK5XAI, VK5FM, VK5S, VK5NMQ, VK5HT, L50442, VK5VE, VK5MY, VK5ZAP, VK5JG, VK5EN, VK5RK, VK5NBD, L50363, VK5BN, VK5WP and VK5NL</td>
<td>$1251.60</td>
</tr>
</tbody>
</table>

It is understood further donations are to be expected via Divisions.

**Have you sent in your Log Sheets for the**

**RD CONTEST?**

**NOTE:** You MUST include a Front Summary Sheet as per Rules in July AR, p. 41.

QSP

**COMPUTER SHOW**

Melbourne's first Home and Small Business Computer show will be held in the Exhibition Buildings from 27th to 30th September, 1979, according to a media release from Australian Seminar Services Pty. Ltd. Resulting from many requests at previous shows, the theme of this show has been expanded to include all small inexpensive computers.

**CADMIUM POISONING**

An item in Pat Hawker's TT in Rad. Comms. June 1979 draws attention to the potential risks of cadmium poisoning by ingesting or inhaling the "woolly" white powder (cadmium salts of organic acids) which sometimes appears as a deposit on cadmium-plated metalwork (screw heads, switches, etc.) in electronic equipment. Take reasonable precautions, he recommends, to remove any such deposits which are due to corrosion — use gloves and swabs damped with water to wipe away all corrosion products. Place these and the gloves in a plastic bag and burn them.

**SUNFIRE PROJECT**

"For over 8 years and at their own expense, High School students living in the vicinity of (the Jet Propulsion Laboratory, Pasadena, California — WB8O) have worked together to construct a Solar Thermal Electrical Generator for use on Pitcairn Island. These young boys and girls, some of them amateurs, expect to complete the project this month (June) with the generator ready for shipment." "All told the generating system will weigh in at about 11 tons and be able to supply between 5 and 8 KW of power." All that remained to be done was the installation of the 240 individually adjustable mirror facets, the boiler at the point of focus and the generator operated by a steam engine. "The boiler is heated by the rays of the sun focussed on it from all points of the parabolic cylindrical section solar collector." After that money some means must be found to transport and install it on Pitcairn Island.—CO editorial June 1979.

**GENEVA ITU EVENTS**

WARC 79 opens in Geneva on 24th September. Two other events in Geneva during September as organised by the ITU will be Telecom 79, the third of such World Telecommunication Exhibitions, from 10.00-18.00h 20th to 26th September (entrance fee Sw. fr. 10) covering 70,000 sq. m. for nearly two parts — Part 1 from 10th to 21st September, covering telecommunication perspectives and economic implications, and Part 2 from 24th to 26th September in two parallel sessions, covering technical matters. Travel arrangements are being handled by American Express.

**EMERGENCIES**

According to Ham Radio June 1979 the volcanic eruption on St. Vincent essentially destroyed conventional communications throughout this Caribbean Island. Amateur radio immediately filled the breach when several VP2s set up a communications centre at police headquarters. Requests for help from the Island's Premier were passed through to Miami via amateur radio, resulting in immediate relief assistance. A request was also relayed to the FCC for third party traffic handling facilities — this was granted in under two hours.

**2GB AMATEUR RADIO ANNIVERSARY ON 873 kHz**

One year has passed since the first amateur radio propagation report was broadcast over 2GB radio.

Three times each night seven days a week for the last year amateur radio enthusiasts have provided the station with the latest radio conditions and news of interesting club meetings and events.

Broadcast after midnight, 1 a.m. and 2 p.m., any listener able to tune into at least one amateur band is able to volunteer to phone a report into the station at least once a week at 10.30 p.m.

If you would like to promote amateur radio to the listening public in this way then contact Sam VK3BYS on phone 407 1066 between 7 and 9 p.m.
CURRENT SINK

Designs for DC power supplies of various current capabilities, appear frequently in amateur publications. Constructors often have trouble providing loads in order to test the regulation throughout the design range. This item of test gear provides a solution to such problems.

Though having originated, in principle, during the valve era many years ago, the circuit has apparently not found its way into amateur handbooks. The idea is simple and can be built temporarily to test a "one-off" supply, or is ideal as a club or group project.

The SUPPLY terminals of the load are connected to the corresponding output terminals of the supply to be tested via, if required, a test ammeter. A variable voltage, set initially to zero, is connected to the DRIVE terminals.

With the drive voltage at zero, the load transistors are all turned off and only a few microamps of leakage current is drawn. As the drive voltage is carefully increased, the transistors are proportionally turned on, until the required load current is obtained. With six 2N3055s a drive voltage of about 1.8V will input some 500 mA to the paralleled bases, loading a 13V supply to about 20 amps. A limit of round about 4A collector current per 2N3055 should be observed.

The maximum drive voltage (Vbe) for a 2N3055 is 7 volts, but even as much as half this value is unlikely to be required. The source of drive voltage should be fairly smooth, a lab type bench supply is ideal, any undue ripple on the bases will modulate the load current.

A silicon transistor is "too hot" if its case will boil a drop of water placed on it (rule of thumb, or in this case "finger"). If the heatsink is not up to the job, it may be assisted with a forced draft from a fan or from the delectable YLs hair drier.

Wiring should be capable of carrying the currents involved, otherwise the full capability of the regulator will not be realised. Collectors and the common ends of the emitter resistors should be bussed, each bus is made with two parallel lengths of 14 B and S tinned copper wire, supported at the ends of the heatsink on tag strips. The busses both carry the full load current and each collector and emitter connection should be able to cope with 4 amps.

Rather than use a heavy multi-stranded wire such as 100/0076, with which it is difficult to produce neat soldered terminations, the writer uses up to four smaller wires in parallel, giving the same total current capacity but resulting in a tidier job.

With regard to test measurements, erroneous results can easily be obtained, so take care that connections made are adequate and do not introduce unnecessary contact resistance. It pays dividends to make proper connecting leads with suitable terminal lugs. If a current meter is included in the test circuit, allowance should be made for its internal resistance and its resulting voltage drop, e.g., an AVO Model 8 multi-meter used on its 10 amp range drops about 0.9 volts at Full Scale Deflection, while with additional current shunts, lesser drops will occur.

TOROIDAL BALUNS

Practical information about making ferrite-cored toroidal baluns. The details should apply to almost any antenna that can be fed with a balun. Experiments at this QTH were all with quads but of many shapes and sizes.

It is essential when winding a toroidal balun to know the impedance you are trying to match and I would recommend that you beg, borrow, buy (or build) an antenna impedance bridge.

A quad driven element that is over ½ a wavelength from the ground will vary in impedance from about 55 ohms with a .1 λ spacing to the reflector to about 115 ohms with a .2 λ spacing. The director makes negligible difference. The main problem is that proximity to trees, rooftops, etc., as well as other closed loop elements in multi-band quads, all vary the impedance.

It is best, I have found, to have a minimum of 10 turns on the primary winding and most ratios can be made close enough without exceeding 15 turns on the primary. For ease of adjustment the two secondary windings should be wound on first—they must have the same number of turns and I always make them one continuous winding with a large loop halfway that can be snipped later. This keeps the windings intact and also saves the sharp ends from piercing your hands when winding the primary over the top.

To calculate your turns proceed as follows—

If your impedance is, say, 98 ohms and you want to feed the antenna with 50 ohm coax the ratio of these impedances is 1.96 to 1. As with any close-coupled transformer the turns ratio is the square root of the impedance ratio, thus in this case 1.4 to 1. Then as it is essential to use about 10 turns on the primary the secondary turns would be 14. This means that we would win 10 turns on the primary and 14 on the secondary in the form of two 7 turn windings.

K. Curie VK2OB
24 Beach Drive, Woonona 2517
If you have to guess your impedance it is best to leave a couple of extra turns on the primary and check your SWR as you remove them half a turn at a time. If you are working off a ladder or the roof it is wise not to try for a 1:1 SWR as it will change when the antenna is at full height. There are probably many good ferrites available. The one I use is the Mullard FX1588, which is excellent at HF. It does seem to be "running out of steam" at the top end of 10 metres, but results are still good on this band. Wire is not very critical, 14 SWG is what I have used and found that it wraps around the toroid without springing off and slipping. If you use wire from an old transformer heater winding the enamel may not provide adequate insulation, and I would suggest that you layer plastic tape over the secondary before winding the primary.

Once you are happy with the matching, the balun can be coated with silicone rubber or in my case (I have a beach frontage) encapsulated in epoxy resin. I have run 350 to 400 watts PEP through these baluns without melting candle grease poured on them as temporary moisture shields. I don't know what power they will take, but they will handle any legal amateur power.

### SOME EXAMPLES (Turns are practical figures)

<table>
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<tr>
<th>Coax Impedance</th>
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<th>Turns Ratio</th>
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<th>Turns Secondary</th>
<th>Half</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1:1</td>
<td>10</td>
<td>5 each</td>
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<tr>
<td>50</td>
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<td>50</td>
<td>84</td>
<td>1:1.68</td>
<td>14</td>
<td>9 each</td>
<td></td>
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<tr>
<td>50</td>
<td>100</td>
<td>1:2</td>
<td>14</td>
<td>10 each</td>
<td></td>
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<tr>
<td>75</td>
<td>200</td>
<td>1:2.67</td>
<td>11</td>
<td>8 each</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>200</td>
<td>1:4</td>
<td>10</td>
<td>10 each</td>
<td></td>
</tr>
</tbody>
</table>

**LEFT: FIGURE 1.**

![FIGURE 1: Component layout.](image)

How many times have you heard on the air the remark "my FT101B Is a little deaf"? My own unit was not deaf but its performance was well down compared with a Drake RC4. Not now!

Always looking to improve the performance, the usual modifications published were tried and found wanting. Determined to find a way, It was decided to improve the signal between the 3SK40 RF stage and the antenna input. No claim is made for the originality of the circuit as shown, but the initiative to wire it up and try it.

The prototype was built on a piece of vero board, 11 x 23 holes, and laid out as Fig. 1.

The vero board is mounted on the top of PB-1181-B by attaching it by four wires to the earth rail and the earth of the PB-1181-B board, as per Fig. 2.

Take the PB-1181-B board out from the FT101B and withdraw the 3SK40 RF stage transistor from its socket for safety.

Lift the end of the 100 pF capacitor C1 that connects from pin 14 to gate 1 of the 3SK40 at the gate 1 end and run a wire from the capacitor to gate 1 of the MPF121. On the opposite side of the board connect a wire from gate 1 of the 3SK40 to the 100 pF output of the BC308. Also connect a wire from pin 14 to the plus input of the added board. Replace the 3SK40 in its socket and replace the board in the FT101B. You may have to re-align the receiver circuits on 28 MHz A, B, C and D. On the other lower frequency bands the pre-selector tuning will take up any difference. If not, re-align all circuits as per instruction manual. The extra gain will mean the "S" meter will need to be adjusted at 14200 MHz as per instruction manual.

If, when you replace the board and switch-on, there appears to be an intermittent fault such as "crackling" or "popping" noises when the board is touched or moved, check the lead between C1 and the gate of the MPF121. Where the lead leaves C1 it passes between two resistors and a capacitor. Part these components so that the lead is clear, does not touch them, and is kept well down near the surface of the board. This should cure the slight regeneration which causes these symptoms.

*(Note: The circuit as originally submitted by 5KL showed a resistor across the MPF121 drain coil. Correspondence with the author indicated that this was one of the measures tried to reduce regeneration, but later proved unnecessary. Possibly a higher than normal gain FET may require a resistor here in the order of 220 ohms to 1k.—Tech. Ed.)*

In my case, due to the extra gain I find that on 3.5 and 7 MHz the RF attenuator can be used to reduce the gain to that of the other bands and it aids the selectivity on these two bands.

Now sit back and notice the new sensitivity of your receiver and how the signals stand out above the noise level.

Good luck with the modification—Clarry.

**FIGURE 2: Connection diagram.**

**FIGURE 3: Circuit diagram.**

L1, 8 turns nylon coated jumper wire close-wound on 5/32 in. dia.

* Can be varied from 220 to 1k ohms. The higher value will drop the gain slightly but aid selectivity.
**REVIEW:**

**THE DRAKE TR7**

Stephen Garner
27 Neerim Rd., Castle Cove 2069

This article is a departure from our normal equipment reviews. Firstly it is not written by our usual reviewer. Secondly, it is not a solicited article and we must accept that the author did not have available the sophisticated test equipment required to check the manufacturer's claimed technical performance. The article, nevertheless, does cover the apparent strengths and weaknesses of the TR7 quite well. Even if you are not about to buy a new rig this article makes interesting reading.

The R.L. Drake Co. have recently released their latest HF transceiver, the TR7. This radio is to supersede their old TR4 series and possibly the T4, R4 series of separate transmitter and receiver (the "Twins". The TR7 has taken off very well in the States where at the moment there is a six to eight month waiting period for delivery. The TR7 with DR7 option (Digital Readout), TR7/DR7, is the model most Australians will meet, so comments will be restricted to this model.

**FREQUENCY COVERAGE**

The frequency coverage of the TR7 is the first point of interest. On receive it is a 1.5 to 30 MHz receiver. On transmit it covers all the Ham bands 160 to 10 metres in 500 kHz sections. With the addition of the optional extra, AUX 7, the TR7 enjoys 0 to 30 MHz receive capability, and it can transmit in an extra 8,500 kHz sections which may be placed anywhere from 1.5 to 30 MHz. Alternately the frequency can be crystal controlled, which is probably of some use in commercial applications. So the TR7 will easily handle any extra band allocations, unless WARC 79 gives amateurs more than an additional 4 MHz in the HF band.

The TR7 has a built-in frequency counter which gives a digital display of the operating frequency and can be accessed externally to provide an accurate counter for work around the shack. The unit will count up to 150 MHz which makes it useful for work on VHF as well as HF equipment.

**FRONT END DESIGN**

The TR7 achieves its frequency coverage capability by a radically new design approach. Most amateur HF transceivers use a single or double conversion technique to get to an IF of between 5 and 10 MHz, where a crystal filter provides the selectivity. The TR7 has broken away from this idea to a new method Drake term Up-Conversion. That is, the signal is converted up to a first IF of 48.05 MHz and then down to 5.645 MHz, where an 8 pole crystal filter provides the selectivity. By this method, Drake are able to provide a 0 to 30 MHz receiver, with no IF gaps, that has the performance of a good amateur transceiver.

As Drake point out in their advertising brochures, it is only with recent developments in solid state techniques that transistorised equipment has been able to meet or exceed the performance shown by that using valves. The area where solid state equipment has failed in the past is in the ability to handle strong signals near to the desired frequency. So the specifications for Dynamic Range and more importantly Intermodulation Distortion (IMD) are rarely quoted by the manufacturers. Rather they are only too willing to tell of the excellent sensitivity of their equipment, an area where transistors excel.

In an effort to provide a "strong" front end, the first active element in the TR7 is a double-balanced mixer with a high level of local oscillator injection. This connects to a 4 pole crystal filter 8-10 kHz wide, then via a second diode ring double-balanced mixer to the information filter, which for voice is 2.3 kHz at 6 dB down and 4.1 kHz at 60 dB down. It is only here, after the selectivity, that Drake place the bulk of their gain.

As a result of this design Drake are able to quote figures for Dynamic Range and IMD of 95 dB and +20 dB respectively, two very impressive figures. None of the figures quoted have been verified by the author but one would hope that even in modern times manufacturers can be trusted to this degree. There is, however, a necessary trade-off between Dynamic Range, IMD and Sensitivity. Consequently Drake are only able to claim a sensitivity figure of 0.5 µV for SSB. This comparative lack of sensitivity would not normally be a problem as background noise is usually above this figure, but conceivably there could be circumstances where this lack of sensitivity would be a hindrance.

**ON AIR TESTING**

The TR7 was connected "back to back" with the Drake Twins and then to a TH6DXX at 90 feet. Unfortunately on the evening of this test the bands were not very crowded and neither set could be faulted under strong signal conditions.

On weak signals, the audio quality was superior on the Twins while the TR7 appeared to have less background noise. If there was a difference between the two, the TR7 appeared to have a slight edge in hanging on to the weak signals. The difference in audio quality was probably due to the fact that the Twins were used with their matching speaker and the TR7 has a narrower filter and more extensive audio filtering to cut out the "highs".

The results were repeated when the TR7 was run back to back with a Kenwood TS820S at VK2MB, the Manly Radio Club. Once again there were no strong signals on the bands. Under weak signal conditions, however, the TS820S was able to demonstrate its superior sensitivity, being better at pulling signals out of the mud. The audio quality of the TS820 from a hi-fi point of view was superior to the TR7. The narrower filter of the TR7 and audio characteristics definitely make it a communications transceiver rather than one for enjoying the individual's voice in local "rag-chews".

The big test came later when the TR7 was used during the CQ WPX contest. Conditions were good and the bands were crowded with S9+ signals. Here the TR7 really proved itself, and after 4 or 5 hours behind the VFO one could almost feel the crystal filter reaching out into the night.
The TR7 is solid state throughout, including the ham bands. However, there was only one spurious signal found that moved the "S" meter, and this at 5.645 MHz was S9. These are certainly a nuisance but it is doubtful if they would ever stop a contact being made. The most annoying feature is that they sound like a weak DX station tuning up on air, and one is constantly switching between antenna and dummy load to determine if they are DX or a spurious signal.

TRANSMITTER
The TR7 is solid state throughout, including the PA, which is rated at 250 watts input. The output power was measured and found to fall from 130 watts on 14 MHz to 100 watts on 28 MHz, which means the amplifier is fairly inefficient. This is probably true, because as it is broadband, Drake have used linear techniques throughout in order to keep the transmissions clean. The transceiver is extremely simple and can be adapted for many other applications. It is standard, 300 Hz, 500 Hz, 1.8 kHz and 6 kHz are optional. Independently of the mode in use, thus one can receive CW on 300 Hz filter and transmit voice. By use of the Pass Band Tuning PBT, it is possible to receive on a sideband and transmit on the other. All interesting features but probably of little practical value.

The operation of the circuit relies on the basic fact that a diode will conduct when the anode is positive with respect to the cathode and has the appropriate forward bias. A silicon diode requires approximately 0.6 volts.

Two diodes are used to isolate the supplies. The output to the clock timing circuit is always the higher of the two input voltages. To operate correctly, the voltage from the main supply must be higher than the battery source. If not, the batteries will become the main source for the clock timing circuit.

A key switch has been included in the clock display circuit. This switch enables the display to be switched on continuously from the main supply, switched off or keyed-on from the battery source. By utilising this facility, the battery life will be extended. In this circuit, the batteries are not charged by the main supply.

CONCLUSION
A number of quick points in conclusion. The TR7 is both a notch filter, which seems a pity. The book basically gives very little information apart from instructions on operating the rig and a basic overview of the theory of operation. It badly lacks a circuit diagram or any servicing details apart from advising that it should be taken back to the dealer should any problems arise.

The TR7 is an expensive rig, but for the amateur who wants the best and is prepared to pay for it, it is worth looking at. The TR7 is not for the ham who only wants to talk to the locals, other rigs available will do the job as well and cheaper. The TR7 comes into its own, however, in crashing dogpiles, in kilowatt alley on 20 metres, or on 40 metres where the IMD is negligible.wią

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The R.L. Drake Co. have certainly produced a technically interesting transceiver in the TR7. It will be interesting to see if other manufacturers of amateur equipment follow Drake's lead in up-conversion and strong front-end design.

NO-BREAK CLOCK SUPPLY
Having lived in areas where the mains are somewhat erratic, I found it necessary to construct a simple no-break supply. This circuit overcome the problem of having to reset the station digital clock every time a mains failure occurred.

INTRODUCTION
A no-break supply is a system in which the supply is normally taken from the 240 volt mains. In the event of a mains failure, the supply is automatically switched to a standby battery source. When the mains voltage is restored, the system automatically switches back.

The circuit is extremely simple and can be adapted for many other applications.

OPERATION
The operation of the circuit relies on the basic fact that a diode will conduct when the anode is positive with respect to the cathode and has the appropriate forward bias. A silicon diode requires approximately 0.6 volts.

Two diodes are used to isolate the supplies. The output to the clock timing circuit is always the higher of the two input voltages. To operate correctly, the voltage from the main supply must be higher than the battery source. If not, the batteries will become the main source for the clock timing circuit.

A key switch has been included in the clock display circuit. This switch enables the display to be switched on continuously from the main supply, switched off or keyed-on from the battery source. By utilising this facility, the battery life will be extended. In this circuit, the batteries are not charged by the main supply.

CONCLUSION
As many of the quartz clocks available have good long term stability, it is advantageous to have a clock supply which has long term voltage availability.
160 METRE BAND DX

My primary interest is DX and the propagation conditions that make DX possible. Real DX is generally only possible when the most Eastern station is calling at his sunrise time. Even then contacts are possible only at certain times of the year when exceptional conditions occur. It is therefore necessary to keep regular vigils at suitable times — the contacts may be few but are both exciting and rewarding.

The receiver used should have excellent selectivity as the 160m band is narrow and, when the Americans and Japanese are coming through, so are the local VKs. The AR88 used here was fine with regard to selectivity but was not nearly selective enough. Nevertheless it provided me with WAC, starting in 1971 and being completed in 1973. The mode used was CW.

What sort of DX can be worked? Well I have been exhilarated by contacts with America and Africa but my most exciting 20 minutes on 160m occurred on December 31, 1973, when the following stations were worked reporting my RST as shown. Times are in GMT (now UTC — Ed.).

<table>
<thead>
<tr>
<th>Time</th>
<th>Call</th>
<th>RST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1858</td>
<td>OK1ATP</td>
<td>479</td>
</tr>
<tr>
<td>1904</td>
<td>G3ZEM</td>
<td>579</td>
</tr>
<tr>
<td>1907</td>
<td>G3XYV</td>
<td>579</td>
</tr>
<tr>
<td>1911</td>
<td>G3YUV</td>
<td>579</td>
</tr>
<tr>
<td>1915</td>
<td>E18H</td>
<td>579</td>
</tr>
</tbody>
</table>

QSOs with OK1, 5Z4, ZE7, OA8, GM3, VP6, L5, KL7, VE5, PAO and many W and JA stations have been enjoyed on this band.

Is high power necessary? Apparently not, as G3TR was contacted with only 10 watts used at his end.

Suitable antennae include inverted Vees and verticals. I use a long dipole at 50 feet.

What time should you listen? Europeans are best heard here at dawn during December, January and February. Africans are heard at the same time in June and July. South Americans appear at dusk here in June, July and August. North Americans are heard in the early to late evenings and the Japanese are also audible in the evenings.

Tune 1800 to 1810 kHz for the North Americans, South Americans and the Africans, 1907.5 to 1912.5 kHz for the Japanese and 1825 to 1830 kHz for the Europeans.

Some of the signals are surprisingly strong with many W stations running to S9 plus. Conditions are not as good now as in 1971 to 1974, but good contacts are still to be had. Other amateurs, such as VK6HD, have recently made WAC on 160m so why not you?

(Art was also something of a pioneer on this band having attained what are believed to be the first VK-VP8 and VK-LUS QSOs on 160m — Ed.)

TRY THIS
WITH THE TECHNICAL EDITORS

RUSSIAN 28 MHz DIRECT CONVERSION RECEIVER

Due to the upsurge in the solar cycle and the Russian Amateur Satellites several 28 MHz band construction projects have appeared in the Russian magazine RADIO.

One of these projects is a simple direct conversion receiver using an interesting type of balanced mixer. The balanced mixer was described some time ago in Radio and uses the unusual combination of parallel reverse connected diodes and oscillator injection at half the frequency.

The circuit is shown in Figure 1 and the printed circuit board layout is shown in Figure 2. These are reprints from Radio for December 1978.

No equivalent or coil details are shown due to the difficulty of obtaining exact equivalents. Construction should be possible by experienced constructors able to choose suitable local components. The coils used were similar to the local Neosid and the low pass filter used a small audio toroid. The diodes V4 and V5 are low capacitance types with approximately 1 pF at 0 volts.

In the circuit of Figure 1 the RF amplifier is V1 which is an FET. Audio AGC is applied to this stage by the AGC diodes V2 and V3. L1, C2, L2, C3 form an input filter.

The output of the RF amplifier, tuned by L3 and C8, is applied to the balanced mixer made up of diodes V4 and V5 in a parallel connection with reverse polarity. The local oscillator being applied by C9. The local oscillator is on 14 MHz region.

The output from the mixer passes through an audio low pass filter made up of L5, C9 and C10. This uses an inductor wound on a small audio ferrite toroid. The cut-off should be 2 to 4 kHz to allow reception of SSB.

The audio amplifier is quite straight forward. The only quirk being resistors R7 and R11, which are adjusted on test. This will apply in any case as direct equivalents are not obtainable locally.

The circuit of Figure 1 uses a mixture of Russian letters and Roman letters, e.g. capacitor marked C20 47.0 x 15B is really a 47 mF 15VW capacitor.

The circuit board used in the original measured 140 mm by 50 mm. The circuit details appeared in Radio, issue 12, 1978. The author was V. Polyakov RA3AAE.
THE NEW WORLD-WIDE CRAZE OF
10 METRES FREQUENCY MODULATION

Faced with the question of how to utilize the top end of 10 metres, in such a way that increased amateur occupancy, many efforts over the last 20 years have failed to stir any interest.

Faced with a wide range of frequencies from 28.0 to 29.7 MHz, our largest HF allocation, most amateurs were content to tune 28.0 to 28.1 MHz for the CW action and 28.5 to 28.6 MHz for the voice action. Internationally 29.3 to 29.5 MHz has come under intense use as a result of the amateur satellite service and nationally 28.1 to 28.6 MHz has seen great use with the introduction of the novice licence.

The growing world-wide interest in the frequency range from 29.5 to 29.7 MHz has resulted from the tremendous amount of activity occurring on this band in the United States. Many of us in Australia who operated on 6 and 2 metres in the early 1970s using modified commercial taxi transceivers can remember the keen tinkering, building and exploring spirit of those operating 6 and 2 metres before the days of widespread commercial amateur gear.

This is the situation which has generated so much interest in 10 metres FM. At present I would estimate that 95 per cent of those on 10m FM are using modified VHF gear in the USA. They see their interests and style of operating as different from those using the same mode on 6 and 2 metres. They like 10 metres FM because "it's different to what's going on on 2m", "there's not the nonsense you pick up on 2", "it's got all 2 has got plus more", etc. etc.

THE AMERICAN 10 METRE REPEATER BAND PLAN

<table>
<thead>
<tr>
<th>Channel Number</th>
<th>Input Frequency (MHz)</th>
<th>Output Frequency (MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>29.520</td>
<td>29.620</td>
</tr>
<tr>
<td>2</td>
<td>29.540</td>
<td>29.640</td>
</tr>
<tr>
<td>3</td>
<td>29.560</td>
<td>29.660</td>
</tr>
<tr>
<td>4</td>
<td>29.580</td>
<td>29.680</td>
</tr>
</tbody>
</table>

Most 10 metre repeaters conform to this band plan with 20 kHz channel spacing and 100 kHz separation between input and output.

10 metre repeater function in the following way: A signal which is received on the input frequency is transmitted via 440 MHz UHF or via a telephone line to the repeater's transmitter site from where that signal is re-transmitted.

This means that a 10 metre operator in the USA can actually listen in to three frequencies and select the one with the best reception. He can listen to the original signal at the 10 metre input, he can listen to the UHF link or to the 10 metre output. To make contact with USA repeater operators from Australia one can either transmit on the repeater's input and listen to or quickly dial up to the repeater's output or one can listen and transmit on the repeater's output.

All the American needs is a UHF transmitter in his car tuned to the 10 metre transmitter's input and a 10 metre receiver.

CONTROLLING A 10 METRE REPEATER

Most repeaters on 10 metres are open access systems which means that any signal appearing on the input is automatically relayed onto the repeater's output. This means that there is no problem in working into these repeaters from Australia.

The common modes for International working are CW and SSB and these are used much lower in the 10 metre band. Up the top end FM is the in mode and operators are aware of the various simplex and repeater channels. Any SSB or CW operator who ventures into the top end soon finds out about these various frequencies when he hears a mass of heterodynes on certain frequencies. (This is what ± 5 kHz of FM deviation sounds like on an SSB receiver.) In Australia we are restricted to ± 3 kHz of FM deviation on 10 metres, which is so narrow that SSB listeners are able to resolve this as an AM station by zero beating.

The disadvantage of only ±3 kHz FM is that the American and European and Japanese FM operators may ask you to turn up your deviation or speak closer to the mike. However, our regulations once explained means they just wind up the audio gain on their receivers.

The advantage of extra NBFM is that we can use this on 28.1 to 28.6 MHz and work crossmode with the novices, thus interesting them in the techniques of FM.

Only a few of the 10m repeaters require tone access, however because of the growing interest of working into Australia and Europe on FM, repeater maintainers often monitor the repeater's input so that when a DX FM station attempts access, the required tone is transmitted permitting access to the DX FM operator.

American operators can send controlling signals which will automatically shut down a repeater or which will open a direct line with a local police department or which will link up with another VHF repeater on 6 or 2 metres. It is very interesting just how varied repeater usage can be.

A procedure that had me listening in for hours was the use of the Ten code by an extensive network of mobiles which appeared to be on some patrol or exercise. The snappy and highly organised operating procedure was a delight to listen into.

Not all repeaters operating on 10 metres use FM. Some, called linear repeaters, can
transmit AM, FM and CW, others can retransmit SSB.

Some of the Repeaters which can be worked daily from Australia are:

**CHANNEL 1**
(29.520 MHz in, 29.620 MHz out)
WR6BDG — Sierra Madre, Calif. Carrier operated access.
WR1AJF — New Fairfield, Conn.
WR1AAA — Maiden, Mass. Carrier operated access.

**CHANNEL 2**
(29.540 MHz in, 29.640 MHz out)
WR6AAK — Los Angeles, Calif. Requires WR3AID.
WR4ATE — Jacksonville, Florida. Carrier operated access.
WR6AFB — San Diego, Calif. Requires WRZANW.
WR2AMI — Dallas, Texas.
WR5AOK — Pt. Naches Groves, Texas.

**CHANNEL 3**
(29.560 MHz in, 29.660 MHz out)
WR6AFB — San Diego, Calif. Requires 107.2 Hz access tone.
WR6AWR — Santa Barbara, Calif. AM repeater. Req. 1950 Hz to access.
WR0AQE — Boulder, Colorado. Requires 91.5 Hz tone to access.
WR4ATE — Jacksonville, Florida. Carrier operated access.
WR9AKD — Split-Prospect Ht, Illinois. Carrier operated access.
WR3AID — Towson, Maryland.
WR2ABA — Huntington, New York. Carrier operated access.

**CHANNEL 4**
(19.580 MHz in, 29.680 MHz out)
WR1ACY — Glastonbury, Conn. Civil amateur radio emergency service. Civil patrol, carrier operated access.
WR3AID — Towson, Maryland. FM carrier accessed.

### 10 METRE CONTROLLED TRANSMITTERS

As well as repeaters there are dozens of remote controlled transmitters which like the repeaters are owned and operated by either associations or in many cases, by individual amateurs.

Remote controlled transmitters are almost the same as repeaters. They are located on a high location, can cross-band and link with other repeaters, can link into the local telephone system (autopatch) or into the law enforcement agencies.

Remote transmitters operate in this way:
You transmit on, say 440 MHz and the remote transmitter re-transmits you onto 29.6 MHz. Anyone on 29.6 MHz is re-transmitted back to you on your frequency of 440 MHz. From Australia it is quite easy to contact the many local communities who operate such remote transmitters.

By transmitting on their 10 metre frequency, an American is able to either receive you from the remote site via 440 MHz or direct on 29.6 MHz and can likewise call you either from his home using 29.6 MHz or via the 440 MHz link which is re-transmitted onto 29.6 MHz. Thus communications can be maintained as selective propagation occurs between these two sites.

One of the most consistent signals into Australia from a remote transmitter is that of WB7CZQ on Stranger Mountain, Washington, which can be switched between two selectable frequencies. 29.6 MHz primary or If In use, the users switch the system onto 29.64 MHz.

### GETTING STARTED ON 10 METRE FM

Commercial transceivers covering 70 to 85 MHz or 6 metre modified FM gear can be obtained from between $15 to $35 and modified onto 29.6 MHz.

USA operators using 5 watt modified CB radios have been putting incredible signals on FM. These sets are easy to get onto FM by applying a small part of the audio output to the Varicap diode in the clarifier circuit and disconnecting the audio being applied to the power amplifier stage.

FM reception can be achieved by using an appropriate detector in the 455 kHz IF stage. For receiving wide-band FM the 455 kHz IF can be widened and the filter replaced. Many of the contacts on 10m FM have been with mobile operators using vertical whips.

In Europe there are 15 amateurs in Copenhagen, Denmark, using 29.6 MHz. The operator I spoke to, OZ7IS, only runs 6 watts FM to a ground plane. In Norway it is popular to add the microwave converter MMC28/144 onto a 2 metre transceiver.

This converter, which sells in Australia for $45 will receive 29.6 MHz when your 2 metre receiver is tuned to 145.600 MHz. The idea of hearing world-wide FM on my 800 channel 2 metre FM set is really tickling my mind at the moment. To transmit FM it is quite easy to simply modify an FT200 and FT101B (see previous articles in AR).

The modification of the TS820 is almost identical to that of the FT101B.

Microwave modules in the USA are said to be developing a transverter so that you will be able to transceive on 10m FM using any 2m FM transceiver.

Japanese amateurs as well as the Americans and Europeans, have also been using complete home-made systems as well as USA Army transceivers. Several ex-Military FM sets which cover 29.6 MHz are available in Australia.

Two new commercial 10 watt 80 channel FM transceivers selling for $280 have become available. In Japan a unit called the UNICOM UX502 is in use and in the USA a unit called the COMTRONIX FM80 has also just been released.

Both units use the following 80 channel system. Standardisation to this system will help to make contact with those using these transceivers.

### TABLE OF CHANNELS 1A TO 40A FOR 10 METRE FM USERS

<table>
<thead>
<tr>
<th>Chan A Freq (MHz)</th>
<th>Chan A Freq (MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>28.91</td>
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<td>2</td>
<td>29.92</td>
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<td>3</td>
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<tr>
<td>19</td>
<td>30.09</td>
</tr>
<tr>
<td>20</td>
<td>30.10</td>
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### TABLE OF CHANNELS 1B TO 40B

<table>
<thead>
<tr>
<th>Chan B Freq (MHz)</th>
<th>Chan B Freq (MHz)</th>
</tr>
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<tr>
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<td>29.480</td>
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<tr>
<td>19</td>
<td>29.490</td>
</tr>
<tr>
<td>20</td>
<td>29.500</td>
</tr>
</tbody>
</table>

Note that the range 29.360 to 29.5 MHz is currently used by American and Russian amateur satellites and should be avoided.

Of the commercial amateur sets available the FT901D is the only one which includes FM transceive facilities. The deviation control under the top cover can be adjusted with on-air tests until a total 6 kHz is indicated on the tuning range of an SSB receiver. Adjustment of this potentiometer is quite critical but once attained, you are all set. Existing ground plane and beam antennas can be quite effective up the top end of 10 metres with the use of an antenna matcher. My next experiment will be to work the USA repeaters hand-held pedestrian using the new USA Palomar transceiver which will soon be available in Australia and will include FM facilities.

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EQUIPMENT REVIEW

COMPARISON TEST, KULROD UHF MOBILE ANTENNA TYPE LM-420

UHF FM mobile is not particularly popular in the Melbourne area and at this point in time with one repeater operating in Melbourne (VK3RAD) and more proposed, it is therefore important to recognise suppliers and their equipment if an excursion to 70 cm FM is to be undertaken.

Don Sinclair VK3VH
Glen Percy VK3PE

Antenna supplied by Toowong Agencies, 15 Kapunda Street, Toowong, Queensland. Telephone 370 8785.

TEST EQUIPMENT
Sierra in-line power meter/reflectometer 144-470 MHz insert.
Texscan Corp. in-line stepped attenuator.
Horwood combination reflectometer (field strength) meter 75-450 MHz.

TEST TRANSCEIVER
Converted Westminster UHF W15.

TEST VEHICLE
1978 Falcon panel van, centre roof mount.

The antenna supplied is quite an attractive unit, being made of best quality stainless steel and gave an overall picture of good workmanship. Unfortunately, nowhere in the accompanying instructions did the supplier state the antenna configuration or gain figures. The antenna, however, follows the popular "Ringo" configuration, being three half waves at the base by a small coil. The centre phasing coil is completely weather sealed and enclosed in strong plastic as is the base coil. The antenna is supplied with its own base and connection instructions.

The antenna is not compatible with most commonly used bases, the centre conductor being too long; they can be used however with a slight increase in VSFR.

With the base supplied, an SWR of 1.2 : 1 was obtained and an SWR of 1.5 : 1 was obtained with a Scalar mount. When used with a Scalar mount, the antenna sits high and there is a gap between the bottom of the antenna and the top of the base. This could be overcome by cutting approximately ½ in. off the standard Scalar base. As "Murphy" dictates, this makes your Scalar mount useless for other antennae; this is the case with most other bases. The problem is caused by insufficient depth in the socket at the base of the Kulrod.

Apart from this major difference, the antenna when mounted is quite rigid and although almost 30 inches long does not flex, and at high speeds remains vertical (test speed of 100 km/h).

Instructions with the antenna states a coverage of 420-450 MHz. For a centre frequency of 435 MHz (being the centre of the repeater band) the bottom portion only is to be cut to 9¾ in., the top portion of 15 in. is not to be touched. The bottom section slides from the bottom coil and is cut and locked in again (Allen key supplied). Overall length for frequency of 435 MHz is 30 in.

TESTING
Gain of the antenna was measured using a stepped attenuator and monitoring the limiter current. While VK3PE keyed his transceiver, a noisy signal was obtained with 5 dB of attenuation in the antenna line. This noisy signal was used so as to avoid saturation of the receiver. The 5 dB of attenuation gave a limiter current of 30 µA. The reference antenna used was a standard ¾ wave and Scalar mount.

Then the Kulrod antenna and base was substituted and another reading was taken. An extra 3 dB had to be added to bring the limiter reading again to 30 µA. This meant the Kulrod had a gain of 3 dB, which was expected. In both cases 10 ft. of RG58 was used and both antennae had VSWR no greater than 1.2 : 1.

ROAD TEST AND COMPARISON
During a fortnight of use in the author's vehicle, comprehensive testing in low signal areas was undertaken. The Kulrod produced more flutter on receive than the author's usual antenna (Scalar co-linear). At a well known noisy spot on the Ballarat Freeway, the signal both on receive and transmit was down compared to the author's co-linear when working through VK3RAD. This was also the case in other known bad spots.

GENERAL SUMMATION
As a general mobile antenna the Kulrod antenna produces only very fair results, and is not considered a "DX" antenna by any means. The antenna fulfils the requirements of most amateur operators and is definitely superior to a ¾ wave antenna which was the basic antenna used in all the experiments.

No tests were carried out involving "Ski Bar" mounts as this form of mounting, from previous experience, is highly inefficient. Results from any VHF or UHF antenna can only be obtained by good engineering and practice. A good ground plane might be maintained and all soldered connections be neat and tidy. It has become very evident, especially with 5/8ths and co-lines as mobile antennae, that the bigger the ground plane area the better the results.

Sincere thanks are extended to the following call signs — VK3YEO, YOC, AAF, RN, YES, ZKV, EM, YN, AFL, BAF, AHO, AJI for their assistance in obtaining the above details.
THE FINAL COURTESY OF A QSO IS A QSL CARD

Cards, cards and more QSL cards. A total of 84,914 QSL cards, an average of over 7,000 per month, passed through the VK3 Outwards QSL Bureau during 1978. There has been an increase in this quantity so far during 1979.

Involved is the preparation of about 100 large and small packets per month, of cards for other QSL Bureaux throughout the world. Not an easy task to ensure an even flow is maintained, the packets are prepared so that as far as possible they arrive safely at their destinations, and postage costs are kept to the minimum.

As Fred Lubach VK4RF, says on page 23 of March 1979 AR, the way some of the cards are filled out cause QSL officers to tear their hair out. Perhaps this is obvious from the cover photo.

Please, oh, please, read Fred's article carefully, and follow the criteria outlined when sending cards through your bureau. In VK3 if you are still not sure, an information sheet is readily available. This sheet also describes the operation of the VK3 Inwards QSL Bureau.

Your co-operation will make the task of your voluntary QSL Officer so much easier, and allow him more time to work some of the DX stations he sends cards to on your behalf. From Roy Prowse VK3XY.

THE "MUF" IS RISING

The "MUF" is Rising very fast,
"Tis the after effect of a Solar Blast;
It sprays its rays through thick and thin,
While the amateur sits with a sickly grin.
"It won't be long!" he says at last;
Wacko! DX now! Thick and fast.
But the sun grins back and he says for sure,
"Tis only my minor overture;
To 51 I'll go, no more;
To 52 it's an arduous chore.
So the keen boys listen and read the band,
But nought do they hear from a foreign land.
So it came to pass in the "Year of the Yen",
The VKs were working the JAs again;
Once rare JAs came in much too slowly,
In a very short time they became rather lowly;
There were more JAs than a man could work,
"There's better DX!" you'd say with a smirk.
With Channel O gone and 5A at last,
What say we give 50 megs a blast?
No one will hear us that's for sure,
The Amateurs' Principle is much too pure;
"'Tis Science, and Fact, and Experiment too;"
That's the Amateurs' Code from me down to you.
Now HL and KG were starting to break,
'Twas more than some of the boys could take;
So in sad desperation while scratching their head;
"I'll swear 50 megs will gather the bread."
This was the answer they found at long last,
That contacts on Fifty could come very fast.
Our 28 megs was going full steam,
It's the moulding band for a 50 meg dream;
The chaps up in HL, KG, and CE,
Have from 50 to 54 megs; What a speed!
And the boys down in VK said "Oh! What a Pity",
That such rare DX doesn't come to our city.
The Lush Path to Frisco was too long in coming,
Are our predictions the result of an incorrect summing;
If the P and T could be tempted to proffer,
There'd be plenty of fine DX in their offer;
Why worry they said, "It worked once, it's terrific!"
We can use 50 megs to cross the Pacific.
For long the high band remained tightly closed,
you can imagine the problem that this one posed;
"It worked once on Guam, I can't see any reason,
Why it won't work with LU or XE this season."

The predictions were right and they conquered Low Grade,
Contacts with W and XE were made.
As in the days of old when "Pirates Bold" sailed the Spanish Main;
A treasure untold, much greater than gold, came into view again;
The Signal was weak, at first so to speak;
And they listened with sparkling fangs bared;
Then out of the pack, just like a whip crack;
The VP1 was snared.
The feather in the cap or the scoreboard on the wall,
Are all the same Cinderella after the ball;
Just put 50 megs it'll tell the whole story.
When the accounting is done and you've worked out your haul,
Remember it's April, and Autumn leaves fall.
You need one to lead, for the others to follow,
What is fashion today is Old Hat tomorrow;
Won't be long now, and the high band will open;
Well! — That's what lots of VKs are hopin';
Then when you work that rare one for certain,
On — "FIFTY-ONE MEGS" — you'll have rung down the curtain.

By J. F. Hanran VK4JH

Amateur Radio September 1979 Page 17
How important are these international general radio conferences of the ITU as they relate to our amateur service? This question has been asked over and over again and has been answered in the pages of AR repeatedly.

Many amateurs clearly understand the importance, the vital importance, of these Conferences as evidenced by all the generous donations from so many to the WARC 79 Fund.

The attitude of "she'll be right" when the time comes is a forlorn hope unless our amateur service efforts are backed to the utmost by all amateurs.

The attitude that the WIA, IARU or some other amateur body will "take care of things for us regardless of whether or not I am a member or supporter" is yet another misconception spawned out of selfishness and perhaps the feeling that the right to criticise any outcome applies equally to those who do and those who do not support the society. "Let them do the work so that we can tear the results to pieces" seems to be a common disease.

Enough of this.

Looking back at the outcome of the last four major ITU general Conferences is interesting insofar as the amateur service is concerned. Out of the Washington Conference in 1927 we got 7.0 to 7.3 MHz and 14.0 to 14.4 MHz as exclusive amateur bands and 1.715-2.0, 3.5-4.0, 28-30 and 56-60 MHz as shared bands.

The 1938 Cairo Conference, for the world other than Europe and the Americas, gave us 7.0-7.2 and 14.0-14.4 MHz as exclusive bands and 1.715-2.0, 3.5-4.0, 7.2-7.3, 28-30 and 56-60 MHz shared. This also applied to Europe except that they lost 3.635 to 3.685 MHz and gained 112-120 MHz as a shared band. The Americas retained all the 1927 bands and gained 112-118 MHz as an exclusive amateur band.

The next conference was the 1947 Atlantic City Conference at which the three ITU world regions came into being. Here in Region 3 we got 7.0-7.1, 14.0-14.35, 21-21.45, 28-29.7, 50-54 and 144-148 MHz as exclusive amateur bands with 1.8-20, 3.5-3.9, 7.1-7.15 and 420-460 MHz shared.

Region 1, however, lost the 160m and 6m bands, but Region 2 gained the 220-225 MHz bands as well as 420-450 MHz on a shared basis and 144-148 MHz as an exclusive allocation. The Region 1 allocations were — exclusive 7.0-7.1, 14.0-14.35, 21-21.45, 28-29.7, 50-54, 144-148, 220-225 MHz and shared 1.8-2.0, 3.5-4.0 and 420-450 MHz.

The next conference was the Geneva Conference of 1959 — WARC 59, at which the late John Moyle VK2JU was an amateur observer with accreditation as a member of the official Australian party. The outcome of this Conference, insofar as Region 3 was concerned, was that Divisions had voted against holding a Divisional Conference as evidenced by all the special set-ups which were never applied in Australia until radio-communications were introduced. WARC 59 was never applied in Australia until radio-communications were introduced.

The late John Moyle "carried out his assignment on behalf of the Australian Amateur in a manner which can only leave us all feeling peculiarly humble. Even when he returned and underwent a most serious operation, his tenacity of purpose and never-ending interest in Amateur Radio drove him, under extremely uncomfortable circumstances, to write his final report to you ... the Amateurs of Australia". This quotation is from the editorial of AR of March 1960 in which John Moyle's report was published.

Anyone wishing to know how these ITU conferences affect us should carefully study this report in AR for March 1960 and note that WARC 79 will undoubtedly be even tougher.

For those who cannot refer to this issue of AR check out some of these quotes from John Moyle's report.

"Its [WARC 59] pages of tables and regulations will clearly reveal how much work went into their preparation, but can tell nothing of the drama, the dangers, the tension and the hours of frustration and achievement through which we lived during the long weeks (Aug.-Nov.) of the Conference."

"I only wish every Amateur could have been present at least part of the time. He would have learned about the enormous pressures on frequency space which have literally made portions of the spectrum un-workable; he would have seen how Amateur problems, important though they are to use, are only a small part of the incredibly complicated pattern of modern communication."

"A final result obtained appreciably better than most of us hoped for."

"... the Amateurs received an excellent hearing at every level of the Conference and a very fair hearing at that."

"But there is a rider that broadcast stations must vacate the exclusive Amateur portion between 7 and 7.1 Mc. Frankly this isn't worth much, because several countries now poaching there announced quite openly that they won't move until given clear channels, of which there are none." . . . the standard and bitterness of the debates on this matter, the special committees set up to handle it, and the good old duck-shoving that went on, convinced me that high political bands were at work, far beyond any capabilities of mine to influence."

"These conferences are meetings of national delegates, each of which has a vote (only 96 countries in 1959). It follows, therefore, that the first aim is to convince each delegation that the claims of the Amateurs are as strong as those for any other service and thus to secure votes for them. It is far too late to initiate action at the conference itself, by which time most decisions have been made up to this level."

"We fell down because our preliminary work over the years was not good enough, and we were obliged to take great action at a late hour." (Lesson well taken years ago for WARC 79.)

"Coming straight from Geneva, where our very future was being battled for, I was astounded and discouraged to find that Divisions had voted against holding a Convention this year (1960)." (An Extraordinary Convention was held eventually.)

"All our excellent, and often elaborate, Divisional set-ups will be of little use if we haven't the bands to use them."

"I believe that every Amateur who takes his licence to the wall must shoulder an inescapable responsibility to his fellow Amateurs and to the Amateurs of the future. If he fails them, they must suffer and may even cease to be."
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**Baluns**

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- **TH3JR** 11/10/20 + m 3 beam - $279.00
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SPECIFICATIONS ETI-140

<table>
<thead>
<tr>
<th>Mode of operation</th>
<th>Frequency, period and time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>10Hz - 50MHz</td>
</tr>
<tr>
<td>High frequency</td>
<td>20MHz - 1GHz</td>
</tr>
<tr>
<td>Period</td>
<td>0.1μs - 10 ms</td>
</tr>
<tr>
<td>Time</td>
<td></td>
</tr>
</tbody>
</table>

| Resolution        | 1Hz                        |
| High frequency    | 10kHz                      |
| Period            | 0.1μs                      |
| Time              | 1μs                        |

| Display           | 5 digit LED, locking edge blanking |

| Sensitivity       | Normal input 20mV/MHz         |
|                   | High frequency input 20mV/MHz |
| Time input        | 300μs - 3V level shift       |

| Maximum input voltages | Normal input 70Vac, 100V peak; High frequency input 200mV ac, 50V peak; Tuning input 100V dc |

| Crystal frequency  | Frequence: 4000kHz nominal, 3999.995 kHz actual |

| Stability and accuracy | Frequency depends on crystal used and initial adjustment. Only used loose trimmer with approx. ~0.00012% |

| Period and time     |                              |

* The upper limit of the prescaler has not been checked due to the lack of a suitable source but both the prescaler (IC326) and the divider ICs are specified up to 1GHz.
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A state of the art communication receiver covering the range 0.5-30MHz using a Wadley Loop for rock solid stability. Unlike some other receivers that use only one filter in the IF and exhibit poor selectivity, the C6500 has two filters, giving good selectivity on SSB and AM. For more details write to us for a brochure.

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Covering 6, 2 and 0.7 METER BANDS

It had to come. A Keyboard Entry, Microprocessor controlled VHF/UHF Monitor Receiver from Japan with the following outstanding features:

- Wider frequency range.
- 0.5-140-180 and 410-514 MHz.
- 5 KHz Channel Spacing on VHF and UHF.
- Covers 6, 2 and 0.7 meter Amateur Bands.
- Over 32,000 Channels.
- 0.5 uV Sensitivity.
- 220-240 VAC and 12-16 VDC operation.
- Large Green readout showing channel number, frequency, time, day and date.

Because the SX-100 covers such a wide frequency range, virtually any of the thousands of VHF/UHF Commercial, Amateur and CB, two-way services in Australia can be monitored at the press of a button, e.g. FIRE BRIGADE, POLICE, MILITARY OPERATIONS, CIA and many, many more.

**S929 Inst.S.T.**

Write for a brochure or drop in for a demonstration of this remarkable receiver.

**WRITE FOR A BROCHURE OR DROP IN FOR A DEMONSTRATION OF THIS REMARKABLE RECEIVER**

**NEW!!!**

ATLAS 210X AND 215X, $795 ea., PLUS OTHER ATLAS ACCESSORIES.
HAM RADIO FOR REHABILITATION

By Don Pugh VK6DN
Room 5, Ward 11,
Royal Perth Rehabilitation Hospital,
Shenton Park 6008, WA.
June 10th, 1979.

The radio conversation was in no way unusual. "VK6ZAT, this is VK6DN," I said. "How are you today, Bruce? The temperature is going up to 40°C. Sure glad my room is air-conditioned." What was unusual was that I had just broken my neck at the cervical five, six and seven level three days before. Lying in the Intensive Care Unit of the Royal Perth Rehabilitation Hospital, my body paralysed from the shoulders down. Only my arms could move and those only weakly upwards.

The effects were devastating on a person who had been leading an active life of hiking, bicycling, scuba diving and flying. As a Canadian from Toronto who had arrived in Perth in 1977 to teach High School, I enjoyed the sunfilled "Sand-groper" life, and extended my stay from one to three years. In December, 1978, a lift in a car from Perth to Adelaide proved tragic. The monotony of the Nullarbor Plains early in the morning caused the driver to doze at the wheel and the car rolled over. Asleep at the time, I regained consciousness to find myself still firmly strapped in the passenger's seat, but unable to move a single limb. Transferred to Kalgoorlie by ambulance, and flown to Perth by the Flying Doctor Service, my X-rays brought the bad news that my spinal cord was severed and I would be confined to a wheelchair for life.

During registration, I was assigned to Sir George Bedbrook, a pioneer and world renowned authority in the field of spinal Injuries. During our first meeting, the topic of amateur radio was discussed and Sir George described his friendship with Jim Rundle (VK6RU), a local amateur. Jim had enabled Sir George to communicate on the air with a South African amateur, who was the director of a large and progressive spinal unit. A call by Sir George to Jim led to the erection of a two metre antenna outside the Intensive Care Unit.

Once the antenna was erected, a nurse was able to hold my portable walkie-talkie and operate the OFF-ON switch. Within a short time I was in touch with my amateur friends. My first contact was with Bruce Jacobs VK6ZAT, an active amateur who is also confined to a wheelchair, due to loss of his legs. After a few contacts with Bruce, it became most apparent that modifications to the system were required, as I could not continue to impose on the busy nurses for any extended time. Discussions between Bruce and another amateur, Bob Wynn VK6WY, a paraplegic who lectures in electronics at a technical college, led to a proposed solution. Bob, with a number of other interested amateurs, built an automatic scanner, which allowed my receiver to lock on in sequence for three seconds each of the ten most actively used frequencies in the Perth area. If any channel was in use, the scanner locked on that channel. If I cared to talk on that channel, all I had to do was drop my arm momentarily on to a sensitive air bulb switch and turn on my transmitter. Hitting the switch again would turn off the transmitter and allow reception of my friends' conversation. The pressure required to operate the bulb was only a few grams, and I had to raise my arm only a few centimetres to clear the bulb, which was the limit of my ability at that time. Due to my weakness, it was possible for me to leave my transmitter on, which would lock the repeater "On", preventing other amateurs from using it. Bob later installed a timing circuit, which cut off my transmitter at the end of three minutes, putting the set back into receive condition. This allowed other amateurs to use the system again.

During operation, the microphone was mounted on a swinging boom fitting into a mount, one of which was fixed to the head posts on each side of the bed. Thus I could talk, whether I was lying on my back or on either of my sides. Since I was turned from one position to another every two hours by the hospital staff, this feature was most important.

During the next six to eight weeks, rigidly confined to bed in spinal traction, my condition had become known on the air, I was visited by many Perth amateurs. This both cheered me up and encouraged me to persevere in my recovery. Finally, the radio provided me with a link with normal life as it had been before the accident.

In the hospital setting following an accident, quadriplegics at first are unhappy and often depressed, not only because they are secured to their beds by metal calipers embedded in their skulls, but also because they are unable to do so little as roll over, or even to scratch their heads. The psychological need for the continuation of old interests and activities is acute. The ability to carry out easily and successfully an interesting activity such as operating a radio, calling up friends and talking to people of similar interests was, for me, a good way to avoid the depression suffered in the early days by many spinal patients. Yet, much as I enjoyed the contact with the outside world, I regretted my inability at that time to communicate with the other patients. I felt that the availability of suitably modified CB radios, for rent, would permit bedridden patients within the hospital to share their experiences and offer mutual support. It could be that the introduction of CB radios for non-amateurs could be an important rehabilitative agent, possibly even superior to rental television, as the patient is actually participating in, and accomplishing, an activity.

After five months in the hospital, I still use the two metre set, though not as frequently as during the early days. Application has been made to establish within the hospital my high frequency radio transmitter. With the establishment of this station, it may be possible to interest other patients in a hobby ideally suited to their conditions.
GETTING INTO JAMBOREE ON THE AIR

The 1979 Jamboree on the Air will be held from 0000 hr. on the 20th of October to 2400 hr. on the 21st of October GMT. Amateurs all over the world will be assisting Scouts to make contact with each other during this week-end. This article is designed to help previously participating JOTA operators to better prepare themselves, and introduce new participants to some of the "tricks of the trade".

The first thing to do is to contact your State Commissioner for Radio Activities, who will be able to point you at a suitable Scout group. Don't be put off by this impressive title, he is probably an ordinary amateur prepared to do the organising. You will find this man has a team of Area Co-ordinators, one of which you will probably be dealing with direct.

Work out the conditions you are prepared to operate under, for example, the bands you will operate on, the period of operation, and how many Scouts you think you can handle at any one time. In making these decisions, consideration should be given to the expected propagation factors, the terms of your licence and your equipment capabilities.

Ideally you should keep the JOTA weekend free of other commitments as this will allow you to extend your operations if you so desire. When you have a firm idea of what you can and can't do, approach the Scoutmaster with your plans. After talking things over with him, a visit to a Scout meeting is in order, there you can talk to the Scouts about Amateur Radio and your plans for JOTA.

Quite a few Scouts will have had some experience of JOTA, but you must make your talk simple and non-technical. This talk will be quite important as it will allow you to gauge the enthusiasm of the troop and pick out those keen ones who will become your invaluable helpers on the weekend. Important concepts that should be stressed include the difference between Amateur Radio and the CB service, on-air manners and rules, "one-way at a time" communication and how to use a microphone. Follow the talk with microphone practice as this will help to reduce mikes fright which will be your largest problem. Further preparation can be done by the Scoutmaster, helping the Scouts to decide what they will say to other Scouts around the world.

Do not forget that most groups will also have Cub packs, Brownies and Girl Guides, Venturers and Rangers; all of these groups can become involved in JOTA. A responsible Ranger or Venturer is a great help with such things as QSLing and supervision of the setting up of the station.

We strongly suggest that you work your station portable from the Scout hall or camp it at all possible. This will save you (and your YF) the worries of having a lot of strangers landing on your doorstep and tramping in and out of your home all weekend. Besides, most amateur shack spaces are not large enough (or tidy enough) to accommodate this style of operation.

As you are going portable we recommend the use of wire antennas, i.e. dipoles, long wires, or a true G5RV with open feed wire all the way to the ATU. With wire antennas, especially those that are end fed, an excellent earth is essential. The performance of your transceiver depends on a good SWR and so this should be continuously metered.

To keep the hoards of eager Scouts clear of your shoulders a microphone on a long cord is preferable to the standard PTT mike on spiral flex. An even better idea is a microphone change-over box that allows you to switch to a roving remote mike. The device also gives you greater control over what is put to air, as you are able to cut in at any time during transmission. Two circuits are shown below for this style of device, the first being very simple and the other including a pre-amp for those with tiny voices.

Now you have made it to the point of choosing the operating room. Rather than using the main hall, go for a warm but well ventilated space about 15 feet by 12 feet with a large bench of comfortable height, near a window (for poking antenna wires out of). Put you back to the masses of your audience.

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The following suggestions have been found useful, but not essential, in the past. Clearly display your call sign and name above your equipment. Also display appro-
QSL cards are an important part of JOTA for the Scouts. Try to get a direct QSL address for each contact plus the name of any Scout group present. Conversely, request two QSL cards unless you don't want one for yourself. The QSL cards can be designed by the Scout group if they wish, as long as you provide them with the necessary basic information. If the cost of a small batch is prohibitive suggest a rubber stamp to over-print your own cards. The dispatch of direct QSL cards can be handled by a responsible Venturer (or similar), with your handling those to go via the bureau. Remember the limitations on the number of words in the remarks section. Cards will continue to trickle in via the bureau well after JOTA. Don't forget to send these on to the Scout troop, as these will help to keep interest in JOTA alive.

Quite a few ideas have been put together here and a workable division of responsibilities should be devised. We suggest that you get the Scoutmaster or Group Leader to handle information from the Scout Radio Branch, provide the QSL cards, organise all camping and catering arrangements and rosters of attendance. You are the visiting amateur, the expert if you like, so don't get bogged down with Scout Association policy or organisation.

The immediate aftermath of your JOTA depends a lot on how long your operate for. If you're only on air for a couple of hours on the Saturday, you'll probably have a room full of Scouts begging you to come back the next day. If your operations go way over the eight hour mark, you will bundle up the coffee stained log sheets, get the boys and girls to dismantle the antennas, bid farewell to the Scout hall and head for the comfort of a hot bath. Either way during the following few days you will no doubt do three things.

(1) You will realise that it was all a lot of fun.
(2) You will decide whether or not you'll be in it next year.
(3) You will make your report to the State Commissioner for Radio Activities.

This final point is very important, and it must be done properly as the State Commissioners will have to have their reports into Canberra by mid-November.

Possible JOTA withdrawal symptoms may include keen Scouts appearing at your door asking to watch you operate, bands of eager log-keepers for the next RD, a Scoutmaster waving P. and T. forms while he takes you into being trustee for the Group's new call sign, or as a final blow, your own youth radio club.

However it all turns out, we hope you will enjoy this year's JOTA as much as we have enjoyed the last six!

CU in JOTA, Greg Brown VK5ZVK, Vicki Brown, operators for the Black Forest Scout Group Youth Radio Club VK5KR.
mode for a couple of days to bring the batteries back to normal. Telemetry indicates there is no permanent damage.

Users of OSCAR 8 are asked to observe telemetry channel 3A and to report any situation below 61 counts. If this observation is made, please inform Dave Hull VK3ZDH QTHR.

OSCAR PHASE III
Progress towards the March 1980 launch is reported.

- Seven Solar substrates have been forwarded to AMSAT Deutschland.
- Antenna tests of the 435 MHz uplink antenna are looking good. The crossed Yagi design appears to be satisfactory.
- A second Phase III flight structure has been delivered — this is still unassigned to a launch.
- Tests are being run on the IHU (Integrated Housekeeping Unit) computer to be used in the Phase IIIA spacecraft. This unit has been constructed by W2FPY and W1HDX.
- The Phase IIIA flight transponder is under construction in Germany by DJ5KQ. Input range is 435.14-435.29 MHz, output 145.8-145.99.

OSCAR 7
Maury VK80B tells me he is active on OSCAR 7, Modes A and B. He suggests that A07 does not turn on until it is in sunlight, which indicates that the batteries are dead and that the satellite's power comes direct from the solar cells. This is a new theory and could well be correct. The only problem is that due to this erratic situation the transponder in use is unpredictable and it is necessary to search both receiving Modes. From this information it would seem that AO7 is operable on morning passes only at the present time.

RS1 AND RS2
News recently received indicates that RS2 is now out of service.

RS1 will not be used again for communication but will be switched on for short periods to enable telemetry signals to be received during the satellite's pass over the USSR. This indicates that we shall not hear it again in the southern hemisphere.

THE SATELLITE USERS' BAND PLAN
As indicated previously, AMSAT have the Satellite Users' Band Plan to which operators are requested to adhere. Some stations in South-East Asia say they have heard Australian stations working through the satellites on frequencies which do not conform to the above plan. Therefore, if you wish to work this DX it is advisable to conform. However, when considering the level of activity from within Australia and New Zealand and the difficulties in working stations to the North via OSCAR 8 (at least from Melbourne), it is probably of little importance. The information taken from the AMSAT Newsletter is repeated for your guidance:

PREDICTIONS

NOTES:
1 Guard Area to avoid interference to beacons. These frequencies are available for Emergency and Bulletin Stations.
2 RTTY and SSTV are placed at the edge of the CW and SSB passbands, conforming to their usage at HF where RTTY is present within the CW space and SSTV is transmitted in the SSB sub-band.
3 Mixed Mode Area. This is recommended for crystal controlled stations, or by expedition stations, or anyone wishing to work both CW and SSB stations.

This band plan is always based on percentages of the downlink passband. It applies to both inverting and non-inverting transponders. The allocations of frequency for AMSAT-OSCARs 7 and 8 are as follows:

THE AMSAT SATELLITE USERS' PLAN
This band plan allocates a percentage of the available radio frequency spectrum as seen on the downlink to different modes of communication. The relative amount of spectrum for each mode is thus the same for any transponder in any satellite.

The allocations are as follows:

ACKNOWLEDGEMENTS
ARRL, HR Report, VK4PJ, AMSAT, VK3ACR, VK80B.

PREDICTIONS
The predictions for OSCAR 7 should be reliable. Those given for OSCAR 8 may be a minute or so late as I do not have an accurate orbit time to project the predictions two months ahead. Observation will enable you to apply an appropriate correction.

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BREAKING
If you saw two strangers engaged in earnest and obviously personal conversation, it stands to reason that you would not but if unless you had some matter of importance to discuss.

On the other hand, if the same two strangers were lounging about just making casual conversation, then it is probable that they would welcome your company and invite you to join in.

This rule applies generally to breaking into a group and commonsense is the only guide. If you have something to offer in the way of conversation, or desire information on some subject, then wait for a suitable opportunity and drop in your call clearly and quickly, ONCE.

You may be acknowledged briefly or you may not, but in any case wait until a reasonable time has elapsed before trying again. If you have no success, then either the group cannot hear you and with overseas stations this is quite possible, or they do not want any other stations in the net. In either case it is pointless to persist.

Remember, IF YOU HAVE NOTHING TO CONTRIBUTE, why bother to break in in the first place.

☆ ☆ ☆

HAM TERMS
Handle . . . OTH . . . Break . . . XYL . . . ORZ . . . and QSY are all well known and have been used on the bands for years.

Fine business is a common expression of agreement, however it can be overdone. Terms such as Negatory . . . Breaker Breaker, Ten Four . . . Ten Nine . . . Good Buddy . . . Come On, etc., are strictly CB terms and are never used in Amateur Radio.

Remember, too, that you are not “THE” VK3NRR. You might have been THE Rubber Duck as that is your personal call. On the ham bands VK3NRR is the call of your station and is used as such.

OLD MAN, or OM, is an expression of endearment where an operator does not know another’s name. The term has been in use since the early days of radio and is not confined only to Ham Radio. Early wireless operators on ships used it long before phone operation was possible and Morse was the main method of transmission.

PILE-UPS
If there is a rare DX station being worked by a local operator it is pretty certain that there will be many other hams waiting on the side for the opportunity to call him.

Assuming that the DX station is holding the frequency he will eventually sign and call “QRZ”.

Resist the temptation to call him before you are sure that he is clear with the station that he is working. You might not be able to hear the local operator and an attempt to call will cause QRM and possibly antagonise the DX station.

Dropping your call in just before he signs is sometimes permissible, but is frowned upon. The only exception is when the DX station is a personal friend and you feel that he would like to speak to you, or if you have some information for him.

If you know him, then he will recognise your call and possibly bring you on when he signs with the station he is working, but do not call in this manner more than once. If he does not reply, then it is pointless calling further as he probably cannot hear you over the station that he is working at the time.

The methods of cutting through a pile-up are many, but some are not strictly legal. The following may help. Immediately the DX station calls QRZ, follow up with your complete call clearly and distinctly.

Example: “VICTOR . . . KILO . . . THREE . . . NOVEMBER . . . NOVEMBER . . . ROMEO . . . STANDING BY.”

He may remember the “November November Romeo” part having picked that out of the general confusion and call you with “The November November station, please QRZ” . . . this is when you return to him as quickly as possible with your call two or three times. Speak clearly and distinctly as his English may not be good.

However, put your call over and then listen. If others are still calling, wait for a moment for a slight lull then “VICTOR . . . KILO . . . THREE . . . NOVEMBER . . . NOVEMBER . . . ROMEO . . . STANDING BY.”

Finally, if he still has not called anyone, drop your call in right at the end just as the pile-up is starting to die down. DX operators sometimes wait for the last station in the pile-up to call.

The main rule to remember is not to make the pile-up worse by calling repeatedly without stopping to listen.

Firstly he may have already called you . . . and if he has called somebody else you are only creating QRM. Wait and try again later.

If he seems to be calling another State repeatedly, then it is probable that the signals from that State are getting to him with greater strength than those in your State. Your chances of a contact are thus lessened. If he is working your friend locally, then it is possible for you to choose a suitable opportunity to let your friend know you are on the side. He may then ask the DX station to listen for your call.

This procedure should be handled with discretion, however, and is not wise in very large pile-ups where many stations are waiting for contact. Rather, this is more acceptable where your friend called CQ and thus holds the frequency, or where there are relatively few stations.

Do not ramble on about trivial matters to a rare DX station. He is not particularly interested in your weather, your equipment . . . unless it is something very unusual . . . or how glad you are to work him . . . he knows that already.

The fifteen and ten metre bands are generally DX bands and if a rare station is on the frequency, exchange the minimum of information and give someone else a go.

He will require your name, QTH and, most important, his signal report. You may ask him how he wishes to QSL, and if you may QSL direct should you wish to do so. You may also ask if he is OK in the latest call book. Thank him briefly for the contact, wish him 73s and go CLEAR and QSY.

If you wish to talk at length to him, there is nothing to stop you sending a letter with your card and arranging a sked for a later date. It is important to remember that with any DX station, rare or otherwise, you should move off his frequency after signing with him. If other stations are calling you may say “VK3NRR is off and clear and will listen 5 kHz down . . . or up . . . for any other station”.

In other words, if you answer a CQ, it is his frequency unless he offers you the use of it because he is going QRT.

Always establish who holds the frequency before you rush in to work stations in pile-ups.

If you called CQ . . . then of course the frequency is yours, and when signing you should call “VK3NRR is now clear and QRZ any other station”.

Finally, when calling a DX station, don’t waste time giving out his call as he already knows it . . . you can do that if and when he calls on you to transmit.

From CQDX Radio Group Handbook — by Trevor Reid VK3NRR.

☆ ☆ ☆

CQDX RADIO GROUP
The CQDX group members may usually be found in QSO on 28.555 MHz at around 2030 GMT (8.30 EST).

The senior club members usually choose a Friday night and the younger members prefer Sunday nights.

The idea is to promote a “rag-chew” session for those who are not primarily DX chasers and for times of low band activity. For anyone who is tuning around, looking for someone to yarn with . . . the members of our group will welcome a call.

QSP
NEW CLUBS
Quickening interest in radio communications means more clubs for amateur radio enthusiasts springing up almost everywhere. Latest in the listings is the Southern Peninsular ARC in the Mornington Peninsular area of Victoria. The inaugural meeting was on 4th June and the Secretary is Bob Whitehead VK3NHA, OTH in the 1979 Call Book (to be released later this month).
CADMIUM PLATING CAN BE DANGEROUS TO YOU AND YOUR RIG

The following article appeared in Radio Communication June 1979. Cadmium compounds can be very poisonous if swallowed and most of us would not try tasting any that we found laying around. Yet wouldn't you blow off any dust or white powder you found on your rig? Before you do that again please read the article below. We would like the pleasure of your company a little longer.

THE HAZARD OF CORRODED CADMIUM

A recent Tomorrow’s World television programme and many other reports in the media have drawn attention to the potential risks of cadmium poisoning, for example in the vicinity of zinc smelting plants. Much less well known is the health hazard arising from the possibility of inhaling or ingesting the “woolly” white powder (cadmium salts of organic acids) which sometimes appears as a deposit on cadmium-plated metalwork (screw heads, switches, etc.) in electronic equipment. It is therefore advisable to take reasonable precautions to remove any such deposits which are due to corrosion and which tend to occur in equipment that is inadequately ventilated so that heat generated in the unit may cause fatty acids, as found in transformer impregnation and sometimes in the coatings of printed circuit boards, to migrate to any cadmium-plated metalwork.

Cadmium corrosion can be removed provided that the following safety procedure is followed carefully:

Never attempt to blow away the white powder, for instance by using an air jet. Use disposable plastic gloves and open and deal with the equipment in a well-ventilated area. Then, using a swab dampened with water, wipe away all corrosion products in the affected area, changing the swab after each wipe in order to prevent any spreading of the powder. Afterwards the used swabs and gloves should be placed in a plastic bag and burnt in an incinerator. Make sure the treated surfaces are clean and dry, and then apply varnish to the area.

Now that’s not the end of the bad news. If you keep any equipment in chipboard cupboards, paint the cupboards inside as well as outside. Acidic fumes are released by the binding material or glue in the chipboard and these just love to gobble up cadmium and produce white powdery deposits. Painting the chipboard seals these fumes in. Good ventilation may be another way of preventing the problem. Six months in a new unpainted chipboard cupboard can ruin much of the plated parts of a set.

AROUND THE NOVICE SHACKS

Hans VK3NOZ, now VK3BSK, a very well known former Novice, in his shack.

Many Novices will have worked JA2FDX (Fantastic DX). I’m sure they would like to see his photo.

(Transparent courtesy of the Artist, Brendan Akhurst and CB Australia magazine.)
MML 144/25
MML 50/25

25 WATT 50MHz LINEAR POWER AMP. - LIFER & LOW DISTRIBUTION PREAMP
25 WATT 144 MHz LINEAR POWER AMP. - LIFER & LOW-NOISE RECEIVE PREAMP

- RUGGED 65W DISSIPATION PA TRANSISTOR
- ULTRA LOW-NOISE RECEIVE PREAMPLIFIER
- EQUIPPED WITH RF VOX AND MANUAL OVERRIDE
- L.E.D. STATUS LIGHTS FOR POWER & TRANSMIT
- SSB/PM, AM and CW.

MML144/25 SPECIFICATION
- LINEAR AMPLIFIER
  - Power profile: 25 watts typical output for 3 watts input
  - Frequency: 50.54 MHz
  - Bandwidth: 144-148 MHz at -1 dB
  - Power: 13.8 volts at 2.8 amps
  - Quiescent current: 75mA nominal at 13.8 volts

MML 144/100
100 WATT LINEAR POWER AMPLIFIER

- 80 watts minimum RMS output 100 watts RMS typical.
- Fully protected against poor load VSWR overheating and excessive or reverse supply rails.
- Equipped with RF VOX and manual override.
- Frequency bandwidth 144 – 148 MHz at -0.5 dB.
- 10 watts nominal for 80 watts output.
- Weight 4 Kg.
  - Size 315 x 142 x 105 mm

PRICE AMATEUR NETT $295.00

MML 432/144S
LINEAR TRANSVERTER

- UTILIZING an IF of 144MHz * 10 WATTS DRIVE of ½ WATT * VOX OPERATED, TWO SELECTABLE RANGES 432-434/434-436 MHz.
- FEATURES EXTENDED COVERAGE FOR OSCAR 8
- FEATURES: High quality double-sided glass fibre printed board. * Highly stable zener controlled oscillator stages * PIN diode aerial changeover relay with less than 0.2 dB through loss * Extremely low noise receiver converter, typical 3 dB * Separate receive converter output gives independent receiver facility. * Built-in automatic RF VOX with override facility. * Built-in 10 watt 144 MHz termination, selectable attenuator for ½ watt * Use of the latest state of the art Power Amplifier transistors provide reliable 10 watts continuous output.

MMT 432/144S Price $315
MMT 432/28S Price $265
MMT 144/28 Price $197

NEW READY-TO-OPERATE MODULES AVAILABLE IN THE SALES PROGRAM OF VHF COMMUNICATIONS.

All modules are enclosed in black cast-aluminium cases of 13cm by 6cm and are fitted with BNC connectors. Input and output impedance is 50 ohms. Completely professional technology, manufacture, and alignment. Extremely suitable for operation via satellite or for normal VHF/UHF communications.

2 METER MOSFET CONVERTER: Noise figure typ. 2.8 dB. Overall gain typ. 30 dB. IF: 28-30 MHz. 9-15 V 20 mA.

PRICE AMATEUR NETT $47.00

DUAL RANGE 432 – 434 MHz & 434 – 436 MHz Converter. Type MMC 432/28 'S' & MMC 432/144 'S' Input frequency ranges 432-434 MHz (low), 434-436 MHz (high). I.F. output frequency 25-30 MHz or 144/16 MHz. Typical gain 30 dB. Noise figure 3 dB maximum. D.C. Power requirements 11-13.8 volts, 12.5 nominal. Current consumption 50 mA maximum. PRICE AMATEUR NETT: $67.00

1296 MHz CONVERTER; Microstripline, Schottky diode mixer. IF: 28-30 MHz or 144-16 MHz, Noise figure: typ. 8.5 dB. Overall gain 25dB. Power requirements: 12 volts DC ± 25% at 50 mA. PRICE AMATEUR NETT: $65.00

VARACTOR TRIPLER 432/2126, Max. input at 432 MHz. 24 W (FM,CW) – 12 W (AM) Max. output at 1296 MHz. 14 W.

PRICE AMATEUR NETT: $74.00

500 MHz COUNTER 6 DIGIT LED DISPLAY. Two ranges 0.45-50MHz, sensitivity. Better 50mV. 50-500 MHz, sensitivity better 200mV.

Features low angle AT cut quartz crystal, typical temperature stability of 0.5ppm per degree C. Power requirements 11-15 Volts DC at 300 mA approximate.$

CONVERTERS
PACK & POST $2.00

AMATEUR ELECTRONIC IMPORTS IS THE EXCLUSIVE AUSTRALIAN DISTRIBUTORS FOR THESE PRECISION BRITISH MADE UNITS FROM MICROWAVE MODULES LTD.

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Amateur Electronic Imports
P.O. BOX 160, KOGARAH, N.S.W. 2217
TELEPHONE: (02) 547-1467
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Presenting: A Symposium on 'Future Amateur Communications Techniques'

The 1979 F.A.C.T. Symposium

to be held over the weekend 29-30th September – 1st October
in congenial surroundings at Noah's Northside Gardens Hotel
(52 McLaren St, North Sydney NSW)

Following the highly successful and enthusiastically attended 1978 Symposium held in May last year, the organisers are planning another event to stimulate and enthuse. The theme for this year's Symposium will be "Propagation and Circuit Techniques".

The series of lectures and workshops planned will cover the following topics: The coming solar cycle peak; Propagation research in Australia; Long distance VHF work; Practical SSB equipment; Circuit design and analysis using a computer; Amateur microwaves; Amateur applications of microprocessors; Building and using test equipment. A trade display is also planned.

For a registration fee of only $20 you can enjoy two and a half days of stimulating lectures and discussions from well-known amateurs — lunches and coffee breaks included! Those attending will receive a bound copy of the Symposium 'Proceedings'.

For further information, registration forms etc; contact: THE FACT SYMPOSIUM ORGANISER
c/o ETI, 15 Boundary St
RUSHCUTTERS BAY NSW 2011

Organised by Roger Harrison VK2ZTB and a committee of amateurs; sponsored by Ansett Airlines of Australia and Electronics Today Magazine.

NEW NIHON DENGYO RIGS

BELCOM LS707
430-440MHz All made UHF Transceiver
Continuous Band Coverage
All solid State Circuitry
AM, FM, CW, USB and LSB Modes of Operation
Power Output: AM 4 watts
FM, CW 10 watts
SSB 10 watts (PEP)
Options —
SM10 Base Microphone
R 707 PS 7 amp Power Supply with Speaker

HC-1400
NDI HC-1400
2 metre FM Transceiver
800 channels with 5 KHz Spacing
144 — 148 MHz
3 Memory Channels
Microprocessor Controlled PLL Circuitry and Repeater Offset
LED Display of both Tx and Rx Frequency
Power Output: 25 watts (High)
5 watts (low) (Approx.)
On Wednesday 15th August - after nearly nine months of negotiation - the text of the new "Handbook" was agreed with the P & T Department. It must be remembered that the Handbook is intended only to set out how the law (in our case the V.T. Regulations) is to be interpreted so far as amateurs are concerned.

Negotiating an up to date interpretation for the Handbook does not mean the law gets changed. This is a much more complex and time consuming job - as will be explained later - is still being carried on by the W.I.A.

In summary the new Handbook will contain no dramatic changes. Its format has been improved and will (hopefully!) make it easier to understand. As a generality it is less restrictive than the old 1967 edition. There have been no changes to the amateur frequency allocations and none can be expected until after WARC in September 1979.

Power levels for some modes have eased up slightly and all transmitters, irrespective of mode, will - in future - be rated on RF output and not partly on output and partly on DC input as has been the case for the past 12 years. The SSB output allowance remains at 400 P.E.P. but AM and FM now have a 120 watts output limit.

The ambiguities in respect to mobile operation have been removed and a mobile rig will now (officially!) be considered an extension of the home rig. However, if you want to go /M or /P for more than four consecutive weeks you will still have to make representation to your State licensing people.

The general rules governing the setting up of repeaters have been included as have a set of rules for participation in civil emergencies or emergency practices.

The section on distress calls has been expanded to clarify what you should do if you hear a distress call.

Also included in the appendices are sample papers (in the new format) for Novice and (L) A0CP theory examinations.

Not yet reflected in the new Handbook are several issues still under negotiation and which will require changes to the Regulations before they can become effective. These are:-

(a) Act and Regulation changes necessary to remove the existing ban on anyone (not only amateurs!) listening on unauthorised frequencies.

(b) Act and Regulation changes necessary to remove the existing secrecy provisions as they apply to amateurs.

(c) Act and Regulation changes necessary to redefine "emergencies". The existing law only recognises war as an emergency. Civil emergencies and disasters were not contemplated when the present law was drafted.

Negotiations are still in process to make amateur log keeping optional and not mandatory. This does not require changes in the law. The W.I.A. has already submitted working papers on the above points and - in broad principle - the P & T Department has no objection to the further liberalisation implied by these submissions.

Finally it must be borne in mind that both the Department and Institute look upon this new Handbook as a temporary document only. The changes that may well come from WARC and the long impending changes to the W.T. Act and its regulations will require a further round of negotiations within a year or so.
All prices in this advertisement concerning Yaesu, Kenwood and Icom equipment are only a guide, to obtain our firm price please ring us on (03) 726 7353.

SOON AVAILABLE

DIGITAL DISPLAYS FOR FT-7 TRANSCEIVERS

Complete with necessary instructions. Type....YC-7B.

IC701

The fabulous state of the art ICOM IC701 solid state transceiver.

IC-701, HF 160-10M Transceiver. .................$1299.
IC-202E, 55W Portable Transceiver. .................$229.
IC-225, FM 10 Watts 2M Mobile Transceiver. ........$259.
IC-241, AM 4W 10 Meter Transceiver. .............$799.
IC-280, Mobile 2M Digital Transceiver. .............$449.
IC-701PS, Power Supply. ..........................$250.

NEW !

TS-120

FT-101Z 160-10 M Adi. N/B IF $765
OPTIONAL.
FAN. ..............................................$19
DC-DC for FT-101Z $79
FT-901 Ext.VFO FT-901 FT-101Z $1549
PV-901 Ext.VFO FT-901 FT-912. ....................$439
FC-901 Antenna coupler ............................$249
YG-901 Panorama adapter, monitor scope ...........$499
TV-901 6M,2M, 70cm All Inc .................$399
SP-901 Ext.speaker for 901 -101Z .................$439
TV-901 6M.2M.70 cm All Inc $839
AT-200 SWR meter. antenna coupler.................$185
SM-220 Station monitor scope ......................$379
5W-5 Panoramic adapter for 520S ..................$66
5B-8 Panoramic adapter for 820S ..................$66
AT-200 SWR meter. antenna coupler .................$185
RD-300 Dummy load 150 mHz-300W ...............$79
TB-7628 2 M,25-2W. Digital .....................$465
MC-10 Hand mic. .................................$21
MC-355 Hand mic. noise cancel. ...................$26
MC-80 Desk mic. .................................$55
YG-3395CW filter for 520 .........................$59
YG-88C CW filter for 820 .........................$59
YG-88C CW filter for TS-120 ......................$38

FT-227R 2M. Digital transceiver $329
FT-227RA 2M, Scanning digital transceiver  $399
FF-50DX Low pass filter 2 Kw ..................$40
Optional X-tall filters FT-901, FT-101Z ..........$59

equipment sold by Chirnside Electronics is pre-sales checked and covered by 90 day warranty and expert after sales service.

We handle and stock most Yaesu, Kenwood, Icom Equipment.

We are sure you will be completely satisfied with your purchase.

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CHIRNSIDE ELECTRONICS
FRED SWART — VK3NBI

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CHIRNSIDE ELECTRONICS
FRED SWART — VK3NBI
"On 14-7 probably the best Es for July. Band open from 0300Z to 0630Z to VK2 and VK4 with S9+ signals to Sydney for over an hour from VK5. Also VK3, VK7 to VK2 same period. Es backscatter evident. Es was still there to VK4RTL at 0700Z when 49.750 MHz TV appeared. At 0712 the TV signals peaked to maximum strength with 49.760 also evident as heterodyne. At 0732JZ JA8 signals were only off for a few minutes. Usually Russian logistics junk between 40 and 48 MHz to 0812Z. Last TV at 0735Z. Overall double hop TEP still getting to 50 MHz in the very northern part of the VK2 and 4 band. (Who said TEP only worked around the Equinoxal periods?) Normal midday F2 peaks around 41 to 42 kHz to the north. Also single hop to Indonesia/Malaysia to 41.55 MHz with military channels around midday. Very consistent.

"On 15-7 ZL TV from 0300Z to 0600Z on 50.750 MHz. At 0420Z worked ZL1AVZ 5 x 1-21 Band also open from 0300Z to 0530Z to VK2 and VK4 with S9+ signals to Sydney for over an hour from VK5. Also VK3, VK7 to VK2 same period. Es not as strong as day before and favouring lower areas this time. Of course the above represents only part of the conditions as only taken from reports in the VK2 Sydney area and here. However, it was a rather late winter peak in Es this year.

TROPOSPHERIC

"Once again things have been hopping! 24-6-79 proved to be a real hum-dinger across the southern/ eastern part of VK. To start VK2ZRU (at least) worked ZL3TV, also VK3HF and VK2BQJ worked Chris (of EME fame) on 144 MHz also. Chris is located near Millinocket in the south-east US, but they cover north to about 640 miles (1015 km). As usual, nothing into the Adelaide area from that distance. The closest was probably Griffith earlier on in June to Adelaide. Other contacts may have occurred but insufficient details. Heard also that VK2HY worked three VK3s from Sydney.

SKYLAB SCATTER!!

"Nothing has had more publicity, apart from domes- tic troubles, than poor old Skylab in recent years. Being a bit of an event (six years ago) high sunspot count this cycle it had just to come down, where wasn't really known until minutes before. Gordon VK2HYHs (ex VK5GZV) sent a letter to quite a few amateurs proposing an experiment of sorts with scatter if Skylab begin break- ing up and ionize (most probably around E Layer) the ionosphere within normal range to the layer, maximum about 800 to 900 miles. 144.200 MHz was proposed for 2 meters and 52.050 for 6 meters. In the eventual burn-up, that area occurred around the southern part of South Africa and the Indian Ocean, but by the time it reached VK6 at 1643Z it was low enough to be seen and heard, i.e. too low. Various 52 MHz beacons from VK6 had been heard with a chart recorder but nothing more than random meteor bursts, none of which corresponding to re-entry times. Unfortu- nately there weren't enough scatters (on one E hop range) and in the wrong spot, but one cannot say try again! RIP SKYLAB!

OVER THE SEAS AND FAR AWAY

"Well, while we sit and watch winter go by the Northern Hemisphere plods through its Es season. VK3s from Sydney are on the rise. Inconsequential, details, as far as VK is concerned, conditions have been much the same as they were six months ago. Es is generally low key, although F layer DX is possible, particularly the WET and KL7 on 7-7 and 8-7 via Es. It is Interesting to note that on 8-7 and 9-7 we had good multi-hop Es, on 13-7 JA to HS1WR (Thailand). Once again, coincidences, great sorcery at work? The above conditions, maybe similar conditions to ZS from VK6 may exist around in the wind. It may also take an S point of view.

The MONTH OF JULY

Activity has been somewhat subdued, but this information from David VK5KK will keep us in as to what has happened as we come to this from end.

"DX again relatively quiet from 26-6 to 24-7 across VK1, 2, 3, 5, 6 and 7, although some single and double hop Es between those areas plus VK4. Band open to VK5 from 0300Z to 0500Z on 5-7. On 8-7 six metres also open 0000Z between VK7 and VK2. Several VKs heard on backscatter as well as some VK5s around 0500Z to 0600Z worked VK7, VK2 at 0535Z and VK2 at 0332Z also.VK3, VK7 to VK2 same period. Also from 0030Z to 0510Z VK4RTL at S9+ but no other station heard except VK4L0. Last signals heard around 0630Z. On 9-7 similar conditions to VK2 from here around 0430Z. 10-7 to VK4 with Ch. 0 and VK4RTL at 0200Z to 0300Z.

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standing achievement in the field of VHF operation. Ed will be in Townsville for this year’s 1979 North Queensland Convention, and will personally present the trophy, which will be awarded biennially at the Convention. This is the first year the trophy will have been presented.

The name of the amateur whose activities have been acknowledged will be inscribed on the trophy, and a silver plate on which amateurs’ names will appear is attached to the base.

The trophy will be held by the Club in its operating station. However, an appropriate certificate will be given to recipients of the trophy.

GOING SOUTH?

If you are contemplating becoming a VK0 why not take six metre equipment south with you? The present sunset cycle has put the possibility of exciting long distance contacts well within the grasp of a VK0 operator.

Amateurs in Australia, New Zealand, Japan and the USA would welcome the opportunity to work you on six metres. Other countries within range are South Africa and the many South American countries.

Certainly you can be besieged by stations eager to work you on any other HF band. But remember that six metres peaks rarely and the coming equinoxes could be the time for you to put VK0 on the six metre map.

Overall activity in the south has been limited this month, there seems no point in prattling on, so I propose closing the column for the moment. However, should some improvement in the six metre scene happen, and September of course should really see things humming. Until then, should you be so inclined, “Nothing lays itself open to the charge of exaggeration more than the language of naked truth.”

73. The Voice in the Hills.

FURTHER SMIRK MEMBERS

The following are SMIRK members who are in the current listing in addition to those listed in May AR.

JAI1XCT 3042 JH3CGS 3089
JE10XGB 3140 JHSJWV 3011
J1EC8 3052 JHSKYX 3008
J1TQH 3081 JR3OKY 3012
J1GKD 3027 JR3LSE 3053
J1HMK 3091 JH4SSO 3075
J1KOP 3124 JH4SP 3069
J1RAP 3136 JH4WEO 3050
J1SHW 3080 JASWYY 3134
J1SOZ 3099 JHSBXY 3054
JK1MC 3039 JR6BTP 3097
JK1NUH 3082 JR6GTM 3115
JK1OVI 3073 JR6SVM 3043
JK1PEC 3022 JR6TCT 3084
JK1RWC 3063 JR6FVA 3122
JK1UPA 3026 JA7KYW 3077
JK1CGD 3138 JA7NYF 3028
JK1ITJ 3139 JAROK 3074
JE2KCR 3049 JH7XUD 3095
JE3KCC 3051 JH7XWA 3075
JP3BTR 3038 JA8QVC 3078
JF3DWD 3054 JA8WRM 3029
JF3NUX 3092 JA8PHR 3135
JF3DLO 3045 JA8SSX 3010
JF3QDO 3071 ZL1AVZ 3131
JF3SRA 3114 VK2BMX 3120
JF3WNR 3037 VKAUJ 3041
JF3XKK 3035 VK8G 3025
JG3AVO 3137 VK3NM 3067
JG3DXX 3123 VK4JJR 3003
JG3EC 3072 VK5AVO 3005
JG3FPP 3013 VK9ZGC 3119

Compiled by Lionel Curling VK3CNM.

20 YEARS AGO

SEPTEMBER 1959

It was about twenty years ago that the first Bass Strait Ferry went into service. Not slow in coming forward, Max VK7MX described some of the sights to be seen at the VK7 end of the journey. Naturally, Max suggested the portable gear should go along.

While on the subject of portable gear the revised rules of the National Field Day Contest were published, along with an Editorial comment on why we should all be In It.

September was a good month for technical articles. Tropospheric propagation at VHF was discussed by Alan Elliott VK3AEL.

Bud Pounsett VK2AQJ described a high tension power supply with a variety of protection and control circuitry incorporated.

Simple Sideband. A multi-part article by Lester Earnshaw ZL1AAX covered all aspects of SSB circuit design. This one, an all-band heterodyne unit.

How Good Are Your RF Chokes? Hans Ruckert VK2AOU showed the methods for designing, testing and winding your own RF chokes. Excellent reading now as then.

Meet the Other Amateur and His Station featured Andy Roulde VK3JU, complete with AR88 receiver and transverter with Geloso VFO.

In his second article for the month, Hans Ruckert looked at the possibility of using 12 volts of high tension on standard receiving tubes.

Build your own 14 inch TV set. O-PLUS were advertising a complete kit with easy to follow instruction manual. The price, only $200. Times have changed.

INTERNATIONAL NEWS

CHINA AND BANGLADESH

IARU Headquarters has the news that there is a newly-formed Association of Radio Sport in the People’s Republic of China. Officers of the Society were elected in Peking during March 1979. In the same issue of the Calendar there is news of the formation of the Bangladesh Amateur Radio League.

TONGA

The Amateur Radio Club of Tonga was elected as the 105th member of IARU. Two more Societies have applied for IARU membership. These are the Cayman Radio Society and the Fijian Association of Radio Amateurs.

QSP

Ex-G RADIO CLUB

The Ex-G Radio Club, Australian Chapter, is managed by Steve VK3CZ, QTHR. This club is for amateurs in the UK and living abroad. Local nets are at 12.00Z on Monday and Friday on 14.344 MHz, 10.00Z on Thursday on 3.622 MHz, and 04.00Z winter (05.00Z summer) on Saturday on 14.346 MHz. This is their 20th anniversary year.

BLUE BOTTLES AND RED FACES?

Wonder how many amateurs got their national news and music on 40 metres one sunny morning in the last week of June. Gen’leman providing this unusual service apparently left home in a hurry with rig and mic, switched to transmit. Much consternation when he returned for lunch and found XYL with domestic receiver running full bore alongside the Tx.

Join the I.W. net at 2300Z on Thursdays on 14165 kHz when you have intruder information.
TECHNICAL CORRESPONDENCE

The Editor,
Dear Sir,

I refer to the "Soldering Hint" in Novice Notes at page 30 of the March issue.

I have been using the dial lamp across the secondary of the Scope transformer for some time, and have found it very helpful. The only problem that I have encountered is that it is very fragile and easily smashed, particularly when I have to take the iron to the job instead of the other way around. I am now using a LED in the circuit below, mounted on a PCB which fits over the 3.3 volt connecting screws on the transformer. (My transformer is the A-R with the vertical separator.) The PCB was coated with resin after etching then the areas around the mounting holes were tinned to give good electrical contact. The dip in brilliance of the LED is not so pronounced as with the globe, but it still occurs.

Incidentally, don't say to yourself (as I did) that the transformer puts out 3.3 volts, therefore a "3 volt" torch globe is suitable. It burns out very quickly.

Yours sincerely,
J. D. Laidlaw VK3ZTA.

Dear Sir,

Many of the TVI filters available are of unknown quantity. In ascertaining which one I should purchase I undertook some insertion loss measurements on the Drake TV-42-LP (model 1605) filter. This unit is stated by the maker to be a four section filter with a cut-off frequency of 43.2 MHz with a rating of 100 watts. I enclose a copy of the results as I believe they may be of interest to other amateurs. Although the measurements were not taken at the rated power all inductors are air-cored so there should be very little variation in performance.

I have now used this filter for quite some time and have had no interference problems. I live in a TV fringe area and the amateur antenna and TV antenna share the same tower and coaxial lines.

Yours faithfully,
Malcolm R. Haskard VK5BA.

INSERTION LOSS MEASUREMENTS ON DRAKE FILTER TYPE TV-42-LP

Equipment used: Tektronics constant voltage generator, type 191; Termalone 50 watts, 50 ohm load, type 808S; Volthymyst with crystal probe, type 2A 56074; Hewlett Packard RMS voltmeter, type HP 3400A.

Results: A 2 volt signal was fed from the 50 ohm output of the generator into the filter which was terminated with the load. The voltage, V, across the load was measured and the insertion loss calculated from:

\[
\text{Insertion loss} = 20 \log \left( \frac{2}{V} \right) \text{dB}
\]

<table>
<thead>
<tr>
<th>Frequency MHz</th>
<th>Insertion Loss dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.35</td>
<td>0.0</td>
</tr>
<tr>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>3.0</td>
<td>0.08</td>
</tr>
<tr>
<td>10.0</td>
<td>0.08</td>
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<tr>
<td>20.0</td>
<td>0.18</td>
</tr>
<tr>
<td>25.0</td>
<td>0.66</td>
</tr>
<tr>
<td>30.0</td>
<td>1.18</td>
</tr>
<tr>
<td>34.5</td>
<td>0.38 (peak)</td>
</tr>
<tr>
<td>35.0</td>
<td>0.39</td>
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<tr>
<td>40.0</td>
<td>1.84</td>
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<td>12.0</td>
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<tr>
<td>44.0</td>
<td>21.6</td>
</tr>
<tr>
<td>50.0</td>
<td>74.6</td>
</tr>
</tbody>
</table>

Greater than 50 Too great to measure

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SUPPORT OUR ADVERTISERS

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

The Editor,
Dear Sir,

I take the opportunity to extend to you my gratitude for placing our "Worked Australian State Police" Award in your magazine. The Award has really taken off and has been nick-named the "Flatfeet Award". We hope to make a donation to the Australian Cancer Society shortly, as a result of profits made from the Award, and we will inform you of the date. You may like to put a paragraph or two in the magazine.

73. Lance Ferris VK2NVF,
Member WIA, WASP Charter Member.

Editor's Note: Yes please, Lance, let me have the details of the donation in due course.—VK3UV.

Dear Sir,

"INTERNATIONAL CORRESPONDENCE"

Like possibly many of you have considered doing, I once looked into the matter of importing some amateur radio equipment direct from overseas. Without commenting specifically on the advisability of such action I would, however, like to share with you the benefit of one of the replies received to my series of enquiring letters.

I can assure you that this is a true case. In fact, the editor may care to authenticate this, as I have forwarded to him in confidence a photo-copy of the letter which, under the particular firm’s letterhead, reads as follows:

"Tokyo: 22nd October 1978
Dear: Mr. Ian J. Hunt.
We thanking you for your letter on your dated of 16th, Oct. Which we received recently on this"
letter. However, we should reply to you on this matter. We calculated to let him with his excess baggage claim to shipped from us, but that's the moment which was lucky to got the unit. Then we shipped him. Except, when this moment, very hard to get the unit of the mentioned. TRIO TS-5200F with External VFO. We are very still those units are shortage, therefore, when it will be getting those unit, even we don't know when.

So, we should reply to you in this matter as same moment to our agent in Sydney, as follow-
in you. So, please contact with him, may could be should take care of this moment and much recommendable to advising from him.

We worry about your requirement, except we couldn't do hundred percent with your requesting in this moment, so much we regretting with you. Even the Mr. XXX telling to you the Hows about the supplying to unit in Japanese situation. Should new it this happen. So, we would like to be understand this matter. Much thanking for your fine cooperation and trying to understanding in this case.

Best Regarding Yours.
(Signature)
Tokyo, Japan.

Ian Hunt VK5QX.

EDITOR’S NOTE:
Yes, Ian, the letter is genuine, and I thought I was having trouble on 15 metres! — (VK3UV).

The Editor,
Dear Sir,

I cannot keep this piece of good news to myself, so here is a challenge to find a younger member of the WIA than Associate Member Ian Wesley Foster, of Nicholson, age three weeks!

When I heard the news that this much desired Jnr. Op. had safely arrived, I asked his proud father, Ian Snr. VK3ST, “Has he joined the WIA yet?”

Reply, “Not yet, but won’t be long”.

So yesterday, upon a visit to the shack of VK3ST to see this nice little fellow, Ian Snr. produced the membership application form with cheque attached, with a request — please second it.

So it will go to the Council on Wednesday 30th, and there's no doubt they will accept our youngest member.

In a few years time I predict the lad will be our youngest Novice!

Yours faithfully,
K. V. Scott VK3SS.

The Editor,
Dear Sir,

I refer to the mention in the Federal tape broadcast from VK2AWI on Sunday, 6-7-79, concerning paper quality and costs of AR.

I would agree with Bill Roper's remarks about polished paper and would suggest that paper of the quality used in the 60s was quite suitable with a cover of polished paper.

I would also suggest that the envelope is also an unnecessary expense, witness the number of publications now using a simple wrapper, which must cost less than an envelope. After all, AR usually arrives doubled in half anyway.

Allan V. Bull VK2FB.

EDITOR’S NOTE
Different paper is now used for inside texts. Most members appreciated an envelope for AR instead of the wrapper used several years ago. Perhaps a re-appraisal may now be necessary. What do other members think?

Page 36 Amateur Radio September 1979
YOU AND DX

Mike Bazley VK6HD
8 James Road,
Kalamunda, W.A. 6076.

The one advantage I have in writing this column is that I can express my point of view first! With the approach of summer the band becomes full of stations swapping numbers, on certain weekends the phenomena is on Phone and CW simultaneously. The contest season approaches! So I'm not against contests, in fact I get a lot of pleasure from them; mainly because it brings stations on to the LF bands who normally would not operate on those frequencies. My gripe is that a Major Phone or CW contest takes over the bands completely. I do belie that the contest organisers have a duty to see that their contests do not spoil the activities of non-contestants. For example, I would suggest that no CW contest should operate above 14000 kHz or no Phone contest should operate outside 14150 to 14250 kHz. Could the VK2L contest organisers be the first to set the trend with band frequency limits for their contests?

DX NEWS, RUMOURS, FACT AND FICTION

Listening around the bands one hears a lot of rumours. If you are like me you make a note of the call and date and hope that some of these rumours do materialise. Looking back over the past 20 years, some countries become easier to work, others harder, but all DXCC countries eventually earn a call for an unusual call, work it, or if you think that the BY is not genuine, work it. I always remember the first time 7GIA came on the air, he was branded a pirate, until the QSLs started to come through. With doubts in my mind the following notes are offered on a "perhaps" or "wait and see" basis. Rumours, fact and fiction.

VE3FTX will be travelling to Burma in December. Call sign unknown but a licence to operate on a spot frequency is likely. The frequency? 21,225 kHz. Georges is supposed to be working in Burma for the next two years up to the end of 1982. If this one materialises it will take a much needed country off the wanted list.

CE2ZJ has been worked/heard on 14195 and 14225 around 2300 GMT onwards.

SUNA still QRV Burundi, around 14220/2250 kHz. QSL via O29DX. Has been heard at 0030 GMT and also at 2030 GMT.

ARRL films

This was specially produced by VK5KG, the Federal Videotape Co-ordinator, for the CCIR Seminar in Sydney.

"This week has 7 days" (25 minutes).

ARRL VHS films (60 minutes in all).

"ATV in Australia 1976" (10 minutes).

"VKS — official opening of Burley-Griffin Building" (60 minutes).

"AMATEUR RADIO — VIDEOCASSETTES" (90 minutes). On special loan ONLY.

Also, a service exists for copying any of these titles — except QSL Group looking for high class promotional material for amateur radio?

Ask your Division for the loan of video-cassettes in colour. Titles available now are —

"Amateur Radio the Natural resource of every Nation" (6 minutes).

"ARRL films" (GO minutes).

"AMATEUR RADIO — VIDEOCASSETTES" (30 minutes).

"AMATEUR RADIO — VIDEOCASSETTES" (30 minutes).

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Also, a service exists for copying any of these titles — except QSL Group looking for high class promotional material for amateur radio? Ask your Division or direct to VK5KG.

NOTE — Educational tapes are now being considered but please wait for an announcement in AR.
CQ February 1979
The Federal Arc Transmitter; Watt's Current; Eavesdrop on RTTY; Repackaging the GLB Synthesiser; Electrical Shock; The Viking 5; Adding the VHF Radio; Details of a New Tool; What Tools and Equipment you'll Need; A 1935 Style DX Tx for Twenty Dollars or Less; QSL Cards, Part 2; Fixing the Washington Scene; Conversations of an XYL; Communications a New Concept In Education and Community Services; CQ WW WPX/SSB Contest.

CO March 1979
RF Power Transistors and Amplifiers—Their Care and Feeding; More on the All-Band Antenna Tuner; Understanding the SWR Meter; The MFJ-1150B Linear Master Memory Keyer; The W3GNO Loop Antenna; The K7WA Loop Antenna and the WBSQG Sloter; Antenna Construction Guidelines for the VHF/UHF Amateur Bands; A Power Meter that Says "Watts the Difference"; Save a Life—with CPR; Comments on FCC Docket 2077 (ASCI and Discount Conversions); Receiver Help runs the New York City Marathon; Across the US with Two Metres.

CQ April 1979
Wideband Modulation (WBm) Techniques; Build Your Own MP-30 Morse Code Keyer, Pt. 1, Basic Theory of Operation; A Broadbanding and Interconnection Scheme; A Solid-State 3.5/7 MHz VFO for the K8EEG Viking-5 Transmitter; The Yaesu TM-590; All About Kits, Part IV; If It Doesn't Work, RF Power Transistors and Amplifiers, Their Care and Feeding, Part II—Servicing and Trouble shooting; Antennas: The 160m Tuner and the UA3IAR Quad; A Compact 4 x 4 Array for Home or Field Day Use; Mobile Autoaccess Operation—Safety First; 1978 CQ WW DX Contest High Claimed Scores; 9 Projects for Under S9; The DJ is a Robot; A Data Retrieval Program—In Basic.

HAM RADIO February 1979
Two-Metre FM Power Amplifier; Solid State Antenna Position Display; Phase Coherent RTTY Modulator; Charging Nicad Batteries; Crystal Oscillator Filters; Semiconductor Curve Tracer; New Approach to the Noise Blanker; Causes and Cures of Power-Line Noise; Digital Techniques: Gate Structures and Logic Families; Field-Strength and Voltage Measurement, Part 3; Learning the Morse Code, Part 1; "What Have We Learned In Africa?; They All Wear White Hats.

HAM RADIO March 1979
Small Beams; Voltage Tuned Oscillator; Operation Characteristics of the 555 Timer; Receiver Digital Display; 1-MHz Oscillator; Matching Grounded-Grid Amplifiers; The "Fiver" Converter for Four; The 40-Channel FM Receiver; Two Demountable Beams; Solar Cycle 21—Progress and Prospects; Extending the Facilities of the Experimental Test-Tower Morse Code; The Cornwall Repeater Network; "Pay in advance" for the AIM-9 Sidewinder; UGSA—Britain's First Amateur Spacecraft.

HAM RADIO Communication April 1979
The "Fiver" Converter for Four; The 40-Channel FM Receiver; Two Demountable Beams; Solar Cycle 21—Progress and Prospects; Extending the Facilities of the Experimental Test-Tower Morse Code; The Cornwall Repeater Network; "Pay in advance" for the AIM-9 Sidewinder; UGSA—Britain's First Amateur Spacecraft.

RADIO COMMUNICATION April 1979
Reception and Processing of TIROS-N Weather Satellite Telemetry (Part 1); A Diode Matrix Channel Switch; A Phase-Shifter Network (VHF); International Beacon Project; UK Beacons.

37 February 1979
Five-Channel Auto IDer; The Vacationer; Tone Decoder Improvements; The All-Wrong Power Supply; The Hardhearted RF Detector; Custom-Designed Power Supplies; A Touch of Class; How to Burn the Coax; Mobile Antenna Ingenuity; Impedance and Other Ogres; The Active Filter Cookbook; A Rock-Solid AF Skid Oscillator; Pulser Plus; Oh, My Poor Quad; A Self-Contained, Fully-Automated, Transistored Fuse Puller; The CPU is Buried; Power x 2; Experimenting with Tones; Synthase Your Ash Tray; Attention, Satellite Watchers; Batteries Dead; How to Nab a Jammer; This Station Plays Beautiful CW; The 12mA G2VSW Keyer; An Economy MC Keying System; The Cosmic Connection: Part 2; Learning the Code; Books for Beginners; The Two-Metre ECCM; I Love My Ten-Tec; A $5 Phone Patch; The Filter Follor Revisited; Build an Economizer Checker; Alaskan Adventure; The Last DX-pedition; An Audio Morse Code Memory; The Americans Go to the Moon; Pico Car Machine; Car Battery Charger; Immortality for Vacuum Tubes; The Hot Mugger X1; Build the Mini-Pr0be.

73 March 1979
RAM Scan Your KOK; The NCX-Match; The Memorizer Goes to MARS; Build a Hybrid Capacity Meter; Power Plus; Reaching for the Top; Universal Alarm Circuit; Exercise Those Unwanted Frequencies; 102 Mod for the 222; The 10-GHz Cookbook; Legalised ASCII, The Quad-S System; Brew Up a Beam for Two; Keyboard Serialisation; Ignition Noise and 2m FM; An 8000 Repeater Controller; The Ultimate Keyer; Juddering Fades; Try a Log Periodic Antenna; New Coax Cable Designations; The Micro Magic Pi Designer; A Better Micoder; Winning the QSO Name Game; A New Approach to NICAD Charging; Great Chamber of Horrors; An Intelligent Scanner for the HW-2036; Trickle-Cost Trickle Charger.

73 April 1979
A Speddy Spinner Mod; A Variable Bandpass Active Filter; What About an Active Antenna; Help for the Hearing-Impaired; Try a Bi-Loop Antenna; Simple RTTY IDer; Tales of Speech Processing; PTT for Ten-Tec's Linear; Disaster Preparedness; Comfort Moda for the Mark II; An 8000 Repeater Controller System; An 8000 Micro Ducer; An 8080 Disassambler; Antenna Bonanza for 10; Lightning; Build a CW Memory; Wire Wrap on a Budget; Compact Con-Tester; Who Needs SSB; 12 Volts, 5 Amps, 3 Terminals; Has Anyone Seen OSCAR 77; Tricky GSK; Make Life Easier; The Heath/Kenwood Connection; An 8-Element, All-Driven Vertical Beam; CW with a Nordic Flair; House Hunting for Hams.

73 May 1979
Get a 10,100 ICOM IDer for Longer Call Signs; The W7AGC Key Collection; Proper FM Transceiver Adjustment; Dual-Band Smokey Detector; The DXer's Secret Weapon; Foiling the Mad Kerchunker; A Digital Front-End Receiver; For Sale; The Vertl-Loop; Interesting Solutions to the Jammer Problem; Variable-Frequency Audio Oscillator; Pulser Plus; Oh, My Poor Quad; Mobile Antenna Ingenuity; Impedance and Other Measurements, Part 1; Learning the Morse Code, Part 2; The Active Filter Cookbook; A Rock-Solid AF Skid Oscillator; Pulser Plus; Oh, My Poor Quad; A Self-Contained, Fully-Automated, Transistored Fuse Puller; The CPU is Buried; Power x 2; Experimenting with Tones; Synthase Your Ash Tray; Attention, Satellite Watchers; Batteries Dead; How to Nab a Jammer; This Station Plays Beautiful CW; The 12mA G2VSW Keyer; An Economy MC Keying System; The Cosmic Connection: Part 2; Learning the Code; Books for Beginners; The Two-Metre ECCM; I Love My Ten-Tec; A $5 Phone Patch; The Filter Follor Revisited; Build an Economizer Checker; Alaskan Adventure; The Last DX-pedition; An Audio Morse Code Memory; The Americans Go to the Moon; Pico Car Machine; Car Battery Charger; Immortality for Vacuum Tubes; The Hot Mugger X1; Build the Mini-Pr0be.

CQ June 1979
Getting the Most Out of Schematic Diagrams, Part 1; An Introduction to Slow Scan Television; The World’s First Integrated Circuit; Build Your Own MP-30 Morse Code Keyer, Part 3; Conclusion; DX Antennas for 40 and 80; In Focus: Computers and SSTV; A Versatile Step Attenuator; The LPO Mk. V, A Low Profile Quad for 10, 15 and 20 Metres; Learning the Morse Code, Part 1; WVBIO’s SSTV Pictures of Jupiter and its Moons go around the World; Support Your Local Dealer; QRZ; 1978 Milliwatt Field Day Results; RF Output Power Measurements, Part 1.

HAM RADIO April 1979
40 Metres Receiver; CW Operator’s PAL; Calculator-Aided Prediction Propagation; Deluxe Memory Keyer; Bandpass Filter for RTTY; Audio Amplifier for the Vertl-Loop; Interfacing Solutions to the Jammer Problem; A Variable Bandpass Active Filter; Transceiver and Split Operation with the TR-4/7-R Combination; High-Performance 432 MHz Converter; Digital Techniques: Flip-Flop Internal Structure.

HAM RADIO May 1979
Quads vs Yagi; Impedance Bridge Errors and Corrections; Broadband Reflectometer and Power Meter; New Approach for Measuring SWR at High Frequencies; Folded-Umbrella Antenna; Broadband 80-Metre Antennas; Matching Complex Antenna Loads; Different Multi-Band Antenna Systems; Two-Metre Mobile Antennas; Sloping 80-Metre Array; Measuring Antenna Performance.

QST May 1979
Permission to Use Mobiles; A MultiModle Paddle Keyer; An Experimental VMOS Transmitter; Build a Broadband Ultra-Wideband VMOS Filter; A MSOS FET transmitter for 10 Metre CW; A Novel Way to Mount a Rotary-Beam Antenna; Novice Questions and Their Answers; Extra Special Extras; Mountain-topping the Mod Style; The RV Service Net System; Stamps Reflect Growth of Amateur Radio; The Care and Feeding of Repeater Traffic Nets; The Not-Ready-for-Prime-Time Traffic Handlers; Results of the 1979 IARU Radiosport Championship; Field Day Rules; June VHF QSO Party; Armed Forces Day Tests; The 65th Anniversary of ARRL; FCC Extends Grace Period for Renewal to Five Years; The Safari Ends. What Have We Learned in Africa?; They All Wear White Hats.

RADIO COMMUNICATION June 1979
Improving the FT101; The Yaesu FT7 HF Transceiver; The Art of Coil and Tuner Design; Current Resistance and Reactance; A Compact Pre- scaler for VHF; A Multiband Dipole for the HF Bands.

SHORTWAVE January/February 1979
Antennas—The Weak Link, Part 7; RAE Q and A; A High Frequency Converter; The Law of Heating-Impaired; A Constant Deviation Compressor for a Two-Metre Transmitter.

RADIO ZS January 1979
Vapour Ignition Hazards can be Controlled—HSE; A Visit to the Far East; What Effect Will CB Have on Ham Radio? — The Weak Link, Part 7; RAE Q and A; A High Frequency Converter; The Law of Heating-Impaired; A Constant Deviation Compressor for a Two-Metre Transmitter.

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FRG 7000 $599
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FC-901 antenna coupler $245
FV-901 pm scanning VFO $475
FTV-901 R with 6m, 2m, 70cm transverter $850
YP-150 dummy load/power meter $112
SP-901 speaker $56
YC-7B dig. readout FT7B $125
YH-55 headphones $19
YD-148 gooseneck type mic $49
QTR-24 world clock $35
FL-2100B linear amp. $579
FP-12 12 amp power supply $165
FP-4 4 amp power supply $85

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RSM-2 base + mast $29.90
RSL coil + tip rods
for 80m $22
40m $21
20m $20
15m $19
10m $19
TH6DXX 6 element tribander $295
18 AVT 80m - 10m vertical $129
WESTERN DX-32 $135
DX-33 $215
DX-34 $255
HIDAKA VS-33 $259

Morse keys
HK-706 $25
HK-707 $19.50
MK-701 for electronic key $40

Rotators
103 LBX medium duty $183
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1102 MXX heavy duty (mechanical brake) $389
1103 MXX extra heavy duty $410
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- Frequency Coverage: 50 — 54MHz.
- Operationable Temperature: — 10C to +60C.
- Frequency Stability: Less than ±500Hz after switch on 1 min to 60 min, less than ±1kHz per 1 hour after 60 min, and less than ±1kHz in the range of — 10C to +60C.
- Antenna Impedance: 50 ohms unbalanced.
- Power Supply Requirements: 13.8V DC ±15%.
- Power Consumption: Receive at min. audio level DC 0.9A AC 35W. at max. audio level DC 1.4A AC 41W.
- Transmit in SSB/CW modes DC 3.3A AC 95W. in AM mode DC 3.0A AC 92W in FM mode.
- Dimensions: 111mm (h) x 241mm (W) x 311mm (D).
- Weight: 6.1 kg.
- Transmitter: Emission Modes: A3J (SSB), A3J (USB), A3J (LSB), A3H (AM), F3 (FM).
- Sensitivity: SSB/CW/AM Less than 0.5mV lor l0dB S+N+D/N+0. FM More than 300 S+N/D+N/d at 1 uV.
- Spurious Response: More than 60dB.
- Selectivity: SSB/CW/AM More than ±1kHz at — 6dB.
- Audio Output Power: More than 2 watts.
- Audio Output Impedance: 8 ohms.

Check it out at your VICOM dealer.
Here is a summary of WIA Awards Issued during the period 1st January, 1979, to 30th June, 1979.

WAVKCA AWARD

During the period 1st January, 1979, to 30th June, 1979, Here is a summary of WIA Awards Issued during the period 1st January, 1979, to 30th June, 1979.

WICEN

Ron Henderson VK1RHB
Federal WICEN Co-Ordinator,
53 Hannaford St., Page ACT 2614
Ph. (062) 54 2059, A.H.

PLANNING A WICEN EXERCISE

The starting point for any activity is an aim which must be specific, concise and achievable, e.g. to exercise the Bungendore WICEN group in formal message handling.

Having due regard for local terrain, weather, numbers of operators expected and equipment available, it is next best to select a time, duration, location and frequency band for the exercise. For example, 0900 to 1300 Sunday, using 2 metres VHF along the Molongolo River. From this a scenario can be painted. It need only be a paragraph or so, to portray a possible situation in which your group may become involved, i.e. river flood height reporting.

The exercise director or controller can now ghost out a sequence of events covering the proposed exercise duration and devise exercise traffic, often as pre-printed formal messages with associated release times.

Consideration should also be given to administrative matters such as publicising the exercise to members, meals, and Radio Inspector clearances (see him early to determine his needs!).

Briefings can be given either at a central site before moving out or on the air. Briefing should be thorough and include enough information to allow each outstation to work up a neat diagram complete with call signs and locations.

Personal experience has shown that a 6 to 8 hour exercise period is workable. Each net will be expected to call, receive, acknowledge and repeat a standardised message form. Personal comment is allowed. Contacts with the same station on which the same band on whichever mode in the same day are allowed. Contacts with the same station on whichever band in the same day are allowed.

In conclusion, do not forget the post exercise debrief or “wash-up” this must be held as soon as possible yet with ample time allowed for individual comments. Consequently it is often best not to hold it straight after the exercise, but a few days later, possibly as a “social” coffee house gathering. Do not neglect the AR publicity aspects and keep your divisional WICEN co-ordinators informed of your activities.

FEDERAL NET ACTIVITIES

As a result of failing interstate communications arising from the Telecom employees’ Industrial action in mid-July a Federal WICEN network was activated. The net reported in for about a week and tested both SSB and RTTY communications each evening at 0800Z.

Activities in the States differed from State to State, but at least one State WICEN group was placed on standby by their emergency authority, the police.

Whilst little traffic was passed, possibly only one or two messages, the regular tests demonstrated WICEN’s capabilities which were advised to the Natural Disasters Organisation, our liaison link with the emergency communications committee set up by the Prime Minister and chaired by Senator Guilfoyle. Obviously the lack of traffic was due to the Government policy of waiting until serious breakdowns were evident before invoking emergency services. Despite this, WICEN has demonstrated its ability to meet a request if needed. Thanks to all operators who reported in each evening.

NATURAL DISASTERS ORGANISATION

ANNUAL EXERCISE

The annual Natural Disasters Organisation exercise, COMCOORD 2, will be held over the period 7th to 9th November. The exercise scenario includes a cyclone in Darwin and an earthquake in Adelaide.

PRELIMINARY DISCUSSIONS with NDO suggest that WICEN may be involved on the 8th and 9th November, and that activations in Adelaide and Darwin will be without warning.

To avoid confusion in other States not involved, ACT WICEN will be on listening watch for the duration of the exercise. States not Involved may monitor the exercise but should not involve their local counter disaster authorities. State WICEN co-ordinators will be notified of any further details in due course.

CONTESTS

Wally Watkins VK2DEW
Box 1065, Orange 2800

CONTEST CALENDAR

September:

8/9 EUROPEAN PHONE CONTEST

15/16 SCANDINAVIAN CW CONTEST

22/23 SCANDINAVIAN PHONE CONTEST

22-Oct. 10 “STRAVARI” CONTEST

October:

6/7 VK/ZL/OCEANIA PHONE

13/14 VK/ZL/OCEANIA CW

13/14 RSGB 21-28 MHz PHONE

20/21 RSGB 7 MHz PHONE

27/28 CO WW DX PHONE

November:

3/4 RSGB 7 MHz CW

24/25 CO WW DX CW

STRAVARI CONTEST

Artistic certificates and special valuable prizes will be awarded to amateurs who submit written confirmation for contacts with amateur stations located in the district of Cremona.

Period: From 0000Z 22nd September to 2400Z 10th October.

Rules: 80 through 10. Modes: Phone and CW.

Call: Phone, “CO STRAVARI CREMONA”; CW, “CO STR CR”.

Only one contact with the same station on the same band on whichever mode in the same day allowed. Contacts with the same station on whichever mode and in the same day are allowed on different bands at least one hour later than the previous contact on other band.

Score: VK stations, two points for each valid contact and double score for 28 MHz contacts.

Certificates will be awarded to VK stations scoring at least 30 points.

A special and valuable prize will be awarded to the station with the highest score in Oceania.

Confirmations to: ARI, Sez. Di Cremona, Box 144-26110, Cremona, Italy, not later than December 31, 1979, and consisting of station reporting form — serial No. (start 001), time, date, call, band, RST, of each contact. One OSL card for each contacted station and 1 IRC.
VICOM RELEASES COMMUNICATIONS COMPUTER
Vicom has released the latest in microprocessor technology with the Tono Theta-7000 communications computer, specially designed for the Amateur Radio Operator.

The computer offers facilities for both transmission and reception of RTTY, CW and ASCII, plus video output for monitoring, and a parallel port for a hard-copy printer.

Firmware provided includes the usual housekeeping, cursor and scrolling functions, plus the ability to interface with another microprocessor unit.

Information can be recorded and played back using an external tape recorder which adds to the flexibility of the unit.

A spokesman for Vicom said that sales of the Theta-7000 had exceeded all expectations. "The Tono is packed with features and tricks not previously available with other units. A number of enterprising amateurs are using the units to completely control their ham shack functions," the spokesman said. The Theta-7000 is packed with features and tricks not previously available with other units. A number of enterprising amateurs are using the units to completely control their ham shack functions. The Theta-7000 is packed with features and tricks not previously available with other units. A number of enterprising amateurs are using the units to completely control their ham shack functions.

NEW 6 METRE ALL MODE TRANSCEIVER
ICOM have just released the export version of the 6 metre all mode transceiver. The ICOM IC511, as it is called, follows in the tradition of the IC211 (2 metre) and the IC701 (HF) in that it is the same size and appearance but with increased facilities.

The ICOM IC511 covers 50-64 MHz and the export versions to Australia will have the optional FM and passband tuning units installed. Modes covered will be FM, SSB, AM and CW, with the available VFO system as used in the IC211 and 701 part of the package. Memory is provided (three frequencies) and a scanning function with variable speed can be switched in to cover the whole band.

Power output is a nominal 10 watts.

Price is expected to be around $800 and enquiries on availability should be directed to the distributor, Vicom International Pty. Limited and their dealer network.

SCALAR HF BAND AMATEUR MOBILE ANTENNAS
A new range of mobile antennas for use in the HF amateur band 80-10 metres has been announced by Scalar Industries.

The new Scalar HF resonator system consists of a radiating support mast section topped by one or more screw on resonators, covering the 80, 40, 20, 15 or 10 metre bands. When used alone the mast section serves as a quarter wavelength antenna on either the 6 metre (model SC6M) or 2 metre bands (model SC2M).

Mounting a single resonator on top of either mast converts it into a quaterwave resonant, top loaded vertical antenna. Individual resonators cover each of the 80m, 40m, 20m, 15m and 10m band and are user adjustable to resonant frequency by means of the tuning spikes.

The addition of a trindab attachment (model SC1015) at the top of either mast enables conversion to automatic dual-band or triband operation.

The SC6M mast is manufactured of high grade aluminium, anodised. It is designed to fit on a heavy duty base, having a standard 3/8 In. x 24 TPI female thread.

The SC2M mast fits on either a roof or ski bar mounted base using a gutter type base, having a 5/16 In. x 26 TPI male thread.

Further details may be obtained from Scalar Industries Pty. Ltd., 20 Shelley Ave., Kilsyth, Vic. 3137.

NEW GREAT CIRCLE MAP
GFS Electronic Imports have just announced the release of a new Melbourne Centred "Great Circle Map". The map, measuring 33.5 x 43 cm, allows the user to obtain bearings on the shortest distance to any place in the world.

By laying a ruler on the map, the correct bearing, in degrees, for pointing an antenna to a particular country is given. Also the shortest distance, in miles or kilometres, can be read at the same time.

For more information, contact the publishers, GFS Electronic imports, 15 McKeon Road, Mitcham, Victoria 3132, (03) 873 3939. Price is $1.00 plus 75 cents post and packaging.

HOME COMPUTER WINNER
Kevin Reville of Frenchs Forest, NSW, winner of the "Sorcerer" competition held during the recent Home Computer Show, Sydney, receives his prize of an Exidy "Sorcerer" Personal Home Computer from Dick Smith.

Kevin, a computer consultant, is also a part time lecturer in commercial data processing at Sydney technical colleges. The "Sorcerer" will assist Kevin in class room demonstrations and for processing student programs.

HAPPY BIRTHDAY
R. H. Cunningham Pty. Ltd. is celebrating its 30th anniversary this year. It was founded in 1949 by Bob Cunningham following retirement from the RAAF. The company has become known as one of the leading electronic/electrical distributors of components and professional audio equipment in Australia.

Bob is known to many readers as VK3ML.

Many amateur stations in the 1950s used Geloso and Transhome equipment supplied by R. H. Cunningham.

R. H. Cunningham Pty. Ltd. has decided to concentrate all its efforts in the professional audio market effective from June 4. Rife Pty. Ltd. has taken over the marketing of Cunningham's non-audio product lines which include Bulgin, Eddystone, Sonnenschein, Stettner and Q-Max.

Jim Cunningham, managing director, said "the decision to specialise in audio follows the success of the Sennheiser product range covering dynamic headphones and microphones, RF radio mikes, infra-red cordless headphones, condenser microphones and test equipment.

"The Swiss made Neutrick XLR-type audio connectors introduced only one year ago have had tremendous acceptance, and are now in wide use throughout the audio industry."

Dowkey/Kilovox coaxial and vacuum relays, together with Vitovox loudspeakers and microphones, remain an important sector in Cunningham's marketing programme.

SHORT FORM ANTENNA CATALOGUE
A short form catalogue describing Australian made VHF and UHF base station antennas has been issued by Antenna Engineering Australia of Kil- synth, Victoria.

The condensed information covers simple ground plane and vertical dipole antennas, to high gain omni-directional collinear arrays, dipole arrays, yagis, corner reflectors and mounting hardware. Individual data sheets for all new models will be available.

Copies are available on request from Antenna Engineering Australia, PO Box 191, Croydon 3135.

QSP
GLASS FIBRE WAVEGUIDES
It is not possible to reproduce in full an article in the May 1979 issue of the Telecommunication Journal, but a few extracts are interesting. Light, being an electromagnetic wave of the same kind as radio waves, has an Information transmission capacity of 100 Gbit/s—enough for 1 million digital telephony channels. Research by Drs. Kao and Mourer in the 1960s, following the discovery of the gas laser, led to the production of glass fibre waveguides of two glass materials with different refractive indices known as the "step-index fibre". Other types were then developed with a refractive index continuously variable from the core centre to the periphery — "graded-index fibre".

At the present time there are glass-fibre systems working with a transmission capacity of 44 Mbit/s and systems for 274 Mbit/s are planned, all with an attenuation below 0.1 dB/km at the usual wavelength.

A small quantity of silicon replaces a large quantity of copper and also results in lighter and more flexible cable immune to external electromagnetic disturbances. Another item in the journal reports a new 15.4 km link public telephone network link in W. Germany using cable about 7 mm thick consisting of a pair of glass fibres with a diameter of 0.1 mm. Up to 480 telephone cells can be transmitted simultaneously and separately. The June 1979 Proceedings of the IREE Australia is devoted to optical fibres.

Join a new Member
DIVISIONAL NOTES

VIC. DIVISION NOTES VK3BWI, BROADCASTERS

GEELONG RADIO AND ELECTRONICS SOCIETY
At the recently held Annual General Meeting the following office-bearers were elected:
President, A. Chalmers VK3NOR; Vice-President, R. Tippett VK3NMF; Secretary, R. Francis; Treasurer, W. Erwin VK3WE.


Special Officers: Syllabus Officer, G. Wilson; Librarian, R. Trevor; Publicity Officer, K. Vriens VK3AFL; Store Officers, G. Wilson, W. Bond VK3BWS; Caterers, Ladies' Auxiliary; Auditor, L. Wilson; AF Officer, B.Mahon; CB Officer, C. Blues; RF Officer, R. Wheller VK3NOF; Equipment Officer, R. G. Green VK3AYQ.

According to the recently adopted constitution, the new office-bearers will remain in office for a period of two years.

The printed circuit board equipment is used a lot, and the addition of materials and facilities for members to produce their own art work and negatives has created even further interest.

Project building activity is very high at present, with projects varying from a touch oscillator, a remote digital control unit to an ICG25 channel scanning unit.

Novice and advanced classes (free to enrolled members) are run on Monday nights from 1900 to 2100 hours.

Club meetings are held on Thursday nights at 2000 hours. Visitors are welcome.

The Society's rooms are located at the Belmont Common. For further information write to: The Geelong Radio and Electronics Society, PO Box 962, Geelong, or ring (052) 93337 or (052) 213658.

COMMERCIAL KINKS
With Ron Fisher VK3OM
3 Fairview Avenue, Glen Waverley 3150

This month two very simple modifications for two popular transceivers, the FT-7 and the FDXT-401/560.

LET'S START WITH THE FT-7
Allan McKercher VK7NAT has come up with an idea that should please CW operators. As FT-7 owners will know, the CW side tone level can only be adjusted by means of the internal preset control. With Allan's modification the side tone level can be varied with the normal AF gain on the front panel. Here is how to do it:

Remove PB1648 (AF unit) and remove R617 (100K). Connect a small .047 ceramic capacitor between pin 10 and pin 11 of this board. This allows the side tone to be fed to Q603 via the AF gain control. Next realjust the side tone preset VR701 (PB1622A) to about the 11 o'clock position. It is now possible to turn the side tone up or down with the normal AF gain control.

NOW TO THE FDXT-401
One of the main problems with this transceiver (in my opinion) is the high noise level of the cooling fan. I put up with this for a long time but finally enough was enough. The solution proved simple: A series resistor was all that was needed. The AC supply to the fan comes off the power transformer primary winding and is easily accessible. After some experimentation a value of 700 ohms was settled on. This appeared to make very little difference to the amount of air being moved but it dropped the pitch of the motor noise to a very acceptable level. The photo shows how the resistor was mounted or as in this case two resistors in series. A single resistor would need to be rated at five watts.

The next edition of Commercial Kinks will return to our old friend the FT-200 for an interesting AGC modification.

SPECIAL NOTICE TO "AMATEUR RADIO" READERS
In the June issue of "Amateur Radio", an advertisement appeared for Dick Smith Electronics on the inside back cover.

We have discovered that the advertisement is not valid as the artwork is over 13 months old. This is not the fault of Dick Smith Electronics but an oversight by "Amateur Radio" production staff.

The correct advertisement as should have appeared in June is in this magazine.

Dick Smith Electronics have suffered considerable embarrassment over this error and would like us to point out on their behalf that publication of the ad was completely beyond their control.

We apologise to any readers who may have been misled by this unfortunate error.
HAMSAD

* Eight lines free to all WIA members.
* $5 per 3 cm for commercial advertising.
* Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
* Reprints 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 1979 Call Book.

FOR SALE

Crystals, suit Ken PK-202, five commonly used 2m FM European channels, Simplex 59, S21, repeater R6, R7, S15, VK5SU/J, Box 1231, Canberra City, Act. 2601.

Draeke T4X SSB/CW Tx, 200W input DC, matching AC power supply, Dyn desk mic, Draeke RA4 Rx with accessories of full short wave band xtal, Draeke noise blanker, Draeke CW filters, Draeke MS-4 common see, Cushcraft vertical HF antenna cable and RGGU connectors all supplied, $675 full price. All equipment in mint condition. James VK2JO, GPO Box 5076, Sydney 2001, N.S.W. Ph. (02) 36 7756 Burswood, W.A.

SM220 Monitor Scope with BS-8 adaptor (new), $380; Swan 240 with ext VFO, AC and DC supply and spare set of valves, $200, ONO. Bruce Beresford VK2K, Ph. 588810.

Complete Icom Station: Icom IC 701 HF SSB Transceiver, IC 701 PS power supply, IC RM3 remote control unit, IC SM2 desk mic, only 4 months old, the lot for $500, IC 502 6m Tx/cv, 4 months old, hardly used, as new, $220; IC 202 2m Tx/cv, IC 204 6m xtal, little used, as new, $220; IC 60: 6m linear, 2 x 6146A, 120W from IC 502, $50, ONO. VK2K farewell, 1075 Merribee Rd. Bundoora, Vic. 3083.

Barlow-Wadley Rx, includes new whip aerial, $130; IC215 FM portable, ch. 40, 50, R2, 46, 6, 7, 8 and reserve 5, $198; IC22E SSB portable, 444 to 144.6, plus Oscar, $198; xtal filters, 10.7 MHz, 10 kW, B/W, 6 only at $5 posted. VK3Y, QTHR, Ph. (03) 871-8183.

Barlow-Wadley Rx, includes new whip aerial, $130; IC215 FM portable, ch. 40, 50, R2, 46, 6, 7, 8 and reserve 5, $198; IC22E SSB portable, 444 to 144.6, plus Oscar, $198; xtal filters, 10.7 MHz, 10 kW, B/W, 6 only at $5 posted. VK3Y, QTHR, Ph. (03) 871-8183.

FT925 6m Transceiver, ready for immediate purchase, to be used for spare parts. Lionel VKKNM, QTHR, Ph. (03) 88 3710 home, (03) 588 2733 Bus.

Daiwa 144 MHz Mobile Rx, must be in good condition, details to L30997, QTHR, Ph. (03) 35 9231.

Silent Keys

It is with deep regret that we record the passing of—

Mr. E. C. READING VK2LT
Mr. E. A. VARRUTHERS VK2PF
Mr. B. SCOTRENT VK7B

TRADY RADIO

OSL Cards, Log Books, Contest Sheets—send 20c stamp for samples and prices to Linda Luther VK4V, PO Box 498, Nambour, Qld. 4560.

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A W A T R E N D A R Y  

Daiwa 144 MHz Mobile Rx, must be in good condition, details to L30997, QTHR, Ph. (03) 35 9231.

Old Copies of "Radio and Hobbies" (before 1952), also copies of Amatuer Radio (before 1947), VK5BC. Ph. (03) 561 1151.

Galaxy 5 Tswc. Price, condition and details to Reg Bulman VK4YL, Box 238, Maldon, Qld. 4865. Ph. (07) 96 5131.

Kenwood TS600a 6m Transceiver in working condition. Write to Reg VK3KK, QTHR, or Ph. (03) 652 8110 Bus., (03) 469 6200 A.H.; all letters answered.

Circuit Diagram or any other information on a Plessey B47 38-56 MHz transceiver, will buy or photostat the original and return immediately to buyer. Plessey B47 38-56 MHz transceiver in excellent condition, to be used for spare parts. Lionel VKKNM, QTHR, Ph. (03) 88 3710 home, (03) 588 2733 Bus.

TRADE HAMS AD

OSL Cards, Log Books, Contest Sheets—send 20c stamp for samples and prices to Linda Luther VK4V, PO Box 498, Nambour, Qld. 4560.

TRADE HAMS

For a very long time commercial advertising has not been accepted in AR Hamsad, but as the result of discussions at the 1978 Federal Convention a decision was made to open up a "Hamsad-Trade" section. The rate will be $10 for 4 lines plus $2 per line (or part thereof), minimum charge $10. Prepayable. Copy is required by the first day of the month preceding publication. This will mean that in future ordinary Hamsads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades will not be certified as referring only to private articles not being re-sold for merchandising purposes.
WE SURRENDER DICK! But show us some quarter, please. Buy more of our Hy-gain antennas (we have ample stocks of most lines) — you can even buy at our retail prices and re-sell at your advertised retail prices and still make a handsome "backyarder's profit" on the deal! As a reputed "Multi-shop millionaire" of advertised 'umble backyard beginnings, why do you continually knock the little bloke, Dick! 'Ave a 'eart Mate!

Signed B. AKYARD DEALER No. 1

NOTE — Our prices are set as low as we can sell at and still remain in business. We are unable, therefore, to adjust our prices if we are undersold. All we can say is, "Good luck to them."

ROY LOPEZ

HY-GAIN ANTENNAS

<table>
<thead>
<tr>
<th>Antenna Type</th>
<th>Frequency</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH6-DXX</td>
<td>10-15-20M</td>
<td>6-el yagi</td>
<td>$275</td>
</tr>
<tr>
<td>TH3-MK3</td>
<td>10-15-20M</td>
<td>3-el yagi</td>
<td>$240</td>
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<td>TH3-JR</td>
<td>10-15-20M</td>
<td>3-el yagi</td>
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<td>18-AVT/4WB</td>
<td>10-80M</td>
<td>vertical</td>
<td>$110</td>
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<tr>
<td>204-BA 20M</td>
<td>4-el Tiger Array</td>
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<td>$200</td>
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<tr>
<td>2M 6-el yagi w/balun</td>
<td>6'3&quot; boom</td>
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<td>$25</td>
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<tr>
<td>2M 8-el yagi w/balun</td>
<td>12'5&quot; boom</td>
<td></td>
<td>$30</td>
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<tr>
<td>BN 86 balun for beam buyers</td>
<td></td>
<td></td>
<td>$20</td>
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<tr>
<td>HY-Q (USA) 50-ohm 1KW balun</td>
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<td>$15</td>
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<tr>
<td>HY-Q (USA) multiband 10-80M dipole kit, wire, balun</td>
<td></td>
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<td>$45</td>
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</tbody>
</table>

ROTATORS & CABLES

All rotators now come with bottom brackets and control-indicator boxes wired for 28V AC operation.

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEN KR-400 medium duty</td>
<td>$110</td>
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<tr>
<td>CDR BT-1A light duty 4 position push-button programmable</td>
<td>$90</td>
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<tr>
<td>CDR Ham III heavy duty</td>
<td>$175</td>
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<tr>
<td>CDR tall-twister extra H.D.</td>
<td>$225</td>
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<tr>
<td>KS-065 stay-thrust bearing</td>
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<tr>
<td>1/8&quot; to 2½&quot; masts</td>
<td>$25</td>
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<tr>
<td>RG-58U coax cable, per yard</td>
<td>$30</td>
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<tr>
<td>RG-8U foam coax cable, per yard</td>
<td>$80</td>
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<tr>
<td>8-cond. rotator cable, per yard</td>
<td>$60</td>
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<tr>
<td>7/8&quot; H.D. VHF/UHF coax, per yard</td>
<td>$3</td>
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<tr>
<td>Cable cutting &amp; packing, per length</td>
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ACCESSORIES

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<th>Accessory Type</th>
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<td>Voltage regulator 18V AC input</td>
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<td>12V DC 3A output</td>
<td>$10</td>
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<tr>
<td>240/18V AC transformer</td>
<td>$23</td>
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<tr>
<td>RG-58U coax cable</td>
<td></td>
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<tr>
<td>5 meter with PL-259 one end</td>
<td>$25</td>
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<tr>
<td>Mobile bumper mounts ¾&quot; 24 thread</td>
<td>$5</td>
</tr>
<tr>
<td>Mobile gutter mounts ¾&quot; 24 thread</td>
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TRIO-KENWOOD PRODUCTS

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<tr>
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<td>TS-520S 10-160M transceiver</td>
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<tr>
<td>TS-120V 10-80M 12V transceiver</td>
<td>P.O.A.</td>
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<tr>
<td>TL-922 10-160M linear amp</td>
<td>$1100</td>
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CO-AX CONNECTORS

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<th>Connector Type</th>
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<tr>
<td>PL-259-SO-239-cable joiners ea</td>
<td>$75c</td>
</tr>
<tr>
<td>Right angle &amp; T connectors, ea</td>
<td>$1.50</td>
</tr>
<tr>
<td>GLP right angles RG-58U to SO-239 w/lock nut and cap, ea</td>
<td>$2.50</td>
</tr>
<tr>
<td>Double female connectors, ea</td>
<td>$80c</td>
</tr>
<tr>
<td>MLS right angles RG-58U to PL-259, ea</td>
<td>$90c</td>
</tr>
</tbody>
</table>

NOVICE SPECIALS — TRANSCIEVERS

<table>
<thead>
<tr>
<th>Transceiver Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>10M Sideband SE-502 USB/AM 15W PEP-240V AC-12V DC-inbuilt SWR/RF meter 28.3-28.6 mhz-clarifier tuning transmit and receive</td>
<td>$125</td>
</tr>
<tr>
<td>10M Universe 224-M USB/AM 15P PEP 12V DC-24-ch. 28.480 to 28.595 mhz, 5-khz steps-clarifier tuning transmit and receive</td>
<td>$100</td>
</tr>
</tbody>
</table>

CONVERSION CRYSTALS for amateur licence holders — set of 8-crystals to convert 23-ch. 27-mhz CB units to 28-mhz. Suitable for Kraco, Sideband, Universe, Hy-range V etc., converts as per Universe 10M above — CRYSTALS and instructions | $40 |

KYOKUTO FM-2016A 800 channel

<table>
<thead>
<tr>
<th>Transceiver Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 meter FM transceiver with 4-channel memory &amp; scanner</td>
<td>$360</td>
</tr>
</tbody>
</table>

All Prices are NET, ex Springwood, NSW, on a pre-payment with order basis. All risk insurance is free of charge, allow for freight charges by air, road, rail or postal, excess will be refunded. Prices are subject to change without prior notice. All orders cleared on a 24-hour basis after receipt of order with payment.

Arie Bles (VK2AVA) Proprietor

Roy Lopez (VK2BRL) Manager
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TS-520S 1.8 to 29.7 MHz SSB TRANSCEIVER
Amateurs throughout the world acclaim this rig which was specially engineered for the serious enthusiast.

SM-220 Station Monitor
Provides efficient station operation and also serves as a high-sensitivity, wide frequency-range oscilloscope for various adjustments and experiments.

TS-700SP 2 METER ALL-MODE TRANSCEIVER
The feature-packed design of the TS-700SP puts you on SSB, FM, CW and AM. The AC and DC power supplies are built-in which allows you to operate just about anywhere.

TS-120S 3.5 to 29.7 MHz SSB TRANSCEIVER
Ideal front panel layout gives simple operation for all users — novice or advanced, fixed station or mobile. A marvellous combination of high performance and low cost.

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TH3-JR. 3el. 20-15-10M $175.
18-AVT. 80-10M trapped vertical. $POA.
BN-8E. 11 matching balun. $23.

MONO BAND BEAMS.

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AB4-15. 4 el. 15M. 20" boom. 10 dB $114.
AB5. 5 el. 15M. 24" boom. $139.
AB3-30. 3 el. 20M. 8 DB $139.
AB4-30. 4 el. 20M. 10 dB $189.

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SP-901, ext. speaker. $65.
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FRG-7000, Digital communication receiver $855.
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When two OOTs eyeball, for the first time after more than 40 years since their first QSO, there's an awful lot of sentiment, nostalgia and not a little emotion in the scene — and, in the case of Bill Pickard G6KP (right) and Al Shawsmith VK4SS/VK4AKP (left), a small bit of personal history was made.

They subsequently never kept skeds but did QSO more than 40 years since their first QSO, there's an awful lot of sentiment, nostalgia and not a little emotion in the scene — and, in the case of Bill Pickard G6KP (right) and Al Shawsmith VK4SS/VK4AKP (left), a small bit of personal history was made.

When they OSOd, way back in 1939, the contact was Bill's first VK4 and Al's first QSL card sent to the other prior to WWII. Not something that's done every day of the week after forty years. They are pictured here, in the swapping back ritual, in Al's vintage wireless museum, where the same type of rig they both used, i.e. MOPAs at 25-50 watts, are on display.

Needless to say, the topic was on past events and DX dolings. Both are brass pounders: G6KP has now returned home but wants to prove that AR is the Prince of Pastimes.
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Federal Council:
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VK2 Mr. T. I. Mills VK2ZTM
VK3 Mr. G. A. G. Williams VK3ZXX
VK4 Mr. A. R. F. McDonald VK4TE
VK5 Mr. G. J. Hurst VK5SH
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VK7 Mr. R. K. Emmott VK7KK
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Executive Office: P.O. Box 150, Toorak, Vic., 3142. 2/517 Toorak Rd., Toorak. Ph. (03) 24 8652.

Divisional information (all broadcasts are on Sundays unless otherwise stated):

ACT:
President — Mr. I. J. Hunt VK5OX
Secretary — Mr. W. M. Wardrop VK5NWM

Broadcasts— 1820, 3550, 7095, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 EST. 1000Z.


SA:
President — Mr. A. Davis VK1DA
Secretary — Mr. P. T. Blake, VK7ZPB

Broadcasts— 3570 kHz and 2m Ch. 6 (or 7): 10.002.

Gen. Mtg. — 3rd Friday.

TAS:
President — Mr. F. S. Parker VK2NFF
Secretary — Mrs. J. M. Seddon and Mr. Mark Stephenson (AR advertising).

Broadcasts— 1825, 3595, 7146 kHz, 14342, 21175, 28400 kHz; 2m (Ch. 42, 48): 09.00 EST. 1000Z.

Gen. Mtg. — 3rd Tuesday.

NSW:
President — Mr. F. M. Robert VK2AR
Secretary — Mr. R. R. Rowse, VK2CAB

Broadcasts— 7130 (AM) kHz with relays on 2m VHF and Repr. Ch. 3, Ch. 8, and Hunter Branch, Mondays 0930Z. Relays on 160, 80 and 10m, VHF and Repr. Ch. 3, Ch. 8, and Hunter Branch, Mondays 0930Z on 3595 kHz, 10m, and Ch. 3 and 6. RTTY Sunday 0030Z. 14090 kHz. Ch. 52, 0930Z 3545 kHz, Ch. 52.


VIC:
President — Mr. E. J. Buggee VK2ZNN
Secretary — Mr. J. A. Adcock VK3ACA

Broadcasts— 1840, 3560, 7135 kHz — 53.032 AM, 144.2 USB and 2m Ch. 2 (5) repeater: 10.30 local time.

QSL:
President — Mr. A. J. Aarsee VK4QA
Secretary — Mr. W. L. Gillea VK4AG

Broadcasts— 1825, 3590, 7146, 14342, 21175, 28400 kHz; 2m (Ch. 42, 48): 09.00 EST. 1000Z.

Gen. Mtg. — 3rd Friday.

SL:
President — Mr. R. T. Norrie VK5AC
Secretary — Mr. P. R. Marks VK5RT

Broadcasts— 1820, 3550, 7095, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 EST. 1000Z.


WA:
President — Mr. Ross Greenaway VK5DA
Secretary — Mr. Peter Savage VK6NCP

Broadcasts— 3560, 7075, 14100, 14175 kHz. 28,485, 52.290 MHz. 2 metres Ch. 2 Perth, Ch. 6 Wagon. Time 0130Z.

Gen. Mtg. — 3rd Tuesday.

QSL BUREAUX

The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

VK1 — QSL Officer, G.P.O. Box 46, Canberra, A.C.T. 2600.
VK2 — QSL Bureau, C/- Hunter Branch, P.O. Box 43, 41/3535 Weekdays 10.00-15.00h).
VK3 — Inwards QSL Bureau, Mr. E. Trebliccok, 340 Gillies Street, Thornbury, Vic. 3071.
VK4 — Outwards QSL Bureau, Mr. R. R. Prowse, 83 Brewer Road, Bentleigh, Vic. 3204.
VK5 — QSL Officer, G.P.O. Box 638, Brisbane, Old., 4001.
VK7 — QSL Bureau, Mr. Gao. Luxon VK5RX, 203 Belair Road, Torrens Park, S.A. 5062.
VK8 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tasmania.
VK9 — QSL Bureau, C/- VK9HA, P.O. Box 1418, Darwin, N.T. 5794.
VK9, O — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

As you read this I will be in Geneva as a member of the Australian delegation to WARC 79.

Over the past three years much has been written in amateur journals about this Conference. It would have been apparent to all that the amateurs of the world were not taking this Conference lightly. Least of all those in Australia.

The amateurs were probably one of the first groups to start moving in their preparation. Over three and a half years ago the WIA was invited to attend the meeting convened by the P. and T. Department for the purpose of setting up the Australian Preparatory Group to prepare for WARC 79. I attended that meeting and have attended every meeting since.

The world-wide co-operation and co-ordination between the member societies of the IARU under the leadership of the President, Noel Eaton VE3CJ, and reinforced by the three Regional Associations has led to a reasonably unified and consistent case for retention of frequencies, to the addition of new bands to improve the HF family of frequencies and to give the Amateur Satellite Service more reasonable access to the spectrum.

Do not think all this just happened. It is in fact due to the very hard work of a nucleus of dedicated amateurs who have sought advice and conferred together in order to become as knowledgeable as possible so as to apply that knowledge to the best advantage.

At home here in Australia the strong financial support of the amateur community has enabled us to provide two members of the Australian delegation. This support again shows the importance with which the Australian amateur views the Conference.

The preliminary phase is now over. Let us hope the results of the Conference may come up to our reasonable expectations, as we might. Naturally we will be pushing Australia’s proposals as hard as possible, which in the amateur field, I feel are very reasonable.

Again my thanks for your support at this vital time.

DAVID WARDLAW VK3ADW
Federal President.
receive stronger citations until sooner or later stern disciplinary
numbers of licensed amateurs.

find themselves having to answer “please explain” letters direct
non-conformity, and the point is that if there were only a handful
licensed amateurs. Anyone who ignored advice and became a
service was
rules of good operating habits and procedures. The amateur
operators generally prided themselves upon putting out good
credit that
from the official spectrum policeman — the P. and T. Department.
there must be 5 or 6 times as many because of the increase in
of these
However, in any human society, there does exist an element of
radio is all about and genuinely make every effort to conform.
sub-standards of operating behaviour were corrected by other
of amateur radio currently being subjected to close scrutiny is
Apart from WARC 79 and the Handbook, one of the many aspects
AMATEUR ADVISORY COMMITTEE
In the pre-1939 era, when rigs were home constructed,
people in the amateur service of years gone by, today
serious measures have been few and usually only after
reserves unless something is done about it, especially as
their bona fides. This hardening of attitude will also flow into the
mental attitude to the issue of licences to visitors has toughened
level has been unchanged for three years mainly due
will be in terms of more frequent exams, increases in fees and
mention of WARCı 79 and the Handbook, one of the many aspects
exceeding the ravages of inflation on
their numbers. The amateur service is self-regulatory; any poor quality signals or persistently
sub-standards of operating behaviour were corrected by other amateurs in a friendly and co-operative spirit. Basically, the
number of offences were very small because there were not many licensed amateurs. Anyone who ignored advice and became a
habitual offender deserved everything coming to him if his licence
was suspended or cancelled by the Administration.

After World War 2 the numbers of amateurs increased,
especially from the ranks of Servicemen exposed to radio during
the war. In this period the Amateur Advisory Committee emerged as a buffer between officialdom and amateurs. Nevertheless, the
on-air practice of friendly advice to those amateurs putting out
poor quality signals, etc., continued. Has this practice since
fallen into disfavour because of the Advisory Committee being in
existence?

In recent years there has been another great influx into the amateur ranks, this time of CB and other operators, coupled
with the introduction of the Novice licence. Probably the great
majority of newcomers genuinely take steps to learn what amateur
radio is all about and genuinely make every effort to conform. However, in any human society, there does exist an element of
non-conformity, and the point is that if there were only a handful of these people in the amateur service of years gone by, today
there must be 5 or 6 times as many because of the increase in
numbers of licensed amateurs.

Without any Amateur Advisory Committee, offenders would
find themselves having to answer “please explain” letters direct
from the official spectrum policeman — the P. and T. Department. It is reasonable to suppose that a persistent offender would soon
receive stronger citations until sooner or later stern disciplinary
measures would be taken. It is to the Departmental officers’
credit that serious measures have been few and usually only after
everthing else has failed.

The question being asked today is whether we as amateurs
can self-regulate ourselves so as to avoid the need for official citations. Not because we wish to reduce Departmental work
but because we recognise the benefits flowing from taking care
of ourselves and safeguarding our hard-earned privileges. After
all, the USA, the UK and other countries get along without
Advisory Committees as such.

In some States, Amateur Advisory Committees fell into
abeyance due to Departmental staff and other difficulties. Did the
amateurs in those States suffer any harm from direct exposure to
“the policeman”? And the questions mount up.

EXAMINATIONS
There was a meeting of the Joint WIA-Departmental Com-
mittee on 22nd August at which a number of subjects were
discussed. It appears that having introduced multi-choice exam-
ination questions the Department intends to review the examina-
tions area of their work. Nobody can forecast what the outcome
will be in terms of more frequent exams, increases in fees and
general streamlining of procedures. It appears that the Depart-
mental attitude to the issue of licences to visitors has toughened
as the result of recent occurrences. No longer will photocopies of
home licences be accepted and visitors will have to prove
their bona fides. This hardening of attitude will also flow into the
field of reciprocal licensing affecting intending residents. Reduced
licence fees for pensioners is a subject still with the Minister
despite agreement as long ago as 1976 — please see WIANEWS
in AR for December 1976. Conditions for the installation and
management of repeaters at long last appear to be resolved —
negotiations on this subject have been going on for several
years — please see WIANEWS in AR March and April 1976.

SUBSCRIPTIONS
At the Executive Meeting on 14th August there was a long
discussion about the level of the Federal part of subscriptions in
1980. The level has been unchanged for three years mainly due
to the rise in membership exceeding the ravages of inflation or
expenses. These inflationary trends will soon eat away our slender
reserves unless something is done about it, especially as
economies are already stretched to the limit. It was found that
the expenses in producing AR had risen dramatically this year.
This was not apparent at the time of the Federal Convention.
FEDERAL QSL
Approval was given for the appointment of Nell Penfold VK6NE to take over the Federal QSL Manager's work, being relinquished after some 30 years by Ray Jones VK3RJ. The 1979 Federal Convention had recorded a sincere vote of thanks to Ray for his great many years of service to WIA affairs.

GENERAL
Also approved was the composition of the Federal RTTY Committee, consisting of VK2ABH, VK2AOE and VK2BVJ. Another post to be filled later in the year is that of Federal Intruder Watch Co-ordinator on the retirement of Alf Chandler VK3LC. Hopefully a volunteer, possibly from VK4, will come forward to assist. Taking over the management of the Westlakes Novice Contest awaits comments from the Federal Contests Manager. Keith Malcolm VK3ZYK was confirmed in his appointment as chairman of the Federal VHF/UHF Advisory Committee in place of Peter Wolsten den VK3ZPA. This Committee would be discussing a band plan for 6 metres with the Federal Repeater Sub-Committee. A suggestion that the WIA should re-introduce the sale of a WIA tie is to be investigated.

During August the 1979 WIA Australian Radio Amateur Call Book was received from the printers and was distributed. Early indications show that everybody appears to want one.

At the Publications Committee meeting on 7th August it was noted that, from the few comments received, the change of paper used in AR was favourably commented on mainly because it was less glossy than the previous grade. It was also noted that problems in postal distribution caused delays in receipt of the July issue in particular.

WARC 79 DONATIONS
The Executive wishes to acknowledge with grateful thanks the receipt of the following donations from members —

<table>
<thead>
<tr>
<th>LIST No. 6</th>
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<tbody>
<tr>
<td>Western Suburbs RC (per VK3NGN)</td>
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<td>VK3XY</td>
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<td>L50985</td>
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<td>VK2AY</td>
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<td>Sunshine Coast ARC (per VK4ARC)</td>
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<td>L30574</td>
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<td>VK3UE net (per VK4ZB)</td>
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<td>Ex List 2 — VK2ARP</td>
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<td>VK2NJ</td>
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<td>VK3ABH</td>
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<td>VK4W</td>
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<tr>
<td>VK4 Division — Sales proceeds</td>
</tr>
</tbody>
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The Federal President wishes to extend grateful thanks to our advertisers for generous donations towards the expenses of WARC representation

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Page 6 Amateur Radio October 1979
I have recently returned from a two-month trip to EUROPE and seen many interesting things, directly and indirectly related to amateur radio. As a result I have decided to start early next year with some new things, computer related equipment and new brands of receivers, transceivers and accessories.

Meanwhile I plan to clear my present stock of equipment to make room for what is to come next year. Consequently there will be even more bargains to be had than before. Many items are already being sold below replacement cost, just check earlier advertisements for prices or send a 9 in. x 4 in. SAE for the latest price list. There will be particular bargains for novices in 10 metre transceivers, accessories, etc.

ARIE BLES VK2AVA

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SSB TRANSMITTER FOR THE 13 cm BAND

Experimental Version Using Envelope Elimination and Restoration

(Note: This is a translation by AR staff, with permission, of an article originally published in German in UKW-BERICHTE 4/1978, based on material submitted to them by VK5QR. As the English version (VHF Communications) may not appear for some time, it is hoped this version may expedite use of the technique by VK amateurs.)

The technique of SSB signal generation by the method of envelope elimination and restoration has been suggested to VHF amateurs in Ref. 1. Dr. Karl Meinzer DJ4ZC has developed the necessary adapter, using a frequency divider, which allows a final frequency multiplication into the desired UHF or SHF band. This can be achieved by use of the usual varactor multipliers (Ref. 2). The author employed the method in an SSB transmitter for the 13 cm band, and was able to produce by this means a 4W SSB signal on 2304 MHz. This was sufficient to make contact on 17th February, 1977, with VK6WG under mid-summer duct conditions over the 1885 km path from Adelaide to Albany. Naturally it was not the conversion process which made this incredible distance possible, but there is unlikely to be a simpler method of achieving SSB signals of usable power in the microwave spectrum. It seems therefore that the technique should be more widely known, so the transmitter used will be described. It is emphasised that since the equipment described is experimental no attempt will be made to provide complete constructional Information. The main details will be presented and discussed; some photographs which were helpfully provided by R. T. Manual VK5RT give an impression of the author's prototype version.

1. BLOCK DIAGRAM

The block diagram in Fig. 1 shows the stages and filter arrangement. A KWM-2 or FT-101B on 21 MHz is used as the SSB exciter. The vital element of the system, the processor, will be described in detail in Section 2. The frequency of the following crystal oscillators is chosen so that after multiplying by 6 the frequency of 2304 MHz in the 13 cm band is achieved. Linear power amplification takes place at 384 MHz, at which frequency this poses no problem. For example, one might use the amplifier described by G. Freytag DJ3SC in Ref. 3. The output power is solely dependent on the capability of the following frequency multipliers. For tripling from 384 to 1152 MHz one may use the varactor tripler MMV1296 available from Microwave Modules. It is only necessary to re-tune it to the lower frequency, at which it can produce 10W output at 1152 MHz from a maximum of 20W.

The following doubler, from 1152 to 2304 MHz, will be described in greater detail in Section 3, since in this area there is more scope for individual variations. The band-filters preceding and between the frequency multipliers are extremely important to ensure that only the desired single frequency drives each multiplier.

Finally, it may be mentioned that the DJ6ZZ 006 unit (Ref. 4) was used as the transverter from 28 to 384 MHz, and an interdigital output filter (Ref. 5) was used in the receiving converter.

2. THE PROCESSOR

The theoretical basis of the technique is covered extensively in Refs. 1 and 2. Here, it is sufficient to say only that the incoming 21 MHz SSB signal is split into its AM...
FIGURE 2: The 21/28 MHz SSB processor using division by 6.

These two components are then further processed separately. The PM signal is divided by 6, whence the resulting frequency of 3.5 MHz has only one-sixth of the original deviation. This signal is then amplitude-modulated by the separately-amplified envelope signal, and finally mixed with a crystal-oscillator frequency of 31.5 MHz to produce 28 MHz. After this the new SSB signal, now containing only 1/6 of the deviation, is selectively amplified to a level suitable for the next stage.

Fig. 2 shows the processor circuit. The 21 MHz SSB signal (any chosen frequency between 21 and 21.5 MHz) is of the order of 100 mV at the input, where it is amplified by transistor T$_1$ to around 5V. An envelope detector using diode d$_1$ separates out the AM component, the resulting low-frequency signal being fed to the audio amplifier T$_2$, which then modulates the PM signal in the stage T$_3$. The diode D$_1$ provides bias for transistor T$_3$.

The signal amplified by T$_1$ is also fed via the bandpass filter (L$_1$, L$_2$) to a first limiter (D$_4$, D$_5$). After more amplification (T$_4$) and limiting (D$_6$, D$_7$) the 21 MHz PM signal arrives at a pulse-forming stage (T$_5$). The square-wave signal is now divided by 6. Although at an input frequency of 21 MHz standard TTL devices should be adequate, the author preferred to be sure and used Schottky TTLs.

Transistor T$_1$ works as an electronic switch, which is controlled by the 3.5 MHz square-wave. The current through T$_1$ controls the audio voltage at the base of T$_3$, so that the 3.5 MHz signal is re-modulated by the envelope.

The composite signal is now fed through a low-pass filter to suppress the 6th harmonic, and then to the mixer stage using an FET (T$_6$). The crystal oscillator T$_7$ delivers a frequency of 31.503 MHz, so that the difference frequency 28.083 to 28.0 MHz passed by the filter (L$_1$, L$_2$) can then be amplified in the last two stages.
2.1. COMPONENTS FOR THE PROCESSOR

- **T₁, T₂, T₃** — RS2003 (Japan), AF106, AF127 or other Ge PNP HF transistor.
- **T₄, T₅, T₆** — 2N706 or similar Si NPN VHF transistor.
- **T₇** — BF173, BF224, BF199 or similar VHF transistor.
- **T₈** — MPF102, BF245 or similar FET.
- **T₉** — MPF121, 40673, 40841 or similar dual-gate MOSFET.
- **D₁, D₂, D₃** — 1N914, 1N4148 or similar Si planar switching diode.
- **D₄** — AA112, AA118 or similar Ge diode.

All coils on 6 mm formers with HF slugs, using 0.4 mm (26 AWG) enamelled wire.

- **L₁** — 20 turns.
- **L₂** — 22 turns. Formers spaced 15 mm between centres.
2.2. CONSTRUCTIONAL DETAILS

For the processor of Fig. 2 a printed circuit was developed as shown in Fig. 3. It is 145 mm x 70 mm in size and is double-sided. The few through connections necessary are effected during component mounting by soldering top and bottom; these points are designated in the diagram (Fig. 4) by small crosses. Leakage of any original SSB signals into the output must be completely prevented by shielding of the whole processor and its individual stages from each other. To achieve this the board is divided into 6 compartments (Fig. 5) using shielding plates, and the assembly is then soldered into a tight-fitting housing. This is carried out as follows:

The side of the board with the greatest area of copper will be designated as the top or component side. The underside is therefore that with relatively few conductor tracks. All mounting holes are to be drilled from the underside.

The shielding plates are cut out as in Fig. 5, the holes in them are drilled as shown, and the plates are then soldered to the component side of the board. The coils can now be wound (as in Section 2.1), and lightly fixed with quick-setting glue. Before permanent fixing with epoxy cement the specified distances must finally be checked.

The components can now be installed for the input amplifier, limiter, and frequency divider, supply voltage connected, and a 21 MHz signal fed in. Following a rough alignment of the coils, the functioning of the divider is checked either with a receiver or a counter.

The remaining components can now be fitted.

After this, the unit is enclosed in a tin box fitted with BNC connectors and voltage feed-throughs. Then final alignment follows.

2.3. ALIGNMENT OF PROCESSOR

It is important to provide a constant input level at 21 MHz so that the limiter can function properly, thus providing a roughly constant voltage to the modulator. After adjustment of $L_1$, test points TP should read not less than 5 volts nor more than 6, using an HF VTVM or equivalent.

Adjustment of the circuits $L_2$ and $L_3$, which are damped by the limiter diodes, can be effected with the VTVM at TP, using a temporarily-reduced input voltage such that barely usable indication is produced at a level below the diode limiter threshold.

With the VTVM at TP, the crystal oscillator is adjusted to oscillate, and checked for reliable self-starting.

During final alignment of the mixer and output amplifier it is essential that these should not inadvertently be adjusted to the crystal frequency. After this the signal may be fed to the 384 MHz transverter.

3. A MODIFIED VERSION FOR THE 23 cm BAND

The principle and construction as described can be used with minor changes for the 23 cm band. Appropriate construction notes are as follows:

- Obviously it is considered easier to achieve linear power amplification in the 70 cm band, and subsequently triple the frequency, than it is to amplify the 23 cm SSB signal directly.

The whole concept remains the same; only the frequencies must be altered as follows:

In the processor one divides by 3 instead of 6. The appropriate circuit as shown in Fig. 6 is inserted between $T_3$ and $T_4$ in Fig. 2.

The crystal oscillator is now on 35.166 MHz, so that mixed with the "intermediate frequency" of 7.0 to 7.166 MHz, output is produced from 28.166 to 28.0 MHz. There are no other component or coil changes needed.

In the following transverter mixing takes place with 404 MHz, producing the usual 70 cm frequency of 432 to 434 MHz. The power is then linearly amplified and a frequency tripler follows.

(On the appropriate request, a PCB layout for this version can be made available.)

4. DOUBLER 1152 TO 2304 MHz

The principal dimensions of this assembly are shown in Fig. 7. The cavity walls are
made of 4 mm sheet copper, top and bottom plates of 2 mm. The whole doubler fits into a cast aluminum box of the type used by Microwave Modules. Although the author used BNC connectors, based on experience he would recommend using type N connectors at 2300 MHz.

Quarter-wave coaxial resonators are provided for input and output frequencies. They are connected together by a coupling line with 4 mm wide brass tabs used as coupling capacitors. This line passes through a third compartment containing a multiplier diode type VSE 66P (Mullard/Philips). The diode is mounted at one end to a heat-sink and the other end has a cap and attached strip connecting to the coupling line.

Whereas the input coupling at 1152 MHz is by metallic connection to a tapping point, the output coupling at 2304 MHz is capacitive, by means of a disc about 6 mm diameter soldered to the inner conductor of the connector. The coupling is adjusted to optimum by screwing the connector in or out.

The author would be glad if others adopting this method of microwave SSB generation could inform him of their experiences. He would also like to acknowledge the assistance given by Terry VK5GU in suggesting the dividing circuitry. The Editor would like to acknowledge the invaluable assistance of Mr. R. Maier with the German to English translation.

A ROOF-RACK ANTENNA FOR HF

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Some time ago I had a small imported car that did not seem rugged enough in either the front or the rear end to carry a decent HF whip. I decided, therefore, to try a Discontinuous Directional Ring Radiator (DDRR) in the form of a roof-rack. The results obtained from its limited use were sufficiently good to allow me to recommend it to others who might like to try a bit of inconspicuous mobileing.

Figure 1 gives the essential details and dimensions. The four roof-rack clamps used were made by Wilbroc and the curved aluminum pieces of tubing were swiped from a defunct camping chair.

The radiating element was insulated from the holding clamps by slipping a piece of large sized PVC garden hose over the aluminum tubing. According to design data for DDRR antennas the radiating element should be about 440 cm long for 14 MHz. However, it seems that the three insulated mountings provided capacitive loading that resulted in a considerable shortening. In my case the actual length was 411 cm. In the normal DDRR configuration a capacitor is inserted across the gap in the ring to tune the radiator to the desired frequency. In this case no capacitor was required and tuning was accomplished by sliding a smaller section of tubing into the end of the larger part of the loop. Adjustments were made with the aid of a GDO and self-tapping screws were inserted after adjustment to hold things firm. Matching proved to be a simple matter of a tapered feed extending from the support at the grounded end of the loop to a point 35 cm along the radiator. Again, no capacitor seemed necessary to cancel the stray inductances and a SWR of 1.5 : 1 was obtained over the 14 MHz band.

The initial try-out was on the day of the 1974 Field Day Contest. The first response to a CQ Field Day was a call from a YS1! It did appear that we were getting out at least, even if we were not immediately answered by another Field Day contestant.

While the dimensions given worked for my particular car (a Datsun 120Y), there is no guarantee that these will immediately suit another type. Variations in dimensions and clamping details will possibly alter the radiator length required. However the system is offered here as one alternative to the usual compromise provided by the helical whip. The DDRR is supposed to be theoretically identical to a full quarter-wave ground plane. While the car roof does not quite give the full extension specified for a DDRR ground disc, it appears to go close to filling the bill. The DDRR has an added advantage in that, with some adjustment of feeding arrangements, it should work on 21 and 28 MHz. Although no check was made on the latter two frequencies, I did try it on 144 MHz!

Whether is was sheer luck or something else is unknown, but the SWR was below 1.5 : 1 for the 2 metre band and a number of contacts were made using the DDRR. It also remains a moot point as to which part of the structure was doing the radiating, or what orientation and direction this radiation took. As yet, no measurements of directivity have been made, either on 144 or 14 MHz.
Conventional coaxial cable losses make the use of long runs of such cable unattractive for use at UHF. Most of the cable does not need to be flexible so the use of rigid “cable” or line is possible. This article describes a method of building low loss, low cost rigid coaxial line.

The basic arrangement is shown in Fig. 1. A centre conductor of 3/16 in. copper wire and an outer conductor of 1/2 in. 16 gauge aluminium tube were selected to form a coaxial line because of their ready availability. The line impedance works out at 57.5 ohms, which is convenient. The copper wire may be purchased in rolls the same as fencing wire. It may be straightened by gentle hammering and stretching after cutting into 20 foot lengths. The aluminium tube may be purchased in 20 foot lengths.

Fabrication of the line is described below. The inner assembly details are shown in Fig. 2. The spacers are turned from 1/2 in. teflon rod, drilled and cut off with a parting-off tool or hacksaw. They should be a push fit on the inner wire and a loose fit inside the outer tube.

The outer tube is connected to a coaxial connector as shown in Fig. 3. The termination block is pressed on to the end tube until this is flush with the block face and then clamped with a 3/4 in. hose clamp over the slit.
Twenty foot lengths may be joined as follows. The outer tubes are butted together and the joiner, Fig. 4, clamped with two ¾ in. hose clamps. The inner conductor is joined as shown in Fig. 5. The two sections should firstly be completely assembled separately. The inner assembly is inserted into the outer, then the end connector is attached on to its mounting block with screws. The end clamp is fitted and tightened up and the joint sealed against entry of water. After fitting the two twenty foot lengths together a splint of two three foot lengths of 3/8 in. tubing taped to the centre joint will reduce strain on the joint and prevent a nasty accident during installation or service.

If the line is not run vertically, it should be supported as shown in Fig. 6.

The cost several years ago was 75 cents per foot. The loss at 422 MHz is less than ½ dB for the 40 foot length. The tube will now only be available in metric sizes so some adjustments will be required in the dimensions given. The impedance of the line, $Z$, can be calculated from the standard formula $Z = 138 \log (D/d)$, where $D$ is the inner diameter of the tube and $d$ is the diameter of the wire.

**AN EMERGENCY LIGHT FOR THE SHACK**

Have you ever been caught in the shack at the bottom of the garden on a dark and stormy night, when the power fails and you can’t lay your hands on a torch? Then read on.

The system is shown in Fig. 1. When plugged into the mains, the three nickel-cadmium cells are placed on charge, the charging rate being set by $R_1$ and indicated by the LED. In the prototype, $R_1$ was 120 ohms, giving a charge rate of approximately 30 mA. Loss of mains voltage will allow the lamp to turn on. Restoration of mains voltage will automatically turn the lamp off and place the cells once again on charge. Emergency light is available for several hours from the “nicads”.

There is a measure of built-in delay between the loss of mains voltage, and when the light is activated. This delay can be controlled within small limits by changing the value of the filter capacitor. Typical delay times are shown in Table 1.

The unit can be built into a “standard” flush light fitting mounted on the wall or ceiling, a hand lantern or whatever. A hand lantern has the advantage of portability, and will be most useful in getting you from the shack up into the house if the black-out is prolonged. All the components, including the three “D” size cells will fit comfortably in a “Dolphin” hand lantern. Connections to the supply can be made via a short lead or a suitable socket mounted on the rear of the torch. Note that the built-in switch of the torch must be left in the ON position. If a 9 volt “plugpack” power supply is available, then this could be used in place of the built-in power supply.

The PC board is simple and quite within the scope of those who use hand painted resist. A full size layout is reproduced as a guide.

**TABLE 1**

<table>
<thead>
<tr>
<th>C1 (µF)</th>
<th>Delay time (sec.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>220</td>
<td>0.5</td>
</tr>
<tr>
<td>470</td>
<td>1.0</td>
</tr>
<tr>
<td>1000</td>
<td>2.0</td>
</tr>
</tbody>
</table>
During a recent sojourn in G-land I had the opportunity and pleasure of visiting G6XN's antenna farm and of garnering a few ideas from Les as to how to go about exciting loops of wire to work as antennas on several bands. The present design was produced as a result of that visit.

While experiments are still being carried out, the results so far have been so encouraging that it was thought worth while reporting. Let me say at the outset, though, that the antenna, electrically, is due more to G6XN's know-how and experimenting than to any technical brilliance on my own part. The physical configuration described here, however, can be blamed directly on myself. In spite of the lack of visual aesthetics, the system may offer sufficient virtues and advantages for others to wish to try. It works as a rotatable directional array, albeit with some limitations in efficiency, on 40, 20, 15 and 10 metres. It is light, weighing about 3 kg from the rotator upward, and can easily be turned with a TV rotator. The turning circle is 11 ft. and, best of all from my point of view, it can be tuned entirely from the ground.

Basically it is a cubical quad system using two 12 ft. 6 in. square loops of wire each tuned by a closed stub about 45 ft. long. Given that the array is placed no higher than about 50 ft. the stubs fall within reach of terra firma, a condition that will be appreciated by all those who no longer have the ability to imitate our simian ancestors! Physically, the system is realised by arranging the loops around the corners of a cube formed by what initially appears to be a ground plane for 21 MHz (see Fig. 1). Three-quarter inch hard-drawn aluminium tubing was used for both the centre upright and the four radials. The centre upright was insulated from the rest of the structure at the base by a paxolin tube to break up the electrical mass of the support structure. The wire elements are held away from the structure by Estapol-coated dowelling jammed into the ends of the radial supporting tubes. Rather than bring the tops of the two element loops together a 3 ft. cross-tree of dowelling was fitted at the top with the aid of nylon cord down-
bracing. While theoretically the two loops should be further apart, 3 ft. seemed to be a good compromise. Nylon cord was also used at the bottom of each loop to pull these in to about 3 ft. apart.

As the system is meant to rotate through 360° some arrangement had to be devised to allow the trailing stubs to turn with the elements without tangling or entwining with the mast and its guys. In practice this meant a twist of 180° in either direction. This was achieved successfully by the use of two dowelling standoff supports, one attached to rotate freely at about 3 ft. below the loop-to-stub termination, and the other fixed to the mast 3 ft. below the other. If some slack is allowed in attaching the stubs it will be found that the array can twist through 180° without unduly affecting the stub tuning. Some form of standoff support is also needed to hold the remainder of the two stubs away from the tower, and possibly along the ground if the tower height is less than the length of either stub. Nylon rope was used in guying the mast for the first 4 ft. or so to avoid interactive effects between the guys and the stubs.

ERECTION AND TUNING

Erection can be done, and was done, single-handed, for all of the apparent size, the whole array is quite light and easy to balance. In fact, it can be held up in one hand (if no wind!). I used a 25 ft. length of 1½ in. OD aluminium tubing to loft the array skywards from the back balcony of my QTH. With the array in place and the stubs tied down tuning was done by applying a GDO to the end of the stub in question just above the shorting bar. My initial aim was quite unambitious, simply that of making it work on 20. It turned out to be quite easy to find a position for the shorting bar to resonate on 14.2 MHz. Quickly checking for resonances on other bands I found that the driven element gave nice dips on 7.1, 21.4, and 28 MHz. Not bad! As I was anxious to feed some soup into the thing I improvised a 4:1 balun* out of two lengths of 73 ohm twin to take the end of a RG-8/U coax feedline to an impedance which I guessed to be suitable at about 3 ft. up from the shorted end of the stub. As it turned out, the position was just right and there was scarcely a flicker from the SWR meter in the reverse direction. A check on the higher bands showed that I was in luck, almost no return power at 21.35 and 28.1 MHz. After a slight adjustment of stub tuning and alteration of loop dimensions a low SWR was obtained for all three bands.

The GDO was also used to tune the second loop as a reflector by application to its stub. Again, by adjusting the loop size slightly and the stub length a compromise position was found where the reflector resonated about 5 per cent lower in frequency for two of the three bands. A check with received signals indicated that a front-to-back ratio of about 8 to 10 dB could be obtained for 14.2 MHz and about 20 dB for 28.6 MHz. Fifteen metres was a different story. Due to the fact that the loop tuned high on this band the front-to-back was about —10 dB. In other words, the loop was acting as a director rather than a reflector. OK, so one just has to remember to reverse directions mentally from that indicated by the beam rotator when using the beam on 15!

No doubt a better compromise could be reached by adjustment of the various dimensions, but I chose to leave well alone.

While the principal aim of the exercise was to build an antenna which would work on 20, 15 and 10 metres, according to my reckoning it should work on 40 too, perhaps with some loss of efficiency! As it turned out, the loop plus stub arrangement did show a nice GDO dip on 7.1 MHz and a SWR of about 2.5:1 was indicated when RF was fed in. Again, no doubt a better SWR could have been obtained by adjustment, but as my interest in 40 was minor I thought it better not to disturb the good readings obtained for the other bands. More intrepid experimenters may like to improve on my results by further juggling the dimensions. As for 15 metres, the back-to-front for 40 turned out to be reversed. As far as I could tell the directional effect seemed to be weak, perhaps about only 5 dB. This could probably be improved also by further adjustment. Remember, though, that any adjustments affect all four bands.

How well did it work? Quite well in fact. While no comparisons could be made with a conventional beam, the impression was that it was not quite as good as the 3 element mono-band yagi used previously on 20. The virtues of this mini-quad, however, are obvious for those who are happy to sacrifice gain and efficiency.

* A QUICK, MULTI-BAND BALUN

A simple 1:1 balun for HF can be made by taking two lengths of 70 ohm twin of about a ¼ wave-length for the lowest frequency to be used, coiling both together into a bundle of about 6 in. diameter, taping, and joining the four wires at each end in accordance with the balun configuration. I have found that such a device works well to feed the end of coax to a balanced antenna for 20, 15 and 10 metres. In all probability ordinary figure-eight would serve just as well.

VK4LR

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Photographs for AR

DON’T KEEP THEM TO YOURSELF

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A SIMPLE REGULATED POWER SUPPLY

Following on from the supply described recently (1), here is a design that may appeal to those who require a supply with a shut-down facility rather than the more often used current-limiting version. The decision to use shut-down may simply be personal preference or it may be a technical requirement.

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The supply built by the author some months ago satisfied the need for a 12V, 1.5A unit requiring shut-down. Higher currents may, of course, be obtained by external pass transistors in the usual fashion.

The circuit of the supply is shown in Fig. 1 and follows the ideas put forward in the original article, i.e., keep it simple. As can be seen, the heart of the unit is the regulator IC, uA 723. The pin numbers in the circuit refer to the 10 pin metal can version (because it was on hand). There is no reason why you should not be using the 14 pin DIL version if you have them. (For pin numbers see reference (1).)

The basic information for the shut-down operation is given by the manufacturer of the device (2). I required an indication by way of an LED to signal that an overload had occurred. A simple push-button will reset the supply once the overload has been removed. My supply has pre-set output voltage. If you require adjustable output then substitute a potentiometer in place of VR1 and R2 (as per reference (1)). R1 limits the switch on surge to within the ratings of the diode bridge (30A peak). In the event of an overload, some power is dissipated in R6 and R7. This is done intentionally in order to prevent the voltage across C1 rising above its voltage rating. A capacitor with a higher voltage rating would have been too big physically. D1 is included to protect TR2 and IC1 in the event of the load generating a back EMF or other undesirable transient when the supply shuts down.

The SCR I have used comes from a packet of unmarked SCR devices sold by Tandy's. They are low power devices and look something like a BC108 transistor. I have tried several and they all work. You will need to adjust R8 to get satisfactory triggering, however, watch you don't reduce too much or you will exceed the gate current of the device (not at all desirable). I suggest if the thing does not trigger with

R8 = 1k ohm, try another, or buy the one listed in the circuit diagram, if you don't feel like experimenting.

The construction is not at all critical. I have not given a PCB layout; you might feel like giving it a go. This might be a good project for "starters" in the art of making printed circuit boards.

Under conditions of capacitive loads the supply will cut out upon switch on although the current drawn is not anywhere near the limits of the supply. This is due to the surge as the external capacitors are trying to charge up. However, the action of the overload circuit is so fast that it shuts down before any charging-up can occur.

A small capacitor and a diode will need to be added to the circuit to "soften" the turn on action. These two components are shown as D3 and C5 in the circuit diagram Fig. 1.

REFERENCES:

Amateur Radio  October 1979  Page 17
Review: THE TONO THETA 7000 COMMUNICATION COMPUTER

By AR Editorial Staff

The TONO THETA 7000 Communications Computer (to give it the full title) is a highly sophisticated state of the art RTTY, ASCII and CW receiving and transmitting terminal, and projects the information on a normal television receiver or VDU monitor.

It is not often that we get the opportunity to look at the latest in amateur equipment as it actually hits the market, and we were grateful when we contacted VICOM that a unit was made readily available for a review.

The unit itself is very compact, measuring 400 mm x 300 mm x 120 mm and weighs 4.5 kg.

It incorporates many facilities including being able to be used as a terminal for an external microcomputer, and is not restricted to amateur communications. It can also be used for many types of commercial traffic.

The built-in RTTY demodulator has three shifts: 170 Hz for normal amateur use, also 425 Hz and 850 Hz, making it a very versatile unit in this mode. FSK or AFSK may be used.

Character speeds of 45.45, 50, 56.88 and 74 baud are available at the push of a button, and in the ASCII mode speeds of 110 and 300 baud are selectable.

The unit has several reasonably large capacity memories, including a buffer memory with recall.

CW sending and receiving is also fully automatic, with adjustable speeds and weight for varying character ratios.

The control panel is a modern type-writer keyboard and is silent in use.

We tested the unit basically from an operator's point of view, and did not delve into the circuitry with any depth.

Suffice to say that it is fully solid state, with a Central Processing Unit, and naturally due to its complexity, would not lend itself to "fiddling" by over-enthusiastic experimenters.

One would have to consider that providing the unit was operated in accordance with the instructions, and the "works" be left alone, many years of excellent service would be obtained.

The unit comes with a fairly comprehensive instruction manual, and even a limited service manual for various adjustments.

Both manuals are written in the typical pseudo English from Japanese translation we are now becoming used to, and it is necessary to read over some of the sections several times to obtain a thorough understanding.

ON-AIR TESTING

On-air tests were restricted to the RTTY and CW modes, we did not encounter any ASCII transmissions during the tests, so we were unable to fully appreciate that mode.

It is very easy to be over critical with a device such as this, and after a period of becoming fully conversant with its capabilities, we found it a delight and relatively simple to operate.

RTTY

It certainly helps if the operator has some form of typing capability, but the testers were only "two finger" typists, and even though we were slow at first, we had no trouble in keeping up with some of the more experienced operators in our QSOs.

We generally found that signals less than S3 provided a marginal copy only, in both RTTY and CW. It was interesting to note that on occasions where the "woodpecker" was evident, or with QRM from SSB and some CW stations, the display was not affected.

The automatic carriage return and letters and figures shift means that the operator does not have to concern himself with "running off the page" or typing "asterisks", etc., in place of numbers. It is all done for you, and helps to speed up transmission.

The memory functions are very useful, and permanent short messages such as call signs, basic details, etc., may be stored for instant recall.

CW

The signal to noise ratio on most bands produced excellent CW copy from keyers.

The easy way to copy CW at virtually any speed.

Hand sent CW is often not optimally spaced, and the unit produced some odd characters if a station operator was inconsistent, e.g., "HI" was often displayed as "HEE".

Some noise bursts, particularly on 80 metres, produced a string of "Es", but after a while one became used to this, and it was amazing how quickly we were able to mentally correct what was being displayed.

It is obvious that the unit performs its best on receiving keyer sent code.

In monitoring two or more stations on CW we found it necessary for all stations to be zero beat, or within 100 Hz of each other, to save returning the receiver. This is actually quite an important facility, as it proves the effectiveness of the filters by rejecting QRM as mentioned earlier.

SUMMARY

The general consensus of the testers was that the TONO Corporation has produced a very effective and efficient terminal. It is a new generation of amateur equipment and should prove itself popular with amateurs and commercial users.

The unit performed to its specifications and, after spending several hours to become fully accustomed to its capabilities, we found very little to criticise.

We found it relaxing to use and were grateful for the help and understanding given by the other amateurs we contacted.

The TONO THETA 7000 is the ideal unit for the RTTY enthusiast who detests noisy teletypes and who would also like to work some CW, or for the CW fiend who would like to try RTTY.

It is not particularly cheap, although very competitively priced to other similar units. At the time of testing the price is $839, and is available from VICOM and their distributors.
Contacts should always be logged in UTC, or GMT as this gives a universal basis of comparison rather than in local time. Local time may not mean anything to someone in another country and could result in a card being returned as the log entry could not be found.

An easy way of keeping the log is to have a 24 hour clock running in UTC. This can be set to WWV and will then enable you to have a log using UTC.

However a snag arises in that 24 hour clocks are not available over the counter in every shop. All is not lost though as most electronic clock integrated circuits provide a 24 hour option.

The DC operated digital clocks are initially very attractive but unfortunately most of them use a colour TV crystal from the USA. These are very cheap as they are mass produced and so is an integrated circuit divider to bring this down to a suitable input for the clock circuit. However the frequency of this crystal is 3,579545 MHz. This is rather unfortunate as it places a rather large birdie in several amateur bands.

A better alternative is the mains operated clocks which use the AC mains. The AC mains hold frequency very well and for a clock are quite adequate.

An AC mains type 24 Clock Module has recently been advertised by Dick Smith at the extremely attractive price of $6.90. All you need with this module is a transformer, some switches and a case. The module is a 24 hour unit and is actually a unit designed for use in a clock radio. As a result of this an alarm driving output is available. The module is type MA1008. Similar modules are the MA1002 series.

Suitable transformers, switches, buzzers and cases are also available. These parts may be used in the clock described.

A word of caution is in order before you start though. These modules use an MOS integrated circuit and several of the inputs are of necessity brought out to connect to switches. When soldering the module into circuit the module should be grounded by attaching a clip lead to the power supply section of the circuit board. The electrolytic capacitor leads are very convenient. The soldering iron should also be earthed as also should any tools and also yourself. Quite high resistance earthing is satisfactory and you may discharge your static charge by touching any of the earthed objects.

In spite of all these problems with MOS the author was able to solder and unsolder the circuitry several times without any trouble. The reason for this was that the first lashup was outside the case and then when in the case a few wrong connections had to be sorted out.

The module is wired up in accordance with the data sheet as shown in Figure 1. A circuit board layout with connections is shown in Figure 2. The alarm need not be used but it can be handy for reminding you of schedules or to alert you to listen to WWV for the propagation broadcast. The seconds display is used in setting the time and a toggle switch may be easier to use than a push button.

The alarm in this module provides an output to drive a transistor which turns on...
were clock adjusted by varying the values of \( R \) from

The author mounted the clock in a Horwood aluminium box. These boxes consist of a piece of aluminium extrusion with suitable end plates. The module was positioned close to the edge which put the readout centrally in the end. The readout outline was then marked on to masking tape covering the panel. A suitable cut-out was then punched and filed to shape.

When mounting the module 8 BA screws were used with small insulated washers, as some tracks are very close to the mounting holes.

The brightness of the display may be adjusted by varying the values of \( R \) from 680 ohms to 10k. A fixed resistor is simplest but a potentiometer may be used if you wish to vary the brightness. The author found a 1k resistor to be suitable.

The mains fuses were included as the sonalert is another suitable type which whilst dearer will give an ear splitting level if required. The transistor may be virtually any NPN silicon type.

The mains fuses were included as the sonalert is another suitable type which whilst dearer will give an ear splitting level if required. The transistor may be virtually any NPN silicon type.

The seconds display button shows the last figure of the minutes display plus the two seconds digits. The fast and slow buttons may be operated also. The fast set button allows you to reset the seconds to zero in this condition. Also with the seconds button pushed simultaneously pressing both fast and slow buttons will reset the clock to 0:00:00 or 0 hours. This last feature may be very useful at times. To set the clock to WWV manipulate the fast and slow buttons to set the time display to one minute in advance of the last announcement. Then operate the seconds button and flip the fast button to reset the seconds to zero. Then wait till the minute display is announced.

The alarm may be set by operating the alarm display button and then using the fast and slow set buttons to change the displayed alarm time. A reset is available by pushing both fast and slow buttons in this mode. This resets to 0:00. The alarm is turned on by a switch which indicates on the display by an LED in the bottom right-hand corner of the display. The alarm display switch also provides a 9 minute snooze feature when the alarm operates.

Considerable variation in layout, switches and transformer used is possible and in the features used. The exact mix selected is up to you. However the result is a most useful and noise free 24 hour clock. It would also be possible to run several modules to provide a number of displays set to various time zones. This would be a very easy way to use display of time around the world.

Should you wish to use one of the multi-tapped transformers of 18 volts or so, then refer to Fig. 3 for connection details. These are often more readily available than the special clock transformer. Whilst a Ferguson transformer is shown there are many similar multi-tapped transformers made by all manufacturers. Small differences in voltage will cause no concern as the module is usable over a reasonable range of voltages.

\[
\text{FIG. 3: Alternative Transformer}
\]

![FIG. 3: Alternative Transformer](image_url)

Give the fast set button a flick whilst keeping the seconds button depressed as the tone beep is heard. Release the seconds button and the clock is set on UTC.

**AMATEUR SATELLITES**

Bob Arnold VK3ZBB

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**EDITOR'S NOTE:** Due to unforeseen circumstances, this column will appear in the next issue.
TRY THIS
WITH THE TECHNICAL EDITORS

In my home brew transceiver, which uses a Yaesu 5174 kHz filter, I used originally a VFO on about 8 MHz. This gave outputs directly on 80 and 20 metres, from the difference and the sum respectively. The VFO was pre-mixed with a crystal oscillator for 40 and 15 metres. I was not happy with this as the 80 and 20 metre calibrations were different, and the 40 and 15 metre calibrations read backwards.

I have now changed the VFO to cover 5826 to 5426 kHz, and this is pre-mixed on every band. The result is a dial reading the same way on all bands, and the positions of the 100 kHz calibration points are virtually unchanged from band to band. Readers who like to build their own may be interested in an outline of the system.

The difference between upper and lower sideband carrier frequencies with this filter is 3.3 kHz. The original crystal on 5172.4 kHz was used for LSB, and another crystal on 5175.7 for USB.

As the VFO scale was not linear I preferred to use the lower half of its range for 80 and 40 metres, with pre-mixing crystals of 14.3 and 17.8 MHz respectively. The full VFO range is used on 20 and 15 metres, the crystals being 25.0 and 32.0 MHz. There are trimmers across each crystal except that on 25 MHz, and these permit adjustment of the 100 kHz calibration points to within about 1 kHz of agreement on all bands. Slightly different crystal frequencies would be necessary to improve on this.

The partial circuit diagram indicates how it is done. Note that FETs are used in mixer, crystal oscillator, and VFO functions, and that to minimise RF band-switching a separate optimised mixer-crystal oscillator combination is used on each band.

Jonathan Kitchin VK6TU.

RIGHT:
FIGURE 3:
Schematic of Oscillator-Mixer.

MY OLD FLAME

A warmth infuses thru my frame
When I think of my old flame.
Passionate, all the more because
I made her what she really was.
Small, elegant, pert and neat;
A well-turned leg and tiny feet.
All her lines were smart and trim;
A touch of class — none more slim.
Orbs that glowed in hot replay
To every word I had to say.
— Adorned her chassis with the best
I showed her off at each Hamfest.

I treated her to tenderness.
The sweetest thing I did possess.
At times we spent the whole night thru
Close together, just us two.
And tho the years have sped away.
It only seems like yesterday.
This affair with my old flame,
But, you ask, what's her name,
This one you loved, warm and big,
The answer is, MY HOME BREWED RIG.

Alan Shawsmith VK4SS.

Are you checking our bands for INTRUDERS
AND REPORTING SAME TO THE INTRUDER WATCH CO-ORDINATOR?
MY OM—AN IDIOPATHIC NARCOLEPTIC HAM

Many more YFs, YLs and OGs seem to find themselves, whether they like it or not, involved in this new surge of AR activity. I’m getting more and more calls on the twin telling that their OM’s going bonkers—like working up at the top of the mast half the night to fix the beam, so as he can come down at 4 a.m. for a ten second QSO with some DXpedition. Well, here’s another YF who’s learnt of the funny (queer) things AR can do to the “better half”. Let me tell you about my OM.

He’s been a DX compulsive for many more years than I care to remember and it sure has worked some changes—even more these past few months: nodding off at odd times and places, as it suddenly bored. I put it down to no new DX but my guess was wrong, for the other day, when tidying his desk, I received quite a jolt. Being his Girl Friday, I attend to the mail. There was this letter lying open and addressed to a city psychiatrist from our local GP. It read in part, “... shows clear clinical evidence of IDIOPATHIC NARCOLEPSY... but suggest an EEG for first elimination of...”

I stared and read it again. No, there was no mistake: it was our own GP referring my OM to a headshrinker for a brain-wave test. It took a moment for the shock to pass. So, my OB was sick — and in the head. He had IDIOPATHIC NARCOLEPSY, whatever that was. The words fairly leapt out of the page at me: now suddenly saw him in a new light — so that was why he was so cranky and bloody-minded. How long had he been getting like this? What had he been doing, why had he been doing it? For how many years?

I caught the GP on the phone, at a party, or even in the street. "What the hell’s the matter with your OM? He’s been wearing us out!"

"Nothing!" I said. "You tag him with a dreadful sounding complaint — er, what it called, "PATHETIC EPLEPSY...?"

"... IDIOPATHIC NARCOLEPSY."

"Yes and send him to have his head read by some ‘shrinker’ — and you say that’s NOTHING. What is this, a con game, or are you up to some sort of a rip off?"

"No, I assure you, there’s nothing seriously wrong with your OM.

"But he is sick?"

"Not in the lay sense."

"Look," I said, slapping the desk impatiently, "do you mind if we go back to square one, where I came in and asked for an explanation."

"Right, a NARCOLEPTIC is a person who can’t stay awake when sleepy. Most can but a NARCOLEPTIC can’t. That’s the difference. He simply drops off any time, anywhere; such as standing up in a bus, on the phone, at a party, or even in the ‘loo’. Fortunately, only very occasionally does it indicate something serious. The other day your OM dropped by for his regular medical. He complained that he’s half-awake at night and half-asleep all day and getting worse. Now, I’ve known the OB for years and I was certain he was OK but I had an EEG done, just because any GP can’t afford to make a mistake. The test showed he’s as normal as both of us. Satisfied?"

"OK. Well, if he’s not sick but has a medical condition, what’s wrong with him?"

"Ham Radio."

"You mean that’s the cause of his IDIOTIC...?"

"Yes, he’s flipped his twenty-four hour cycle."

"... flipped his what!"

"We all have a daily cycle, which is part of our biorhythms. Nature meant us to slow down and sleep at night — but your OM doesn’t. Insomniacs like he is are mostly self-made, for a variety of reasons. He doesn’t know it now, because the habit’s become planted in his subconscious long ago but he wants to get up with the first cock crow; apparently that’s the time he likes to chase DX and it’s put him out of tune with his natural cycle."

"How crazy — he’s tuned every cycle on the HF bands a million times over and flipped his own."

"— er, yes, if you like. You can cheat on sleep for a while but, in the long run, nature wins out — and in your OM’s case, he’s developed IDIOPATHIC NARCOLEPSY."

"OK. What’s the treatment?"

"None."

"NONE!!"

"He’s happy. Just let him be. What he’s got is harmless and trying to change him now, after thirty years, may produce a neurosis. I wish all my patients had a good hobby: I’d have less psychosomatic nuts to treat."

"But he’s becoming an embarrassment. He has dinner, then switches on the TV and is snoring before the picture tube is in focus. Later, friends drop by and, as soon as we are settled and talking, he nods off in the middle of a sentence. What can I say? If they knew he’s become an IDIOPATHIC NARCOLEPTIC, there’d be a stampede out of the house. With a name like that, they’d think it was contagious, or fits, or something..."

"Just tell them he’s been overworking."

"I know what they’d say to that!"

Well, you can’t stop a thing like that from getting around the neighborhood — and yesterday, it happened. The phone rang and I recognised the local Police Sergeant’s Irish brogue. "—er, your good man is with us. He was doing some evidence about an accident he witnessed and, all of a sudden, he went clean out in the middle of it. He’s not been drinking, he’s too clear-minded for that, so tell me, does he take drugs?"

"No, never."

"Then, is he sick? We didn’t want to wake him, In case it was wrong."

"Yes and no."

There was silence on the line as the arm of the law pondered the ambiguity. I knew there was nothing for it but the truth.

"He’s an IDIOPATHIC NARCOLEPTIC."

More silence, then in shocked tones, "He is? Oh... he has, is—he is that! Shall we get him off to hospital right away?"

"No, no, it’s nothing. Just nudge him awake and he’ll carry on as if it never happened."

So, there you are, that’s what thirty years of AR and too much DX and too little sleep has done to my OM. Every pastime has some long term hazard. It’s lumbered me with an IN for a partner. So, watch it; if your OM is a night-time DX compulsive, be prepared for anything, eventually.

I guess I’d better take the Doc’s advice and try not change... OM... might... for... worse... Oops, sorry... must have dozed off at the “mill” here. I can hear a cock crowing, so it’s time to QRT, or the OM’ll be turning out before I turn in.

Helen, YF of Al VK4SS.
FINDING THE RARE DX

Invariably the rare DX station is "at the other end of the band". During periods of peak activity on the bands, calling CQ will not necessarily bring results.

Remember that, although the band may appear to be reasonably clear at your end, on the other side of the world there may be many local stations transmitting and possibly using the exact frequency that you are calling CQ on.

This of course would prevent your call from being heard, so it is reasonable to assume that if you do receive a reply to your CQ then either you are not getting through or the frequency is in use.

Also during busy periods, especially between early evening and midnight in Australia, many many stations will be calling CQ, possibly on the same frequency that you are using. Even though you may not hear them, the operator in another country will, and may find it difficult to sort out the jumble of call signs all coming through at once.

For this reason the experienced DX operator will listen carefully and answer an overseas station calling CQ, particularly the weaker ones.

After midnight, the majority of local operators will have gone off the air and it is more likely that with clearer frequencies, your CQ will be heard and answered.

However, it should always be remembered that any CQ at any time may bring results if you are lucky to be in the right place at the right time.

The successful DX operator is the one that LISTENS.

HOW TO GET THE QSL CARD

If the station you are working is considered rare DX the chances of your receiving a card by direct air mail, even though you send h.m.y yours that way, are remote. He has thousands possibly to send out and is unlikely to favour you in particular. Sending him IRCs increases the chances slightly, but it is wise to check.

I worked an Arabian station that was actually being operated by an Englishman. I asked him if he would QSL direct and would IRCs be appreciated. He said that he answered all cards and if I wanted mine direct it would certainly assist with the postage. I anticipate that that card will arrive in due course.

But remember it costs over $1 to send a letter air mail from South America, and if a station is sending out 300 cards per week, it could amount to six times his salary.

There are exceptions of course but generally they are with more personal contacts and not DX stations working many local operators for long periods at a stretch.

Helpful hints...

Make sure your card is filled out properly with the time in GMT.

Write a short interesting note on the back of your card, but remember that cards via the bureau are limited to five words only.

If possible, try to get your address over to the DX station at the time of contact...if he confirms it correctly you have a chance.

Send one card direct, one through the bureau as well.

Confirm with the DX station at the time of contact that he is OK in the latest call book.

Countries that are reliable in returning QSLs: England, Scotland, France, Germany, Sweden, Norway, Denmark, Japan, Canada.

75 per cent returns: USA, New Zealand, Brazil, Italy, Spain, Eastern Europe.

50 per cent returns: Mexico, other South American countries, South Africa, USSR, Central America, South-East Asia, India, the Far East.

DIRECT OR VIA THE BUREAU

Cards may be sent via the WIA bureau free of charge or at a nominal cost to members.

A maximum message of five words is permitted in the remarks section on your card and the call sign of the station to whom the card is to be sent should be written on the back in the top right hand corner.

Cards sent via the bureau to Australian amateurs may be collected free of charge.

Postage rates at present are (air mail): USA and Canada 50c, Japan 40c, Europe and foreign 55c.

It is not always wise to send unsealed envelopes marked "card only" to certain foreign countries. Do not put Y3GH, for example, or any indication that the letter is to an amateur, as this invites the IRC or green stamp thief.

All cards to the Soviet countries must be sent to Box 88, Moscow, and no Russian may QSL direct. You will receive any Russian cards through the bureau.

TIME

When you are working USA at 2300 GMT on Monday 16th in Melbourne it will be Sunday night on the 15th in USA.

When you are working England at 1100 GMT on Monday 16th in Melbourne it will be Monday on the same day in England.

HAD A WOODPECKER IN THE PILE-UP LATELY?

Have you ever known the frustration of copying that elusive piece of DX on HF and suddenly been plagued by an ever-increasing crescendo of zips, zaps, crackles and grinds reminiscent of a buzz saw with a power supply suffering from the bends?

In total disgust have you then retired to the comfort of your living room and switched on the faithful old colour, or black and white telly only to have your distraught nerves totally shattered by half the picture vanishing beneath a series of fragmented lines moving in bands either slowly up, or down the screen?

Fear not! You haven't been smitten by the dreaded Russian Woodpecker, the Soviet over-the-horizon radar transmission; we have a far worse enemy in our midst: That of electrical transmission line hash.

As far as radio signals are concerned, it has largely been a country area problem, as signals in the city and suburban areas are usually strong enough to drown out the majority of the hash, on the medium and low frequency bands. With the gradual introduction of many local country commercial broadcasting stations, the problem of hash tended to be pushed into the background—that is, until the introduction of television, and particularly colour television. It manifests itself here in a number of ways—

With black and white receivers the hash shows up usually as a series of black dots.
occupying one line space, and combined into 2 bands of varying widths which move up or down the screen obscuring 50 per cent of the picture area. The number of lines involved, and their movement either up or down is usually dependent on the precise relationship between the mains frequency and the field scanning rate. In very severe cases where the interference bandwidth is wide and of a very strong intensity, it can cause horizontal pulling of the picture when the vertical synchronisation is tripped, by its movement into the vertical blanking period. In some cases it affects the vestigial sideband carrying the sound, destroying its quality.

It has been noted by the author of this article at his home QTH, that the effects are not wholly confined to MF commercial broadcast stations and VHF television stations. It rears its ugly head in all portions of the HF amateur allocations, and becomes progressively worse as the frequency drops. On occasions, listening to 80m on a general coverage receiver becomes near impossible!

One peculiarity of the dreaded hash is its relationship with changes in weather conditions. Usually with the onset of rain the problem will vanish, leaving the airwaves very clear while the weather remains wet. When the fine weather returns, it may be days or even weeks before it returns again. This is particularly so during the winter months. On the other hand it is aggravated by the humid conditions encountered during the summer months; particularly at sundown with a drop in temperature and a change in humidity. Light rain drizzle will often trigger it into its worst form of disruption until the onset of heavy rain. I have noticed at my QTH that there appears to be a definite link between the above factors and the load condition of a step-down transformer not 30 metres away from the house.

Many theories have been forwarded as to the reason for this interference, the most common being that of the "dust on the insulators", where a layer of dust provides a leakage track across the insulators until rain washed it off. The same problem occurring again when another layer of dust accumulated. Another theory is that of the "loose hardware" variety. It suggests that any two pieces of metal in loose contact within a strong field adjacent to the power cables could produce small sparks between them, thus generating an RF field.

Whatever the answer is, there is no doubt that the high voltage transmission lines can seriously affect the reception of both radio and television signals when the abovementioned conditions prevail. It is also hoped that some kind soul in the responsible utility organisation will read this article and hopefully for ever banish the dreaded Gosford Woodpecker.


AROUND THE NOVICE SHACKS

THE CQDX RADIO GROUP

Our group is just one of many thousands of similar groups throughout the world with the same aim, to assist each other. Long may it continue.

Photo No. 1: SEATED, from left: John VK3NNF, Roy VK3AOH, Paul VK3VDP (front), Ian VK3VAG (Club President), Trevor VK3NR, Wayne VK3VEW (front), Bob VK3VGG, Bill (SWL), Peter VK3NNY. BACK ROW, standing from left: Kevin VK3NXE, Rick VK3VHF, Gerard VK3NWZ, Graham VK3NOA, Mark VK3VEV, John VK3NBR, David VK3NDO, Colin VK3VBU.

The above photo shows the other two senior members of the club and they are: Len VK3ZGP/NAC (left) and Howard VK3ZJY/NGV. We have one other ham in the group (not illustrated) and that is Merv VK3AMB who instructs in Morse Code. (VK3NXE and VK3NWZ are brothers as are VK3NOA and VK3NNY. VK3VHF and VK3VDP are father and son and so are VK3VAG and VK3VEV.)
Over 1300 CCA transmitters are in use worldwide. The CCA FM range covers everything from a modest 10W. to 80KW. Why do so many broadcasters rely on CCA? Because all CCA transmitters are designed to cut operating costs. By using proven grounded-grid design. Grounded-grid design cuts the expense of frequent replacement which is inherent in designs using HF tetrodes for FM transmission. In a recent survey, WFPG-FM achieved continuous running of 55,586 hours from a final amplifier tube. That’s CCA efficiency and economy in action. CCA make a full line of FM transmitters, antennas and accessories. When you want to make great sounding savings on your new installation, call us for the full CCA story.

What do 34 leading North American broadcasters and VICOM have in common?

WFPG Atlantic City
KFOX Long Beach
KOSI Denver
KVOD Denver
KAAT Denver
WMOD Washington
WEBH Chicago
WEFM Chicago
WGRT Chicago
KADI St. Louis
KCFM St. Louis
WNYP Rochester
WEED
WDA
WMG

WFCN Nashville
WAMB Nashville
KRBG Houston
KHCB Houston
KRSP Salt Lake City
WQFM Milwaukee
WFMR Milwaukee
CBC Toronto
CBC Calgary
CBC Winnipeg
CBC Peace River
CBC Kitimat
CBC St. Johns
CBC Halifax
CBC Ottawa

CCA-FM transmitters are available with ratings from 10, 40, 100, 250, 1000, 2500, 3000, 4000, 5000, 8000, 12000, 20000, 25000, 27500, 40000, 55000 and 80000 watts. CCA also offers a full line of AM, FM, HF, UHF and VHF transmitters and TV translators. Accessories include limiters, auto switchers, auto power controls, studio equipment and consoles.
QUALITY ACCESSORIES FROM DAIWA

NEW!

Mast-Head Divider
AD103X 59.00
Run 70 cm, 2m and HF antennas into the one coax line.

Automatic Antenna Tuners
CNA1001 200W Model 269.00
CNA2002 2.5 Kw Model 569.00
A new concept in antenna tuning!
Patent application pending.

SWR & POWER METERS

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Cross-needle type offer DIRECT readings.

ANTENNA COUPLERS

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<td>1.9-28 MHz, 500 wpep</td>
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<td></td>
</tr>
<tr>
<td>CNW217</td>
<td>Includes SWR/PWR Meter, 200W</td>
<td>165.00</td>
<td></td>
</tr>
<tr>
<td>CNW417</td>
<td>Includes SWR/PWR meter, 500W</td>
<td>199.00</td>
<td></td>
</tr>
</tbody>
</table>

High quality couplers, 2 models includes cross-needle SWR/PWR meters.

SPEECH PROCESSORS

RF660 Phasing type dc 109.00
RF440 Phasing type ac/dc 126.00
RF550 Fitter type, ac/dc 169.00
MC330 Speech compressor 99.00

Increase talk power with splatter free operation. RF clipping (not in MC330) assures low distortion. Simply install between microphone and transmitter.

Typical specs RF660:
Talk power: Better than 6dB
Freq. Response: 200Hz-3000Hz at 12dB down
Distortion: less than 3% at 1 KHz, 20dB clipping.
Power Req.: 13.8 Vdc at 50mA.

ROUTERS

<table>
<thead>
<tr>
<th>Model</th>
<th>Medium Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR7500S</td>
<td>189.00</td>
<td></td>
</tr>
<tr>
<td>DR7600S</td>
<td>259.00</td>
<td></td>
</tr>
</tbody>
</table>

* High dependability: weather sealed
* Quiet operation
* Complete with attractive controller

COAXIAL SWITCHES

2 Position model CS201 23.00
4 Position model CS401 59.00

Professionally engineered cavity construction, high isolation.
Power rating: 2.5 KW pep, 1 KW CW
Impedance: 50 ohm
Insertion loss: less than 2dB
Maximum frequency: 500 MHz
Isolation: Better than 60dB at 300MHz.

COAXIAL RELAYS

<table>
<thead>
<tr>
<th>Model</th>
<th>100W pep max model</th>
<th>200W pep max model</th>
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<tr>
<td>CX2L</td>
<td>45.00</td>
<td>69.00</td>
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<tr>
<td>CX2H</td>
<td>500W pep max model</td>
<td>100W pep max model</td>
<td></td>
</tr>
</tbody>
</table>

Quality change-over relays use 10-15 vdc.
Frequency Range: CX2L 1.8-170 MHz.
CX2H 1.8-450 MHz.

Available from your Vicom Dealer

VICOM
68 Eastern Road, South Melbourne, Victoria, 3205
Ph. (03) 699 6700
MORE GOOD NEWS ABOUT NEW GEAR — FROM VICOM
KENWOOD R-1000
COMMUNICATIONS RECEIVER

200 KHz-30 MHz

$485

ICOM IC211
2m transceiver

- 144 to 148 MHz coverage
- Modes SSB, CW, FM
- LSI synthesizer PLL
- 4-digit LED readout
- Pulse-type noise blanker
- VOX w adjustable gain
- SWR bridge
- CW monitor
- Automatic power control
- AC/DC power supplies
- Antenna impedance 50 ohms unbalanced
- TX output: 10W PEP

$847

I C22S 2MFM STILL $299

800CH TRANSCEIVER

- handheld
- 1.5w output
- 144-148 MHz
- 800 chs, 5 KHz steps
- 600 KHz Repeater offset
- Supplied with SEC approved charger
- 50 day VICOM warranty

OVER 2,100 SOLD!

Yes, more than 2,000 IC22S have been sold in Australia!
Surely a mark of success for this superb rig.

Jaybeam Antennas

5Y/2m 5el 2m, 7.8 dBd gain, length 1.6 m — $430
8Y/2m 8el 2m, 9.5 dBd gain, length 2.8 m — $550
10Y/2m 10el 2m, 11.4 dBd gain, length 4.4 m — $1390
10XY/2m 10el 2m, cross yagi, 11.3 dBd — $1140
8/670cm Twin 8el, 70 cm, 12.3 dBd — $640
PBM 18/70 18 el, 70 cm, 14.9 dBd — $960
MBM 48/70 48el, 70 cm, 15.7 dBd — $830
MBM 68/70 68el, 70 cm, 18.5 dBd — $1050
PMX2C Phasing harness — $200
8XY/2m 2m cross yagi, 8el, 9.5 dBd, 2.8 m — $990
12XY/70 cm 70 cm cross yagi, 12el, 13.0 dBd — $1390

Parabolic Dishes

PBA 1200 70 cm and 1.2 GHz complete — $349.00

Rak Antennas

AL24DXN 20-40 m trap dipole — $700
A4VPN Short wave Rx antenna — $490
LISTENER 3 Short wave Rx antenna — $220
LISTENER 1

Nagara

SS56 6 m 5el beam 1 KW — $159.00
YSJR 80-10 m trap vertical, 6.7 m high — $129.00
VAJR 46-10m trap vertical, 5.2 m high — $99.00

Hy-Gain Antennas

HYQOA 10/15/20 m 2 element quad — $279.00
204BA 4 el monobander for 20 m — $250
TH600X 6 el tribander — $310
TH3MK3 10/15/20 m 3 el beam — $240
TH3JR 10/15/20 m 3 el beam — $225
203BA 3 el beam 20 m — $195

Daiwa Low Pass Filters

FD30LS 32 MHz, Fc, 200 w, 3 stages — $200

Balun

AS-BL 50 ohm for beams — $34
BL50A 50 ohm, 4 kw, 1.1 for dipoles — $32
BL70A 70 ohm, 4 kw, 1.1 for dipoles — $32

Leader Test Equipment

LAC 895 Antenna Coupler 3.5 — 28 MHz — $182
LPM 885 SWR/PWR Meter — $97
LPM 880 RF Power Meter — $139
LDM 815 TR Dip Meter — $990
LBO 310 3' Ham Oscilloscope — $330
LA 31 Ham monitorscope adapter — $260

Radio Teletype Terminal

0-7000 Tone RTTY CW/Baudot/ASCII — $839

Tubes

6K06 Finals for Yaesu linear — $90
6L6C Finals for Yaesu transceiver — $90
12BY7A Driver — $3.75
6146B Finals — $12.00

CW Filters

FT101E Yaesu — $39.00
TSS20S YG339 Kenwood — $57.00
TSS20S YG339 Kenwood — $5300

Morse Keys

HK702 Deluxe Key with marble base — $41.00
HK708 Economy Key — $23.00
HK705 Operator’s Key — $25.00
MK701 Manipulator (side-sweeper) — $45.00
PALOMAR 1C Keyer — $149.00

Radio Shack

LONG JOHN 5 el wide spaced 27/28 MHz — $180.00

Scalar

M22T 1/4 wave 2 m mobile whip, top only Qty 1-4 — $700
M25T 5/8 wave 2 m mobile whip, top only Qty 1-4 — $14.00
BASE B/L for above — $4.00

ICOM Gear

IC701 transceiver NOW — $119.00
IC22S 2m transceiver — $295.00
IC511 6m transceiver — $795.00
IC22B 2m fm remotable — $450.00
IC502 6m ssb portable — $239.00
IC202S 2m ssb portable — $318.00
IC211 2m all mode — $547.00
ICRM3 Remote control unit — $159.00

Microphones

VM-1 Noise cancelling, hand ptt, tow z — $10.00

Coaxial Cable

RG58AU mil spec 30m reels — $13.00
RG213/U mil spec per metre — $1.40

Kenwood Transceivers

TS520S HF transceiver — $635
TS120S Solid state 100w — $735.00
TS120V Solid state 10w — $600.00
TS180S VHF pocket 12 chs — $1240.00

Monitor Receivers

747 Vicom Aircraft Scanner — $199.00
210 Bearcat 210, scanner — $469.00
HF12 VHF pocket, 12 channels — $149.00

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Gold Coast 32 2644

Adelaide 43 7961
Geelong 78 9660

Rockhampton 28 2843
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SYNONYMOUS for QUALITY and ADVANCED TECHNOLOGY

Listed is our well-known series of 9 MHz crystal filters for SSB, AM, FM and CW applications.

Export inquiries welcomed

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<table>
<thead>
<tr>
<th>Filter Type</th>
<th>XF-9A</th>
<th>XF-9B</th>
<th>XF-9C</th>
<th>XF-9D</th>
<th>XF-E</th>
<th>XF-9M</th>
<th>XF-9NB</th>
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<tr>
<td>Application</td>
<td>SSB Transmit</td>
<td>SSB Receive</td>
<td>AM</td>
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<td>FM</td>
<td>CW</td>
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<tr>
<td>Number of Filter Crystals</td>
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<td>4</td>
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<td>Bandwidth (6 dB down)</td>
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<td>2-4 kHz</td>
<td>3-5 kHz</td>
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<td>500</td>
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<td>Shape Factor</td>
<td>(6:60 dB)</td>
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<td>(6:60 dB)</td>
<td>1-8</td>
<td>(6:60 dB)</td>
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<tr>
<td>Ultimate Attenuation</td>
<td>&gt; 45 dB</td>
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<td>&gt; 100 dB</td>
<td>&gt; 100 dB</td>
<td>&gt; 90 dB</td>
<td>&gt; 90 dB</td>
<td>&gt; 90 dB</td>
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<tr>
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<td>$59.30</td>
<td>$59.30</td>
<td>$59.30</td>
<td>$41.50</td>
<td>$73.45</td>
</tr>
</tbody>
</table>

*In order to simplify matching, the input and output of the filters comprise series differential transformers with the 'common' connection internally connected to the metal case.

Registration Fee: $3.00; Air Mail 31¢ per ½ oz. Shipping weights: Filters 2 oz ea; Crystals ½ oz ea. All Prices in U.S. Dollars.

---

**Matching Oscillator Crystals**

<table>
<thead>
<tr>
<th>Oscillator Crystals</th>
<th>50 kHz through 750 MHz available to order. Parallel resonant (30 pF) to 20 MHz; series resonant above 20 MHz. Write for quotation to your requirements (include mechanical size &amp; frequency).</th>
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</thead>
<tbody>
<tr>
<td>XF900 Carrier</td>
<td>9000-0 kHz $4.75</td>
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<tr>
<td>XF901 USB</td>
<td>6998-5 kHz $4.75</td>
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<tr>
<td>XF902 LSB</td>
<td>9001-5 kHz $4.75</td>
</tr>
<tr>
<td>XF903 BFO</td>
<td>8999-0 kHz $4.75</td>
</tr>
<tr>
<td>F-06 Crystal Socket (HC25)</td>
<td>$0.50</td>
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**Matching FM Crystals**

**Discriminators for XF-9E**

<table>
<thead>
<tr>
<th>Discriminators</th>
<th>Freq Dev</th>
<th>Slope</th>
<th>Price</th>
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<tbody>
<tr>
<td>XD-9-01</td>
<td>-5 kHz</td>
<td>-40 mV/kHz</td>
<td>$27.80</td>
</tr>
<tr>
<td>XD-9-02</td>
<td>-10 kHz</td>
<td>-24 mV/kHz</td>
<td>$27.80</td>
</tr>
<tr>
<td>XD-9-03</td>
<td>12 kHz</td>
<td>-50 mV/kHz</td>
<td>$27.80</td>
</tr>
</tbody>
</table>

---

SPECTRUM INTERNATIONAL INC. Box 1084A, Concord, Mass. 01742 USA
Rolf Rasp PY1RO writes that his beacon is on continuously from Rio de Janeiro, using a 5/8 wave vertical antenna, 320 ft high. He last worked 50 MHz by replacing the antenna with a 3 element beam, with some thoughts to turning it toward VK as time permits.

As far as there is to be a new 6 metre beacon near Hobart on 52.370, which now awaits P. and T. approval. Nothing really definite on this one at present, but mentioned here for your reference.

ANTARCTIC NEWS

Direct contact via 20 metres has been made with Brian VK0SC at Casey, who is still very interested in running a new 6 metre station. This month, 100 watts, which is about the total capability of the metre station in the future and currently uses a 300 mW beacon is still operational, running into the Canal Zone soon for Puerto Rico, leaving 52 MHz. Best days for MUF to 35/5 were on 20-8, 21-8, 23-8 and 24-8. A reasonable magnetic storm occurred on 19-8. On 26-8 (the first and the beginning of the equinoxal season here at least) 52 MHz JA openings of any note are likely to be on 24-9, 25-9 and 26-9. Any JA contacts from 0905Z. Areas JA1, 2 and 3 to VK5s KK, LP, ZM0, ZZ2. Peak to 5 x +++. It would appear there will be little Es DX around and to Carnarvon with /R4HDJ heard working VK6GO at 0900Z on 52.057 5 x 9. No other areas heard in dog-piles. This opening is 22 days earlier than the first significant opening to JA last year.

SIX METRES INTERNATIONAL

It seems things are really shaping up for the following 9 months both propagation-wise and new station-wise.

C21AA DXpedition a great success from 10th to 22nd August. Multi country worked, including JA, KG6, XK6, P29, H44, possibly 3D2, and VK4RO. Nothing is known about the last contact except that C21AA has been left the IC551 and 6 element yagi and so there is some good news for Nauru hunters on six metres. OSL via JA1UT for DXpedition.

HST1A also very active from Thailand with a single 5w 432KSP beacon 300 watts into four 5 element yagis. Most DX so far to JA. Still in the Asian area good to hear VU2RM is on as reported earlier. He has taken delivery of a TS560 plus antenna and beacon keyer, all made available by the JA6 Kyushu 6m Group. At present it has been indicated that he is using a special sort of equipment it will be possible to operate elsewhere, including 52.050. Additionally, YB0X is expected to be re-activated during a September-October DXpedition.

Shifting to the Pacific Ocean, northern VK of now. At the moment there are three JA1 stations active on six metres. On 24-8 XK6SC heard working KG6 from 10-8 52 MHz. The same KG6JSG with a FTV650B plus a 6 element antenna and beacon keyer, all made available by the JA6 Kyushu 6m Group. At present it has been indicated that he is using a special sort of equipment it will be possible to operate elsewhere, including 52.050. Additionally, YB0X is expected to be re-activated during a September-October DXpedition.

SOUTH PACIFIC

NEDX going on a 160 metre and 6 metre DXpedition (that's really handling the stick at both ends!), and will be starting from KH6 on 1-1-79. Operating at ZK2 around 16-17 September. ZK2 is NIUE west of Cook Is, then on to AS3A Tonga, SW1 and FIJI. The ZK2XJ is expected to be active around 13-8 and opening at 3D2 Fiji. The 3D2 stay will be useful for many stations wanting to get QSL cards (second time lucky)!

Forreston, S.A. 5233

Eric Jamlelu

VH66-XH

An expanding world

Forreston, S.A. 5233

Eric Jamlelu

VH66-XH

Amateur Radio October 1979 Page 29
likely a chance will be made in the Northern Line Is. prefix so beware of this when beaming towards the area, which is 1500 miles south of Hawaii. Here, N6CT and W6XJ are working with 100 watt Lunar Amplifier and 6 element beam with him on the trip. Still in the South Pacific, remember YJ8PD with 500 watts, plus YJ8KM. On 25-8 Peter YJ8PD contacted VK2G and KH6 all in one go! And we are assured there is unlikely to be any 6 metre operating from Norfolk Is. in the foreseeable future. VK7F runs over at 5 9 x 5 on 25 050 with a good attendance. They are considering moving down into the Novice segment as a result of this. June and Andy are now skeds with Jack VK5AVQ for correspondence on JA 6 metre DX-contacts. The antenna system at ZS6DN is 16 element KLM yagis with a measured gain of 19.5 dB and a realised gain of 30.2 dB. The antenna at SV1DH is a 16 element with 100 watts. 50.740, 50.750 and 50.760, plus beacons on 52.500 and 52.510 MHz. Not a bad effort for a morning's work!

SOUTH AFRICA TO GREECE

It has been known for some time that two metre contacts had been made between South Africa and Greece, but further Information is to hand from Bill WXO and "The World above 50 MHz" in OST. Two-way contacts were known to have been made between Z6ELN on the southern end and SV1DH and SV1AB, but the record officially belongs to Z6SDN and SV1AB for spanning a distance of 7114 km (1732°C) and repeated again on 16-1-79. Contacts lasted up to an hour on 144.130 at S3. The CW signals had a hooting sound to them similar to steam or white noise. Very good tape recordings were taken of the contacts. The antenna system at Z6SDN is 16 element KLM yagis with a measured gain of 19.5 dB and a realised gain of 30.2 dB. The antenna at SV1DH is a 16 element with 100 watts. USA 70 cm WAS

It's been done eventually! W0YZS has completed the First worked-All-States on 70 cm by taking his portable moonbounce station to the QTH of W4PYO and contacting his own station back to Kansas City, operated by KOTLM. Although it doesn't say so, I gather this was achieved via EME contacts, but is still a great achievement and a credit to Bill and the equipment.

70 cm SPANS THE PACIFIC

From OST also comes news of the spanning of the Pacific from the US mainland to Hawaii on 432 MHz. Originally this was conquered on 144.130 by W6FPS and W6JZ and 432 MHz attempt by W6FZJU (now W1BJR) in August 1973 was almost successful, but thwarted by equipment failure. After hearing the KH6HME beacon on Maui, DL6AB, two metres, beginning about 0000Z 18-7-79, WBENMT placed a phone call to the Islands only to find the operator of the beacon couldn't make the trip up the mountain for some unknown reason. Come on, mates! As the evening wore on, the signal faded and peaked finally on 0517Z KH6HME, now operating portable from the 500 foot level, was being copied and repeated again on 16-1-79. Contacts lasted up to an hour on 144.130 at S3. The CW signals had a hooting sound to them similar to steam or white noise. Very good tape recordings were taken of the contacts. The antenna system at Z6SDN is 16 element KLM yagis with a measured gain of 19.5 dB and a realised gain of 30.2 dB. The antenna at SV1DH is a 16 element with 100 watts. USA 70 cm WAS

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CONCLUSION
By the time you read this we will be halfway through the September-October equinoxial period and will have sampled the good contacts likely to be available as Cyclone 21 moves closer to its peak. Another administration overseas which has seen fit to allow limited 6 metre operation is Cyprus, where 5B4AZ has been allocated 50.499 MHz for CW contacts. I note also moves are afoot to allow limited 6 metre operation is expected to attend this most important WARC (141 MHz) allocation available for Indian amateurs (3890-3900 kHz). Australia too has an interesting proposal — or at least that is the present intention. Nevertheless quite a lot will be known by the end of this year and in the meantime it is important that all amateurs throughout the world be the best possible ambassadors for this unique international activity of amateur radio.

INTRODUCTION
As the ITU settles down to hold the 1979 World Administrative Radio Conference with a further estimated 12,500 pages of documentation (1941 at last count) and again most, but not all, are expected to make written proposals to the ITU containing their requirements for frequency allocations for the remainder of this century. At the time of writing (end of July) other eighth countries, including 14 in Region III, had lodged their preliminary written submissions to ITU with some nations putting up several briefs on various sub-bands at once.

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For reasons already publicised, the IARU is accepting the present position that the Amateur Service and Amateur Satellite Service are two separate and distinct services, though they are closely inter-related to be sure. But it is hoped that the Amateur Satellite Service will receive more consideration in the frequency band 1,000 MHz and above. Table 1 and Table 2 show the different bands as proposed by the IARU for both services. These details were promulgated amongst all IARU member societies with the objective of amateurs everywhere presenting a united front to the various national Administrations. The issues to be discussed at the WARC are vast and complex and both from the administrative and technical point of view. Many of them do not involve the amateur/amateur satellite service. Even so the ramifications of those matters affecting only the amateurs in all three ITU regions are so large that for the purposes of this article attention will be concentrated principally on those matters affecting frequency allocations in Region 3.

One way to analyse the approach of the various Administrations is band-by-band, looking principally at the Region 3 countries’ approach and also the USA because of the US possessions in the Pacific but including as appropriate observations about other countries outside of Region 3 where such observations are of importance. As you read the comments below given for each band, compare the details with those appearing in Tables 1 and 2.

AN ALLOCATION IN THE BAND 160-200 kHz (Regions 2 and 3 only)
This would appear to be a non-starter as only one Administration in Region 3 has recognised the IARU proposal. Papua New Guinea has proposed one exclusive amateur allocation at 190-200 kHz for Region 3 only.

6800-7300 kHz
No Region 3 Administration has accepted the IARU proposal but some have agreed to the band commencing at 6950 kHz. Japan, New Zealand and USA propose that both the Amateur Service and the Amateur Satellite Service be allocated 6950-7100 kHz, whilst the Philippines proposes 7005-7100 kHz for both services. Australia on the other hand proposes that the segment 6950-7000 kHz be allocated to the Amateur Service only with no changes to the present 7000-7100 kHz segment.

The top end of the 7 MHz band is coming under great pressure from the Broadcasting Service and it does appear likely that Region 2 amateurs will lose 7100 kHz to the Broadcasting Service and possibly other services. The IARU proposes that the top end of the band be pulled back to 7250 kHz as also does the Philippines. Many Administrations are proposing that broadcasting is allocated 7250-7300 kHz in Region 2.

This band will, without question, be the subject of much discussion and negotiation at Geneva.

10190-10600 kHz
This is the lowest of the three new HF bands proposed by the IARU and many Administrations have accepted the proposal though not in its entirety. India, New Zealand, Australia, Philippines and Singapore all propose a new band around 10190 kHz although India does suggest commencement of the band at 10110 kHz with 10100-10110 kHz being allocated to a new “experimental” service. The Indian proposal does not explain in detail the difference between the amateur service and the experimental service. Papua New Guinea proposes that the band 10100-10300 kHz be allocated to both the Amateur Service and the Amateur Satellite Service, whilst India proposes that 10110-10200 kHz be allocated to the Amateur Satellite Service. The Philippines’ proposed new frequency band is 10175-10200 kHz. Thailand proposes similar allocations in this band.

14000-14500 kHz
No Region 3 Administration has proposed changes to the existing band. Thus there appears little likelihood of the band being expanded. The only challenge to the Amateur Service/Amateur Service on the same shared basis as now exists. The Indian proposal of 3500-3900 kHz shared with 3660-3700 kHz exclusive amateur world-wide is particularly interesting in view of the present very restrictive allocation available for Indian amateurs (3890-3900 kHz). Australia too has an interesting submission — they propose to delete footnote 3501/206, which inter alia confines VK amateurs to 3500-3700 kHz. The reason given is as follows:

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3500-4000 kHz
Again most Region 3 Administrations are not proposing far-reaching changes in this band. Singapore, perhaps following the lead of the United Kingdom, is proposing to give the segment 3500-3615 kHz over to the Maritime Mobile Service on a world-wide basis leaving 3615-3900 kHz to the

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Satellite Service comes from Saudi Arabia, which proposes to add fixed and mobile services in the 14250-15550 MHz range.

18100-18600 kHz

This is another new band proposed by IARU and allows for a potential move to the 18900 kHz band. It has been proposed by the Philippines, Australia, New Zealand, and Malaysia. The proposal is for a very wide band, from 18200 to 18950 kHz. It is intended to be used for satellite services.

500 kHz wide band

Most proposals both within Region III and the other two regions are for a 500 kHz wide band. This is to allow for a balance between the Amateur and Amateur Satellite Services. In Region III, India, New Zealand, Philippines, and USA actively support this proposal, with Australia and New Zealand proposing a narrower band. The Philippines propose a 1008 kHz-18568 kHz band but instead proposes that 18088 kHz to be given to the Maritime Mobile Service. China, Japan, Korea, Malaysia, Pakistan, Thailand, and the Democratic Peoples Republic of Korea have not made submissions on this part of the spectrum.

20950-21000 kHz

To date there have been no proposals threatening a reduction in this band. On the contrary, a number of countries have proposed that the band be extended to 20950 kHz. Both New Zealand and USA propose this for both the Amateur Service and the Satellite Service.

The Philippines emergency frequencies proposed are 21440-21450 kHz.

24000-24500 kHz

The three new HF bands proposed by IARU has not received quite as much support as Region 3 Administrations as the two lower bands. Australia and New Zealand have proposed the segment 24150-24350 kHz for both the Amateur Service and the Satellite Service, whilst Philippines and USA propose 25110 to 25210 kHz for both services.

144.0-148.0 MHz

This segment is under heavy pressure from Region III. Indonesia and USA propose to delete the Amateur Service from the Table in this segment, whilst Philippines, Indonesia and Singapore propose to add either directly into the Table or by footnote, sharing with the fixed and mobile services. Australia and Papua New Guinea make no proposals in this segment. However, the Philippines wish to add a new footnote that permits them to allow aeronautical mobiles to operate in this band, whilst Singapore wishes to add fixed and mobile services on a secondary basis. There is a potential interference problem in that Singapore proposals for both the Amateur and Amateur Satellite Service on a primary basis in this same segment.

146.0-148.0 MHz

This is the segment of the band that is under heavy pressure from Region III. Korea and Thailand propose to delete the Amateur Service from the Table in this segment, whilst India, Philippines, Indonesia and Singapore propose to add directly into the Table, sharing with the fixed and mobile services.

Australia and Papua New Guinea make no proposals in this segment. However, the Philippines wish to add a new footnote that permits them to allow aeronautical mobiles to operate in this band.

Isafer as Region 3 concerned, this band would appear to be beyond reach. The only Administration proposing a Region 3 allocation is Papua New Guinea, and the band proposed is 230-235 MHz. Australia, China, Democratic Peoples Republic of Korea, Malaysia, Indonesia, New Zealand, Philippines, Singapore, Indonesia and USA all refused to accept the IARU proposal of 220-225 MHz world-wide exclusive allocation to the Amateur Service and the Satellite Service.

240-450 MHz

This is another band under heavy attack in Region 3, New Zealand, whilst proposing to cut out 10 MHz from the Satellite Service, proposes to allocate 610-620 MHz for NZ amateurs In lieu. Papua New Guinea also proposes to delete the bottom 10 MHz from the band but offers no other allocation in its place.

The following countries propose to include fixed and mobile services into this band: either by direct entry into the Table or by footnote—India, Japan (including Okinawa), Korea, Philippines, Thailand, Indonesia, Malaysia.

However, Malaysia also proposes to upgrade the Amateur Service to primary.

Australia, Pakistan, and USA make no proposals about this band.

The Amateur Satellite Service is presently allowed to use the segment 435-438 MHz, through footnote 364/320A. No Administration has proposed to change this to the 435-438 MHz segment.

However, the pressure to add fixed and mobile services into this band is strong and if the move is successful it would be to the detriment of the Amateur Service.

902-928 MHz

This proposed new band has not received support from any of the Region 3 Administrations to date. The Philippines have not made any proposal on this segment and the USA proposes that the band 902-928 MHz be made available to the Amateur Service in Region 2 only.

Indonesia and Japan propose that the existing allocation remain whilst other Region 3 countries make no proposals at all.

The important thing for amateurs here is that the Amateur Satellite Service achieves some form of allocation to allow future OSCAR-RS experiments in this frequency band.

3200-2450 MHz

The IARU some years ago had already identified that the 3100-3400 MHz band 230-2450 MHz was already absolutely essential. Both Australia and New Zealand accepted this proposal and both countries propose the segment as requested. The Philippines proposed that the remainder of this band 2310-2450 MHz should remain as is. New Zealand, on the other hand, proposes to leave the entire existing allocation but allow the Amateur Satellite Service on a non-interference basis on a shared secondary basis.

The Philippines and the USA both take a similar approach to New Zealand but their proposed footnote restricts the Satellite Service to the segment 2390-2450 MHz.

The other countries in Region 3 made no proposals about this band.

3300-3500 MHz

Indoaf as the amateurs are concerned, China, Democratic Peoples Republic of Korea, India, Japan (including Okinawa), Philippines, Singapore and USA propose no changes in this band.

Australia proposes that the Satellite Service be allocated the segment 3400-3410 MHz on a non-interference basis (footnote 3739A). Otherwise no change. Papua New Guinea proposes that the band be changed on a world-wide basis and that it becomes 3100-3400 MHz for both services. This would be on a shared and non-interfering basis.

The Philippines, Japan and USA propose that both services share 5650-5670 MHz on a secondary and non-interference basis (footnote 364/320A) with the Satellite Service also allocated 5670 to 5850 MHz on a shared secondary basis.

Australia has a similar proposal except that a different frequency is proposed for the Satellite Service.

Indonesia proposes no changes to the segment 5560-5572 MHz and did not submit proposal to cover 5752-5859 MHz. New Zealand proposes to use footnote 364/320A to permit the Satellite Service to use the segment 5650-5670 MHz and makes no submissions regarding the rest of the band.

It does appear as if the Amateur Service in Region 3 can expect to retain 5650-5660 MHz and that the Amateur Satellite Service will be allocated 5550-5670 MHz.
Most Administrations have either made no proposals or proposed no change for this band.

Australia and Papua New Guinea propose an amateur satellite band, while New Zealand proposes that the entire band be made available to both services (that ubiquitous 3644/320A footnote again).

Japan and the USA do not propose an allocation here for the Satellite Service.

24 0-24.25 GHz

Only three Administrations put forward proposals concerning this band. Australia, Philippines and USA wished to maintain the status quo. Consequently there does not appear to be any threat to amateur interests in this band.

FREQUENCIES ABOVE 40 GHz

The proposals for frequency bands put forward by IARU are at present unallocated in the ITU Frequency Table. Eight of the Administrations in Region 3 have not made submissions covering these frequencies. The Peoples Republic of China has, but does not propose any amateur bands at all. Australia has not proposed any amateur bands either, but has instead proposed that the bands 155-160 GHz and 240-250 be designated "experimental" to allow investigations to proceed without making service allocations.

Pakistan has not made any allowance for the Amateur Satellite Service but has proposed 71-84 GHz, 152-170 GHz and 240-250 GHz for the Satellite Service on a primary, world-wide exclusive basis. New Zealand, on the other hand, proposes that the Amateur Service be secondary and shared on 48.0-50.0 GHz with the Amateur Satellite Service be permitted by footnote on a non-interference basis.

For 71-84 GHz, 165-170 GHz and 240-250 GHz, New Zealand proposes exclusive worldwide use by both services.

The Philippines and USA have, insofar as the Amateur Service and Amateur Satellite Service are concerned, identical proposals, viz., 49.8-50.0 GHz world-wide exclusive both services; 76-81 GHz, 155-160 GHz and 240-250 GHz Amateur Satellite Service shared as secondary service with the Amateur Satellite Service permitted on a non-interference basis (footnote 3644/320A).

Japan, the only other Region 3 nation to make proposals in these frequency bands, submitted the following—49.5-50 GHz, Amateur and Amateur Satellite Service on a primary shared basis; 72-76 GHz, 165-170 GHz and 240-250 GHz both services on a secondary shared basis.

No doubt there is again plenty of scope for discussion during the WARC.

GENERAL

Amateurs in both Australia and New Zealand are fortunate in that their Administrations have a high regard for the Amateur Service and also that their national societies have good working relationships with their respective Administrations. This high regard is exemplified by the following. A form of activity that requires a large transmission bandwidth is colour television (fast scan) and the lowest bands on which amateurs may conduct such experiments is 420-450 MHz. Because of sharing with their respective Administrations. This high frequency is also available from the IARU headquarters in Newington, Connecticut, USA, and from the Regional Secretariat in Singapore. This article has concentrated on the proposals and attitudes of the various member countries of Region 3. More information on the approaches in Regions 1 and 2 can be obtained from the official journal of the IARU—QST. In particular the July and August 1979 issues contain excellent summaries written by Dave Sumner K1ZZ of IARU headquarters.

Australian amateurs have every reason to be proud and grateful to those dedicated amateurs who have worked so hard over recent years to promote the amateur cause to the authorities. The Australian proposals to the Conference are supported by many of the requests put forward by the IARU.

However, it must be borne in mind that other services have a claim on the radio spectrum and the allocation splits will be by negotiation and agreement. Amateurs may therefore not get all that they want—never again 200 metres and down—but the IARU Observer Team and amateur representatives on the various national delegations will ensure that the amateur requirement is properly presented.

As stated earlier, the IARU has never been better prepared for WARC. The value of putting up a consolidated position paper for the consideration and adoption of national societies is obvious. One only has to look through the various country submissions to see which societies approached their licensing authorities. Some were more successful than others but it does appear that no country having an active national amateur society failed to impress on its government the importance of the amateur cause.

PUBLICITY

About the 1979 WARC in almost all amateur journals has been extensive. Individual amateurs who don't know what is going on only have themselves to blame. Most of the active, national societies in Region 3 have a designated IARU Liaison Officer who has most, if not all, pertinent information for amateurs on WARC in his possession. Information is also available from the IARU headquarters in Newington, Connecticut, USA, and from the Regional Secretariat in Singapore. This article has concentrated on the submissions and attitudes of the various member countries of Region 3. More information on the approaches in Regions 1 and 2 can be obtained from the official journal of the IARU—QST. In particular the July and August 1979 issues contain excellent summaries written by Dave Sumner K1ZZ of IARU headquarters.

Table 1

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Allocation</th>
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<tbody>
<tr>
<td>1800-2000 kHz</td>
<td>420-450 MHz</td>
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<td>3500-4000 kHz</td>
<td>902-928 MHz</td>
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<tr>
<td>6800-7300 kHz</td>
<td>1215-1300 MHz</td>
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<tr>
<td>14000-14500 kHz</td>
<td>3300-3500 MHz</td>
</tr>
<tr>
<td>18100-18500 kHz</td>
<td>5650-5925 MHz</td>
</tr>
<tr>
<td>21000-21500 kHz</td>
<td>10000-10500 MHz</td>
</tr>
<tr>
<td>24000-24500 kHz</td>
<td>24000-24500 MHz</td>
</tr>
<tr>
<td>28000-29700 kHz</td>
<td>48-50 GHz</td>
</tr>
</tbody>
</table>

All non-allocated frequencies above 275 GHz.

Table 2

<table>
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<tr>
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</tr>
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<tr>
<td>7000-7100 kHz</td>
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</tr>
<tr>
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<td>2300-2310 MHz</td>
</tr>
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<td>48-50 GHz</td>
</tr>
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</table>

All non-allocated frequencies above 275 GHz.

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June 1979 QST contains a short article describing how an old loudspeaker can easily be modified to enable a deaf (and blind) amateur to read Morse by carefully removing the cone but leaving behind the dust cap, speaker and input lead connectors. A half table tennis ball glued on to the dome allows the operator to feel the vibrations which, even at full volume, are almost inaudible.
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BOOK REVIEW

THE ARRL ANTENNA ANTHOLOGY
Reviewed by VK3AUI.

As the title says, this is a selection of antenna articles originally published in QST. The book describes range from midgets to monsters and construction, as shown in the photographs, covers the range of machines of machine shop to a miracle that it worked.

Various beams and verticals which have enjoyed some popularity are described. The range from 80 metre monsters to small verticals. Some of them will no doubt have the answer to your antenna problem.

The major criticism is that the book lacks a Bill Orr to tie it all together. However for all that it still provides a most interesting collection of antennas.

Definitely a book that you should thumb through before buying. It is not set out to be an A to Z of antennas but it does provide a very convenient grouping of recent popular antenna articles from QST.

Available from Magpubs or your favourite bookshop.

THE RADIO AMATEUR'S LICENCE MANUAL — 7th EDN ARRL
Reviewed by VK3AUI.

This publication is a comprehensive manual for all grades of licence in the United States of America. The amateur rules and regulations applicable in the USA are set out in full, together with sample questions and an outline of the scope of the syllabus for each class of examination.

Both the Novice and General Class theory sections have relevance to the Australian scene. The wording of some questions may be different locally but the sections are considerable use locally.

Regulations are different and in particular the morse requirements are totally different. The regulations and theory are examined in one combined paper. The morse is examined as a comprehensive test which is marked on the answers to a multiple choice question sheet based on the text sent.

Some interesting points emerge from the new regulations and licensing and call sign structure.

The first point is that in many centres examinations are held weekly in the USA and they are reported on the spot and a result given on the spot. This is one area in which P. and T. could learn something but maybe we will never have the American system, which grew out of a need to save staff caused by the elimination of licence fees and the declassification of FCC licensing. Messrs. Fraser and Staley please note this new way to save funds.

The second point is that you may immediately be upgraded. It is the use of a code letter group pending the updating of FCC records. This may or may not involve a call sign change at your request. If you wish you may upgrade from Novice to Extra with the same call sign. The need for the identifier is only until FCC computer records are updated.

The third point is that in the USA there is no grade of licence which is gradeless free. All grades of licence have a code requirement and have HF operating privileges. This is in sharp contrast to the bleating of those fools who are too lazy to learn the code.

The code speeds are 5 words per minute for Novice and Technician Classes. For General and Advanced Classes the code speed is 13 words per minute, whilst for the Extra Class the code speed is 20 words per minute.

The Advanced Class and the Extra Class theory are exactly what the names imply. The General and Technician Class have the same standard of theory.

The Novice Class has an interesting set-up for examination in that it may be taken at home using a volunteer examiner with a higher grade licence. Now that's an innovation for you.

The final interesting point is that, notwithstanding reciprocal licences, anyone can take a 747 flight and stroll into an FCC office and walk out with any licence, even an Extra Class licence, which they may then hold for as long as they keep on renewing it every five years. But remember, there are no renewal notices as the FCC has no funds for such frills. This is a most interesting possibility for anyone who travels and wants to be able to take out a top grade licence anywhere in the world.

A most interesting book for anyone needing a bit of extra pre-exam material or for anyone who has an interest in the US licence structure. There is even an explanation of the call sign structure. It is also a must for the travelling ham. Finally, it is a definite must for P. and T., for if they don't learn from it the Minister certainly could when it comes to departmental efficiency and cost cutting.

Available from Magpubs or your favourite bookshop.

TECHNICAL CORRESPONDENCE

The Editor,

Dear Sir,

ERRATA — 2m FM SYNTHESISER — AUGUST 1979 AR

1. For page 9: Table 1, programme codes. Programme code for Ch. 61 on Tx should be "2941" and not "1941".

2. For Fig. 28: Coll details: these are missing the number of turns, etc. They should be as follows:

- L1: 100 turns, 36 swg scrambler wound on neonoid former between a couple of \( \frac{1}{4} \) in. diameter toroids. Secondary is 10 turns over bottom of L1 and same gauge. Slug is F16. L2: 40 turns 36 swg close wound on neonoid former. Toroids not used. Slug is F16.

L3: 60 turns 36 swg tapped 15 turns from earth end. Slug is F16.

L4: 45 turns as per L3 tapped at 10 turns from supply end. Slug is F16.

L5: 30 turns 28 swg. Secondary is 6 turns over bottom of L5. Slug is F16.

For using tripler at 34 MHz alter above details for L3, L4 and L5 as follows:

L3 becomes L6: 37 turns 28 swg tapped 8 turns from earth end. C = 33 pF.

L4 becomes L7: 20 turns 28 swg tapped 6 turns from supply end. Slug is F29. C1 equals 10 pF.

L5 becomes L8: 20 turns 28 swg. Secondary is 6 turns over bottom of L8. C = 10 pF.

3. For Fig. 3:

- A: IC10 and IC11 should be MC14560B not MC14560B.

- B: Pin 9 of IC10 should go to pin 7 of IC11.

- Pin 7 of IC11 should go to earth.

- C: Pin numbers on IC5 missing. They are as follows:

   - IC5: 1 7 8 9 11 12 13 15 16 17 18 20 21 22 23 24 25 26 27 28 29 30
   - IC5: 5 2 1 4 5 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
   - IC5: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

4. For page 12:

   - Text at bottom of page 12, last paragraph, should read: "... the counter resets the number of turns on the count of 41 via IC12A ..."

For Fig. 5, page 13:

- For Mode Switch:
  - Pos. 1 = +600 kHz Tx.
  - Pos. 2 = Simplex.
  - Pos. 3 = —600 kHz Tx.
  - Pos. 4 = —600 kHz Rx (reverse retp.)

For Fig. 6, page 14:

- \( \Delta T \) pot should have 270 ohm resistor between bottom of pot and earth.

For page 17:

- Mode Switch (see Fig. 3) (not "see Fig. 5")

L. De Stefano VK3AGZ.
IONOSPHERIC PREDICTIONS
Len Poynter VK3ZGP/NAC

---

**EDITOR’S NOTE:**
Due to illness Len Poynter was unable to prepare this month’s chart, and we have reproduced last month’s chart as a guide to band openings.

We wish Len a speedy recovery — (VK3UV).

---

**YOU and DX**
Mike Bazley VK6HD
8 James Road, Kaliamunda W.A. 6076

At the time this is being written Spring is just around the corner. Spring, the time when a “young” man’s thoughts turn to the ten metre band! Once again ten will be staying open until the late hours with DX opportunities into all areas of the world. Some of our newly licensed fellow amateurs may not be aware of the activity that takes place on ten. Even so, an average amateur is aware of sunspot minima. I’m referring to those ten metre beacons which have been helpful in the past by pinpointing openings and which are still active. It would be appreciated by all if these beacons could be given a clear frequency. The following information is supplied by G3DME through the Rees’ ‘Red Coat’.

28,175 kHz VESTEN, Ottawa, Canada.
28,200 kHz Common frequency.
28,205 kHz DLOGI (Mt. Predigstuhl, near Salzburg). Moves to 28, 200 kHz between hour and half plus 5 min. and hour plus 30 and plus 35.
28,207.5 kHz N4RD, Englewood, Fla. Non-operational?
28,210 kHz 38MS, Signal Mount, Mauritius.
28,215 kHz GB3SX, Crowborough.
28,217.5 kHz VK2WJ, Sydney, Australia.
28,220 kHz SB4CY, Limassol, Cyprus.
28,225 kHz (Reserve for VESTEN.)
28,230 kHz ZL2HMH, Mt. Clilim, New Zealand.
28,235 kHz VP9BA, Southampton Parish, Bermuda.
28,245 kHz AS9C, Hamala, Bahrain.
28,247.5 kHz EAO1Z (Unofficial beacon).
28,257 kHz EAO1Z (Unofficial beacon).
28,257.5 kHz DKOTE, Konstanz, FR Germany.

In Group 2 (under construction) are the following:
28,212.5 kHz ZD9GI, Gough Is.
28,222.5 kHz HG5, Hungary.
28,225 kHz LG3. Lucedal, Norway.
28,242.5 kHz ZS1CTB, Cape Town.

**DX NEWS, RUMOURS, FACT AND FICTION**
Those of you who are chasing 5BWAZ may be interested in a letter received from K2EEK, editor of CO Magazine. Initially one was able to claim a certificate for having worked the first one hundred of the required two hundred zones (40 zones on each band from 80 to 10m). Anyone who managed to get to the two hundred would be awarded a plaque. K2EEK states that the hundred zone certificate award has now been abandoned and that the first ten amateurs to work two hundred zones will receive a plaque after that a certificate will be issued. It seems that the response to the award was so great that CO was snowed under and the administration problems got out of hand. Just in case you think that forty zones on each of the HF bands is practically an impossibility, the first 5BWAZ has already been awarded to ON4UN. The award took John six months to work and accumulate the OSLOFI (Makes my efforts look a bit thin!) If you need Aves Island TV0 and you hear VYSHAM or YV5HQe, do not pass them by. These two stations are permanent residents on the island and have been heard in QSO on 20 SSB. There is one catch, their English is somewhat limited.

The 160 metre DX enthusiast may be interested to know that the Russian stations are now allowed to operate in the segment 1850-1850 kHz with a maximum of 10 watts input. The frequency range 1850-1875 kHz is reserved for CW only.

Amateur Radio October 1979 Page 39
REMEMBRANCE DAY OPENING ADDRESS

Richard E. Butler, Deputy Secretary-General International Telecommunications Union (ITU).

INTRODUCTION

This is Ted Robinson F8RU, past President of the International Amateur Radio Club 4U11TU at the International Telecommunications Union in Geneva, Switzerland.

It is a great pleasure and honour for me to introduce Mr. Dick Butler, the energetic Australian Deputy Secretary-General of the ITU and patron of this event, who has always shown keen interest in all matters related to the Amateur Service.

RICHARD E. BUTLER

In the year 1979, I am delighted that I, as Deputy Secretary-General of the ITU, have been invited to open your Remembrance Day Contest and to remember the heroes who have served our governments, offering their skills and services without hesitation and indeed their lives in time of national need. In thanking my colleague, Ted Robinson, for the provision of some of what was known as the "private experimental station" but nevertheless operated by "a person interested in radio propagation" solely with a personal aid and without pecuniary interest. How wishes that international encouragement and recognition proved to be a small legislative concession, when radio amateurs are still not considered to be an integral part of the international initiative and interests, as well as self-help. The growth of amateur radio has proved to be of basic importance to community service, without cost, in times of need, and it is a fine fighting unit in the early days. The regulatory provisions established a major potential for fostering goodwill between people with the same pursuits in other countries—yet never to meet except through the friendly dialogues on the air.

The radio frequency possibilities and spectrum operation conditions for the amateur service, which was elevated from recognised station use to a "Special use" by the ITU Atlantic City Conference in 1947, received even more formal recognition as a "Radiocommunication Service", being permitted to open your Remembrance Day Contest and to remember the heroes who have served our governments, offering their skills and services without hesitation and indeed their lives in time of national need. In thanking my colleague, Ted Robinson, for the provision of some of what was known as the "private experimental station" but nevertheless operated by "a person interested in radio propagation" solely with a personal aid and without pecuniary interest.
NEW ATLAS 110 LINE

• 250 WATTS • $499 • 80–100MHz •

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- Frequency Coverage 35–40MHz, 70–75MHz, 140–145MHz, 210–215MHz, 280–290MHz
- All Solid State. High Performance Design. Excellent sensitivity, selectivity and dynamic range superior to most receivers currently on the market.
- Receives and transmits CW and normal SSB. LSB on 3.5 and 70MHz bands, USB on 140, 210 and 280MHz bands.
- Sensitivity in CW is a standard feature
- Built in speaker and CW sidetone
- Modular Design provides much easier service and maintenance. This is a piece of equipment that you can work on yourself if you wish, because you can get at everything with ease.
- Check if 12–14V DC for mobile or 220–240V AC for home operation with the Atlas PS-110 Power Supply.
- Superior Size RX/TX-110 measures just 31W x 10H x 250D cm.

NOW IN STOCK ATLAS 210X AND 215X, $795 ea., PLUS OTHER ATLAS ACCESSORIES.

STOP PRESS!!!

GFS Electrons Imports proudly announce that we are now Melbourne distributors of ATN quality products. DSI Frequency Counters and Mirage Linear Amplifiers.

ATN Australian manufactured antennas range from 6 Element 28MHz Yagi’s through to 432MHz 27 Element and 580MHz 14 Element Amateur TV Yagi’s.

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“NEW”

2 MTR. STACKED YAGI $138

2 MTR. STACKED YAGI $138

Just arrived!
The IC22s 2m FM transceiver
It’s now available at a special price. Come in
and check it out.

Now only $299

Radio Teletype Terminal
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6J6C
6L7C
6L7C JFET Driver - $12.00

CW Finals
FT101Y Yaesu - $39.00
TS202S YQ3395 Kenwood - $57.00
TS820S YQ88C Kenwood - $59.00

Kenwood Morse Keys
HKT02 Deluxe Key with marble base - $41.00
HKT08 Economy Key - $23.00
HKT06 Operator’s Key - $25.00
MKF01 Manipulator (side-swiper) - $45.00
PALOMAR 1 C Keyer - $14.00

SWR/PWR Meters & Dummy Loads
VC-2 Twin meters 3-150 MHz with cal. chart - $35.00
SWR2000 Oscilloscope 3200 MHz 2/20/200/2000MHz - $88.00
SW210A Yaesu 1.8-150 MHz, 20/120 W direct - $89.00
SW4100A Yaesu 140-500 MHz, direct reading - $129.00
CN820 Yaesu Cross-mod, 18-150 MHz, direct - $99.00
CN630 Yaesu 140-450MHz, 20/200 W, direct reading - $115.00
CN650 Yaesu 1.2-2.5 GHz, 2 W, direct reading - $169.00
LPM-88S Leader SWR/PWR meter - $89.00
LPM-88D Leader SWR/PWR meter - $135.00
RW-155D Kenush RF Power Meter - $165.00
RW-151D Kenush RF Power Meter - $195.00
RW-1002L Kenush RF watt meter - $139.00

Coastal Switches
TS-520S P.O.A.
TS-820S P.O.A.
TS-120V P.O.A.
TL-992 P.O.A.
TS-120S P.O.A.

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Coaxial Change-Over Relays (Daiwa)

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Leader Test Equipment

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LA-31 Ham monitor scope adaptor - $25.00

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2 MTR. 7/8 WAVE MOBILE WHIP. including

BASE LEAD $32

5/8 WHIP included $28

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SHURE DESK $54
SHURE H.H. $36
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ANT. TUN WITH METERS $245.00

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WILLSTON
HARVEY SCELL
TSKAN
STOCKMAN & HIGGINS
INVERELL

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SHURE H.H. $36
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ASK FOR OUR “SPECIAL” OF THE MONTH

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<tr>
<th>Model</th>
<th>Price</th>
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<tbody>
<tr>
<td>IC-701</td>
<td>$1380.00</td>
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<tr>
<td>IC-701PS</td>
<td>$253.00</td>
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<tr>
<td>IC-211 2 Mtr. All mode</td>
<td>$799.00</td>
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<tr>
<td>IC-280 2 Mtr. Mobile, CPU</td>
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<td>IC-22S 2 Mtr. Synthesized.</td>
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<td>RM-3 Rem. Cont. for 701</td>
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<td>IC-202E 2 Mtr. Handheld</td>
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<td>IC-502 6 Mtr. Handheld</td>
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<td>IC-402 70 cm Handheld</td>
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<td>IC-215 2 Mtr. FM Portable</td>
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SWAN TRANSCIEVERS

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<th>Model</th>
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<tr>
<td>350B Analog 300 watts input</td>
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<td>350D Digital 300 watts input</td>
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<td>HF-700S 500 watt DC input</td>
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<td>100 Mx 100 watt Mobile</td>
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KENWOOD PRODUCTS

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<td>TS-120V</td>
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<td>TS-120S</td>
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<td>PS-30</td>
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<td>MG-50</td>
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<tr>
<td>AT-200</td>
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<td>AT-120</td>
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KYOKUTO DENSHI

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<tr>
<td>2 Mtr. 1000 Channel. Memory. Scan</td>
<td>$380.00</td>
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HOKUSHIN MULDOL ANTENNA

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<tr>
<td>HF-5 10-80 Mtr. Vertical</td>
<td>$75.00</td>
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<tr>
<td>Oscar 2D 7/8 wave, 2 mtr. mobile. incl. Mount and Coax</td>
<td>$32.00</td>
</tr>
<tr>
<td>Oscar 2S 5/8 wave, 2 mtr. mobile. including Mount &amp; Coax</td>
<td>$29.00</td>
</tr>
<tr>
<td>144HS-16 8 Element stacked Yagi for 2 mtr.</td>
<td>$138.00</td>
</tr>
<tr>
<td>144HS-8 8 Element Yagi</td>
<td>$70.00</td>
</tr>
<tr>
<td>Rubber Duck 2 Mtr. to fit on mobile mounts</td>
<td>$4.00</td>
</tr>
</tbody>
</table>

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144.000 - 145.995MHz, Transmit, FM-2016E

SEMI-CONDUCTORS
11 FET, 33 Transistors, 17 IC's and 65 Diodes

MEMORY CHANNELS:
4 Channels

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Scanning of 4 memory channels for open and closed channels.

FREQUENCY STABILITY:
Better than +.002%

USABLE TEMPERATURE RANGE:
-20°C to +60°C

POWER SOURCE:
DC 13.8v, +10% (negative ground)

ANTENNA IMPEDANCE:
50 ohms nominal, unbalanced

CURRENT CONSUMPTION:
Less than .4A receive standby, .6A maxium volume

DIMENSIONS:
180w x 60h x 195d mm

WEIGHT:
2.5Kgs, transceiver only

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50 - 54 MHz FM
800 CH. 25W. $330

NEW! SKY-BAND MOBILE ANTENNAS

THIS NEWLY DESIGNED UNIQUE MOBILE ANTENNA HELICALLY WOUND EXTRA HEAVY DUTY.
SIX FEET LONG, AND CAN HANDLE UP TO 400 WATTS P.E.P.

FEATURES:
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SKY. 40M 7.06
SKY. 20 14.150
SKY. 15 21.100 and up.
SKY. 10 28.5 and up.
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SKY 10/15 $30

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You have no doubt heard WICEN networks in action and been puzzled or even amused by some of the expressions used. These standard and repeated words or phrases are PRO WORDS (short for pronounceable words) which have a fixed meaning for WICEN operators. They speed up message handling and reduce confusion due to their assigned meanings, not unlike the "Q" code in CW.

In this issue I intend to list the most common ones together with their agreed meanings. In later columns I will give examples of radio nets showing prowords in use.

**LIST OF PROWORDS**

**EXPLANATION**

<table>
<thead>
<tr>
<th>Proword</th>
<th>Used by Sender</th>
<th>Used by Receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONTROL OF AIR TIME</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OVER</td>
<td>That ends my transmission. I am</td>
<td>I have replied but expect further</td>
</tr>
<tr>
<td></td>
<td>listening to hear your reply.</td>
<td>transmission from you.</td>
</tr>
<tr>
<td>ROGER</td>
<td>Message received and understood.</td>
<td></td>
</tr>
<tr>
<td>OUT</td>
<td>My transmission is ended.</td>
<td>My transmission is ended.</td>
</tr>
<tr>
<td></td>
<td>No reply is required.</td>
<td>No reply is required.</td>
</tr>
<tr>
<td><strong>REPORTING CIRCUIT CONDITIONS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOW DO YOU HEAR ME</td>
<td>What is the strength of my signal?</td>
<td></td>
</tr>
<tr>
<td>LOUD AND CLEAR</td>
<td>Your signal is loud and clear.</td>
<td></td>
</tr>
<tr>
<td>READABLE</td>
<td>While not loud and clear, your signal is readable.</td>
<td></td>
</tr>
<tr>
<td>WEAK</td>
<td>Your signal is weak.</td>
<td></td>
</tr>
<tr>
<td>INTERFERENCE</td>
<td>You are hard to understand because of interference to your signal.</td>
<td></td>
</tr>
<tr>
<td>DISTORTED</td>
<td>You are hard to understand because of distortion to your signal.</td>
<td></td>
</tr>
<tr>
<td><strong>MESSAGE HANDLING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MESSAGE</td>
<td>I have a message for you.</td>
<td>(The receiver should have a Message Form ready to write the message.)</td>
</tr>
<tr>
<td>LONG MESSAGE</td>
<td>I have a long message, use a large form.</td>
<td></td>
</tr>
<tr>
<td>RELAY</td>
<td>Transmit this message to all addresses or to the address designations immediately following.</td>
<td></td>
</tr>
<tr>
<td>INFO</td>
<td>The message is to be passed for information to the designations immediately following.</td>
<td></td>
</tr>
<tr>
<td>SPEAK SLOWER</td>
<td>Your transmission is too fast to write.</td>
<td></td>
</tr>
<tr>
<td>SAY AGAIN</td>
<td>Repeat all your last transmission or the part I will now identify.</td>
<td></td>
</tr>
<tr>
<td>I SAY AGAIN</td>
<td>I am repeating my transmission or the portion identified.</td>
<td></td>
</tr>
<tr>
<td>ALL AFTER ALL BEFORE WORD AFTER WORD BEFORE</td>
<td>I SAY AGAIN the portion of the message you require and repeat your identification.</td>
<td>This identifies the part of the message I require. The reference I quote is the nearest word or phrase received correctly.</td>
</tr>
<tr>
<td>I SPELL</td>
<td>I will spell the next word phonetically.</td>
<td></td>
</tr>
<tr>
<td>FIGURES</td>
<td>Numerals follow.</td>
<td></td>
</tr>
<tr>
<td>WORDS TWICE</td>
<td>To indicate that each phrase or group will be said twice.</td>
<td>To request that each phrase or group be said twice because conditions are difficult.</td>
</tr>
<tr>
<td>CORRECTION</td>
<td>I will correct a word or group I have said incorrectly.</td>
<td></td>
</tr>
<tr>
<td>CORRECT</td>
<td>Your version is correct.</td>
<td></td>
</tr>
</tbody>
</table>

Visiting
Hong Kong
LET US ASSIST
WRITE FOR INFORMATION

ALL BRANDS
HF
VHF
UHF
RECEIVERS
ACCESSORIES

Tel. K 36 0606 K 38 3774
DELTA COMMUNICATION SERVICES LTD.

15 CUMBERLAND ROAD, KOWLOON-TONG, KOWLOON HONG KONG

2. Referring to paragraph 1 of this letter, who committed no offence but they have been punished severely by the removal of a complete band!

1. Novice licensees were granted a segment of 10 metre band, as requested by the WIA. Perhaps you would like to publish the following correction information? However If you do, it is going to make the writer of the original article quite rightly so! But it seems that if enough people break the law, then the law is changed!

As far as we can see, nothing has been given to the Amateur Service to replace this band. The law was broken by Pirate CBers! For the offence they were given a complete Amateur Service Band! As far as we can see, nothing has been given to the Amateur Service to replace this band.

Radio operators in the Amateur Service have committed no offence but they have been punished severely by the removal of a complete band!

The Amateur Service has been given a replacement HF band nor any additions to existing HF bands. Also I quote from ARA, Vol. 2, No. 3, Eris: “What happened to third party traffic privileges offered by the P. and T. In compensation?”

is the WIA like the Government and Medibank, keeping their heads in the “sand” hoping that if we get extra band(s) from WARC, all the operators in the Amateur Service will forget the terrible 27 MHz crime.

**EDITOR’S NOTES:**

1. Novice licensees were granted a segment of the 10 metre band, as requested by the WIA.
2. Referring to paragraph 1 of this letter, who will remove the law breakers?

<table>
<thead>
<tr>
<th>Proword</th>
<th>Used by Sender</th>
<th>Used by Receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRONG</td>
<td>Your last transmission was incorrect. The correct version is . . .</td>
<td></td>
</tr>
<tr>
<td>READ BACK</td>
<td>Repeat this entire transmission back to me exactly as received.</td>
<td>The following is my response to your instruction to READ BACK.</td>
</tr>
<tr>
<td>I READ BACK</td>
<td>Verify the whole (or the portion indicated) of the message with the originator and send the correct version. Only the addressee will originate the request for verification.</td>
<td>That which follows has been verified by the sender in response to your request and is repeated.</td>
</tr>
<tr>
<td>VERIFY</td>
<td>Fetch the designated named official to the radio.</td>
<td></td>
</tr>
<tr>
<td>LOCSTAT</td>
<td>What is your present location?</td>
<td>My present location is . . .</td>
</tr>
<tr>
<td>WILCO</td>
<td>I have received your message, understood it and will comply with it.</td>
<td></td>
</tr>
</tbody>
</table>

**LETTERS TO THE EDITOR**

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

74 Warnigton Road, West Sunshine 32020 7th August, 1979

The Editor,
Dear Sir,

If an individual amateur radio operator breaks his licence regulations he is penalised by the authorities; and quite rightly so! But it seems that if enough people break the law, then the law is changed!

The law was broken by Pirate CBers! For the offence they were given a complete Amateur Service Band!

As far as we can see, nothing has been given to the Amateur Service to replace this band.

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1. Novice licensees were granted a segment of the 10 metre band, as requested by the WIA.
2. Referring to paragraph 1 of this letter, who will remove the law breakers?

7 August 1979

The Editor,
Dear Sir,

I think the enclosed copy of a letter to the editor of ARA speaks for itself.

My reason for sending you a copy is that you may find it beneficial to WIA members who read AR to know the true situation and how they s. and.

Just a couple of lines somewhere in your magazine may save a lot of people a lot of trouble.

Thanks.
Charles Shaw VK9NI.

7 August 1979

"To the Editor: Amateur Radio Action.

Copy: Editor: Amateur Radio (WIA).

Dear Sir,

Yesterday I was shown an article that appears on page 81 of Vol. 2, No. 2, of your magazine, under the heading 'Norfolk Island' The information contained in this article is obviously intended as some kind of 'stir', perhaps at me personally, but I assure you that it is going to do the most damage to those Amateurs who are previously intended as some kind of 'stir', perhaps at me personally, but I assure you that it is going to do the most damage to those Amateurs who are guilty enough to believe it and act upon it.

Perhaps you would like to publish the following correction information? However If you do, it is going to make the writer of the original article look a bit stupid, as there was hardly a word of truth in the original.

1. VK8NI will be inactive on 6 metres until further notice. No promises of any kind have ever been made to anyone.
2. I do not have a new antenna atop a 90 foot tower. My old antenna was atop a 21 foot length of water pipe. It fell down in strong winds and is a write-off.
3. I have never heard of a Lunar PA, let alone a write-off.
4. All the operating I have done on the 6 metre band was done with borrowed equipment, which has since been returned to the owner, and I do not intend to borrow it again or buy anything or build anything for VHF operating.

5. Paul VK8NW, in spite of the fact that he has been allocated a two letter call by the powers-that-be, is a novice. He can only operate the normal novice bands and that does not include 52 MHz.

When Paul first applied for a call sign, he was given VK9NI. He wrote back and said he would prefer a VK89N call. They then allocated VK89N. This tended to indicate they neither knew nor cared what was going on, so Paul left it at that. If this causes too much confusion blame the licensing authorities, not him.

6. Needless to add, even with my help and an 'old antenna', there is no way that Paul can get on to 6 metres legally, except to pass the full call examination. He is at present studying for the next one, and is not very active on the air for mainly that reason.

I have already had two letters from operators who have read the article with queries about 6 metres operation on Norfolk. It would save them time and effort and expense writing, and the same for me answering, if you could find the space to publish a little more accurate information, i.e. forget Norfolk Island or else buy a plane ticket and bring your own rig over if you wish a QSL card that badly.

Operating from a location such as this can be a blind at times, and the spreading of totally misleading stories does not make it easier for any of us here. I am not a DXer, or a fanatic, and Ham radio is not my number one hobby by any means — and take it from me that applies to all the other permanent call operators here as well. I will continue to do my best for what it is worth, but NO promises.

Thank you.

Yours faithfully,
Charles Shaw VK9NI.

7 August 1979

The Editor,
Dear Sir,

I wish to Inform you of the formation of a new radio club.

The Club Is —

Shepparton and District Amateur Radio Club meets first Wednesday of each month at 7.30 p.m. in the Mechanics Institute Hall, 225 Wyndham Street, Shepparton. Informal meetings on third Wednesday.

If anyone would like further Information, contact the Secretary, SDARC, PO Box 692, Shepparton 3630.

Yours faithfully,

Sandra Stevens VK3ZSO.

Publicity Officer SDARC.

PO Box 692, Shepparton, Victoria 3630.

---

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Thank you.

Yours faithfully,

Charles Shaw VK89N.

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**MAGAZINE**

Syd Clark, VK3ASC

**BREAK**: June 1979

A Simple Aerial Coupling Unit; Oven Controller — Timebase Oscillator Power Supply; Twin for Galbraith PS1 (8 Amp, 13.5 Volt PSU); Spurious Free 2 Metre Transmitter; Bending Brake; Microprocessors.

HAM RADIO June 1979

RF Power Amplifier Design; AFC Circuit for VFOs; Satellite Tracking Systems; Diode Noise Source.
AWARDS

COLUMN

Bill Verrall VK5WV

7 Lilac Ave., Fllnders Park, S.A. 5025

AUSTRALIAN COMMONWEALTH ELECTORATE AWARD

This award was instituted by CHC Chapter 66 and has been available for some years. Publication of the rules in this issue may encourage some portable/mobile operators to plan "DXpedition" to seek rare electorates during the coming summer months.

OBJECT OF THE AWARD

(a) To foster an interest by Australian and overseas radio amateurs in making contacts with all Federal electorates.
(b) To encourage Australian amateurs to more fully occupy the allotted frequencies, particularly those required for short range communication.
(c) To encourage Australian amateurs to cooperate with overseas and local stations in obtaining contacts with electorates with few or no active amateurs by undertaking mobile or portable operation from home or hotel.
(d) To provide a Premier Award in Australia comparable with the NZ Counties Award.

AWARD REQUIREMENTS

(a) An initial certificate will be issued for 25 confirmations which must include VK2-9, VK3-6, VK4-4, VK5-2 and one each for VK1, VK6, VK7 and VK8.
(b) Endorsements will be issued for 50, 75 and 100 confirmations. Additional endorsements may be included in any one of the nominate bands and/or modes.
(c) Separate certificates may be obtained for different bands and/or modes.
(d) Only contacts made on or after 1st July are eligible for the award.
(e) In general all CHC rules are applicable.

APPLICATION

(a) All applications for award/endorsement must be confirmed in the space provided by either one CHC member or two licensed amateurs.
(b) The check list remains a complete record of all endorsements obtained and will be returned after each application.
(c) Applications for award, endorsements, check lists, etc., should be made to the Awards Custodian, Mr. Allen Smith VK2AIR, 111 Corr- cotti Road, Seven Hills, NSW 2147, Australia.

FEES

(a) Basic Award (25 confirmations), $1.00 Aust.
(b) Each additional endorsement, 50 cents each.
(c) Each additional endorsement, 50 cents.
(d) To reduce costs, IRCs or mint stamps may be used.

FEDERAL ELECTORAL BOUNDARIES

The Commonwealth Electoral boundaries change from time to time and the number of Federal electorates is increasing annually.

AUSTRALIAN AWARDS

The Australian Awards are a group of Awards which were instituted by CHC Chapter 66 and are available for members of the Australian Awards (see Rule 4.5). The most frequent omission Is the location of the station worked.

WIA AWARDS

I wish to draw to the attention of all future applicants for WIA awards the following points:

(i) Verification — Rule 4.3.
(ii) Application — Rules 5.1 and 5.2.

The VHA makes no distinction between members and non-members and will issue awards to any ham who submits the required QSOs for qualification. However, approximately half the applications for awards are returned due to missing evidence (see Rule 4.5). The most frequent omission is the location of the station worked.

Awards to all members and non-members on request.

Join a NEW MEMBER NOW!
Please check your call sign, name, initials, address, grade and other details on your address labels.

Advise any corrections NOW to your Division or direct to WIA, Box 150, Toorak, Vic. 3142.

- The coding on the label reads: Letter Numeral Two digits One digit Two digits Grade Division Unused Distribution Zone.
- The Call Book data derives from the same EDF file.

## CONTESTS

Wally Watkins VK2DEW
Box 1065, Orange 2800

### October

6/7 VKZL/OCEANIA PHONE
13/14 VKZL/OCEANIA CW
13/14 RSGB 21/28 MHz PHONE
20/21 RSGB 7 MHz PHONE
20/21 JAMBOREE ON THE AIR
27/28 CO WORLD WX DX PHONE

### November

3/4 RSGB 7 MHz CW
3/4 ARRL CW SWEETSTAKES
17/18 ARRL PHONE SWEETSTAKES
24/25 CO WORLD WX DX CW

### 1979 CO WORLD WX DX CONTEST

October 27-28 and CW November 24-25. Starts 0000 GMT Saturday, ends 2400 GMT Sunday.

Objective: For amateurs around the world to contact as many amateurs in as many zones and countries as possible.

- **Bands:** All bands 1.8 through 28 MHz.
- **Type of Competition:** Single operator, single or all band. Multi operator all band operation only, single or multi transmitter. ORP single operator, not over 5 watts output.
- **Number Exchange:** Phone, RS report plus zone (5705). CW, RST report plus zone (57905).
- **Multiplier:** 1. A multiplier of one for each different zone contacted on each band. 2. A multiplier of one for each different country contacted on each band.

Stations are permitted to contact their own country and zone for multiplier credit.

- **Points:** 1. Contacts between stations on different continents are worth three points. 2. Contacts between stations on the same continent but different countries are worth one point. 3. Contacts between stations in the same country are permitted for zone or country multiplier but have zero point value.

Scoring: All stations, the final score is the result of the total OSO points multiplied by the sum of your country and zone multiplier value.

Awards: This year first place certificates will be awarded to Australia only, not for each call area due to poor number of entries in the past. Single operator stations must show a minimum of 12 hours of operation. Multi operator stations must operate for a minimum of 24 hours.

Full details in "CO" magazine.

### REMEMBRANCE DAY CONTEST 1979

There were two errors in the rules as set out in July Amateur Radio and Amateur Radio Action. I can assure everyone that the correct rules were sent to the editor but they were changed without my consent or knowledge. The example of the SWL log was changed from that submitted and caused confusion and some hard words during the contest as well as some strongly worded comments on logs submitted. Due to the late delivery of July "AR", mid-August in NSW, I will be taking a lenient view of logs where the minor changes are Involved.

---

NEW DC-10MHz OSCILLOSCOPE FROM BWD

The new BWD 804 just released by BWD Electronics Pty. Ltd., is an economically priced Single Beam Oscilloscope.

A most useful feature of the BWD 804 is its isolated ground.

The vertical amplifier sensitivity range is from 10 mV/cm to 1000 mV/cm and it has a constant DC-10 MHz 3dB bandwidth.

The time base ranges from 200mSec to greater than 0.1 Sec/cm in six calibrated steps and has a continuously variable vernier control.

Calibration is better than 5 per cent over a wide temperature range and an input supply voltage range of 200 to 265V or 100 to 132V as selected.

In addition to normal oscilloscope applications in audio, industrial, education and servicing fields, it is an excellent X-Y-Z monitor for analogue or digital displays.

Further details are available from BWD Electronics Pty. Ltd., Miles Street, Mulgrave, Victoria 3170, or PO Box 325, Springvale, Victoria 3171. Telephone: (03) 561 2888, or from their authorised National or international representative.

The MFJ-484 Grandmaster is the top of their new MFJ Electronic Morse Keyers and four new antenna couplers.

The MFJ-484 Grandmaster is the top of their range with a memory of up to 400 characters which may be used as up to twelve 25 character messages, plus one 25 to 100 character message. Also featured on the Grandmaster are a built-in monitor, speed, weight, tone and delay repeat controls, plus built-in memory saver. Other features are dot-dash memories, tambic operation and solid state keying.

The MFJ-481 Memory Keyer can store up to 100 characters in two 50 character messages. It features speed, volume and tone controls, plus a repeat function for repeating messages, as well as a tune function for transmitter tune-up. Built-in memory saver for loss of power and solid state keying.

NFJ's economy keyer, the MFJ-402, makes use of the new Curtis 8044 Keyer IC. It offers variable speed, internal preset-weight control, built-in paddle, dot-dash memories and solid state transmitter keying.

Top of the line antenna tuner is the new MFJ-984, "3 kW Versa Tuner IV", which features a built-in 0-10 amp RF ammeter, SWR-0-2000, 0-2 kW power meter, dummy load, 7 position coax switch and 4:1 balun. It is suitable for matching coax line and balance line up to 3 kW PEW power. Both tuning capacitors are 500 pf and rated at 600V with a capacity of 1000 pf. The tuning range is from 16-19th October. Provision is made for either of two antennas to be used. Matching is roughly done manually so that SWR is around 5:1 and when switched to automatic, final matching is completed by automatic control. When minimum SWR ratio is achieved it will be below 1.5:1. If required, finer tuning can be done manually.

Each unit contains a cross needle meter to indicate actual SWR, and a dummy load is included for initial setting up on the frequency it is desired to use.

Lower down the power scale are the models MJ-962 and MJ-961, "1.5 kW Versa Tuner II". For more information contact GFS Electronic imports, 15 McKean Road, Mitcham 3132, Victoria. Telephone: (03) 873 3939.

LINEAR AMPLIFIERS

Vicom announce the availability of a new line of VHF Linear Amplifiers produced by the Tono Corporation for 146 MHz, 435 MHz and 28 MHz, with output powers ranging from 30 to 130 watts.

In Australia, these units will be available:

- 146 MHz units: MR-1300E and MR-900E.
- 435 MHz units: MR-1300E and MR-900E.
- 28 MHz units: MR-1300E and MR-900E.

The MR-1300E has an output power of 130 watts when driven with 15 watts and the MR-900E 90 watts under the same conditions. Both units employ a solid state RF amplifier which gives a gain of 13 dB.

Technically, these amplifiers offer increased performance because of a stabilised bias voltage using a special AVR circuit. Changeover from receive to transmit can either be manually controlled or carrier operated using a Schmidt circuit.

Further details can be obtained from Vicom, 68 Eastern Road, South Melbourne. Telephone 699 6700.

AUTOMATIC ANTENNA TUNER

Daiwa Corporation of Japan have automated one of the last areas of amateur equipment to be automated.

Oishi's Australian representative, Vicom, have just announced the MR-1300E and MR-900E, 2.5 kW versions of an automatic antenna tuner.

The principle behind the operation is the use of the voltage sensed in a mismatched condition to control a motor which in turn varies inductance or capacitance, thus reducing the detected reverse power from the load to a minimum.

In operation, either unit is switched to the band desired and the antenna to be used is selected. Provision is made for either of two antennas to be used. Matching is roughly done manually so that SWR is around 5:1 and when switched to automatic, final matching is completed by automatic control. When minimum SWR ratio is achieved it will be below 1.5:1. If required, finer tuning can be done manually.

Each unit contains a cross needle meter to indicate actual SWR, and a dummy load is included for initial setting up on the frequency it is desired to use.

Power required is 13.8 volts at about 0.2 amp and output impedance that can be matched range from around 10 ohms to 300 unbalanced.

LED readouts are used to indicate power ranges and motor action.

It is claimed that frequency excursions over a band can be reduced to a minimum during base station test working, and also for mobile operation where major frequency changes currently require returning of antenna or matching network.

Full details and pricing are available from Vicom, 68 Eastern Road, South Melbourne. Telephone 699 6700 or their dealers.

VICOM GAINS EXPERIMENTAL LICENCE

Vicom International Pty. Limited has received approval to run a VHF/UHF colour television transponder and an FM transmitter at the coming EEMEC Exhibition to be held at the Sydney Showgrounds from 16-19th October.

The translator will be a Hirschmann 10W unit featuring high quality construction with unique fail-safe system which meets the Australian Broadcast standards and CCIR specifications.

Hirschmann is an Austrian based company specialising in VHF/UHF and VHF/UHF television transmitters from 1 watt to 2 kW. This FM transmitter will be run on equipment supplied by CCA Corporation of USA and will operate on 88.90 MHz.

The equipment can be seen running at stand 28 at the EEMEC Exhibition.

SOLID-STATE RF SIGNAL GENERATOR

The new B & K Precision Model E200D RF signal generator features solid-state circuitry. Six indi-
The second annual Gold Coast Hamfest will be held on Saturday, 3rd November.

The Hamfest will be held at the Burleigh Heads Scout Hall on Saturday, 3rd November.

One contact per band per 24 hour period with a member of the Gold Coast Amateur Radio Society.

Full details may be obtained from the Club and logs may be returned at the Hamfest or by post at PO Box 558, Southport 4215, before Saturday, 17th November.

BLUE MOUNTAINS AMATEUR RADIO CLUB FIELD DAY

The Blue Mountains Amateur Radio Club will be holding its annual Field Day on Sunday, 25th November, 1979. The venue this year will be Springwood High School, Gorse Road, Springwood. Home-brew, competition, auction and varied, enticing events will be staged throughout the day. Registration will be $2 for adults and $1 for students if competing in the events, otherwise free admission to all. So come and meet your fellow amateurs in the mountains and have an enjoyable day. Further details from PO Box 54, Springwood 2777.

VK3 AMATEUR RADIO LTD.

During the late sixties when the Victorian Division was located at 478 Victoria Parade it was apparent that we would need to look for new premises. To this end we increased the value of the property then the Council decided to buy up neighbouring properties. The potential for borrowing money was soon exhausted and the Council considered debentures. Because the Division had no charter to sell debentures a subsidiary Company was set up for that purpose which was called Amateur Radio Limited.

Two hundred and eighteen $50 debentures were sold to members with a rate of 4 per cent per annum. The debentures became due for repayment in December, 1978. The biggest cost of running the Company (AR limited) offset the low rate of interest the Council decided to completely pay out all money owed. The Company will be kept in some form to protect the name. To close all activity of Amateur Radio Limited members were asked to either donate their debentures for the purpose of mortgage reduction or claim their money back.

As at 17-6-79 $2,200 has been donated for the reduction of mortgage and $5,350 has been re-deemed. The total of $7,550 eliminates most of the debt. We by AR Limited. We would like to gratefully acknowledge the names of the following persons who donated their debentures for the reduction of our mortgage. The number of others not listed here have donated their debentures to WARC and other Institute activities.


Issued on behalf of the Directors of Amateur Radio Limited which is also the Council of the Wireless Institute of Australia, Victorian Division.

MELBOURNE TWO METRE FOX HUNT

The winner of the VICOM competition for the best performance in the two metre fox hunt was won by Greg Williams VK3ZXX. This competition ran over a twelve month period and concluded in July 1979. The competition was sponsored by VICOM and put a great deal of competition into the fox hunt.
GSL Cards, Log Books, Contest Sheets — send 20c stamp for samples and prices to Linda Luther VK4LV, PO Box 494, Nambour, Qld. 4560.
Before you invest in new amateur communications equipment or accessories, spare 60 seconds to read this advice.

"Any salesman will find a way to give you a better price — but for every dollar you save that way, you spend twice as much to find the after sales service you need. Before you buy, ask another Ham where he gets good sales assistance and concerned service attention."

At Bail Electronic Services we continue to offer first class equipment with a sure back up service.

A selection of the equipment available from Bail.

**All-New FT-101ZD Series:** High performance HF Transceiver with today's technology backed by a proud tradition. This rig includes variable IF bandwidth, digital plus analog frequency display, a built-in RF speech processor, and wide receiver dynamic range.

**FT-101Z Analog Model:** Top performance for the budget-minded amateur. The precision VFO gear mechanism is coupled to an easy-to-read analog display, providing resolution to greater than 1 kHz. All other features — the variable IF bandwidth, RF speech processor, superb noise blanker, VOX — are identical to the FT-101ZD. Counter and Dig display can be added later. Set is basic and you add the extras you need.

**FRG7 Synthesized Receiver.** For amateurs, novices and shortwave listeners. Electronic band changing with 0.5 - 29.9 MHz continuous coverage. Uses Wadley Loop to derive synthesized heterodyne oscillator signal. LSB, USB, AM and CW. Frequency readout better than 10KHz, stability within 500Hz. Write to Bail for full details.

**Digital Display Communications Receiver with CPU Digital Clock and Timer — FRG-7000**

The digital clock and timer, controlled by a CPU chip will read out both local and GMT time and will control peripheral station equipment such as a tape recorder.

Other equipment from Bails includes Antennas, desk and hand microphones and headphone sets such as the YH-55 illustrated.
FEATURED IN THIS ISSUE:

★ DIAMOND JUBILEE OF THE S.A. DIVISION
★ SUNSPOTS, DX AND GETTING AMONGST IT
★ WHAT'S LEFT FOR THE NOVICE
★ REPEATER TIMER TIMER
★ 1979/80 ROSS HULL MEMORIAL CONTEST RULES
Electronics: the FUN WAY!

At last, there's a book that treats electronics as the really enjoyable hobby it is!

It's called 'Dick Smith's Fun Way Into Electronics' — and it's the ideal introduction to electronics for all ages — from 5 to 95.

Dick Smith's Fun Way uses a unique 'breadboard' wiring system that needs no soldering — so it is safe and each project has easy, step-by-step instructions that anyone can follow.

There are twenty exciting projects to build, from continuity checkers to radio transmitters — even a beer-powered radio receiver!

Electronics is fun. Have fun with Dick Smith's Fun Way into Electronics.

- SAFE
- SIMPLE
- ECONOMICAL
- FUN!
- ONLY $4.95
- NOW AVAILABLE

SCHOOLS, COLLEGES, BOOK SHOPS, NEWSAGENTS, ETC: Ask about our incredible discounts for bulk orders (10 copies or more) of this book. You'll be pleasantly surprised!

And to help you get started:

Save money with 'Fun Way' kits!
The components used in the Fun Way book are all common, easy-to-get types. But you can save by buying the kits from Dick Smith: We have assembled two kits which contain brand new, guaranteed components. You save up to ½ on the cost of individual components!

SAVE MONEY - BUY THE KIT!

DICK SMITH ELECTRONICS

KIT 1: FOR PROJECTS 1 — 10
Build the first ten projects with these components — even includes the breadboard to assemble them on. You can make light flashers, Morse communicators, transistor checkers, continuity indicators, etc etc.
Contains: One particle board, 28 self tapping screws & washers, 1.7m wire, speaker, battery clip, 23 resistors, light dependent resistor, one diode, two LEDs, two transistors, 7 capacitors.

$6.90
Cat K-2600

KIT 2: FOR PROJECTS 11 — 20
This kit contains slightly more specialised components which, with the components in kit 1, will enable you to make the last ten projects, including radio receivers & transmitters, audio amplifiers, etc.
Contains: 10 capacitors, one variable capacitor, one potentiometer, one resistor, one signal diode, one integrated circuit, one ferrite rod aerial, one crystal earphone, one audio transformer and 70cm hook-up wire

$7.50
Cat K-2610

7 DAY TRIAL OFFER
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STILL GOING STRONG!

Eric Bierre VK2BEK at his amateur station, is in his 80th year and has been licensed since 1924. Eric describes his first rig as a receiver with regenerative detector and two audio stages.

The transmitter was a 210A valve with a Ford coil supplying plate voltage. This created ICW and also bad QRM locally.

He was told to stop using this直到他 could provide filtered DC for the plate supply. This was smartly done using a dynamotor run from a 6 V 3.5 battery and supplying 500V DC. He could then transmit for an hour and then charge the battery for the next 23 hours. The aerial was the last word in those days — an 8 inch cage and a counterpoise.
WIRELESS INSTITUTE OF AUSTRALIA

Federal President: Dr. D. A. Wardlaw VK3ADW
Federal Council:
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VK2 Mr. T. I. Mills VK2ZTM
VK3 Mr. G. A. G. Williams VK3ZEW
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VK6 Mr. N. R. Penloid VK6NE
VK7 Mr. R. K. Emmett VK7KK
Staff: Mr. P. B. Dodd VK3CIF, Secretary.
Part-time: Col. C. W. Perry, Mrs. J. M. Seddon and
Mr. Mark Stephenson (AR advertising).
Executive Office: P.O. Box 150, Toorak, Vic. 3142.
Divisional Information (all broadcasts are on Sun-
days unless otherwise stated).

ACT:
President — Mr. F. S. Parker VK2NFF
Secretary — Mr. T. I. Mills VK2ZTM
Broadcasts— 1825, 3595, 7146 kHz; 28.5
and 53.1 kHz, 2m (Ch: 8): 09.00 EST.
Gen. Mtg. — 3rd Tuesday.

SA:
President — Mr. I. J. Hunt VK5QOX
Secretary — Mr. W. M. Wardrop VK5NWM
Broadcasts— 1820, 3550, 7095, 14175 kHz; 28.5
and 53.1 kHz, 2m (Ch: 8): 09.00 S.A.T.

WA:
President — Mr. Ross Greenaway VK6OA
Secretary — Mr. Peter Savage VK6NCP.
Broadcasts— 7130 (AM) kHz with relays on 2m
and Ch. 2 Perth, Ch. 6 Wagin. Time 0130Z.
Gen. Mtg. — 3rd Tuesday.

TAS:
President — Mr. I. Nicholls VK7ZZ
Secretary — Mr. P. T. Blake, VK7ZPB
Broadcasts— 7130 (AM) kHz with relays on 2m
Ch. 2 (S), Ch. 8 (N), Ch. 3 (NW),
09.30 EST.

NT:
President — Dick Kleoe VK8ZDK
Vice-Pres. — Barry Burns VK8BD
Secretary — Graeme Challinor VK8GG
Broadcasts— Relay of VK5WI on 3.55 MHz and on
146.5 MHz at 2330Z. Slow morse
transmission by VK8HA on 3.555 MHz
at 1000Z almost every day.

Postal Information:
VK1 — P.O. Box 46, Canberra, 2600.
VK2 — 14 Atchison St, Crows Nest, 2065 (Ph. (02)
43 5795 Tues & Thurs (10.00-14.00h).
P.O. Box 123, St. Leonards, NSW 2065.
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03)
41 5355 Weekdays 10.00-15.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at
West Thebarton Rd., Thebarton.
VK6 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. Box
37317, Winnellie, N.T., 7589.
Slow morse transmissions — most week-day even-
ings about 09.30Z onwards around 3550 kHz.
VK QSL BUREAUX
The following is the official list of VK QSL
Bureaux, all are Inwards and outwards unless
otherwise stated.
VK1 — QSL Officer, G.P.O. Box 46, Canberra,
A.C.T. 2600.
VK2 — QSL Bureau, C/- Hunter Branch, P.O.
Teralba, N.S.W. 2284.
VK3 — Inwards QSL Bureau, Mr. E. Trebilcock,
340 Gillies Street, Thornbury, Vic. 3071.
VK3 — Outwards QSL Bureau, Mr. R. P. Browne,
83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld.,
4001.
VK5 — QSL Bureau, Mr. Geo. Luxon VK5RX, 203
Belair Road, Torrens Park, S.A. 5062.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O.
Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371Q, Hobart,
Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 1418,
Darwin, N.T. 7994.
VK9, 0 — Federal QSL Bureau, 23 Landale Street,
Box Hill, Vic. 3128.

HISTORY
your legacy

DEMOCRACY
your privilege

CONTRIBUTIONS
your responsibility

QSP —

It is fitting that this QSP should come from South Australia, as it was on 5th November, 1919, that the first General Meeting of the South Australian Division, at which a constitu-
tion was adopted and office bearers elected, was held. Thus this month the VKS Division celebrates its Diamond Jubilee. The first meeting at which interim office bearers were appointed had been held earlier in the year on 10th September, 1919.

Ever since, the members of the Division have had their rights protected by the constitution and have been able to have their say by voting on any and all matters affecting the running and representation of their organisation. I believe that all of the Divisions within the Wireless Institute of Australia have followed a similar path.

In later years with the formation of the Federal organisation the same democratic process has been followed right through from Divisional level to the Federal level and the policy making Federal Conventions.

It has often been said that for a group of people who are supposed to be communici-
ators we are sometimes not very good at communicating.

To communicate anything, several functions must be carried out. Firstly, develop an idea. Secondly, find someone to transmit the idea to. Thirdly, the person receiving MUST LISTEN.

By listening one can become informed, but herein lies the crux of the matter. If the original idea or statement is incorrect in fact, the person listening will therefore become ill-informed. As in radio if the receiver adds distortion the true and correct message is not received. If the original idea is not quite right the person listening can act as a HISTORY, your legacy; Democracy, your privilege, CONTRIBUTIONS, your responsibility filter, provide feedback, either positive or negative, make a conversion process etc., thus improving the "signal" which may then be transmitted far and wide.

(continued page 5)
WIA (FEDERAL) DIRECTORY

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FEDERAL CONTESTS MANAGER
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FEDERAL VIDEOTAPE CO-ORDINATOR
Mr. J. F. Ingham VK5KG.

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VK2 — Mr. P. B. Card VK2BBX.
VK3 — Mr. A. R. Noble VK3BBM.
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VK5 — Mr. C. J. Hurst VK5HI.
VK6 — Mr. P. J. Savage VK6NCP.
VK7 — Mr. P. D. Frith VK7PF.

When you think about it, isn't this the mechanism of the democratic process the WIA follows? By debate at meetings, suggestions, action of committees, we develop a line of approach hopefully producing in the final analysis a result for the betterment of amateur radio and your organisation.

One thing you do know and that is “that if there is no input you will get no output.”

One of the most important aspects of these functions as regards the WIA, is the fact that, like it or not, for member and non-member alike, the Institute is recognised by the authorities as the only official spokesman for amateur radio in this country.

So, let’s all be transmitters and provide an input. Also act as receivers and become informed. Filter out un-informed information, don’t take notice of divisive and distorted views. Distortion is one thing to be well rid of. Use the democratic process, proven by tradition and time, which is open to you. It is in your own interests to support your hobby and your organisation in this way.

The oldest amateur radio organisation in the world with proud traditions can only retain its pride and effectiveness through YOU, the member. Make sure that you can be proud of your contribution to YOUR hobby and YOUR organisation. Contribution is YOUR responsibility.

Help provide a united front for amateur radio.

To use an old and traditional cliche: “In unity lies strength”.

IAN HUNT VK5QX.
Divisional President of SA Division.

QSP

EXHIBITION OF APPARATUS
According to a publicity release the Fair Association of Vincenza in collaboration with the ARI (Italian Association of Radio Amateurs) is arranging an exhibition, including components and amateur radio equipment, in Vincenza from 8th to 10th December. The exhibition also includes micro-wave processor systems and various industrial equipment and will provide a meeting place for everybody to exchange ideas, comparisons and experiences.

IYC

1979, the International Year of the Child. A brochure asks “What can you do?”, and then goes on to list examples of what can be done. Most of these look rather familiar in the context of amateur radio activities year in and year out as an ongoing commitment. One has only to think of dedicated amateurs instructing the young in Youth Radio schemes these many years. JOTA and other activities involving amateurs locally, not forgetting the international aspects of this first class leisure activities.
TV CHANNEL 5A
The following is the text of a letter dated 20th September received by the Federal President from Mr. A. A. Staley, Minister for Post and Telecommunications —

"On the 27 March 1979 you forwarded to me a copy of your Report on Increasing Usage of Television Channel 5A. The Secretary of your Institute (Mr. P. B. Dodd) has also sent me copies of attachments to the report.

I have already advised you that I agreed that there should be no further allocations of Channel 5A until a detailed report is prepared following WARC 79. The question of allocations already made, but where the stations concerned are not yet in service, is still being studied.

I have read your report with interest and it is being carefully studied at present by my Department. However, the questions raised are complex and it will be some time before detailed comments can be produced. You will realise the extreme difficulties involved, both from a financial and timetable viewpoint, in changing the channel of projects that are already well advanced. It is to be expected therefore that a significant number of 5A stations will still come into operation over the next 12-18 months."

The final paragraph is considered to be of sufficient importance to require clarification, particularly relating to the meaning of "5A stations".

Readers may wish to refer to the Press Release published in June AR.

HANDBOOK
Since publication of the statement on page 31 of September AR a copy of the latest draft of the Handbook has now arrived. This could in fact be the proof for the final printed copy.

The new draft includes a great number of appendices which incorporate the syllabus for the AOCP and Novice theory examinations, 50 sample multi-choice questions for each, 30 sample multi-choice questions on Section “K” (Regulations), the contents of various forms such as the RB125 and RB125A, an update of the pamphlet about good radio and TV reception and other data.

Readers are reminded that the details in any such Handbook cannot conflict with the WT Regulations. The Handbook is merely an interpretation of these Regulations.

The chapter on definitions has been expanded. In general, any new definitions follow the broad ITU equivalents — such as "harmful interference", "occupied bandwidth", "spurious emissions" — whilst others include "operator", "repeater/translator station", "session", "simplex operation", "slow scan television", "television", "third party", "beacon station", "club station", etc. A few definitions have been expanded or clarified, as for example —

"Mobile station" means a station in the amateur service that is installed in a vehicle, aircraft, ship or any other means of transport and is normally used while the vehicle, aircraft, ship or any other means of transport is in motion, or during halts at unspecified locations. A station carried by a pedestrian is included in the above definition, but see also 42(b) below."

It is manifestly impossible to isolate all the various differences between the existing and the proposed Handbooks in the space available here. The "statement" referred to covers many of the main differences.

Identification has been increased from 5 to 10 minutes. RTTY (and similar) stations will have to identify in the mode in use as

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well as CW or telephony. Details and parameters are set down for automatic radio telegraph systems, facsimile, repeaters, beacons, television and SSTV as well as duplex working, maritime mobile operations, aeronautical mobile and also emergency working. The operation of club stations has been more closely defined and details about reciprocal licensing have been spelled out in greater depth.

Paragraph 29 in the existing Handbook has been expanded as follows —

“4.2 As a general rule an amateur station licence authorises the operation of an amateur transmitting and receiving station:

(a) at a fixed location detailed in the licence;
(b) at any temporary premises or any temporary location, including a vehicle which is normally garaged at the fixed location detailed in the licence, for periods of up to four consecutive weeks in any one instance. Approval to operate from temporary locations for periods in excess of four weeks may be obtained on written application to the Superintendent, Regulatory and Licensing in the capital city of the State in which it is intended to establish the station . . .”

It seems obvious that the new Handbook does not come into operation until it has been published and distributed.

Much discussion has been held with the Department about highly specialised items which the WIA believes should not be subject to examination — one example is the repeater conditions.

REPEATERS
And on the subject of repeaters it is understood that the Department has agreed in principle to the licensing of a 6 metre repeater on trial in VK6 — please see AR for July, page 6.

EDUCATION MATERIAL
During discussions in Adelaide the Federal Education Coordinator initiated the production of various kinds of visual aids for training purposes. A number of Divisions have been asked to assist in this work.

MEETINGS
At the Executive meeting on 6th September a lengthy discussion was held on the question of the Federal dues for 1980. It had originally been hoped that at the 1979 Federal Convention these would remain unchanged for the fourth year in succession but from the latest data and inflationary trends prudence dictated that a small increase was essential if the budget is not to go into deficit. A modest increase of $1.50 (from $15.00 to $16.50) on all non-concessionary members has been approved.

1979 CALL BOOK
Sales of the Call Book have been going well. To avoid disappointment members should order now before stocks run out.

WARC 79
WARC 79 has begun. The Executive wishes to acknowledge with grateful thanks the receipt of the following donations from members —

LIST No. 7

| VK3ABH | $20.00 |
| VK2DJ  | 5.00   |
| VK5ZRL | 10.00  |
| VK3ADR | 50.00  |
| VK3AUC | 8.65   |
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The Wireless Institute of Australia holds the proud position of being the oldest amateur radio society in the world, having been formed before such other well-known organisations such as the Radio Society of Great Britain and the American Radio Relay League.

I thought you may be interested to know a little about the formation of the South Australian Division of the Institute which this year celebrates its sixtieth year of operation.

Mr. C. E. Ames, who became the first secretary of the Division, fortunately had the foresight in his time to prepare an account entitled How the South Australian Division of the Wireless Institute of Australia came to be Formed. This document, together with the original Minute Book of the Division, have luckily escaped the ravages of time and, still in fair condition, are held by the Divisional Historian, Maurie Philips VK5ZU. The Council of the Division are taking steps to ensure preservation of these documents for posterity.

Access to these documents therefore allows me to provide you with the following information, some of it taken directly from the account by Mr. Ames who, in the year 1914 as a licensed experimenter, held the call sign of VXG.

I now quote directly from that account:—

All pre-war radio experimenters will remember that simultaneously with the outbreak of war came notices that all wireless gear was to be dismantled, packed in cases and handed in to the nearest official Post Office. At the cessation of hostilities in 1919, notice was received that our apparatus would be returned to us on application to the postmaster at the office to which it had been delivered in 1914. The same notice made it clear that restrictions on the use of such apparatus still remained in force, and that a continuance of the prohibition against all private wireless experiments must be rigidly observed in accordance with the War Precaution Regulations.

This, with hints thrown out by the press, made it appear that we experimenters were going to have a hard fight to obtain anything like our pre-war freedom, and I began to realise that if we could organise the experimenters, and others interested in wireless development, into a solid body, that we would then be in a position to press our claims.

I well remember passing down a certain street in Mile End, one day on my way home from work, and seeing an aerial which had been erected, and on making enquiries at the house found that it belonged to Mr. Malpas, with whom I had become acquainted in pre-war days as a wireless operator. I mentioned to Mr. Malpas my idea of forming a Wireless Institute in this State and he was very enthusiastic about it and encouraged me to go ahead with it. Mr. Malpas was the first person to whom I mentioned the idea of forming the Wireless Institute of South Australia.

I then got in touch with Mr. Malcolm Perry, who was at that time Secretary of the Wireless Institute of New South Wales, and acquainted him with my ideas, at the same time pointing out the advantages that would undoubtedly be obtained by the amalgamation of the Wireless Institutes in the various States, and bringing them together as the Wireless Institute of Australia.

I received much encouragement from Mr. Perry and on the 4th April, 1919, at the annual meeting of the Wireless Institute of New South Wales I became a member of that body.

I then caused advertisements to be inserted in the various newspapers in Adelaide calling attention to the desire to form a Wireless Institute in this State, and also wrote to all the pre-war experimenters with whom I could get in touch and received a very encouraging reply from Mr. Hambly Clark, who afterwards became our President.

As a result of advertisements I became acquainted with Mr. Adam Mather, who proved a great help in gathering in members.

The result was that on 10th September, 1919, a meeting was held at my house at Carlton Parade, Torrensville, at which the formation of the Institute to be known as the South Australian Section of the Wireless Institute of Australia was endorsed and a committee was formed, with the object of drawing up a code of rules, comprised of the following members: President, A. Mather; Vice-President, R. L. Lee and H. Clark; and Messrs. W. H. Smith, D. G. Malpas, H. C. Coles, R. M. Dunstone, R. Wyatt, C. J. Poole and C. E. Ames, Secretary.

It was decided to adopt the rules of the NSW Section until our new constitution could be drawn up and adopted. The annual subscription was fixed at 10 shillings and sixpence per year.

Present at that meeting were the following, who all became members of this Section: Messrs. A. Mather, R. L. Lee, D. G. Malpas, D. A. Smith, W. J. Bland, H. C. Coles, R. O. Wyatt, C. J. Poole, J. M. Honnor and C. E. Ames. Absent members elected were Messrs. R. M. Dunstone, A. Cox, W. Jenkinson, C. J. Spencer and C. Barlow.

A second meeting was held at Carlton Parade, Torrensville, on the 24th September, at which six new members, namely Messrs. T. M. Heagney, R. O. B. Matthews, B. M. Brimage, J. W. Wilkin, J. R. Finlayson and A. G. S. Paine, were elected.

On the 15th October the Council met at the office of Mr. R. O. C. Matthews, Grenfell Street, Adelaide, for the purpose of drafting a set of rules. This was done and at a general meeting called as the first Annual Meeting on the 5th November at the office of Mr. R. M. Dunstone, Alfred Chambers, Currie Street, this new constitution was adopted. An election took place and the following officers were elected: President, J. W. Hambly Clark; Vice-President, T. H. Heagney and R. L. Lee; Hon. Secretary, C. E. Ames; Hon. Treasurer, R. O. C. Matthews; Council, W. H. Smith, W. Harrison, R. M. Dunstone, D. G. Malpas, H. C. Coles, V. R. Cooke.

The document written by Mr. Ames is in a most even hand and typical of the old copperplate handwriting which is rarely seen these days. Examples of such writing from the original minute book are reproduced with this article.

It is interesting to note that the Mr. V. R. Cooke mentioned as an elected member of the first Council of the Division is still alive and is an active amateur under the call sign of VK5AC. Roy can be heard most Sunday mornings participating in the 20 metre call-back after the Sunday morning broadcast.

Two interesting snippets from the minute book are the fact that the annual subscription of ten shillings and sixpence, known in those days as "half a guinea", could be paid in two instalments and that very early in the days of the Division it was decided that lady members could not be admitted to the Division.

The Mr. Hambly Clark mentioned as being the first President of the Division was the father of the well-known Adelaide identity of the same name who runs a gun dealership in the city.

An excellent book entitled "A History of Radio in South Australia 1897-1977", written by John F. Ross Firee (Aust.), was published last year and includes as the second chapter a total of 66 pages devoted to the history of the South Australian Division and amateur radio.
ABOVE and BELOW: Photographs of Mr. C. E. Ames’ handwritten minutes of the WIA SA Division 60 years ago.

operators and contains some of the information given above.

To press forward to later history of the Division, it is noted that in the year 1922 there were 58 financial members on the roll. That compares with a figure of about 1,000 in the year 1979.

Amongst the members listed in that year was a Mr. Robert T. Edgar, who was born in Scotland, educated in Australia, and eventually became an American citizen. His father, the late Robert Edgar, invented several important parts of the great 200 inch Hale telescope on Mt. Palomar, California. Mr. Edgar, Jnr., acted as Honorary Assistant Secretary for the Division and went on to become involved in presenting lectures dealing with space exploration, having previously made predictions about such things as ICBMs, artificial satellites, manned space stations, etc., at which predictions people scoffed.

In a brochure in my possession appears the following: Mr. Edgar, be sure to keep up this good work of inspiring our youth, said Dr. Wernher Von Braun, world famous rocket expert. At the present time Mr. R. (Bob) Edgar, another member of the same family, is employed as a research scientist at the Defence Research Centre, Salisbury, South Australia, and holds the call sign VK5RS. Bob has in the past several years had working under his guidance Ron VK5FY, Angus VK5DE, Rick VK5GV, Ian VK5GX, Clive VK5PE, Fred VK5FT, and several other present amateur operators whose names and call signs at the moment I cannot recall, all involved on various scientific projects. So still we can see some possible links with past history of the Division.

So sixty years after its foundation the South Australian Division of the Wireless Institute of Australia is alive and well. Membership is still growing steadily, as is also the case with the organisation on a national basis.

From the beginning described above, with hints made as far back as the year 1919 about the possibility of a Federal body, has grown the organisation which we know today. It would seem that our present-day members are no less enthusiastic than the early experimenters of yesteryear.

We have an organisation with history, tradition and activities of which we can justly be proud.

I am sure that you will wish to celebrate this Diamond Jubilee with the members of the South Australian Division and that all Divisional members would like to have expressed on this special occasion their greetings to all other members of the Wireless Institute, and all other amateurs throughout the world.

I trust that this description of events over the years concerning the operation of our hobby in the State of South Australia has been of interest to you.

Amateur Radio November 1979 Page 9
Amateur radio thrives on unreliability. The VHF fraternity, the DX hounds, and even the dyed in the wool earbasher get much of their enjoyment through exploiting freak conditions. And every single variability in propagation conditions is attributable to our Sun. This article shows how.

INTRODUCTION
Strangely enough, the two most important features of the sun, insofar as the amateur is concerned, is that it is large (diameter approximately one million km) and that it rotates. Consequently it has a strong magnetic field. Instabilities in this field cause waves to travel up through the solar atmosphere and heat the corona to a high temperature (approximately one million degrees centigrade). A gas at this temperature emits X-rays which create our ionosphere by ionizing the upper layers of the earth’s atmosphere. The X-ray emission rate varies from day to day, from year to year, and consequently radio conditions vary in sympathy.

Occasionally an extremely large instability occurs in the solar magnetic field near a sunspot, and an immense amount of energy is released into a volume about as big as the earth. This results in a magnificent explosion; we call it a solar flare. A burst of X-rays hits the earth 9 minutes later; a magnetic storm occurs about 24 hours later and the Van Allen radiation belts are severely disturbed. Each of these events affects radio propagation to a large degree.

The VHF man also must thank the sun for heating our atmosphere, thereby creating the weather patterns and high altitude winds he needs for tropospheric and sporadic-E propagation.

Finally, a little bit of radio archeology. Historical records of the sun indicate to us that Captain Cook probably would have been able to work London on 52 MHz if Hertz and Marconi had come along a little earlier. The next such occurrence should be about 2126 AD.

The amateur operator is well aware of, and in many cases thrives on, the variability of radio propagation conditions. Daily, monthly, seasonal, and year to year variations are clearly recognised. The year to year variability is well known to correlate with the “Sunspot number”, and from this our ionospheric predictions are derived. But we see a sunspot because it is cooler than the rest of the sun; why should the earth’s ionosphere get denser as the number of cool spots on the sun increases? Clearly, there is a lot more physics here than meets the casual eye.

In fact, the sun is totally responsible for our ability to communicate via the ionosphere, and every type of variation in radio propagation is attributable to the sun. This article seeks to outline the complex interplay of seemingly unrelated factors that brings this about.

HEATING AND STIRRING
Our sun (an average star) commenced its life as a small condensation of cold dust and gas in interstellar space. This condensation exerted a gravitational attraction on nearby dust and gas which “fell” into the condensation, increasing its mass, thereby increasing its gravitational field and thereby “sucking” in more dust and gas. Thus, it grew bigger and bigger.

As an atom fell towards the infant sun the gravitational force caused it to speed up; then it hit the infant sun, its kinetic energy heated the sun up very slightly. Each new atom increased both the mass and the temperature of the sun. Ultimately the centre of the infant sun reached a temperature of 10 million degrees, then “nuclear fusion” commenced. In this process four hydrogen atoms unite to form a helium atom, releasing a great amount of heat in the process. The sun had been “lit”, and it was henceforth able to maintain its temperature from its internal resources.

As water goes down the bath hole, it rotates faster and faster the closer it gets to the hole. The same laws of physics affected our infant sun, so that the gas as it fell into the sun swirled around with increasing speed. The lazy motions of the dust and gas prior to the condensation of the sun resulted in a star that was spinning about its axis. The sun now spins about its axis with a period of 25 days. Strangely enough this spinning motion is crucial to the HF operator. If the sun did not spin, there would be no ionosphere! Let’s see why.

Gases at 10 million degrees are excellent conductors of electricity; and the infant sun therefore became an immense (about 1 million kilometres in diameter), rotating electrical conductor. A weak magnetic field pervades space, and, as in the case of an electric dynamo, electric currents started to flow in the moving conductor (the sun). These currents in turn generated magnetic fields of their own, which generated further eddy currents. Positive feedback occurred, and ultimately strong magnetic fields were built up inside the sun. The continued rotation of the sun prevents these fields from decaying. Unlike the magnetic field of the earth, the majority of the sun’s magnetic field is inside the sun; that is, the majority of the lines of force never emerge from the surface.

SPOTS AND KNOTS
The sun is completely gaseous, and some parts therefore can rotate faster than others. The magnetic fields become especially strong at the interface between such regions, and big kinks and knots are also formed in the magnetic field lines. The regions of strong magnetic field contain less gas than adjacent regions, and they therefore “float” to the surface of the sun, taking the magnetic field with them. Such an occurrence is illustrated in Figure 1. This protrusion of the magnetic field through the surface of the sun is the most important single feature of a sunspot.

The light our eyes see from the sun originates in a layer called the photosphere, where the average temperature is 6000°C. The sunspot magnetic field causes
the gas in the sunspot (i.e. where the field is strongest) to expand and cool down. The gas is therefore less incandescent, and we see a dark spot. (As is obvious from Figure 1, we usually see sunspots in pairs, one having a “North” magnetic polarity, the other “South”). These dark spots, themselves, have no effect whatsoever on our ionosphere.

Other effects are occurring that we cannot see with our eyes, however, the hot gas below the photosphere rises, setting up convection cells similar to the thunderheads that occur in our atmosphere on hot summer days. The hot, convecting gas causes the magnetic lines of force to vibrate, and powerful waves (“magneto-hydrodynamic waves”) propagate away from the sun. They carry much energy with them, which is then dissipated in the region up to several million kilometres above the photosphere. The dissipation of these waves heats the gas to very high temperatures of about 1 million degrees.

All hot bodies radiate electromagnetic radiation, the wavelength decreasing with increasing temperatures. Thus, while the 6000°C photosphere radiates optical wavelengths, the million degree corona radiates X-rays and ultraviolet radiation. It is this radiation that generates our ionosphere, and it is the variation in the number and temperature of the coronal “hot spots” over the sunspots that makes the ionosphere wax and wane.

Other things are happening in the sunspot magnetic field as well.

The gas is highly ionized, and some of the individual electrons are accelerated to relatively high energies by the hydro-magnetic waves that are travelling up the magnetic field from the photosphere. These electrons then spiral back and forth in the sunspot magnetic field, in the same way that electrons bounce back and forth between the two hemispheres in the Van Allen radiation belts around our (and other) planets. As they spiral around in the strong fields they radiate microwave radio waves. These waves, themselves, have no effect whatsoever on our ionosphere, but their intensity is determined by the number, size and the magnetic properties of the coronal hot spots. That is, the microwave emission is correlated in a general way with the X- and UV-emissions, and this is the basis for the use of the 10 cm microwaves emission index to predict ionospheric behaviour.

**ONE LUMP OR TWO**

From the above, it is clear that our best way to study and predict the condition of the ionosphere would be to measure the solar X- and UV-radiation intensity. But these radiations are totally absorbed in the topmost 0.1 per cent of our atmosphere, and until recently, we had to make do with the information we could obtain from the optical wavelengths and microwave wavelengths that could penetrate to ground level.

Empirical studies have shown that the number and distribution of sunspots gives a useful barometer that correlates with ionospheric and other geophysical parameters. A rather arbitrary parameter, the Zurich sunspot number RZ = 10G + S is usually used to quantify the sunspot information. In this formula “S” is the total number of individual spots that can be seen on the sun’s disc, while “G” is the total number of separate groups of sunspots (e.g. the sunspot pair in Figure 1). Galileo was the first man to see sunspots (and got into some trouble over it), and records have been kept ever since. The sunspot numbers for the past three centuries are shown in Figure 2.

The well known “eleven year” cycle is evident in Figure 2. But look closely in the years between 1850 and 1940. Note how every second cycle is systematically lower than the adjacent cycles. Analysis of the light from sunspots indicates that the magnetic properties of the spots also alternate between two different states from one cycle to the next. In reality, the physics of the sun exhibits a (roughly) twenty-two year periodicity. Thus the next sunspot maximum (1980) will be a direct descendant of the high maxima of 1872, 1895, 1918, etc., while the recent 1969 maximum was the successor to the low maxima of 1883, 1907, 1929, etc. It is therefore possible that the 1980 maximum will be more like that of 1958 than that of 1969.

**MEANWHILE, ON EARTH**

The X- and UV-radiation from the sun ionises the earth’s atmosphere above an altitude of about 100 km. The number of electrons per cubic centimetre (i.e. the “electron density”) is plotted against height in Figure 3. At a time of high solar activity (i.e. high sunspot number and many coronal hot spots) the X- and UV-intensity is greater, and hence the electron density is greater. Incidentally, Figure 3 shows that the ionosphere is a single region some 150 km thick, and that the D, E, F1 and F2 regions are not separate layers but correspond to kinks in the electron density curve.

Figure 4 shows how a radio wave is reflected by the ionosphere. The wave travels in a straight line until it reaches the bottom edge of the ionosphere, when its path commences to bend. Provided the path does not reach the layer of greatest electron density before the wave is travelling parallel to the earth’s surface, the wave will return to earth.

The frequency which will just be “reflected” back to earth from the point of greatest electron density when the wave is
initially travelling vertically upwards, \( f_v \), is a useful parameter that helps us predict radio transmission characteristics. It is usually referred to as \( f_{0F_a} \). For a radio wave hitting the ionosphere at an angle of \( \phi \), the highest frequency that will be reflected is \( f_v \cos \phi \). For example, if \( f = 12 \) MHz, and \( \phi = 10^\circ \), then the maximum frequency that would be reflected would be 35.1 MHz. Note that the above formula ignores the curvature of the earth; the earth’s magnetic field also complicates the matter somewhat. \( f_{0F_a} \) depends upon the maximum electron density in the ionosphere according to the formula:

\[
f_{0F_a} = 9.002 \times 10^3 V_n, \text{ in Hz}
\]

As the sun’s activity increases (i.e. more coronal hot spots) the increased X- and UV-radiation causes \( p \) to increase, and thus \( f_{0F_a} \) must increase. This effect, wherein \( f_{0F_a} \) increases as the Zurich sunspot number increases, is illustrated in Figure 5.

CRYSTAL BALL DEPARTMENT

Using historical data that relates the world wide \( f_{0F_a} \) values to solar activity, and for an assumed prediction of future solar activity, the Australian Ionospheric Prediction Service (IPS) makes predictions of the MUF for paths of length \( d \), and 3000 km.

Figures 6 and 7 are examples of the MUF (3000) charts issued by the IPS on a monthly basis. To find the maximum frequency for a given 3000 km path, the value of frequency at the midpoint of the path should be read. Note particularly that these maps predict the median MUF; that is, for 50 per cent of the month the MUF will be lower, for 50 per cent of the month it will be higher. The variability of the MUF is a result of the fact that sunspot regions (and consequently, coronal hotspots) are not distributed evenly around the sun. Consequently the number of coronal hotspots that can affect the earth varies from day to day as a result of the rotation of the sun.

Comparison of observed and predicted MUFs suggests that the MUF will be about 1.5 per cent high for 10 per cent of the days in the month. The maximum distance for one-hop transmission is 4000 km, and the MUF for 4000 km is 1.1 times the MUF.
for 3000 km. Thus for 10 per cent of the month, the MUF for 4000 km will be

\[
M(4000) = 1.15 \times 1.1 \times MUF(3000)
\]

Using [10%]

\[
= 1.27 \times MUF(3000)
\]

Figure 7 gives the median MUF at 0600 UT for October 1977, at which time the first real 50 MHz DX of this sunspot was being observed in the Pacific. Figure 7 immediately shows part of the reason. Look at the Guam to Japan path (roughly 4000 km). The midpath MUF from the map is 45 MHz. Thus for 10 per cent of the month, the 4000 km MUF would have been \(1.27 \times 42 = 53\) MHz. That is, the path would have been open by simple one-hop F2 transmission. Four hours earlier (Figure 6) the region of high MUF lay between Hawaii and Guam, and two-hop F2 propagation was possible on 6 metres for 10 per cent of the time.

Both Figures 6 and 7 show two regions of high MUF north and south of the equator. Simple theory says that there should only be a single region of high MUF, and the observed fact that there are two was called the “equatorial anomaly”. Six metre operators should be eternally thankful that theory was wrong!

Figure 8 is a schematic representation of the ionosphere along the path from Darwin to Southern Japan. The two patches of high electron density, north and south of the earth's magnetic equator, can be seen. The path followed by a 6 metre wave leaving the transmitter at a low angle is shown. It can be seen that the refraction of the waves in the southern patch of high electron density is insufficient to return the waves to earth. However they are then refracted again by the northern patch, and the wave then reaches the earth. This is “chordal hop” transmission, and refers to the day time trans-equatorial propagation mode (TEP). Existing TEP will not be discussed here, other than to say that it is less well understood, and presents the amateur with an excellent opportunity to perform meaningful research of world-wide significance.

**THROUGH A GLASS, DARKLY**

What then are the prospects for VHF DX during the 1980 solar maximum?

Despite an excellent set of records of the previous “form” of the sun in its last 25 races (Figure 2), the pundits find it very hard to set the odds for this next race. Predictions vary widely. For interest, however, Figure 9 is one of the more optimistic predictions of the way in which the Zurich sunspot member will behave. It predicts a maximum that is comparable to that of 1958!

Assuming that Figure 9 were correct, what would the propagation conditions be near solar maximum? Roughly, the MUFs in 1980 would be about 1.3 times those in Figures 6 and 7. Thus the median MUFs for 4000 km would be 1.43 times those in the Figures, and for 10 per cent of the time they would be 1.65 times greater. The actual contours of MUF would be very different in the other seasons of the year, and other times of day, however the general features remain.

Applying the above factors to Figures 6 and 7 predicts the following possibilities for 6 metre DX in 1980:

- Perth to Singapore; single hop F2; 50 per cent of the time.
- Darwin to South India; two hop F2; 10 per cent.
- Brisbane to Hawaii; two hop F2; 10 per cent (also chordal hop).
- Sydney to Guam; one hop F2; 10 per cent.
- Darwin to Tahiti; two hop F2; 50 per cent.
- Northern Australia to Peru; just possible (four hop F2).
- Northern Australia to South Africa; possible (three hop F2).
- Northern Australia to Southern Russia (longitude 75°E); chordal hop.

Furthermore, such paths will be extended to higher latitudes, and greater distances, if there is sporadic E at either end of the path. Six metres to Eastern Europe, Africa and South America certainly seems feasible.

Finally it should be recognised that the average 6 metre station has improved significantly over the past 11 years, and even more so since the solar maximum of 1958. Higher power, narrower bandwidths, better antennas and lower noise front ends have all increased the station gain between most stations. Reasonable numbers for each of these factors suggest an increase in average station gain, compared to 1969, of between 12 and 15 dB; i.e. some 2 to 2½ S points. This, plus a greater number of stations, means that there will be a considerably greater probability that a path will be used when it is open. Longer multiple hop paths will become workable.

In summary, worked all continents on 6 metres from Australia is conceivable in the years ahead. Certainly, widespread communications with Asia and the Pacific and Indian Ocean regions via F2 propagation is a certainty. Openings may often be short, however, and will frequently go unnoticed through lack of amateur stations. It will be fruitful to test strange paths (e.g. due east to South America via the corridor of high ionization (MUF) in Figure 6) at the right times. The sun will cause these paths to open; the problem is to be there at the right time.

*Be in it!*

(Reproduced from the Proceedings of FACT Symposium 1978.)

![Figure 8: Illustrating chordal-hop propagation.](image)

![Figure 9: The predicted sunspot number of the present sunspot cycle.](image)
Here is a device which gives the operator an audible warning prior to the repeater time out. It can be fitted to most transceivers via the auxiliary socket, in which case no modifications are required.

The time interval can be varied over a large range (with values shown, R2 limits provide 1.5 mins to 4.0 mins). As can be seen, the circuit has been kept as simple as possible, consistent with reliable operation.

The circuit is based on the 556 (LM556, NE556, etc.), being a dual version of the 555 Timer in a single package. The operation of the device is easily understood and will not be explained here as it is adequately covered on the manufacturer's data sheet.

CIRCUIT OPERATION
During the receive mode, pins 4 and 10 (resets) are held low by R7 disabling both sections of the device. (Note: C2 is discharged.)

Operation of the PTT switch raises pins 4 and 10 to 12V. Pin 6 (Trigger) goes low momentarily providing the trigger to set the time in operation. Pin 5 (Output) goes high holding C3 charged via D1, thus disabling the audio oscillator. The timing period is now under way, dependent on the values of R1, C1, and the setting of R2. When the upper trigger point is reached, pin 5 goes low, enabling the audio oscillator.

The audio oscillator is a basic stable configuration, the frequency being set by R5, R6 and C3. The output level is set by the value of C4.

The circuit can be reset at any time by releasing the PTT switch.

CONSTRUCTION
The circuit was built on a PCB (Fig. 2) and mounted in a Kodak slide container (20 slides x 35 mm), this being attached beneath the transceiver with rubber bands. The four external connection plug into the auxiliary socket of the transceiver.

COMPONENT LIST
R1—2M Ohm
R2—10k multiturn trimpot
R3—47k
R4—1k
R5—1k
R6—1k
R7—1k
All resistors ¼ watt
C1—47 uF 15V electrolytic
C2—4.7 uF 15V electrolytic
C3—0.056 uF ceramic
C4—0.022 uF ceramic
D1—1N914 (or any small diode)
IC—556 (or 2 x 555)
Speaker—A rock armature earpiece from an old telephone or small speaker.

SUGGESTED REFINEMENTS
If several time intervals are required, several resistors could be switched in place of R1.

If a repeater/simplex switch is available this could be used to disable the device during simplex operation.
MODIFICATIONS TO SOLID STATE VIDEO SWITCHES

After reading the article by Andrew Pierson in AR March 1979, I decided to build one of his type 1 switches using 4016s.

I designed a printed circuit board similar to the one shown here with the component layout; the circuit worked very well. I am associated with DPTV10 (Melbourne's Cable TV station at Debney's Park) and was not happy with the use of toggle switches for routing video around the console. The first switch I made eliminated some of the toggle switches and some screwed connections. What was then needed was a switch to provide one input to two outputs.

A modified circuit was produced together with a printed circuit board, Figs. 2, 3, shown here. The board can be used for either the modified function or for the original circuit. The components in the circuit diagram, Fig. 1, which are labelled are those required for the new circuit. The unlabelled ones are as in the original article. The components inside the dotted box can be left out and links X and Y joined if the original circuit is required. Two switch one input to two outputs join A and B and include the circuitry in the box. The component layout shows these components marked with a star.

Both versions worked very well indeed and I thank Andrew Pierson for the original article.
WHAT’S LEFT FOR THE NOVICE?

By Lance Ferris VK2NVF
PO Box 40, Casino, NSW 2470

Here’s a duo-band yagi for 10 and 15 metres for those of you with a spirit of adventure.

When I attained my Novice licence in June 1978, I began to realise that the field of electronics had moved far ahead of its time and there appeared to be no obvious avenues for experimentation or invention by the newcomer. Riggs have become a "no-deposit, no-return, throwaway" shelf item exhibiting different brands and price tags, all doing much the same job. On the other hand, antennas seem to be "branching out" (pardon the pun) into many weird and wonderful designs.

One day I met Bert, an electrician, who was in the process of installing a power point. I stuck my chest out and told him I had just qualified as an amateur (I somehow forgot the word "Novice") and gave him some general advice in relation to the safety aspects of the installation of power points. In reply to my advice, he told me of his hobby, more than ten years experience in tracking satellites. I didn’t need to open the door when I left the house, I found I could fit quite well through the crack at the bottom. His knowledge on antennas was mind boggling and I was delighted when he offered to send me some material on "circular polarisation".

For the next week, my brain was a whirling mass of antenna designs, one of which was circular polarisation on HF with crossed yagis. My four element home-brew yagi worked well, but being horizontal, propagation to local mobiles was limited. I needed a high gain system for vertical polarisation.

I tried 4 x 4 crossed yagis on 10 metres and the array seemed to be okay, although QSB still seemed to be a problem. Locally, because of rather mountainous terrain, mobile signals suffered and I also noticed QSB on DX skip contacts. On DX, however, I was able to eliminate quite a bit of QSB by switching back and forth from vertical to horizontal. For instance, when signals began to fade on the horizontal, quite often they improved by switching to vertical.

With the word "circular" still in mind, I saw a paragraph in the RSGB Amateur Handbook which read, "The use of circularly polarised antennas for general transmission and reception at HF is to be recommended where possible, since such an aerial offers the best compromise solution to the randomly varying elliptical polarisation experienced by waves undergoing ionospheric propagation and reflection". I then began to wonder, "What kind of mirror is the ionosphere?". The myth of it being a smooth, shiny, glass-like reflector has now been amended in my books. To me, it appears like the face of the moon, with mountains, craters, holes, humps, bumps and the lot. One also must consider the ground as it also is involved in the reflection process, and it certainly is not flat. It is these factors that obviously twist and turn the polarisation of the radiated signal, causing the received polarisation to differ, or in the case of "skip" to even become circular or elliptical. My crossed yagis catered for two aspects of polarisation.

Then the booklet arrived from Bert. The words "NASA — USA", heading the top of the page, had me boasting for two days, and when I had settled down, construction began on a bank of relays and an appropriate phasing harness. To obtain circular (axial-fire) polarisation from crossed yagis, the arrays are fed with a coaxial phasing harness which phases one antenna 90 degrees behind the other. By swapping the feed points the "sense" is determined, i.e. clockwise or anti-clockwise. The principle is widely used on VHF and above with crossed yagis and the "Helix". Why not on HF? Maybe the size of the array causes concern. Weight is only marginally increased with the extra elements on the common boom.

Results were amazing. I found QSB on DX caused by polarisation changes was reduced and in many cases eliminated by a conservative 60 per cent of contacts. Similarly, ground-wave QSB caused by reflections was also considerably reduced and with the increased range, mountains and timbered country barely caused a problem with propagation to mobiles.

George W5KHN called me from Texas one day, and told me of his success story with his axial-fire yagis. He included a snippet about his friend Jim W4YHF, from Smyrna, Georgia, who "replaced his quad" with crossed axial-fire yagis, and "heard stations he had never heard before". That may sound, as it still does to me, somewhat surprising, but on many occasions I have heard signals of around 4/0 on the horizontal or vertical. By switching to circular, I have witnessed dramatic increases to 5/3. On one occasion, by switching to circular, I completely eliminated a back-scatter or long-path echo that was making a 30 km contact with Ross VK2NUD almost unreadable. On another occasion whilst talking to a VK5 on horizontal, Bill VK2VDI (another local) came over the back of the beam about 5/3. I switched to circular and I thought Bill had switched off. His signal was virtually eliminated. And one I’ll never ex...
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QSP

EXPERIMENTS RECEIVING LICENCE — 1913
Graham Austin VK3ANZ has forwarded to us a photograph of an Experimenters Receiving Licence, issued to his father-in-law, Ted Holder, and signed personally by the then Postmaster-General, Agar Wynne, dated 5th December, 1913.

The receiving licence was issued under the Wireless and Telegraphy regulations of 1905. These regulations still form the basic part of our current regulations today—only slightly amended.

In part, the licence authorised Mr. Holder to "... establish, erect, maintain and use at the station specified in the First and Second Schedules hereto, appliances for the purpose only of receiving messages by means of wireless telegraphy ..."

The First Schedule authorised the use of a detector, condenser, tuning coil and telephones.

The Second Schedule depicted the authorised circuit the above components were to be used in—a simple crystal set.

Those were the days!

SATELLITES
It is interesting to read details about the 158 satellites launched during the year 1978 as published in the Telecommunication Journal of the ITU. A few have a mass of 7 tonnes, where mass details are provided, others range around 1 to 1½ thousand kg. The two USSR amateur radio satellites, Radio-1 and Radio-2, appear to have been launched from Plesetsk piggy-back with Cosmos-1045 on 26th October with a perigee of 1688 km and apogee of 1724 km. Amsat-Oscar-8, however, launched 5th March, showed 897 km and 914 km respectively.

BANNED COUNTRIES LIST
"There is no banned countries list. (American) amateurs may presently communicate with other amateurs in any country without violating (FCC) rules."—QST July 1979.

FIG. 1 (Above): Original harness circuit.

FIG. 2 (Right): Homebrew modification with relay system requiring one harness only.
The antenna at the home QTH.

plain . . . when working a DX station and a local calls in off the side of the beam, I can usually switch to a mode WITHOUT turning the antenna, and lift the local to 5/3 or better WITHOUT affecting my signal to the DX station.

Discovery of new properties of the array seem to be never ending and I would be particularly interested to hear from any amateurs who have tried a similar system on HF.

Three elements interlaced for 15 metres caused no problems with interaction, and allowed for wide spacing of elements on both bands, facilitating broader bandwidth, easier tuning and optimum gain. The basic layout of the horizontal elements can be found in the ARRL Radio Amateur Handbook, modifications being the elimination of the fourth element on 15m, and the addition of four vertical elements on 10m, coincident on the boom with the four horizontal 10m elements. Driven elements are gamma matched.

The relays used were “Siemens” mini relays, and a bank of five allowed for the four modes on 10m and switching to 15m. Although not coaxial relays, they have now been operational for almost 12 months and no problems have developed. It appears that this type of relay is not critical when used on HF, however I would not advise switching during transmission as this could probably cause arcing and burn the relay points.

The array, affectionately named “Tracker 11”, sits atop a modified, winch-up, fold-over tower at a height of 17 metres. With 30 watts PEP the antenna has proved itself with excellent reports on both bands.

What’s left for the Novice? . . . Read the fine print. Avenues are abundant.

The occasion was a visit by the Governor-General, Sir Zelman and Lady Cowen to the State Award Conference of the Duke of Edinburgh’s Award Scheme held at the “Namaroo” Conference Centre, Lane Cove, NSW, on Saturday, 7th July, 1979.

On that day, over 100 young people from all over the State were on hand to provide demonstrations of the many facets of Award Scheme activities, including those associated with community service requirements, expedition, and physical skills.

A number of hobbies and interests were also on display for the benefit of the general public, friends of the Scheme, as well as parents of awardees, all of whom attended in large numbers.

One such exhibit was an amateur radio station operated by James Woodhill (VK2YKH/VK2/NYW), a Duke of Edinburgh’s Award candidate and a student at Hurlstone Agricultural High School, Glenfield, NSW. Jim was supported by a well known South Coast amateur, Brian Wade (VK2AXI), and other students from the Hurlstone Amateur Radio Club, whose members are mostly candidates for Bronze, Silver, or Gold Duke of Edinburgh’s Awards.

The station operated throughout the day using 80, 15 and 10 metres on HF, and simplex and repeater channels on VHF. Call signs used were VK2VQW and VK2YNH, the call signs of the Hurlstone Amateur Radio Club. Contacts were not, unfortunately, numerous, though the station and associated displays were well received through the day. The Governor-General stayed for some time and appeared particularly interested in the efforts of those concerned.

Appreciation is expressed to the WIA (NSW Division), for publicity material borrowed to support the display, and in particular to Tim (VK2ZTM) for his personal efforts in making such material available at short notice.

The accompanying photograph shows Jim (VK2YKH) with Brian (VK2AXI) answering a question from Sir Zelman Cowen.

Submitted by Ross Wilson (VK2VDH), Senior Resident Master at Hurlstone Agricultural High School, Glenfield 2167. 6th August, 1979.
**8GEM-1** Memory based morse key operated in the same way as a typewriter. The 8GEM-1 allows you to type in your message at any speed while it transmits it at a constant speed. If your message is within 32 letters including spaces and signals, it is possible to call for the message to be repeated automatically. Want to know more? Call us or come in and see for yourself. Price: $475.

**Model HK-808.** Heavy duty commercial hand key with full ball race pivots, heavy marble base and dust cover. The ultimate hand key. Price $85.00.

**Model HK-702** with marble base similar to HK-808 but smaller, the HK-702 includes fine adjustment on spring and contact space. $48.00.

**Model HK-710.** Heavy Duty De Luxe Hand Key, fully adjustable, ball bearing shaft, plastic protective cover. Mounted on heavy non-skid poly marble base. Base dimensions 168mm x 103mm. Price $60.

**Model HK-707.** Economy hand key in all black ABS resin metal parts protected by moulded ABS resin cover. $19.50.

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**Model TC-701.** Morse practice oscillator with built in key and speaker. Including battery and earphone. Copy of morse code on case. Two can be wired together to form a practice communication set. Price $19.50.

**Model MK-701.** Manipulator (side swiver) for an electronic keyer. Accurate and restful keying operation are assured owing to a heavy metal plate and a frictional rubber belt beneath the periphery of the main base. $40.00.

**Model BK-100.** Semi-automatic (buy) key, with standard adjustments, wide speed range, protective plastic cover, on heavy non-skid base, beautifully finished. Base dimensions 175mm x 75mm. Price $49.00.

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TH3-JR, 3el. 20-15-1OM $175.
TH3-15. 3el. 15M. $89.

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Diwa SWR meter, CN-820.....................$95.
Diwa Speech processor, FP-600..............$105.
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SAFETY EXPERT’S STORY:  
PLANNING SAVED FAMILY FROM FIRE 

Submitted by Alan Isaachsen VK5IR

I have been a safety engineer for too many years not to retain a certain amount of professional detachment in the face of a major emergency, even when my family is involved. We safety engineers tend to be pragmatic about disaster and preach that we must be prepared for it through preplanning. Do we practice what we preach?

The storm of Monday, June 5, 1978, caused a disaster at my home, and I would like to share the experience with you. The lessons learned may prevent loss of life at your house.

At 7.45 p.m., my wife and two youngest children (5 and 10 years old) were home alone. I was at a friend’s house helping him install a new cooler. My wife was listening to her CB radio. She calls it “copying the mail”. The two little girls were playing in their bedrooms.

A sudden gust of wind bent the top of the radio antenna mast over until the tip came into contact with the power lines that run behind the house. The high voltage power was fed back down the antenna coax cable and into the radio, which immediately exploded. My wife, fortunately, was not touching the radio or microphone. If she had, she would have been electrocuted instantly. The ball of fire from the explosion resulted in flash burns on the side of her face and some singed hair.

The electricity then left the radio via its power connection and entered the house wiring system, looking for ground. It found ground in the washer in the utility room, and the washer exploded. This caused a second fire that my family did not see until later. Then the fuses blew, plunging my house and the entire neighbourhood into total darkness.

My wife called the children while getting our fire extinguisher and ordered them to take our three cocker spaniels and leave the house. The children went across the street to a lamp post where we had agreed we would meet and waited. Meanwhile my wife extinguished the fire at the radio and called the fire department. She then joined the children.

While talking to my wife, a neighbour spotted the fire in the utility room. Thanks to preplanning, my family did not re-enter the house.

The fire department arrived about two minutes later. After determining that no one was still in the house, they began fighting the fire. The paramedics treated my wife at the scene and suggested she be seen at the hospital by a doctor.

This precaution was necessary to ensure that her vision had not been affected. She agreed and called me from the neighbour’s.

I arrived shortly thereafter to find the fire out and the firemen starting clean-up operations. The children were safe, so we went on to the hospital. The burns were only superficial. All we lost were “things”. All my friends and neighbours commented on how lucky we were. True.

We were lucky that I had purchased a fire extinguisher for the home years earlier. Lucky that I taught my wife and all the children how to use it. Lucky that I made sure periodically that it was serviceable.

We were very lucky that we had sat down as a family and discussed, in advance, what we would do in an emergency. Lucky we picked a nearby place to meet so we would know everyone was out safely, and lucky, too, that one of the rules is that once you are out, you stay out.

Yes, it was a beautiful disaster. Everyone did just exactly the right thing. Lucky? I don’t think so. I think it was the result of the planning we had done much earlier. You can count yourself lucky, too, if you:

1. Have a home fire extinguisher and make sure everyone in the family knows how to use it, and where it is kept.
2. Have a plan for getting out of the house in an emergency. This includes a nearby meeting place so everyone can count noses.
3. Agree on some rules in advance:
   (a) once you are out, stay out;
   (b) no favourite possessions are worth your life;
   (c) call the fire department even if you think the fire is out.
4. Install smoke detectors.

In this case it would not have made any difference, but most fires do not start so violently. Smoke detectors may buy you enough time to get out.

Pat Robinson, Motorola Inc. Semi-Conductor Group.
ASIA-PACIFIC/AUSTRALIAN SCOUT JAMBOREE

The 4th Asia-Pacific/12th Australian Scout Jamboree is to be held at Perry Lakes, Perth, Western Australia, from December 28th, 1979 to January 7th, 1980.

Western Australian Scouts are excited about the prospect of presenting their first ever Jamboree, and a cordial invitation has been extended to Scouts from all over Australia and from Overseas, to share in this great activity.

The Jamboree has further special significance for Western Australians in that it will form part of a year long programme of celebrations for the State’s 150th Anniversary, and will be a fitting climax to those celebrations.

The vast distances and small potential of people power do not deter Western Australians from thinking big. Although covering one-third of the Australian continent making it the biggest State in the world, the West has only eight per cent of its population at about 1.2 million people.

1979 is the State sesquicentenary (150th anniversary) year so many years ago the WA Scout Branch applied for the regular three yearly Australian Jamboree, always previously held in the populous Eastern seaboard States. This was agreed and the Jamboree becomes the final event in a year long birthday party embracing the whole population from all towns utilising all activities which could be imagined.

World Scout Bureau gave it regional status as the 4th Asia-Pacific Jamboree. Subsequently, with the postponement of the 1979 World Jamboree in Teheran, Iran, it became one of the 1979 World Jamboree Year Camps. About 8000 Scouts from Eastern States and over 100 from 30 overseas countries will mix with 2000 locals for eight days of camping, activities, sight-seeing, shopping, trying new skills, fraternisation and fun.

Because Amateur Radio amplifies many of these Jamboree concepts, e.g. new skills, fraternisation and fun, local amateurs are preparing one of the biggest VK6 stations ever mounted. Facilities will include:

- A high frequency station on 20 or 15 metres operating round the clock beaming the world, including eastern States.
- A high frequency station on 15 or 10 metres operating all day beaming eastern capitals.
- A high frequency station on 40 or 80 metres operating as required with dipole aerials favouring north/south.
- RTTY station operating most of the time as signals are available.
- Amateur TV on UHF with special receivers located in sub-camp fraternity areas.
- Three or more VHF stations on 2 metres and 6 metres and perhaps other bands.

A workshop will be included where, under the supervision of Amateurs the Scouts will be able to build a simple electronic working project. In addition a broadcast band radio station on 1610 kHz is in preparation so that items of news, happenings, instruction and music can be conveyed quickly to all Scouts and for their entertainment.

It is expected that the stations will be busy with Amateurs in contact and that the special Jamboree Badge QSL Card will be in demand. It is hoped also that Scout Groups and units with Radio Amateur capabilities or friends will make a special time to get together during the Jamboree to make contact. Further, it is expected that many Groups round the world will want to make contact to find out how the Jamboree and their particular people are progressing. To assist these contacts SKEDS WILL BE ACCEPTED for a particular frequency, date and time by MAIL to:

Scout Amateur Radio VK6SH,
12th Australian Jamboree,
Box 487 PO, West Perth,
Western Australia 6006.

To test propagation conditions as far as is possible all skeds will be acknowledged by trying all contacts with one of the VK6 Amateurs on the organising team exactly FOUR WEEKS to the day and hour on which the contact is asked for. If that sked does not work another will be tried a week later — THREE WEEKS from the Jamboree.

The sooner that skeds are requested the better can the arrangements be.

The Jamboree is being held at Perry Lakes Stadium and associated grasslands — an international track and field site established for the Empire Games in Perth in 1962. The radio station is to be sited on the top floor of the stadium building using most of an area 250 ft. long by 11 ft. wide.

For further information contact:
JAMBOREE
Mr. Alex Shaw,
The Scout Association of Australia,
(WA Branch),
Box 467 PO,
West Perth, WA 6055.
Phone 321-7217
(Mr. Doug Napier)

COMMERCIAL KINKS

With Ron Fisher VK30M
3 Fairview Avenue, Glen Waverley 3150

After a long absenee the FT-200 returns to our column, but before that a quick and easy modification to a not so well known two metre FM transceiver. The MULTI-QUARTZ 16 is certainly not well known in Victoria. Perhaps there are more around in other States. Available up until about a year or so ago, they were a real bargain at $175, complete with eight repeater and twm开出 several labels installed. At the time I obtained one for a friend, but of course tried it out before passing it on. Performance was quite good with one exception, the received audio quality was very woofy. There was a decided lack of high frequency response to the point the readability was poor under mobile conditions.

In checking out the trouble an audio signal was fed into the receiver audio section which proved to be about almost hi-fi quality. The lack of highs was traced to the discriminator which had apparently been designed with too much demphasis. Two capacitors were removed: C72, a .1 mF disc ceramic, and C73, a .02 mF green cap. It was not necessary to use a soldering iron, a quick twist with a pair of long nosed pliers was all it took. Received audio was now normal.

Now to the FT-200. Ian Huser VK5QV was having trouble with strong local signals overloading the receiver. A simple modification changed the AGC from RF to audio derived with apparently excellent results. Let’s see how it was achieved.

The problem of strong RF fields operating the AGC in an FT-200 can be overcome by using audio derived AGC rather than the RF derived AGC used in the original circuit.

The conversion is simple, and can be completed in about 5 minutes once the components have been identified.

Remove the 100 pF capacitor (C127) and the “gimmick” capacitor (C165).

Connect a 0.047 uF capacitor between the top end of the volume control and pin 2 of the AGC amplifier (V102b).

Connect a 0.47 uF 150 volt polyester capacitor across C126.

Re-peak L101, and the modification is complete.

QSP

MEMBERSHIP STATISTICS

The address label control totals for August AR show that for the first time ever two Divisions exceeded one thousand each. VK4 recorded 1026 labels and VK5 recorded 1014. This is a far cry from only a few years ago when the totals were only 400/500 each. For the same issue both VK2 and VK3 were very close to 2000 each.
FINANCIALLY SPEAKING
Courtney Scott VK3BNG

The WIA is a service organisation dedicated to the amateur radio fraternity in Australia and, in particular, providing services to its members. The extent of the services is limited by cost.

If income could be boundless then the imagination could run riot with all sorts of grand ideas but, of course, this is not the case.

Actually, much time and thought is put in by councillors and executives at the convention and at meetings to produce a balanced budget.

Balancing the budget in the most simplistic terms means providing an acceptable service at the lowest cost to the members. The term "acceptable service" will mean different things to different people. There is no way of achieving total agreement amongst all members in this regard.

It is generally agreed that Amateur Radio and the publication of the Amateur Radio Call Book are highly desirable services.

However, all thinking amateurs will be aware, particularly in this day and age, that representation at the appropriate places in protection of our hobby is a vital service: The need to speak with one voice.

Couple with these the diverse activities that are provided or are available to members and the sum total is that the WIA is not as stodgy as some would have you believe in servicing its members, and in some respects, non-members.

Illustrated is a general breakdown of income and expenditure for the year ended 31st December, 1978, of the Federal body. Full details were given in AR for July, 1979. It will be seen that Amateur Radio takes 35 per cent of the income. "Other Costs" refer to expenses other than AR and Office Salaries, and include office rent, computer time, printing and stationery, etc.

Office salaries take 28 per cent of income. It is difficult to put a cost on some services but WIA could not exist without professional administration.

On the income side, note particularly that subscriptions do not fully cover expenditure and we rely on the sale of publications and interest to make up the short-fall and provide a small surplus.

The Federal portion of subscriptions is a fixed amount per member. No one can say when inflation will cease and costs will invariably rise. So must the Federal dues. Either that or standards must fall.

AMATEUR RADIO MOBILE SOCIETY

OBJECTS OF THE SOCIETY
It was formed in 1959 to cater for all interests of mobile amateur radio on a world-wide basis. It is a truly international organisation. Members are in all continents; some countries represented are Australia, Canada, New Zealand, South Africa, the USA and many European countries.

MEMBERSHIP CONDITIONS
Australian amateurs are automatically eligible for Corporate membership as our licences permit mobile operation.

OVERSEAS REPRESENTATIVES
Overseas representatives exist in many countries, and the society is administered in the United Kingdom. The present secretary is Norman Fitch G3FPK, 40 Eskdale Gardens, Purley, Surrey CR2 1EZ.

Mobile News is the name of the society journal, published eight times a year. It contains technical articles, reviews of equipment, antenna ideas, interference suppression, etc. It also contains news of world-wide mobile events, reciprocal licensing, and so on. It is produced offset in A5 size and is of a high standard.

Mobile News is of a high standard.

Awards Programme
The premier award is the "MOBILE CENTURY AWARD" for contacting 100 countries whilst operating mobile.

The WAC/Mobile certificate is for members only and is self-explanatory. The Maurice Margolis Award is a special members only award, named after G3NMR, who did much for the society in the past and was a keen mobile DXer. Individual trophies are awarded each year for retention by the winners, who submit the best aggregate score in terms of the point-to-point distance in kilometres for up to three mobile-to-mobile contacts in each calendar year.

Contributed by Dick Ashton VK5DQ, PO Box 11, Woomera, SA 5720, who will endeavour to answer any queries upon receipt of a SASE. Membership enquiries should be addressed to G3FPK, 40 Eskdale Gardens, Purley, Surrey CR2 1EZ, United Kingdom.

Amateur Radio November 1979 Page 23
The possible combinations of 6 out of 40 is 3,838,380.

Arranging the 40 numbers into three groups the possibilities in each group can be determined. The net possibility is the product of each group multiplied with the other groups. The three groups are:

1-14 14
15-26 12
27-40 14

If all 6 numbers are put in the first group then none are left for the second and third groups. This is written as 6 0 0.

The tables below are written in this manner, the possibilities of each combination are shown alongside. They total the figure above, 3,838,380.

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Grand Total 3838380

For your next holiday, imagine

For your next holiday, imagine arriving somewhere across the country or across the ocean at another Ham’s QTH, while your own home is being cared for by another amateur who shares your interests and concerns. QTH Exchange Service provides listings, with photos, of numerous locations whose owners are looking for a unique holiday experience. Not limited strictly to exchanges, listings might include guest cottages, boats in marinas, spare rooms, summer homes, grass huts, condos, etc. All arrangements handled privately by owners themselves.

First edition available in March, 1980; fall supplement in October.

Special Charter Subscription rate available until December 31, 1979 includes listing, directory and supplement for $20. CAN or $18. US. After January 1, 1980 rates will be $525. CAN or $22.50 US funds or equivalent.

Please write for more information and an application form. Deadline for the spring directory is Jan. 31, 1980.

QTH Exchange Service

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"LISTENER" ACDQUED

In the Melbourne Magistrates' Court on the second May, 1979, Mr. Walker, S.P., dismissed two charges against a Melbourne man brought under the Wireless Telegraphy Act. The charges related to the use by the defendant of a Bearcat 210 scanning receiver. It was alleged by the informant, an officer of the Postal and Telecommunications Department, that the receiver was used in contravention of the Wireless Telegraphy Act. The Bearcat 210 receiver covers the frequency bands 32.50 MHz, 46.5-47.0 MHz, 470-512 MHz and 416-450 MHz.

Evidence was given that the defendant had admitted to receiving amateur, CB, marine and police transmissions. Evidence was also given that the receiver was capable of receiving the Wireless Institute's Sunday morning broadcast. The defendant gave evidence that it was his belief that he did not require a special licence to use the receiver.

In dismissing the charges, Mr. Walker stated that he accepted the submission of Counsel for the defendant that the Bearcat 210 receiver was a receiver capable of receiving broadcasting programmes and by virtue of Section 130 (2) of the Broadcasting and Television Act a licence was not required for this receiver under the Wireless Telegraphy Act. The Magistrate also found that, in any event, the defendant had an honest and reasonable belief that the receiver in question was capable of receiving broadcasting programmes, ruling in effect that he would have dismissed the charges on this ground alone.

DUAL LICENCE HOLDERS

At the last count of the WIA alphabetical computer listings a little over 250 amateurs throughout VK held two calls, either a limited/novice each or two full calls each.
APPOINTED DEALER

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ALL SOLID STATE * 160m to 10 METERS * TWO BUILT IN MICROCOMPUTERS * FOUR MEMORIES * PLUS MANY OTHER EXCLUSIVE FEATURES.

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UHF FM 10 WATT TRANSCEIVER
wide band width, suitable for present and proposed 70 cm. band plan. Optional Crystals available to order.
PRICE: $365.00

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MC - 35, noise cancelling Price $25

MML 50/25
MML 144/25

25 WATT 50MHz LINEAR POWER AMP.
LIFIER & LOW-NOISE RECEIVE PREAMP

RUGGED 65W DISSIPATION PA TRANSISTOR
ULTRA LOW-NOISE RECEIVE PREAMPLIFIER
EQUIPPED WITH RF VOX AND MANUAL OVERRIDE
L.E.D. STATUS LIGHTS FOR POWER & TRANSMIT

LINEAR AMPLIFIER
Power profile: 25 watts typical output for 3 watts input
Frequency: 50-54 MHz
bandwidth: 144-148 MHz at –1 dB
Power: 13.8 volts at 2.8 amps
requirement: for 25 watts output
Quiescent current: 75mA nominal at 13.8 volts

RECEIVE PREAMP
Overall gain: 10dB typical
Overall noise figure: Better than 2.5 dB
Frequency: 50-54 MHz
bandwidth: 144-148 MHz at –1 dB
Weight: 300g
Overall size: 150 x 65 x 47 mm

PRICE AMATEUR NETT $360.00 (PACK & POSTAGE $5.00)

NEW PRICE AMATEUR NETT $105.00 (PACK & POSTAGE $3.00)

NEW MML 432/50

50 WATT 432 MHz LINEAR POWER AMP.
LIFIER AND LOW-NOISE RECEIVE PREAMP

FEATURES - * 50 watt minimum output, 6dB typical gain * Rugged 145w dissipation PA transistor * Ultra low-noise receive preamplifier * Equipped with RF vox and manual override * Led status lights for power and transmit

SPECIFICATION:
LINEAR AMPLIFIER. Power profile: 50 watts typical output for 10 watts input. Power gain: 6 dB typical Frequency bandwidth: 430-440 MHz @ -1 dB Power requirements: 12.5 volts @ 8amps for 50 watts output. 13.8V maximum Quiescent current: 1amp nominal @ 12.5 volts.
RECEIVE PREAMP. Overall gain: 10dB typical. Overall noise figure: Better than 3.0dB Frequency bandwidth: 430-440 MHz @ -1dB. Receive current: 75mA nominal @ 12.5 volts.
GENERAL. RF input connector: 50ohm BNC. RF output connector: 50 ohm 'N' type.
Weight: 4 Kg (8lb. 13oz.) Size: 315 x 142 x 80mm (12 3/8 x 5 5/8 x 3 1/8).

PRICE MML 432/50 $265.00 NETT

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QUALITY ACCESSORIES FROM DAIWA

AUTOMATIC ANTENNA TUNER

CNA 1001 200W $269
CNA 2002 2.5 KW $569


SWR & POWER METERS

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Cross-needle type offers DIRECT readings.

ANTENNA COUPLERS

<table>
<thead>
<tr>
<th>Model</th>
<th>Freq.</th>
<th>PWR</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL67A</td>
<td>1.9-28 MHz, 500 wpep</td>
<td>135.00</td>
<td></td>
</tr>
<tr>
<td>CNW217</td>
<td>Includes SWR/PWR Meter, 200W</td>
<td>165.00</td>
<td></td>
</tr>
<tr>
<td>CNW417</td>
<td>Includes SWR/PWR meter, 500W</td>
<td>199.00</td>
<td></td>
</tr>
</tbody>
</table>

High quality couplers, 2 models includes cross-needle SWR/PWR meters.

SPEECH PROCESSORS

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF660</td>
<td>Phasing type dc</td>
<td>109.00</td>
</tr>
<tr>
<td>RF440</td>
<td>Phasing type ac/dc</td>
<td>126.00</td>
</tr>
<tr>
<td>RF550</td>
<td>Fitter type, ac/dc</td>
<td>169.00</td>
</tr>
<tr>
<td>MC330</td>
<td>Speech compressor</td>
<td>99.00</td>
</tr>
</tbody>
</table>

Increase talk power with splatter free operation. RF clipping (not in MC330) assures low distortion. Simply install between microphone and transmitter.

Typical specs RF660:
- Talk power: Better than 6dB
- Freq. Response: 200Hz-3000Hz at 12dB down
- Distortion: less than 3% at 1 KHz, 20dB clipping.
- Power Req.: 13.8 Vdc at 50mA.

ROTATORS

<table>
<thead>
<tr>
<th>Model</th>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR7500S</td>
<td>Medium Model</td>
<td>189.00</td>
</tr>
<tr>
<td>DR7600S</td>
<td>Heavy Duty Model</td>
<td>259.00</td>
</tr>
</tbody>
</table>

- High dependability: weather sealed
- Quiet operation
- Complete with an attractive controller

COAXIAL SWITCHES

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position model CS201</td>
<td>23.00</td>
</tr>
<tr>
<td>Position model CS401</td>
<td>59.00</td>
</tr>
</tbody>
</table>

Professionally engineered cavity construction, high isolation.
- Power rating: 2.5 KW pep, 1 KW CW
- Impedance: 50 ohm
- Insertion loss: less than 2dB
- Maximum frequency: 500 MHz
- Isolation: Better than 60dB at 300MHz.

COAXIAL RELAYS

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CX2L 100W pep max model</td>
<td>45.00</td>
</tr>
<tr>
<td>CX2H 200W pep max model</td>
<td>69.00</td>
</tr>
</tbody>
</table>

Quality change-over relays use 10-15 vdc.
- Frequency Range: CX2L 1.8-170 MHz.
- CX2H 1.8-450 MHz.

Available from your Vicom Dealer

Vicom
68 Eastern Road,
South Melbourne,
Victoria, 3205
Ph. (03) 699 6700
LBO 508A OSCILLOSCOPE
Bandwidth DC-20 MHz.
Sensitivity 10mV/cm.
130mm highly C.R.T.
$899

LAC 895 ANTENNA TUNER
Built-in SWR and in-line Watt meter. 5 bands from 3.5 to 28 MHz.
500W pep transmitter input.
$182

LSG 16 RF SIGNAL GENERATOR
100KHz-100MHz
Solidstate RF signal generator. Suited for aligning the IF circuits in AM, FM and TV sets.
$119

LAG 26 AF SIGNAL GENERATOR
20Hz-200kHz
Stable generator for all types of audio circuit.
$166

LFM 39A WOW AND FLUTTER METER
For accurate and easy determination of the wow and flutter characteristics of tape recorders to JIS, CCIR and DIN standards.
$699

LMV 181A AC MILLIVOLT METER
AC Voltages from 100uV up to 300V. 5Hz-1MHz.
$189

Distributed by VICOM
COMPUTERISED 2 METRE FM RIG

NDI HC 1400

Microprocessor controlled
PLL circuitry
Repeater Offset
Tone Burst
800 Channels with 5KHz
Spacing 144-148MHz
3 Memory channels
LED Displays both TX & RX frequencies
25 Watts Power Output (5 watts on Low)

MOST YAESU HF PRODUCTS IN STOCK

SPECIAL FT101E’s with fan, DC-DC converter & mic for only $829.00 (no hidden price extras)

IMARK Pty. Ltd., 167 Roden St., West Melbourne, Vic. 3003
Phone (03) 329 5433
Available in South Australia from — Watson Communications, 75 Prospect Rd., Prospect. S. A. 5082 Phone (08) 2694744

BRISBANE HAM TASTES BETTER!

CW ELECTRONICS GETS RID OF THE NORTHERN AMATEUR RADIO OPERATOR’S BLUES.

One of the best and most comprehensive stock displays of transceivers, test gear, communication computers etc. is housed at CW Headquarters in Tarragindi, Brisbane.

CW Electronics is looking to offer the northern amateurs a service and selection that has never been available in Queensland before.

- Inhouse warranty and servicing
- Managed and staffed by experienced amateurs
- Mail order
- Wide stock selection
- Enquiry service
- Bankcard and terms — and more

TURN THE KNOBS. LOOK AT THE METERS, READ THE HANDBOOKS OR JUST COME IN AND DREAM — IT IS ONE OF THE FEW PLACES IN AUSTRALIA THAT YOU CAN.

CW ELECTRONICS
Cnr. Marshall Road and Chamberlain Street
TARRAGINDI, Brisbane
Ph: (07) 48 6601
PO Box 274
SUNNYBANK, Qld 4109

OPEN THURSDAY NIGHTS AND SATURDAY MORNINGS

ICOM o YAESU o TEN-TEC o KENWOOD o COMMODORE PET SCALAR o LEADER o JAYBEAM o HAL o HY GAIN
SPECIFICATIONS - FM-2016A / FM-2016E

GENERAL

FREQUENCY COVERAGE: 144.000 - 148.995MHz, 10KHz steps & ±5KHz, 1000 channels.

144.000 - 148.995MHz, Ditto above receive only, FM-2016E
144.000 - 145.995MHz, Transmit. FM-2016E

SEMICONDUCTORS

11 FET, 33 Transistors, 17 IC's and 6 Diodes

MEMORY CHANNELS:

4 Channels

SCANNING:

Scanning of 4 memory channels for open and closed channels.

FREQUENCY STABILITY:

Better than ±0.005%

USEABLE TEMPERATURE RANGE: -20°C to +60°C

POWER SOURCE:

DC 13.8V, +10% (negative ground)

ANTENNA IMPEDANCE:

50 ohms nominal, unbalanced

CURRENT CONSUMPTION:

Less than .4A receive standby, .6A maximum volume

LESS THAN 1.5Watts, 1.3A 1 watt

DIMENSIONS:

180w x 40h x 195d mm

WEIGHT:

2.5Kgs, transceiver only

FM - 6016

50 - 54 MHz FM

800 CH. 25W.

$330

NEW! SKY-BAND MOBILE ANTENNAS

THIS NEWLY DESIGNED UNIQUE MOBILE ANTENNA HELICALLY WOUND EXTRA HEAVY DUTY.

SIX FEET LONG, AND CAN HANDLE UP TO 400 WATTS P.E.P.

FEATURES:

Light weight.

S.W.R. better than 1: 1.05 at resonance

Covered with highest grade fireproof insulation

Chrome base with 3/8 24 tpi. thread

Available in colours, grey, white, blue, green

burnt orange, brown and black.

AVAILABLE:

SKY. 80M 3.5 Special Novice $3.65

SKY. 40M 7.06

SKY. 20 14.150

SKY. 15 21.100 and up.

SKY. 10 28.5 and up.

SKY 10/15 special $30

PRICE LIST:

SKY 80 6 feet long 3.5 MHz $28

SKY 40 6 feet long 7.060 $26

SKY 20 6 feet long 14.150 $26

SKY 15 6 feet long 21.100 $25

SKY 10 6 feet long 28.500 $24

SKY 10/15 $30

All Sky-Band Antennas are carefully designed and have been individually tested. High quality fibreglass rod, wound with optimum thickness of wire to keep weight down, but maintain High Q. An elegant design to those who only want the best. All antennas are factory tuned for the lowest portion of the desired band and can simply be trimmed for your chosen frequency.

Yes it is all Australian made! You don’t pay for large overheads, instead we use the best material available and offer a mobile antenna which will resonate to our frequencies, unlike the previous overseas designed antennas.

ORDER NOW AND SPECIFY THE COLOUR YOU REQUIRE

SIDEBAND ELECTRONICS SALES, 477 - 479 PACIFIC HIGHWAY,
CROWS NEST. PHONE 438 4191
TRY THIS
WITH THE TECHNICAL EDITORS

SUPER QUAD
An unusual stacked coupled quad antenna, which is both simple to construct and has a high gain claimed for it, appeared recently in the magazine OM.

The antenna described by HB9BIX has a claimed gain of 11.5 dB over a half wave dipole and a front to back ratio of 25 dB.

The antenna is a combination of four quads which are coupled together by sharing common elements.

Constructional details are shown in the Figures 1 to 4.

FIG. 1: The general arrangement of the antenna, showing dimensions.

FIG. 2: Part of detail B showing the gamma matching tuning capacitor.

FIG. 3: Part of detail B showing the gamma match.

FIG. 4: Clamping method for gamma match.

NOVICE NOTES

HAVING TROUBLE WITH SOVIET QSLs
It has been pointed out that a large number of VK Novices and some full calls have been omitting to put the operator's name on their QSL cards to the USSR.

A Russian made this statement when asked why we seem to be getting such a poor return from his country. Many Soviet stations are club stations. The operator will of course give his name and it is advisable to carefully note the spelling. Also try to be as accurate as possible as to the time in GMT when the QSO took place.

Many cards have been useless to the Soviets because the Australian amateur has not put the name of the Russian operator on the card. The club then has difficulty in confirming which particular operator was on the air at the time, especially if the times do not correspond.

Whether in fact this is the reason for the sometimes sparse response from the USSR is debatable, but it would certainly seem worth a try when next sending a card for Box 88, Moscow.

PARASITICS
From a report in a DOT newsletter comes a reminder of the danger of parasitics.

This gave details of an investigation into a fault which involved Distance Measuring Equipment and caused some considerable concern. A large amount of time was spent in tracing the fault and considerable inconvenience resulted.

The fault was eventually traced to an amateur transmitter which had developed a parasitic. The fault was subsequently fixed and happily the report records that the DOT staff received full co-operation during their tests.

This incident should serve as a timely reminder not to be complacent about parasitics and spurious radiations. Commercially manufactured equipment is also liable to develop such undesirable radiations and it is upon us to make sure our gear is clean and stays clean. In particular we should check after any modification or any change in operation.

Run a clean station and continually check station performance. The radiation of spurious and parasitics should be avoided. The amateur service is one which depends to a great extent on the ability to keep one's own house in order. Don't let the slide down by sloppy maintenance and poor signals.

QSP

SENEARC 1980
The 26th national ARRL Convention will be held in Seattle, Washington, from 25th to 27th July, 1980. The theme of the Convention is "World Friendship through Amateur Radio".

POSTAGE STAMP
Most amateurs know something, even if by name only, of the Barlow Wadley receiver. ZSSCO, in a short article, reports that Dr. T. L. Wadley, the "radio wizard" behind the development of this receiver and many other radio developments, has been honoured by a South African postage stamp to appear in February. Dr. Wadley's name is equally well known in the geodetic survey field relating to the Tellurometer system of radio distance measurement.

NEW ITU PREFIX
Radio Communications August 1979 reports the allocation of H8A to H9Z to the Republic of Panama.
IC551 Specifications: General. Number of Semi-conductors: Transistors 51, FET 13. Includes CPU 30, Diodes 114. Frequency Coverage: 50 — 54MHz. Operating Temperature: — 10°C to +50°C. Frequency Stability: Less than ±500Hz after switch on 1 min to 60 min, less than 100Hz per 1 hour after 60 min, and less than ±1KHz in the range of — 10°C to +60°C. Antenna Impedance: 50 ohms unbalanced. Power Supply Requirements: 13.8V DC ±15%, negative ground, or 117V/240V AC ±10%. Power Consumption: Receive at min. audio level DC 0.9A AC 35W. at max. audio level DC 1.1A AC 41W. Transmit in SSB/CW modes DC 3.3A AC 98W. in AM mode DC 3.0A AC 92W. in FM mode DC 3.3A AC 98W. Dimensions: 111 mm (h) x 241 mm (W) x 311 mm (D). Weight: 6.1 kg. Transmitter 75MHz Range: 25MHz, 50MHz, 100MHz, 225MHz, 485MHz, 960MHz. Modulation System: SSB/AM Balanced modulation. FM Variable reactive frequency modulation. Max. Frequency Deviation*: ±5KHz. Spurious Emission: More than 60dB below peak power output. SSB/AM Unwanted Sideband: More than 40dB down at 1000Hz AF input. Microphone: 600 ohm dynamic or electret condenser microphone. Receiver. Receiving Mode: A1 (CW), A3 (USB, LSB), A3H (AM), F3 (FM). Receiving System: SSB/CW/AM Single Superheterodyne. Intermediate Frequency: SSB/CW/AM 9.0115MHz. When Pass Band Tuning Unit is installed: 2nd IF: 10.75MHz. 3rd IF: 9.0115MHz. FM 1st IF: 9.0115MHz, 2nd IF: 455KHz. Sensitivity: SSB/CW/AM Less than 0.5 uV for 10dB S/N ratio. FM More than 30B S+N+N/D+N at 1 uV. Spurious Response Rejection Ratio: More than 60dB. Selectivity: SSB/CW/AM More than ±1KHz at ±6dB. Less than ±2KHz at ±6dB. When Pass Band Tuning Unit is installed: less than 1KHz at ±6dB. FM more than ±7KHz at ±6dB. Less than ±15KHz at ±60dB. Squelch Sensitivity: SSB/CW/AM 1 uV. FM 0.4uV. Audio Output Power: More than 2 watts. Audio Output Impedance: 8 ohms.

Check it out at your VICOM dealer.

100 WATTS ON 6 METRES!

An additional model now available. IC 551D with 100W output.

GRAB THAT DX!

IC551D* 100W $850
IC551 10W $799

*This model does not have FM option. Operates from 13.8 v.d.c.
SPECIAL ANNOUNCEMENT: In the future we will be operating under a slightly different format. Arie Bles-VK2AVA will withdraw gracefully into the background whilst Roy Lopez-VK2BRL will continue to operate the business using the same good, old fashioned, close-to-the-bone price structure which has proved so successful in the past. In the retailing of Amateur Radio Equipment, Sideband Electronics Imports is no “Johnny-come-lately.” Arie can be said to have fathered the introduction of commercially built amateur radio equipment into Australia, and to a great extent he has been responsible for ensuring that retail prices have been maintained at a sensible low level. Have a look back through old issues of Amateur Radio over the past 15 years, and you will see what I mean.

A MATTER OF PRINCIPLE: Arie’s style will be maintained in the future, and under no circumstance will Sideband Electronics Imports assist in, or be a party to, the selling of Amateur Radio Equipment to known radio pirates or to the conversion of relatively high powered Amateur Radio Equipment for use on the 27-MHz CB-band. Such sales and conversions which are both unethical and illegal, may eventually lead to the revoking of the custom by-law which allows radio transceivers for strictly amateur consumption to be imported duty free, causing such equipment to attract heavy import duties with a subsequent increase in retail price. It is an unfortunate fact that some licensed Radio Amateurs involved in the retailing of amateur radio equipment are, for a price, carrying out such illegal conversions and sales. Our advice — Don’t patronise them!

HENRY RADIO — A brand new linear amplifier
1KD-5 10-80M 1200W PEP linear .................. $850

HY-GAIN ANTENNAS
TH-6-DXX 10-15-20M 6-el yagi .................. $275
TH-9-MK3 10-15-20M 3-el yagi .................. $240
TH-3-JR 10-15-20M 3-el yagi .................. $160
18-AVT/WB 10-80M vertical .................. $110
204-BA 20M 4-el Tiger Array .................. $200
BN-86 balun for beam buyers .................. $20

HY-Q (USA) 50-ohm 1KW balun .................. $15
HY-Q (USA) multiband 10-80M dipole kit, wire, balun, insulators, spreaders, etc .................. $45

ROTATORS & CABLES
All rotators now come with bottom brackets and control-indicator boxes wired for 28V AC operation
KEN KR-400 medium duty .................. $110
ODR BT-1A light duty 4 position push-button programmable .................. $90
ODR Ham III heavy duty .................. $175
ODR tail-twister extra H.D .................. $225
RG-8U foam coax cable, per metre .................. $1.00
8-cond. rotator cable, per metre .................. 75c

ACCESSORIES
Voltage regulator 18V AC input
12V DC 3A output .................. $23
240/18V AC transformer .................. $10
5 meter RG-58U coax cable with PL-259 one end .................. $2.50
Mobile bumper mounts ¾” 24 thread .................. $5
Mobile gutter moto.its ¾” 24 thread .................. $3

KYOKUTO FM-2016A 800 channel
2 meter FM transceiver with 4-channel memory & scanner 15W .................. $360

TRIO-KENWOOD PRODUCTS
VFO 820 for TS 820S .................. $150
VFO 520 for TS 520S .................. $130
LF 30A low pass filter .................. $30
SP 120 for TS 120 series .................. $36
BS 8 adaptor TS 820 to SM 220 .................. $50
DK 520 adaptor TS 520 to DG 5 .................. $15

All further Trio-Kenwood accessories and transceivers at competitive prices

CO-AX CONNECTORS
PL-259-SO-239-cable joiners ea .................. 75c
Right angle & T connectors, ea .................. $1.50
GLP right angles RG-58U to SO-239 w/lock nut and cap, ea .................. $2.50
Double female connectors, ea .................. 80c
MLS right angles RG-58U to PL-259, ea .................. 90c
In-line mike sockets 3 & 4 pin, ea .................. 75c
Mike sockets 3 & 4 pin, ea .................. 75c

YAESU MUSEN PRODUCTS
FRG-7 .5 to 30 Mhz receiver .................. $300

NOVICE SPECIALS — TRANSCEIVERS
10M Sideband SE-502 USB/AM 15W PEP-240V AC 12V DC-inbuilt SWR/RF meter 28.3-28.6 mhz clarifier tuning transmit and receive .................. $90
10M Universe 224-M USB/AM 15W PEP 12V DC 24-ch. 28.480 to 28.595 mhz, 5-khz steps-clarifier tuning transmit and receive .................. $100
CONVERSION CRYSTALS for amateur licence holders — set of 8-crystals to convert 23-ch. 27-mhz CB units to 28-mhz. Suitable for Kraco, Sideband, Universe, Hy-range V etc., converts as per Universe 10M above — CRYSTALS and instructions .................. $40

All Prices are NET, ex Springwood, NSW, on a pre-payment with order basis. All risk insurance is free of charge, allow for freight charges by air, road, rail or postal, excess will be refunded. Prices are subject to change without prior notice. All orders cleared on a 24-hour basis after receipt of order with payment.

Arie Bles (VK2AVA) Proprietor
Roy Lopez (VK2BRL) Manager
Although not much information has been forthcoming from the Amateur and Citizens Radio Club (VK/CB) over recent months, nevertheless the members are still very active in the pursuit of our hobby and general public relations.

The photographs tell only part of the story, and depict another excellent example of our younger amateurs assisting interested CBers in attaining an amateur licence.

It is this sort of activity which helps to inform the public of our hobby, and the members of the club are to be congratulated for their efforts.

Wouldn't it be ideal if all of the WIA Divisions and various clubs conducted similar activities on a more regular basis? It seems only too easy to sit back and let somebody else do most of the work.—VK3UV.

PHOTO No. 1
Garry VK2NZI (left) and Ron VK2DAE (talking) operating hand-held pedestrian or 10 metres walking down Bondi Beach Road shopping centre.

Both have worked into Europe on 10m in this way. They often help out at the weekends giving newcomers a taste of QRP DXing.

PHOTO No. 2
Did you know there are a lot of people in Kings Cross, Sydney — just looking for interesting things to do?

Members of the Amateur and Citizens Radio (VK/CB) Club found lots of interest when they set up this display at the Kings Cross fountain.

Local rangers were pleased to see such a worthwhile display at the Cross and indicated that the group would have no difficulty in obtaining a permit to conduct regular such displays at the Cross.

PHOTO No. 3
Members of the Amateur and Citizens Radio (VK/CB) Club holding a display at Bathurst, central NSW, during the flea market event which attracted hundreds to the area.

The Club also demonstrated amateur radio to those manning a CB display organised by the Bathurst CB Club.

PHOTO No. 4
Neville VK2QF, well known locally in the instructional field, met the members of the Amateur and Citizens Radio Club and set up for display a working home-built AM and CW 80 metre station at Hillend in the Central West of NSW.

PHOTO No. 5
On the sidewalk of Bondi Beach. The Sydney amateur radio PR team in action.

PHOTO No. 6
Andrew VK2VHH enjoys a nice bus trip using 2 metres FM under full call supervision.

Andrew and his friends, Chris and Dave (both looking this way), you will probably recognise helping at the amateur weekend.

PHOTOGRAPHS FOR AR
Don't keep them to yourself
SEND THEM IN — NOW
**AMATEUR SATELLITES**

**OSCAR NET**
The OSCAR Net organised by Peter VK4PJ is active on 3680 at 2000 EST on Sunday. There are obviously some propagation problems but no doubt these will be circumvented; perhaps by moving to an alternative band.

**OSCAR INFORMATION**
There has been an increasing interest in monitoring the ARRL RTTY information bulletins through WIAW and a great deal of hard and original work has gone into the necessary facilities. Alan VK2RX, Charlie VK3ACR and Peter VK4PJ are all active recorders (while I’m working!) and provide me with the latest news — thanks, fellows, for your help. Also, thanks to Charlie and Peter for offering to write these notes for November and December while I am wandering around the world.

**SOLAR ACTIVITY**
It now appears that the high solar activity a few months ago was responsible for the change of OSCAR 8's orbital parameters which now seem to be settling down to routine once again.

The lower altitude satellites (below 1000 km or so) were the ones affected, whereas satellites such as OSCAR 7 at 1465 km continued on their predicted courses. Now you know why Skylab came down much earlier than anticipated.

**OSCAR 7**
Perhaps the sunspots have revitalised AO7 as several very good contacts have been made through this satellite. As in earlier years, Mode B is outstanding in its clarity and of course the 20 or more minute pass makes for a really fine QSO. The only problem is its reliability; only observation can tell you whether it is on Mode A, Mode B or just OFF. With (or rarely) beacons for assistance, OSCAR 7 is now real fun!

Regulars on 7B include ZL1BDU, P29ZFZ, VK2RX, VK3ACR, VK2ZI and VK4ZRF. Jim P29ZFB has been a great OSCAR operator during his residence in PNG, being active on Modes A, B and J through both OSCARS 7 and 8. He is returning home at the end of August and hopes to acquire a VK4 call. We shall be looking for you, Jim.

**MODE J CLUB**
Charlie VK3ACR and myself have received the most attractive Mode J Club certificate as described in last month's notes. Our awards are numbered 78 and 79, which is quite remarkable as the potential for this award in Europe and North America must be enormous — possibly Mode J is more demanding than we thought.

**DUAL SATELLITE OPERATION**
Every few weeks our two operating satellites are located in a position where communication between them is possible for ten or so visible orbits.

During August this situation obtained and with AO7 performing well, excellent results were achieved. The procedure is to transmit on 432.15 into AO7, the 145.95 downlink from AO7 is received by AO8 and re-transmitted on 29.45 or 435.15 (the frequencies given are nominal centre frequencies of the transponder Modes A, B and J involved).

The distance between the two satellites may be between 550 km (the altitude difference) and 2000 km, and this can be predicted by somewhat complicated calculation.

This is yet another interesting facet of satellite communication.


Davidoff, M. “Predicting Close Encounters: OSCAR 7 and OSCAR 8.” Ham Radio, July 1979, p. 82.

**PHASE III COUNTDOWN No. 1**
AMSAT Phase III-A is a high altitude, long lifetime satellite to be launched in March 1980 as a secondary payload aboard an Ariane mission. The European Space Agency will provide the launch opportunity from a site in Kourou, near the coast of French Guiana. The satellite will be inserted into an initial (temporary) elliptical orbit with a projected inclination of 17°, an apogee of 35,000 km and perigee of 200 km. After a few weeks in this orbit when the spacecraft has stabilized and the onboard microcomputer has determined that the satellite is in the proper orientation to the sun, to the earth, and at the proper position in its orbit, a one-shot onboard perigee kick motor will fire (a solid propellant motor that will burn for one 20-second period). This will lift the perigee to its projected final 1,500 km altitude and raise the inclination to 57°. This orbit will have a period of approximately 660 minutes and a longitude increment of about 165° west per orbit. Please note that these figures are only preliminary estimates; the final data cannot, of course, be known until precise measurements are made after launch. These figures, however, are suitable for giving the potential satellite user a sense of what the orbit will be like.

This orbit will favour the Northern Hemisphere at first, as the apogee after the perigee kick motor firing will occur at about 26° N latitude. Over the course of the first two years, the latitude of the apogee will drift gradually northward to its highest point, 57° N latitude. From this time on the apogee will drift southward until after another year or so it will occur over the equator. From this point on, the Southern Hemisphere will be favoured and the second of the AMSAT Phase III missions will have been launched, again initially favouring the Northern Hemisphere. Throughout its lifetime, however, the AMSAT Phase III series satellites will be accessible throughout the world at some point during the day; those regions falling under the illumination at apogee will simply have greater access times.

AMSAT Phase III-A will carry a Mode B transponder. Its uplink will be in the 70 cm band and downlink in the 2 metre band. The passband will accommodate SSB, CW, SSTV, RTTY, and whatever digital modes are approved for use through the satellite. There will be several Special Service Channels that will deal exclusively with such areas as data exchange, educational, scientific study, officially authorised traffic, and general interest/information bulletins from throughout the world. A general beacon for routine telemetry and Codestore information, and an engineering beacon for more sophisticated management purposes will be at the very edges of the passband. To access the satellite, a user will need about 1000 watts ERP on 70 cm—but high gain antennas to achieve this effective radiated power economically are feasible as near apogee (plus or minus 3 hours) AMSAT Phase III-A will move very slowly and through a comparatively small arc; tracking will be a fairly simple task.

From Steve Place WB1EYI, AMSAT Phase III-A Education Special Service Channel Co-ordinator.

With reference to Bob VK3ZBB’s article on the new Phase 3 project, further information, via Harry JAIANG’s newsletter, has come to hand and is as follows:

Beacons for Phase 3 spacecraft have been established: General Beacon 145.610 MHz. Engineering Beacon 145.990 MHz.

AMSAT advises that the Phase 3 Flight Ready Spacecraft has to be at the launch facility by 3rd December, 1979, and launch is still scheduled for 5th March, 1980. Checkout of the Flight Computer is being accomplished and everything thus far looks like a goer.

The Flight Transponder is coming along well and should meet schedule requirements. As of now, 4,077 solar cells are in hand and 39 battery cells. Preliminary indications show we should have a very good positive power budget for the Phase 3 spacecraft. This is great news.

Preparation of back-up documentation for the WARC delegation on Amateur Satellites is under way at AMSAT and should be on schedule.
Phase 3 solar panels are undergoing thermal testing in vacuum chambers and vibration tests are completed and have proved very, very good. The wire bundle harness for the spacecraft is also progressing well and will meet schedule. The IHC prototype is in the debugging stage and all is going as expected. The 435 MHz uplink antenna is in the design and testing stage. Spacecraft modules and structure are in for the final paint process.

Biggest problem facing AMSAT at this time is the long lead time required for some space qualified components. Delivery of these items will not meet our target date. Don’t give up, AMSAT is working hard to overcome these problems.

Harry JA1ANG asks — Are we ready for Phase 3-A satellite? Although we will not know for sure until about the end of November, or even later than that, “Phase 3-A” is due to be launched on March 5th, 1980, from ESA’s (European Space Agency: member countries are Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands, Spain, Sweden, Switzerland and the United Kingdom. Austria, Canada and Norway participate as observers) launch site or Kourou, French Guiana (OTH: 5.4N/52.7W). The launch vehicle: “Ariane” — a three-stage 888 million rocket, 154 ft. long. Launch time: Approximately 9.00 a.m. local time. FY7 local time = minus 4 hours UTC. So it will be around 1300 UTC, which will correspond to our evening of March 5th, 1980.

Please Note that all information mentioned here is subject to change.


Downlink Frequency: 145.838-145.962 MHz (centre of downlink: 145.900 MHz).

ERP required when satellite is at or near apogee: Approximately 1,000W. Note: To those who have AO-7 Mode B experience, this will mean that you will need 10 dB more effective radiated power.

Strength of downlink signals: Approximately 7 dB less than those from A07 (mark only or space only — ref. AO-7’s RTTY). Strength of uplink signals: Approximately 10 to 14 days, then the KICK motor will be determined. The kick-motor uses solid fuel, therefore it is going to be a one time only firing. In other words, they will not be able to “do it over again” (once fired, it will burn to the end — no stopping, like in the case of liquid fuel) — therefore it is essentially important that they “do it right” and to enable them to do so, a “quiet” transponder will be needed during the first 10 to 14 days after launch. So, no uplinking by general users, PLEASE!

Please listen to the beacons: one on 145.810 (which may not be on for the first several days, and the other (the ENGINEERING BEACON) on 145.990 MHz, which will be turned on as soon as the satellite becomes available to general users it will be “announced” over the general beacon on 145.810 MHz, by CODESTORE.

Also, listen to the GENERAL BULLETIN, which will be on approximately 145.965, on one of the SPECIAL SERVICE CHANNELS (SSC).

The following is the proposed “band-plan” for the satellite (keeping in mind that this could be changed: Downlink 145.838 to 145.880 MHz, CW only; 145.880 to 145.920 MHz, mixed CW and SSB; 145.920 to 145.952 MHz, SSB only; RTTY (mark only or space only, CW type) on 145.952; SSTV (using SSB) on 145.920.

The transponder passband will be approximately 150 kHz wide, but please refrain from using the band edges below 145.838 and above 145.962 BECAUSE there will be SSCs (Special Service Channels) reserved for bulletins, code practice, scientific, data and educational transmissions; therefore no uplinking below 435.153 and above 435.227 MHz! Incidentally, sidebands will be “inverted” as in the case of AO7’s Mode B and AO8’s Mode J. Thus, uplinking will be on USB, and the downlink will become LSB.

RUSSIAN SATELLITES

Information has been supplied by Bob WA5ERB and Miki JR1SWB, informing us that about a month ago JAMSAT’s JR1WYB, who is very good at Russian, visited RS3A (formally UK3ACM) in Moscow. He learned that both RS3 and RS4 would be launched by the end of the year, and these two satellites would piggy-back with certain Cosmos Satellites. So their orbit will likely be the same as RS1 and RS2. They will have Mode A transponders and downlink would be 29,400 to 29,450 for RS3 and 29,450 to 29,500 for RS4, uplink frequency is not certain. They will have sophisticated AGC system and commandable pad (attenuator) to avoid overload as was noted in RS1 and 2.

The most unique aspect of these birds is they will contain “Robot” system, which responds to the signal of ground station. Example: When I transmit on a particular frequency, RS3 de VK3ACR K, the Robot will respond and RS3 de 579 K. No further information is known on the system, but to say the least, it’s very impressive.

AAO AWARD

(Orca Satellite Communications Achievement Recognition.)

I have just received from Colin VK5HI (AMSAT Awards Manager) a list of the VKs who have qualified and received their certificates. These awards can be obtained by those amateurs who can confirm by OSCAR 7 link with two-way communications with six different VK call areas and two countries. These cards must be sent to Mr. Colin Hurt VK5HI, 8 Arrndell Road, Salisbury, SA, accompanied by postage for return of cards and certificates. ZLs are also eligible. To date only 14 of these awards have been issued in VK, these being:

1979 is a big year for Lismore, the queen city of northern New South Wales, and the home of the Summerland Amateur Radio Club.

This year is the centenary of local government in Lismore, and while celebrations have been planned to take place throughout the year, the major effort was concentrated during the week commencing 28th May, 1979. Many local organisations have participated in the celebrations, and the Summerland Amateur Radio Club decided to do its bit and at the same time achieve some good PR for Amateur Radio.

After some preliminary talks with the Lismore City Council, the Club was allotted a lecture room in the City Hall which would provide adequate security and give us sufficient room to set up a display on Amateur Radio. The project involved a great deal of preliminary planning, so we set up a sub-committee and got to work. With much help from many willing Club members, we assembled a large range of amateur gear dating from 1926 to 1979. As a result, we were able to set up a display representing a history of amateur radio from very early days to the present time. The ancient gear was complemented by a fine display of modern gear provided by our good friend Ken Ayers, the proprietor of Amateurs' Paradise, Southport.

The actual assembly of the display took place on Saturday, 26th May, 1979, when the gear was set up in historical sequence to form a continuous display around the hall. In one section we assembled an operating station under the Summerland Amateur Radio Club call sign VK2AGH. This section included fully operational HF, VHF, RTTY and ATV, with the odd microprocessor thrown in for good measure—home brew of course. The Lismore City Hall took on a new look, with numerous antenna arrays sprouting from various vantage points, and the experience gained by our WICEN group from many previous exercises really paid off in setting up this part of the display.

The official opening of the Club display took place at 0900Z on 28th May, 1979, and it was a great public success from the outset. The display was crowded on each of the week nights, and on the big day, Saturday, 2nd June, when thousands of people came to Lismore for the official celebrations throughout the day, it was necessary for Club members on the supervision roster to regulate the people admitted to the display room in order to keep the numbers in the room to manageable proportions.

The result of the exercise was a tremendous boost to Amateur Radio on the North Coast of New South Wales. The Club received priceless publicity and great PR in the local media, as well as numerous enquiries and new applicants for our Novice classes. At the same time, the Summerland Amateur Radio Club played its part in the community effort to celebrate 100 years of local government in Lismore, one of the oldest provincial cities of the State.

Fred Herron VK2BHE, Summerland Amateur Radio Club.
most running low power with directional antennas. However, its something seems possible at times these days as they are included for your continuing interest.

The ZL1HW beacon on 433.150 uses an omnidirectional antenna with 10 watts, and is reasonably well received. VK2ID notes they have seen some improvements to 433 MHz gear in New Zealand since the big trans-Tasman opening this year, and in his own case runs 50 to 100 watts and 50 MHz, with 30 watts to be kept for work VK. Other stations with a reasonable set-up include ZL1TAB, ZL1TBF, ZL1VHW, ZL2TFJ, ZL2TAU, ZL2BB, ZL3ADC, ZL3AR and ZL3AQ.

So far there are stations in ZL prepared to do something about contacting VK. It seems to be hoped there are similar stations in VK, and that everything will not be left to chance! public opinion.

10 GHz ACTIVITY

Lyle VK2ALU in his letter reports his main activity is now taking place on 10 GHz, whilst further activity is undertaken to get the 432 MHz EME installation in Dapto shifted.

A test on 10 GHz was made on 25-8 between VK2ALU and VK2ZAH over a distance of 112 km from Mr. Glarner near Bowral and Terrey Hills north of Sydney. Very solid signals were received at both ends using FM voice communication. A 2 metre liaison link was used, but signals on 3 cm were not heard over on station.

A fixed attenuator had to be placed in the IF channel at VK2ALU's end to bring the S meter pointer "off the stop".

A pleasing feature was the accuracy of pointing at the target of 15 km distance, with the compass directed position- ing being "spot on". VK2AHG was able to reduce his 15 inch diameter dish without much degradation of signal strength. This was taken over any distance for 2ALU's new portable transceiver. More difficult paths are now under consideration.

The Propagator.

5 METRES AS SEEN FROM SA

It would seem that local DX to the lower placed States has not really raced ahead after the big start on 26-8. Only decent JA opening since 0900 to 0645Z to JA1 and JA2. Some 200 MHz activity also but only JA. Perth stations started with some good early evening TE on 9-9 with VK6SW, etc. They have had several JA openings since. Northern areas of VK6, VK2 and VK8 have had consistent openings for about 30 minutes on 3 cm, but no downstream conditions to keep out the possibility of extensions. Afternoon TE is still poor across Australia, some change should come early October.

Power of exciter is 12 watts RMS. At present it will run with 6 elements at about 12 metres with initial beam heading of 65°T for the present equinox. A separate PA stage is under development and this is aimed at operating directly in the region of 50 watts. Combined with the beam and assuring take-off the system will have an ERP on 500 to 600 watts. Plans indicate that at a later date the system will be extended to 0.5 watt on 3 cm for omnirange and keep out the possibility of extensions. Afternoon TE is still poor across Australia, some change should come early October.

Over the 27-9 period the signal has peaked over 215 in recent days, so long distance F layer could be the next area. On 23-9 MUF to Central America was determined to be at or above 46.1 MHz from 2350 to 0050Z. At said frequency, a repeater output was heard peaking to in excess of 5 Uv. Most of the time it simply cycled. Also CW impressions indicated signals on 44,250 MHz. Several other signals were received within the range and identified from earlier openings in April. Times and stations all corresponded to those heard between 21 and 17 of this year. No reported openings on 50 MHz from VK3 and VK4. For some now time 39 to 40 MHz voice transmissions from the USA have been appearing around 2100Z and disarmingly 2000Z. Highest MUF to date so far, is about 42 MHz to VK5. VK video has been received in VK5 many times but nothing to 50 MHz. One further point about 23-9, JASCMO worked several LU stations on 50 MHz about 0100Z.

OVERSEAS

Generally with the increase in countries available things have not been dull overseas. If you live in the USA have been appearing around 2100Z and disarmingly 2000Z. Highest MUF to date so far, is about 42 MHz to VK5. VK video has been received in VK5 many times but nothing to 50 MHz. One further point about 23-9, JASCMO worked several LU stations on 50 MHz about 0100Z.

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NEW BEACON FOR VK5

WV2K has been advertised a new VK5 beacon is ready for use and will hopefully be on in October. Already it has been running under temporary conditions and looks to be quite promising. Call sign has not been allocated but may be VX3. Following are the details: Transmit frequency 52.150 MHz, with 800 Hz FSK (upshift on keying). Power of exciter is 12 watts RMS. At present it will run with 6 elements at about 12 metres with initial beam heading of 65°T for the present equinox. A separate PA stage is under development and this is aimed at operating directly in the region of 50 watts. Combined with the beam and assuring take-off the system will have an ERP on 500 to 600 watts. Plans indicate that at a later date the system will be extended to 0.5 watt on 3 cm for omnirange and keep out the possibility of extensions. Afternoon TE is still poor across Australia, some change should come early October.

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be making good use of the amplifier. In talking to Peter on 5060 in the middle of the band, it is often audible around 0002Z at S9 and for up to 3 or 4 hours at a time! He also advises working many JA’s on FM, and that both 302AZ and VK3G are excellent on the band. His 7705F beacon on 51999 uses a vertical J beam, and as reported earlier is to be shifted nearer to Peter’s QTH and will be switched off when Peter is operating on 160 metres. The VK5HJ beacon on 51999 uses a vertical J beam, and as reported earlier is to be shifted nearer to Peter’s QTH and will be switched off when Peter is operating on 160 metres.

**THIRTEEN ELEMENT BEAMS**

From time to time I am being asked about the THIRTEEN ELEMENT beams. I have built for two metres. That I ever needed to build them was brought about by the crash of my pair of 16 element beams. I did consider replacing the breaking wire on the crank-up tower. Whilst wondering what would be the best approach to the problem of reconstruction, Bob Stone VK5PB came back from USA with glowing reports of a new developed KLM type yagi of 13 elements, the performance of which was equal to or slightly better than the former 16 elements. Having nothing to lose, I built a pair.

There is no doubt about it, they really do work and work well. At first when number one was built and pointed up in the air from a ladder as a platform for checking SWR it gave a rather poor result. It was thought that changes to the element lengths would be necessary, with the forward element of the driven pair having the most effect on the SWR. It was found they needed to be lengthened.

The following week the antenna was mounted on the stepladder again, this time with the ladder vertically, feedpoint 200 ohms balanced, and re-tested. The SWR rose to 1.1 to 1 up to 148 MHz. And that’s a good result; with those of a normal design. There are a few critical factors in their construction as with most of the KLM type designs which will readily reproduce KLM performance with extreme care; if you are a sloppy builder then don’t start building one!

As you need the full information to make one or two as required I am prepared to make the information available to anyone interested and send a stamped addressed envelope, preferably of the 9 x 4 in. standard envelope to save excessive folding of the paper, plus a 20c stamp to cover the cost of copying.

**CLOSURE**

As other writers of similar columns are finding, news is still scarce due to band conditions, but hopefully things will improve for next month’s copy, as this will cover the equinoxal period. So until then go DXing to everybody, and please take off a little time to write and tell me what you have heard.

Closing with the thought for the month: “To be agreeable in society, you must consent to be taught many things that you already know.”

73, The Voice In the Hills.

---

**LATE NEWS**

TI2 STATIONS FOR 6m
Carlos TI2CF, in Costa Rica, expects to be operational on 6m in time supported for Christmas 1979. Equipment on order is an FT901 with 3 band transverter and a 100W output linear into a 7 element KLM beam. He has been briefed on VK TV frequencies, VK VK3ZM’s operating details for the 28.865 MHz band, and TI2TE also expects to be operational with the same gear (without the linear) around Christmas.

**SMIRK**

SMIRK membership is open to all keen 6 metre operators who may join by listing details of three different contacts above 220 MHz. Two or 6 metres opening in Japan, this is very simple. The list, together with $4 US should be sent to the Secretary of SMIRK, Ray Clark KS2MS, at 7158 Stonefence Drive, San Antonio, TX 78227, USA. On receipt of the list by return airmail your SMIRK membership certificate.

SMIRK print a quarterly newsletter which is full of information about 6 metre activity. To receive this newsletter send with your membership application fee of $4 US lor postage. This is pretty good value for members of SMIRK.

From the latest newsletter comes the following extracts from the results of the SMIRK Party Contest and the updated membership list.

Top scorers in each call area have received a certificate.

**SMIRK LIST — UPDATE**

**JAPAN**

JH1RDU 3395
JH4KID 3392
JIKPBY 3326
JL1MIN 3300
JL1RLL 3339
JRSJU 3364
JRMFH 3333
JEXLQ 3366
JFJDEJ 3390
JGJZQ 3311
JGEPBV 3394
JGBSDS 3394
JGRGQ 3325
JGAJJH 3329
JGSAIJ 3390
JGSGC 3337
JGKGH 3321
JGSKQ 3328
JGSSV 3328
JGSSZ 3328
JGSSC 3328
JGSESS 3172

**NEW ZEALAND**

ZLALV 3377

**AUSTRALIA**

VK3ZDI 3511
VK3ZY 3286
VK3BIL 3351
VK3QAL 3321
VK3ZFA 3386
VK3FU 3286
JKHJLD 3301

**OTHER**

HSLWR 3311
KX6BU 3276
KHEGOM 3400

Plus many others In the USA, Central and South America and Europe.

The list is an update of new SMIRK members from 5th May, 1979 to 25th August, 1979.

*As listed by SMIRK.*

List courtesy of Lionel VK3NM, SMIRK 3067.

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**INTRUDER WATCH**

All Chandler, VK3LC

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**INTERNATIONAL NEWS**

WARC 79

Commenced 24th September. Scheduled to finish 30th November. 147 countries are expected to send delegations and 38 international organisations will be sending observers. The total number of people will be over 7,100. Some 14,000 proposals were received from ITU member countries to revise or modify the Radio Regulations.

**K25**

A report in August 1979 World Radio says that after the end of September the Canberra Zone ceases to be a separate country. All K25 operators will have to qualify for an HP1 licence to stay on the air.

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**ILLEGAL OPERATIONS**

A feature article by N4XX in CQ for September 1979, reports that the illegal use of high-powered equipment in the USA is now at an all time high. For the past couple of years the citizens band has grown significantly in recent years (in the USA). Attention was drawn to so-called "HF" operations between 27.41 and 28 MHz. In both cases the illegal operations were attributed to the easy availability of amateur-type equipment to the public. The article states that operations of this nature are expected to increase with ever growing number shifting to the 10m amateur band.
### IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC

#### PROJECT ASERT - PROGRESS REPORT

In preparation for the forthcoming VHF propagation activity the Project ASERT Committee has taken steps to introduce four additional monitoring stations in New South Wales, Queensland and New Zealand. It is hoped that these stations will be operating during November, thus providing data throughout the summer period of high VHF activity. The three existing monitoring stations located in Tasmania, South Australia and Victoria have been producing information throughout the winter period and this is currently being analysed by the Committee. A detailed report on the results during the winter period will be published in "Amateur Radio" in the near future.

The Committee again expresses its appreciation to members of the Institute who are supporting the Project through construction of equipment and surveillance of the monitoring stations.

---

Stop Press

IPS Daily Report
Phone (02) 269 8614
Details in December AR.

---

Les Janes VK3BKF installs a 2m antenna at Port Melbourne for Project ASERT.
ATLAS 110 LINE


Couple that to a "bUILT-ON" Transmitter Module, the Atlas TX-110H ... which has low spurious and harmonic radiation, high carrier and unwanted sideband rejection and 250 Watts in-pul. You now have the unbelievable Atlas RX/TX-110H top performance transceiver which costs ... NOT $950 ... NOT $750 ... NOT even $650 but just $555

For color brochure with complete specifications write to us, phone us or just drop in and have a look at the RX/TX-110.

GFS FOR RECEIVERS

STANDARD C-6500............................................$359.
HF Wedley Loop Communications Receiver.
Manufactured by Wurkus Jonp the C-6500 is a state-of-the-art HF receiver covering 0.5-30 MHz in 20 MHz steps. Its sensitivity is extremely high at 0.5uV and selectivity is 4 KHz on SSB and 2 KHz on AM.

NEW PRODUCTS FROM MFJ

How a very wide range of Antenna Tuners

- 250 Watts. • BUILT-IN SIDETONE.

TET SWISS QUADS

This antenna is a PHASED QUAD and well known as a HSCV QUAD. Its concept is to drive the Radiator and Reflector at the same time with phase differences to obtain more gain and better front-to-back ratio than the conventional quads.

ATN ANTENNAS

Write to us for a catalogue and price list on ATN's large range of VHF/UHF & HF Systems, (for fact use of DSI FREQUENCY COUNTERS.

DSI COUNTERS

GFS are Melbourne agents for the comprehensive range of DSI FREQUENCY COUNTERS. Drop us a line or just give us a call for your DSI counter.

INSTALL YOUR OWN TOWER AND SAVE $55's with the G201 20 ft. Triangular Lattice Tower, fully self supporting...

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NEW 215XLE LIMITED EDITION

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- 250 WATTS

Includes all the outstanding features of 215X plus now 250 Watts Input, new R.I.T. control and update frontend panel.

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ANNOUNCEMENT – TEN METRE OPERATORS. NOW ENJOY FM OPERATION WITH THE COMTRONIX FM-80

Enjoy the thrill of FM operation that has been so popular amongst 2 Metre operators for years, but with the advantage of being able to work OVERSEAS DX (10 metre FM is very popular in the US with over 250 Repeaters already operating). With the FM-80 you have the choice of 80, 10kHz spaced channels. 28-01-297 (range can be changed to 28-01-28.00 MHz). power output is 15-15 Watts, deviation is ±3 KHz, receiver sensitivity is 0.5uV for 20dB quieting.

Don't miss out on experiencing this exciting new form of communication. Call or write to us for your FM-80 now.

SPECIAL INTRODUCTORY PRICE $289.
Supplying the Enthusiast...

SELECTIVE RANGE OF AMATEUR EQUIPMENT

POPULAR BRANDS OF H.F. & V.H.F. TRANSCEIVERS, ANTENNAE, ROTATORS
and MOST AMATEUR ACCESSORIES

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Address __________________________________________
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Post to: Amateur Radio Action Subscriptions, Box 628E, Melbourne 3001.
OVER 2,100 SOLD!
Yes, more than 2,000 22S have been sold in Australia! Surely a mark of success for this superb rig.

**ICOM IC22S 2FMF STILL $299**

**800CH TRANSCEIVER**
- handheld
- 1.5w output
- 144-148 MHz
- 500 chs, 5 kHz steps
- 600 MHz Repeater offset
- Supplied with SEC approved charger

**PRICE: NOW $355**

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**JAYBEAM ANTENNAS**

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**PARABOLIC DISHES**

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<th>Bandwidth</th>
<th>Gain (dBd)</th>
<th>Length (m)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBA 1200</td>
<td>70 cm</td>
<td>1.2</td>
<td>7.8</td>
<td>3.5</td>
<td>$43.00</td>
</tr>
<tr>
<td>8-el 2m</td>
<td>70 cm</td>
<td>1.2</td>
<td>9.5</td>
<td>3.5</td>
<td>$51.00</td>
</tr>
<tr>
<td>10-el 2m</td>
<td>70 cm</td>
<td>1.2</td>
<td>11.4</td>
<td>3.5</td>
<td>$84.00</td>
</tr>
<tr>
<td>PH 10/2m</td>
<td>70 cm</td>
<td>1.2</td>
<td>11.4</td>
<td>3.5</td>
<td>$84.00</td>
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</tbody>
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**ICOM GEAR**

<table>
<thead>
<tr>
<th>Model</th>
<th>Frequency</th>
<th>Bandwidth</th>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC701</td>
<td>10/12/15</td>
<td>1.2</td>
<td>HF transceiver</td>
<td>$199.00</td>
</tr>
<tr>
<td>IC22S</td>
<td>144-148</td>
<td>2.4</td>
<td>HF transceiver</td>
<td>$299.00</td>
</tr>
<tr>
<td>IC551</td>
<td>50</td>
<td>1.2</td>
<td>HF transceiver</td>
<td>$799.00</td>
</tr>
<tr>
<td>IC280</td>
<td>50</td>
<td>1.2</td>
<td>HF transceiver</td>
<td>$1240.00</td>
</tr>
<tr>
<td>IC502</td>
<td>50</td>
<td>1.2</td>
<td>HF transceiver</td>
<td>$239.00</td>
</tr>
<tr>
<td>IC503</td>
<td>50</td>
<td>1.2</td>
<td>HF transceiver</td>
<td>$299.00</td>
</tr>
<tr>
<td>IC225</td>
<td>144-148</td>
<td>2.4</td>
<td>HF transceiver</td>
<td>$319.00</td>
</tr>
<tr>
<td>IC211</td>
<td>144-148</td>
<td>2.4</td>
<td>HF transceiver</td>
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**MORSE KEYS**

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<th>Model</th>
<th>Option</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>HK702</td>
<td>Deluxe</td>
<td>Key with marble base</td>
<td>$410.00</td>
</tr>
<tr>
<td>HK708</td>
<td>Economy</td>
<td>Key</td>
<td>$230.00</td>
</tr>
<tr>
<td>HK706</td>
<td>Operator's</td>
<td>Key</td>
<td>$25.00</td>
</tr>
<tr>
<td>MK701</td>
<td>Manipulator</td>
<td>side-swing</td>
<td>$45.00</td>
</tr>
<tr>
<td>PALOMAR</td>
<td>1c key</td>
<td></td>
<td>$149.00</td>
</tr>
</tbody>
</table>

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**MICROPHONES**

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
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</tr>
</thead>
<tbody>
<tr>
<td>VM-1</td>
<td>Noise cancelling, hand ptt, low z.</td>
<td>$10.00</td>
</tr>
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**COAXIAL CABLE**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>RG58AU</td>
<td>$1.30</td>
</tr>
<tr>
<td>RG213/U</td>
<td>$1.40</td>
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**KENWOOD TRANSCEIVERS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS250S</td>
<td>$635.00</td>
</tr>
<tr>
<td>TS120S</td>
<td>$735.00</td>
</tr>
<tr>
<td>TS120V</td>
<td>$600.00</td>
</tr>
<tr>
<td>TS180S</td>
<td>$1240.00</td>
</tr>
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</table>

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**COMMUNICATIONS RECEIVERS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>747</td>
<td>$199.00</td>
</tr>
<tr>
<td>210</td>
<td>$469.00</td>
</tr>
<tr>
<td>HF12</td>
<td>$149.00</td>
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**ANTENNA CABLES**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>RG58AU</td>
<td>$1.30</td>
</tr>
<tr>
<td>RG213/U</td>
<td>$1.40</td>
</tr>
</tbody>
</table>

---

**Duncan Baxter VK3LZ**
Customer Service Manager
Perth 321 3047
Sydney 635 6399
Gold Coast 32 2644
Adelaide 43 7981
Geelong 78 9660
Rockhampton 28 2843
Melbourne 836 8635

---

**Vicom**
68 Eastern Road, South Melbourne, Victoria, 3205
(03) 699 6700

---

**Launceston 44 3882**
Brisbane 39 4480
Adelaide 272 8417
Kalgoorlie 21 906
Wellington(NZ)287 946
Wagga 21 2125
CUSTOM COMMUNICATIONS
SHOP 11, PARRAMATTA ARCADE,
CRN. CHURCH & DARCY STREETS,
PARRAMATTA, N.S.W. 2150.

Just arrived!
The IC22s 2m FM transceiver
The most popular FM rig around.
It's not available at a special price.
Come in and check it out.

Now only $299

BASE LEAD $32
5/8 WHIP included $28

2 MTR. STACKED YAGI $138

“NEW”
10-80 MTR. VERTICAL ANTENNA.
ONLY $75
2 MTR. 7/8 WAVE MOBILE WHIP. Including

LEADER SWAPS
4 Kw 100 MHz. 2 element quad — $279.00
TS-120S P.O.A.

 radio equipment

Radio Teletype Terminal
0-7000 Tomo RTTY CW/Baudot/ASCII — $59

Tubes
6K6B Finalis for Yaesu transceiver — $9.00
6J5C Finalis for Yaesu transceiver — $9.00
12BY7A Driver — $3.75
6L6B Finalis — $12.00

CW Finals
FT101E Yaesu — $39.00
TS520S YG3395 Kenwood — $57.00
TS828C YGB68 Kenwood — $59.00

Kenwood Morse Keys
HK702 Deluxe Key with marble base — $41.00
HK708 Economy Key — $23.00
HK706 Operator’s Key — $25.00
HK801 Manipulator (2-position) — $45.00
PALOMAR 1 C Keyer — $149.00

SWRP/WR Meters & Dummy Loads
VC2 Twin meters 3-15 MHz with chart — $35.00
SWRP2000 Cockeril 2-300 MHz, 2/20/200/2000W — $48.00
SW210A Davga 1.8 thru 150 MHz, 20/120 W. — $99.00
SW410A Davga 140-500 MHz, direct reading — $129.00
CN620 Davga Cross-band, 18-150 MHz, direct — $99.00
CN630 Davga 140-450 MHz, 20/200 W, direct reading — $135.00
CN650 Davga 1.2 — 2.5 GHz, 2/20 W, direct reading — $189.00
LPM-885 Leader SWR/Watt meter — $89.00
LPM-880 RF Power Meter — $135.00
RW-150N Kurashin RF power meter — $185.00
RW-151D Kurashin RF Power Meter — $165.00
RW-1002L Kurashin watt meter — $139.00

Kenwood Transceivers
TS-520S P.O.A.
TS-820S P.O.A.
TS-120V P.O.A.
TL-992 P.O.A.
TS-120S P.O.A.

TEN ON OUR PRICES FOR ALL KENWOOD PRODUCTS!

Coastal Switches
CS201 2 position, high power, 500 MHz — $23.00
CS401 4 position, high power, 500 MHz — $39.00

Parabolic Dishes
PBA-1200 70 cm and 1.2 GHz complete — $349.00

Hy-Gain Antennas
HYQUAO 10/15 20 m, 2 element quad — $279.00

SHURE DESK $54
SHURE H.H. $36
MOBILE MATCHBOX $35
ANT. TUNER
4 Kw 4:1 $195
ANT. TUN WITH METERS $245.00

INTERSTATE & COUNTRY DEALERS
DX ENGINEERING PORT MAQUARIE
A TEBOARD MELBOURNE
DITRONS NEWCASTLE
MITEL ARMIDALE
ARMIDALE ELECTRONICS WOLLONGONG
MURPHY HILLS"
CONTESTS
Wally Watkins VK2DEW
Box 1065, Orange 2600

November:
17/18 ARRL PHONE SWEEPSTAKES
24/25 CQ WW DX CW CONTEST

December:
1/3 CONNECTICUT QSO PARTY
8/9 AUSTRALIAN NOVICE CONTEST
15/15 ROSS HULL VHF/UHF MEMORIAL
13/13 Jan. ROSS HULL VHF/UHF MEMORIAL

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Note that the Australian Novice Contest replaces the previous contests organised by the Weststake Radio Club.

One recommendation in my last annual report to the Federal Conference was that the Ross Hull Contest be disbanded in its present form due to the lack of interest in submitting logs. To me it is a waste of my time and a waste of valuable space in the magazine organising a contest which results in less than ten logs being sent in. A recent Romanian contest had a good idea. If the other chap didn't send in a log you could not claim a contact with him for scoring purposes. If entries are not well up this year I will seriously consider a similar rule next year. This year's Ross Hull contest is the final one for the Contest Champion Trophy for 1979.

ROSS HULL VHF/UHF MEMORIAL CONTEST
1979-1980
Firstly some details about the man whose name and achievements we honour with this annual contest.

Ross Hull, born in Melbourne in 1902, studied to be an architect. By 1922 he had become one of Australia's outstanding amateurs and in 1926 with the call OA3JU, was secretary of the WIA.

In the same year he went to America and asked for a job in the editorial department of the ARRL and soon rose to the position of assistant technical editor of "QST". In 1929 he became the logical choice for director of the ARRL programme for special technical development to devise new apparatus. It was from this appointment that the real ability and genius of Ross Hull was to emerge and give brilliant success to the programme. Some of his new innovations included "Bandspreading" of amateur receivers, the first serious use of the Superheterodyne for the reception of amateur phone transmissions, the first presentation in amateur radio of 100 per cent modulation, the use of Linear Amplifiers and the introduction of the Signal Monitor.

Ross Hull had a flair for unorthodox construction techniques. He put his valves upside down to shorten leads and rejected the "Breadboard" in favour of a bent metal chassis. He always set the pace in apparatus design only to be excelled by his own rigid and beautiful construction.

In 1929 he returned to Australia to become editor of "Wireless Weekly" for 18 months until he was attracted back to ARRL as Associate Editor. He became the mainspring of the "QST" editorial staff.

He popularised 56 MHz for local contacts and conducted long term research into UHF propagation and for the first time established the reason for the bending of these waves in the lower atmosphere.

With his activities, his amateur radio, his piano, his camera, his workshop and his cottage on a Connecticut hilltop he was leading the world in amateur radio. However, it was in 1938 that a power supply for his television receiver caused his untimely death. A power supply giving 6,000 volts for a large kinescope. His advice was "Switch to Safety", and a great man met Instantaneous death doing something which he had taught the world not to do.

So with the annual Ross Hull Memorial Contest we honour this amateur who did so much to steer the following generations of amateurs along the sound technical road we know today. A perpetual trophy is awarded annually for competition between members of the WIA. The winner's name is inscribed on the trophy and he receives a suitable certificate.

OBJECTS
Amateurs in Australia and its territories will endeavour to contact as many other amateurs as possible under the following conditions.

CONTEST PERIOD
0012 on 15 December 1979, to 2400Z on 13 January 1980.

BANDS
All amateur bands above 30 MHz may be used. No crossband operation is allowed. Operation via active repeaters and translators is not allowed.

EXCHANGE
RTS(T) plus a three figure serial number. The first number may be any number between 001 and 999 and will be increased by one for each contact, when 999 is reached a start is made from 001.

RESTRICTIONS
Multi-operator stations are not allowed: Only one transmission at a time for all stations: Two contacts per day per band with each station irrespective of mode, providing two hours have elapsed since the previous contact. Entries must operate within the terms of their licence.

DURATION
Any seven GMT days within the contest period, not necessarily consecutive.

SUMMARY OF LOG SHEET
A front sheet must be attached showing the following information in this order:
Name, Address, Section, Call Sign, 7 Day Score, Operating Days, Best 48 Hour Score, Operating Period.

Signature: I hereby certify that I have operated in accordance with the rules and spirit of the contest.

LOG SHEET
It is desirable that complete logs for the whole contest be submitted for cross checking purposes, photo copies are preferable.

The log must show the following information:
Time GMT, Band, Emission, Stn Worked, Tx exchange, Rx exchange, Points, Bonus. Each page should be individually totalled for points at the bottom.

SCORING
Scoring will be based on the following table:

<table>
<thead>
<tr>
<th>Distance</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 200 km</td>
<td>52 144 432 576 1296/up</td>
</tr>
<tr>
<td>200 - 400 km</td>
<td>2 2 5 10 20</td>
</tr>
<tr>
<td>More than 200 km</td>
<td>5 15 25 50</td>
</tr>
</tbody>
</table>

BONUS POINTS
Each new call area contacted, 20 points, once only per band per GMT day, including own call area.

ENTRY CLASSIFICATIONS
(a) Transmitting Phone (AM, FM, SSB, ATV, SSTV).
(b) Transmitting CW (RTTY).
(c) Receiving (any modes).

AWARDS
The entrant with the highest score in either section (a) or (b) will be the winner and his division will hold the trophy for one year.

Certificates will be awarded to the highest score in each section and in the case of (a) and (b) to the highest score in both the seven day and the 48 hour divisions. A winner of a seven day certificate cannot be awarded a 48 hour certificate as well. Certificates will not be awarded on a call area basis unless there are more than 10 logs received for that section.

SUBMISSION OF LOGS
Entries are to be sent to the FCM, Box 1065, Orange 2800, postmarked no later than 4th February, 1980, and endorsed "Ross Hull Memorial Contest".

SPECIAL RULES FOR RECEIVING SECTION (c)
SWLS only may enter this section.
YOU and DX

Mike Bazley VK6HD
8 James Road, Kalamunda W.A. 6076

DX NEWS FROM THE CDQX CLUB
Paul VK3VDP worked JT0LAJ on 18-8-79 around 0810 GMT on 21,185 kHz. The JT was in QSO with a UA0 and the JT went QRX to answer the phone. Paul called and told the Russian how much he would like to work the JT. The Soviet operator said "ah even", but put him on the JT anyway. The JT's QTH was Ulan Bator.

Good DXing . . . . it proves once again that it pays to listen.

Peter VK3NNY has now worked over 150 countries and is the greatest number in the club. Five of us have now worked over 100 countries and it appears that Peter may be the first Novice to get the DXCC on CW alone. Any comments.—From Trevor VK3NRR.

LONELY OUTPOST
The site of the Okin-Toorishima DXpedition in mid-June. Due to dangerous conditions the operation was limited to only four days. See report in September AR, page 27.

BOTSOWANA CALL SIGNS
Barnes, R. G. A., Box 250, Gaborone, A22A.
Broome, E. F., C/o Box 173, Francistown, A22AN.
Broome, N. M., C/o Box 173, Francistown, A22AQ.
Bushe, O. W., Box 604, Gaborone, A22AD.
Delpent, M. P., Box 1054, Gaborone, A22MD.
Ewels, C. E., Box 601, Gaborone, A22AH.
Falom, A. F., Box 601, Gaborone, A22RA.
Garst, J. A., Box 90, Gaborone, A22GJ.
Hornstredt, J. C., C/o Box 604, Gaborone, A22AR.
Harris, D. W., Private Bag 0060, Gaborone, A22BX.
Hosang, H. D., P/Bag 60, Gaborone, A22CV.
Isaacs, J. H., Box 516, Gaborone, A22H.
Kanika, B., P/Bag 2, Molepolole, A22BT.
Kiersted, H. R., Box 10, Kasane, A22RK.
Lange, A., C/o Box 315, Gaborone, A22PC.
Laletsang, P. T., Box 91, Francistown, A22TL.
Marchand, B., UBS, P/Bag 22, Gaborone, A22AS.
Moran, S. A., Box 516, Gaborone, A22SM.
Patterson, D. K., C/o Moedling College, P/Bag 11, Lobatse, A22DK.
Ramanchandran, S., Box 947, Gaborone, A22SR.
Ramanchandran, D., Box 947, Gaborone, A22DN.
Schofield, S. R., Box 104, Lobatse, A22DL.
Sjulfand, E. A., Swedish Embassy, Box 17, Gaborone, A22GD.
Strauss, R. J. W., Box 35461, Northcliff, 2115, RSA, A22PS.
Thompson, E. P. G., Box 1390, Gaborone, A22ED.
Walker, C. D., Box 84, Selebi-Phikwe, A22DW.
Sulz, G. V., Box 516, Gaborone, A22GV.
Sulz, H. A. (Mrs), Box 516, Gaborone, A22GV.
NOTE
Prefix now A22 instead of A2C since 2nd September, 1979.
AWARDS
COLUMN
Bill Verrall VK5WV
7 Lilac Ave., Flinders Park, S.A. 5025

TEN-TEN CHAPTER AWARDS
Several of these awards are available from VK and overseas countries and are only issued to hams who have 10X membership for contacts on the 10 metre band.

The 10X organisation was formed for the specific purpose of promoting more and continued activity on the 10 metre band. To qualify for 10X awards, log details only are required and a point scoring system usually applies.

For further information I suggest you ask any of the 10X members and I thank Bill VK5NVW for explaining the system to me and showing me a selection of 10X awards that are available.

Here are the details of a 10X award available from the Festival City Chapter of the 10X International net which was formed in Adelaide, SA, in May 1979.

VKS FESTIVAL CITY AWARD
This award is available for working 10X Chapter members in the city of Adelaide, SA.

NET TIME AND FREQUENCY
Sunday (Aust.) on 28540 kHz at 0030Z.

AWARDS
Basic Award — 10 points, fee $2 Aust. airmail.
Senior Seal — must work 1 Ch — 50 points, fee SAE plus 2 IRCs or $0.50 in Aust. mint stamps.
Century Seal — must work 2 Ch — 100 points, fee SAE plus 2 IRCs or $0.50 in mint Aust. stamps.
VIP Award — to be announced at a later date.

Senior Seal is 2 points, Century Seal is 3 points and VIP is worth 4 points. Overseas stations may apply for Senior and Century Seals together, for 51 Australian, and VIP Award applicants must hold Senior and Century Seals.

VALUES
Charter member — Ch, 5 points.
Charter member — CH, 5 points.
First State — FS, 3 points.
Other members — A, 1 point.
Chapter member — C.

Chapter membership is available for $2 Aust., is permanent, and is worth an additional point.

First Festival City Chapter award issued to each VE, W, VK or JA prefecture or similar call areas in other countries.

Applications must show the date, time, call sign, QTH, name, Ten-X No. and FC No.

AWARD NUMBERING SYSTEM
1 to 100 — Charter Members.
101 and upward — First State.
101C and upwards — Chapter Members.
251 and upwards — Member.

DESCRIPTION
The certificate measures 265 mm x 205 mm, printed in red on high quality white card.

Applications should be submitted to the Awards Manager, Bill Vogel VK5NVW, 16 Wandilla Street, Largs North, SA 5016, Australia.

BLACK MARLIN AWARD
This award is available to Australian and overseas hams for working members of the Cairns Amateur Radio Club. The award is also available to SWLs.

The award is called the “Black Marlin Award” because of the marlin sports fishing done in the waters around the Cairns area.

REQUIREMENTS
1. Work seven members of the Cairns Amateur Radio Club, or five members plus the Club station VK4HM.
2. Club members must be within 100 kilometres of Cairns; therefore contacts made with club members who are not within 100 km are not valid.
3. QSL cards are not necessary, just send log details.
4. Cost is three IRCs or equivalent for Overseas stations ($1) or five IRCs or equivalent for overseas stations.
5. Endorsements may be claimed for “All CW”, “All SSB”, etc.

Applications should be submitted to the Awards Manager, Cairns Amateur Radio Club, PO Box 1426, Cairns, Qld. 4870, Australia.
Chapter 6 of 1967 issue of the Regulations), Is

dition who uses amateur radio to further their cause.

'tations". but this flagrant abuse gets me hopping

pretty tolerant I think with "stretching the regula-

gratulations on a particularly commendable effort

husband and wife team — Christine and Mick

Awards Manager. During September I had the

advantages would outweigh the disadvantages.

fellow MSPs.

Unfortunately Mike was transferred recently, so I

quested a tape of It — which I duly forwarded.

Awards Manager for his efforts in producing the

VK2 — RTTY

The Society will hold its November meeting and

all future meetings at the Scout Hall in James

Street, Blakehurst.

The first Wednesday of each month and a start-

ning at 7.30 p.m. EST still remains unchanged.

The Channel 1 repeater VK2RDX, which was this

recently vandalised, is well on the way to being

re-installed at Mt. Bindo, and many thanks for

this go to the people who kindly offered donations to

our rebuilding. As well as to the many amateurs in the

oberon, Bathurst, area who have taken a large share of the physical rebuilding of the
tower and the safe keeping of the repeater unit.

VK4 — RTTY

The Townsville Amateur Radio Clubs presented the

fourth biannual North Queensland Convention at the

Townsville College of Advanced Education on

14th to 16th September.

About 100 delegates, mainly from North Queens-

land and as far as VK3 attended.

Friday evening was quite informal with many of

the visitors having a conducted tour of our civic
theatre.

Saturday was a non-stop programme, with fox

hunts, hidden transmitters, films, home brew com-

petitions, AGM, dinner and forums. Included was the

James Cook University Physics Department, fashion,

parade and craft demonstrations.

Our official station, VK4WIT, was on air for the

whole period, both on phone and RTTY (RTTY

equipment which belongs to VK4AM, who used

VK4WIT call sign). As well as we featured SSTV.

We were honoured to have the State President of

WIA (John Aarsse VK4QA) with us, to talk to us on

WIA matters.

Our social evening on Saturday was a great

success and a collection was made for WARC 79.

Sunday saw the WIA news broadcast and call-

backs from VK4 Division and VK2RTY, fun events

and forums, autographs, auction, lecture, and

inspection of technical sites (which included the

RAAF log periodical situated at the Bohlie trans-

mitting station). Amateur Radio was given a great

boost by the Convention, with favourable publicity

on radio, TV and press.

VK4

The Ipswich and District Radio Club will be host to

the 1979 Wireless Institute of Australia Queens-

land Convention at the Ipswich Town Hall on the

14th to 16th of November, 1979.

The venue for the Convention is the Ipswich

Showgrounds, where a diversity of activities will be

available. In addition to the usual Convention

attractions, the weekly trottling meeting is held on

the Saturday and, on Sunday, flea markets and

auctions present a popular diversion for the

families.

There will be competitions, technical seminars,

"Swing an Antenna", equipment auctions and films,

and demonstrations, for both the OM and the XYL.

The ladies will be entertained by the Mayoress

and her committee, and a bus tour on the Saturday

afternoon will be available.

The semi-informal dinner dance on the Saturday

evening will be held in a very pleasant informal

atmosphere and will only cost a very reasonable

$10 a head, which includes registration for both

days. The Convention will attract a registration

tariff of $1.50 for either Saturday or Sunday or $2.50

days.

NEIL MUSCATT VK3BCU

Neil has just returned from New York in January 1977. He received his licence about 10 years ago. He finds the broadcasts both interesting and as an opportunity to keep contact with amateur radio; although I don't think he has ever found it to be an enjoyable way to socialise and it fills in time on a

Sunday morning. He likes a newsy programme.

Neil's other interests are: Technician with Tele-

com, squash, ballroom dancing, photography, ATV.

ERRATA

In the October issue the name and call sign of the first Letter to the Editor was accidentally omitted. He was John Locke

VK3EWL.

DIVISIONAL NOTES

VK3

ALARA

The Australian Ladies' Amateur Radio Association (ALARA) will be holding its Annual General Meeting on 24th November, 1979, at the home of Heather Mitchell VK3AZU at 2.30 p.m. For further information please write to ALARA, Box 110, Blackburn 3130, or contact the WIA offices.

VK3BWI BROADCASTERS

PETER MITCHELL VK3ANX

Peter is the current broadcast committee chairman. He obtained his full call in October 1976 and joined the group in June 1978. Peter joined in response to a call for volunteers to help run the station. He now actively repairs and adjusts the station equipment and keeps the team of announcers on deck with the announcers' roster. (A real battle on Sunday mornings!)

Peter repairs and adjusts the equipment on Saturday afternoon. This is the only suitable time for him to gain access to the station. Consequently, he is pressed for time and as such does an excellent job. As a result of his efforts the station runs very well.

Peter says that the main function of the broad-
casts is to reach all amateur operators. However,

propagation of the radio waves is not always

favourable. The function of the broadcast commit-
tee is to present the news, not collect it. The

broadcasts are a medium for presenting news from

all quarters for amateurs. It is up to the interested

parties to get their news in to the broadcast

group. Peter is making a worthwhile contribution
to the service by helping to run the museum station.

Peter's other interests are: DX on HF, sewerage

maintenance engineer with the Melbourne Board of

Works.

QSP

LETTERS TO THE EDITOR

The following is an extract from a letter written

by a J.P. to the President of the WIA, Queensland

Division, and forwarded by him to the Postal and

Telecommunications Department, strongly support-

ing objections to traffic of this nature on air via

amateur radio. The objections have also received

strong support in a letter to the Department from

the WIA Executive requesting an end to the alleged

contraventions.

"But for weeks, in fact months now, I have been

monitoring a session — emanating basically from

VS but VK5 stations do participate. It is called

"Rendezvous Group", in actual fact run by a J.P.

named Mike, VK4AM. Mike claims to have asked

Jehovah's Witness Organisation on 28.57 ±, starts

about 8.30 a.m. local time. I mentioned it to one

of the Ris in Rocky (Mike Buffin) and he re-

quested a tape of it — which I duly forwarded.

Unfortunately Mike was transferred recently, so

I don't know the outcome. VK5 is the main station,

but VK6, VK2, VK4, VK3 all participate. I am

proudly tolerant I think with "stretching the regula-
tions", but this flagrant abuse gets me hopping

mad. I guess some would think I was out for a

party. It is not a matter of religion, but a fellow

who uses amateur radio to further their cause.

But in my "book" Regulations 79, 80, etc. (of

Chapter 6 of 1967 issue of the Regulations), is

being abused. I would object to anyone else who

used this medium to further their aims, believe

you me."
LETTERS TO
THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

The Editor, PO Box 84, Selebi-Pikwe, Botswana. 16 September, 1979.

Dear Sir,

This is a very long overdue note. When I first moved here in 1975 Peter Dodd wrote me and asked for an article for AR. This is to go some way to make amends.

Enclosed are the last three issues of the BARS newsletter and should be self-explanatory.

The latest information is that A2C is no longer and we now have the A22 prefix, with provision for using A24 for a Novice licensing scheme. The change took place at 0730 GMT on Sunday, 2 September — two weeks ago today.

As of today there are 11 licensed members and six associate members of BARS, with the list growing.

The main mover behind this has been Dave A22BX, in Gaborone.

The most active amateurs in Botswana are Dave A22BX, in Gaborone, QSL via Radio Bots- wana; Larry (Lothar) A22WB, in Francistown, QSL via DOKKG; Don A22DK, in Gitee, QSL via VK3ATQ (600m); Chris A22DW, in Selebi-Pikwe, QSL via VK7CH.

Dave is ex G land and works as a technical Director In Radio Botswana, Larry is a Volunteer but In process of setting up his own business, Don is a teacher at a school and is ex VK3 in A22 land since 1978, and myself an electrical engineer (power) for the copper-nickel mine in Gab-rone in S/P since March 1975.

Don has a regular sked with his brother (VK3) and I have a weekly sked with Chas (or Snow) VK7CH.

There is no bureau in Botswana and unlikely to be for quite a while, hence the reason for the QSL information.

Most activity in A22 land is on HF bands — local or 40m (very little on 80), but we share 40 with the tropical African BC stations so rather a lot of GMR — at night we have in Selebi-Pikwe DX on about seven clear kHz spread over the bottom 100 or so kHz of 40!

The BARS have received the "Project Goodwill" receivers and some DAR 20m receivers, and these are being used with avid Interest in both QSL and DX QSL, the next thing is how to cope with that considering the large number of calls signs. The usual procedure is to pin all those exotic call signs on the wall behind the rig. When that area is taken up the next wall, then moving to the ceiling and the other three walls. From here on it is only a short step to the well tried "shoe box" treatment. Eventually, of course, those boxes can take up the entire floor space, when it then becomes necessary to consider the possible purchase of a "fork lift" to solve the stacking problem as the never ending stream continues unabated. However, one system experienced proved to be quite satisfactory and occurred when I held a pre-war New Guinea call sign. Due to the 1939 fracas, all those precious cards disappeared instantly along with the rig. The generator and the battery charger. It could be called the "instant disposal" method, although I could not recommend a repeat performance.

Of course we all like to preserve those cards, reminding us of some special QSO, like the time a chap in Alaska area said he had a 200 yards long rotary rhombic. Quite incredible, I thought. It turned out he was some research scientist recording the movements of a drifting Ice-flow.

In those nostalgic pre-war days of the 6L6, I still have those lovely blue glowing 6626s and when there were licensed in Canada with the call sign of XU2. Try it sometime on CW, it's really got a rock and roll swing to it.

With the present day craze of miniaturisation going on, it should soon be possible to have a 100 watts final in a matchbox. The day must surely be drawing near when all the QSL information is recorded on microfilm. The storage of vast numbers of QSLs will then be a thing of the past. By following today's business trend of cutting down on all avenues of overhead, it should be possible for a home constructor to buy about seven clear kHz spread over the bottom 100 or so kHz of 40!

This quote from a great man is more than apt to describe the situation. Dldlus Jullanus of Rome once said, "To be a buffoon".

Yours humbly,

Robert J. McKitbinn

The Editor, Dick VK3ADR and Dave VK3ADM, I am able to establish my own station here. Your authorities should be commended for the prompt issue of my call sign.

I am returning now to my home country, Israel, with many good memories of warm and generous welcome in Australia. Should any VK need information please go to this area of a reciprocal ham in Israel I will be glad to help.

Dr. Oded E. Schremer 4X4SO/VK3BSV.

32 Dorset Street, Busselton 6280, WA
18th September, 1979

The Editor,

Dear Sir,

I wonder how many operators fell into the same trap that I did, and entered the recent Remem- brance Day Contest without having first carefully studied the rules. Over many years, apart from some changes to the scoring system, the rules have remained unchanged, and, without having heard or read anything to the contrary, one tends to assume that this will continue to be the case.

The first indication I had that anything had changed was when I found that some stations were giving only three-figure cyphers, without the RST report. There was obvious consternation, but surprisingly half the stations gave three-figure cyphers and half included the RS numbers. I think that, without exception, the CW operators gave six- figure cyphers, however.

However, my big blunder was in entering the new non-existent Open Section, as I have done for many years, and including phone and CW contacts, which is not permitted for entries in an open section. I am not interested in competing in PHONE ONLY or in CW ONLY, as I enjoy both modes of communication, and I am sure that both phone and CW contacts cannot hope to make a comparable score in either section with an operator working a single section only.

What possible motive there can have been for omitting the open section or even changing the cyphers. I am at a loss to understand, and I sincerely trust that the Contest Committee will see fit to return to the old rules next year.

Yours sincerely,

E. F. Davies VK5ED.

The Editor, Dick VK3ADR.

I read with regret of the unfortunate accident and resulting disability of Don Pugh VK6DN (Amateur Radio). As previously mentioned in your Journal, the Austin Hospital has had an amateur radio station, VKSAI, at work since 1970 for many years, although they rarely do so. I have for many years been promoting amateur radio as an ideal hobby for severely disabled people and agree with Don that it would be of great benefit if more hospitals could be induced to having amateur radio.

I would urge any of your readers who are in any way connected with the care or treat- ment of disabled persons, to promote amateur radio as an ideal hobby for them.

Dr. Gerald H. Unag VK3ASO, Deputy Medical Director, Spinal Injuries Unit, Austin Hospital.

The Editor, PO Box 84, Selebi-Pikwe, Botswana. 16 September, 1979.

Dear Sir,

Recently Dave A22BX, with Pete A22PS and Graeme ZS6BMO, worked Oscar Mode J and Chris A22DW, in Selebi-Pikwe, QSL via VK7CH.

There is no bureau in Botswana and unlikely to be for quite a while, hence the reason for the QSL information.

Most activity in A22 land is on HF bands — local or 40m (very little on 80), but we share 40 with the tropical African BC stations so rather a lot of GMR — at night we have in Selebi-Pikwe DX on about seven clear kHz spread over the bottom 100 or so kHz of 40!

The BARS have received the "Project Goodwill" receivers and some DAR 20m receivers, and these are being used with avid Interest in both Gab-rone and Gitee.

I'm the only amateur in Selebi-Pikwe, so we are a little cut off from the activity.

Recently Dave A22BX, with Pete A22PS and Graeme ZS6BMO, worked Oscar Mode J and became the first A22 on Oscar Mode.

Myself am gaining up for 6 metres and looking for the openings — have an FT620B and is in building of a 5/5 yagi set for 6. Am corresponding with VK3ADR, VK3ASQ and talking 6 on 10 metres with VK3AQR, VK3ASQ and talking 6 on 10 metres with VK3AQR, VK3ASQ and VK3AQR.

Work takes up 5½ days a week so only clear time I get is Sundays (then not always), and am usually on 10 metres before 0730 and after 0900Z.

Hope this short note and attached newsheets will of interest to you, Bruce, or any of your contributing editors.

I will try and write an article or two for you before I leave A22 land next July.

Vh 73s Chris A22OW.

The Editor,

Dear Sir,

I contacted 570 stations this year, for a claimed score of 2275, and I wish to protest most strongly to the local boys whom I met on the air and in their own, although they rarely do so. I have for many years been promoting amateur radio as an ideal hobby for them.

The Editor, 569 Inkerman Rd., Caulfield 3161.

Dear Sir,

I have completed 10 weeks' stay in Australia and I should like to express my gratitude and affection to the local boys whom I met on the air and in QSLs, through the pages of Amateur Radio. Thanks to active assistance of Bob VK3SK,
AROUND THE TRADE

VALVES ON THE WAY OUT?

No more amateur transceivers with valves are likely to be produced, according to a director of an equipment distributor. "Spare valves for old transceivers are becoming increasingly hard to obtain from overseas sources and many have been discontinued by the tube manufacturers. A good proportion of these tubes are manufactured by Matsushita Electronics, and will be discontinued this calendar year with this company building large in- dustry of nuclear radiation unlike transistors. Several East European countries are producing many US and European valves types for military equipment. These valves may be purchased from Bint Services, PO Box 323, Cheltenham, Victoria, Systems Reliability in South Melbourne, and CEMA also sell 'hard to get' valves.

NEW LINEAR AMPLIFIER

Kenwood have announced the release of the TL-120 linear amplifier. Designed to lift the output of the TS-120V, it runs 160W in (typical) on 3.5 to 5 MHz.

Cooling is provided by a large heatsink and a thermostat controlled cooling fan. Automatic protection against high VSWR is provided. The ALC circuit is designed to reduce drive and prevent the distortion that occurs when the supply voltage falls; it also holds the power output constant if the supply rises above 14V.

Another useful feature is the positioning of the Vacuum Tube Detector (VTD) to be used as a pass output filter. In the event of the band switch being set for the wrong frequency the PA transistors will not be driven into class B.

Harmonic output signals are typically 60 dB or more below the fundamental.

DX BEAM HEADING LIST

Ever wanted to know the exact beam heading from your location to any country in the world? Bint Services have available a computerised listing which also shows long and short path headings, the distance in miles and kilometres on the short path.

There is also a separate listing for the American States, together with all of the above information.

All that is required to prepare a personalised listing is for you to provide your name, call sign, QTH, and longitude and latitude if known.

Cost of this comprehensive listing is $7.50 plus $1.00 post and packing. Further enquiries to Bint Services, PO Box 323, Cheltenham, Victoria 3192.

SWISS QUAD

GFS Electronic Imports of Mitcham, Victoria, have announced the release of some additions to the already well known range of "Swiss Quad" high performance phased quad antennas for the new manufactured by THT, Japan, and imported/distributed in Australia by GFS.

The Swiss Quads are a "phased" type quad and offer considerable gain over antennas of similar size. Originally designed by a Swiss Ham, HBSCV, their concept is to drive the reflector and radiator at the same time using phase differences to obtain more gain and better front-to-back ratio than conventional quads.

The Models SQ-10 and SQ-15, which have been available for some time, are for 10/11 and 15 metres respectively and have a forward gain of 12 dB and a front-to-back ratio of 20 dB.

New to this range are the SQ-61, SQ-22 and SQ-24. The SQ-61 is a single unit for six metres with a forward gain of 12 dB while the SQ-22 consists of two separate phased Swiss Quads making an array with 15 dB e-b. The new SQ-24 is an array that uses 4 Swiss Quad units and has an extremely high gain of 18 dB.

GFS expect the SQ-15 will sell for $169, SQ-10 $151, SQ-10 1/2 $93, SQ-22 $195, and SQ-24 $245.

For complete specifications on the new Swiss Quad series contact GFS Electronic Imports, 15 McKean Road, Mitcham, Victoria 3132, phone (03) 873 3939.

NEW MJF DUAL TUNABLE ACTIVE SSB/CW FILTER

GFS Electronic Imports of Mitcham, Victoria, have just announced the release in Australia of a new "Signal Enhancer", the MJF-752 Dual Tunable Filter.

The MJF-752 consists of two separate active filters that have both their BANDWIDTH and CENTRE FREQUENCY fully adjustable and either filter may be set up individually as PEAK, NOTCH, LOW PASS or HIGH PASS networks.

The bandwidths may be varied from 3000 Hz down to 40 Hz and using the Notch Mode, a signal may be notched to 70 Hz.

Price of the new MJF-752 is $139. For more information contact GFS Electronic Imports, 15 McKean Road, Mitcham, Victoria 3132, phone (03) 873 3939.

FOR SALE

Ken KP202 2m FM, hand-held, with all extras and extra channels, $170; Ken KP12A RF speech processor, as reviewed in Feb. 1976 AR, $110; Asahi 5/6 2m ant. with coax and connector, $10. VKSOM, QTHR. Ph. (03) 560 9215.

IC211 All Mode Tivr, IC225 FM Tivr, vertical hustler, 4 BTV ant., 10m Swiss quad. Ph. (03) 240 1231, A.H. 509 8637.

Audio Tapes, 1800 ft. on 7 in. reels, brand new (no boxes), sell in lots of 20, $45; photographic spotlight, retail around $9, sell for $2.50. Both each sell in lots of 6 or more. Leon VK3ZN. Ph. (03) 557 6301.

ICOM 215, with Ch. 50, R2, R6, R7, had little use, in orig. carton, $160. VK2BV, QTHR.

Stream of Line-up, $200, had little use, in orig. carton, swap part with cash balance, $50; ASW900, or sell outright, any offers? VK2BV, QTHR.

FDX400/401, owner's add talk power, commercial quality AF speech processor, as used successfully by VK3JF, VK2CX, complete unit ready to use, no wire, $195; Collins 755-3 Rx with noise blanker, 312B-3 speaker, SSB/CW/AM filters, spare tubes, $825; set of solid state tube testers for 75S-3, $95; microwave modules 144 MHz transmitter SSB/FM/AM, $28, 2 MHz, in 10W out, brand new, never used, $150. VK3SV, QTHR. Ph. (03) 63 4414.

Uniden 2020, as new, modified Novice use, $650. ONO. VK3NQS, Ph. (03) 791 2947 A.H.

Kaitsumi Mk. 1024 Prog. Electronic Keyer, as new, $150; Asahi mobile ant. system 50m-10m, incl. spring and bumber mount, $80; EA 2650 mini computer/paper drive system, keyboard VBU, cassette Interface, 3k RAM, game pack cassette, 2650 software record, manual, complete and running, $300. ONO. VK5NQD, QTHR. Ph. (03) 34 4057.

Kenwood Comm. Rx GR-566, 170 to 410 kHz, 555 kHz to 30 MHz, SSB, AM, 10 hours use, still with original factory sealed tubes, $160, William Scott VK4KP, QTHR. (079) 76 1253.

Trioc Comm. Rx 9R-59DS, as new cond, little use, owner's manual Included. $150. ONO. G. Hughes VK2ZNY. QTHR. Ph. (02) 80 3589.

Complete Station — Yaesu FR100B Rx, 80-10m, modes 600 Hz CW, USB/LSB, 2 kHz AM, 4 kHz AM filters, FM styl calibrator, WWV, plus auxiliary transmatch 9.1-10.5 MHz, 12.5-13.6 MHz, 14.5-15.6 MHz, 26.5-27.6 MHz, plus FR100B matching sparkler, plus Yaesu FL200B Tx, 2600W PEP, CW, USB/LSB, AM, will transceive with FR100B Rx, plus Shore Ret; desk stand mic, plus matching linear, 1200W, EIMAC 867 final 80-10m, all patching leads, hand books and spare valves included, all have latest serial numbers issued for FR100/FL200, now commercially operated and maintained to factory specifications since new, full price $875, ONO. VK3ADN, QTHR. Ph. (03) 267 4688 Bus., (03)592 216 A.H.

WANTED

Command or similar WW2 Rxs or components, particularly tuning gangs or coll boxes for student projects. Offers, prices, etc., to VK5RS, QTHR.

Smoothing capacitors for power supply, 2.5/3 kV rating, 4 uf or greater. Price and particulars to VK23R, QTHR.

FT221R 2m Tcvr in good cond., Advise price and cond. to J. Forster VK4CDX, PO Box 125, Mary Kathleen 4827, or Ph. (07) 4722222, 47180 A.H.

External VFO Type 8010 to suit Uniden 2002 transceiver. Price and particulars to VK5WV, QTHR. Ph. (08) 352 2051.

RF Sip, Gen., Marconi TF955 or similar, must have AM/FM modulating capability and capable of output level down to 1 ev. W. Pickering VK4WP, 10 Marine Pde., Ingham 4850, Q. Ph. 762 2008 A.H. 76 2110 Bus.

Swan 415G or 420 External VFO. VK3XVT. Ph. (02) 57 4325.

Yaesu FT650 6m Transverter or similar. Price and details to Gary Hambling VK5AS, QTHR. Ph. (054) 33 2204 A.H., (054) 43 1877 Bus.

Power Transformer, to give 100v each side of centre tap with at least 400 mA and not to have a greater height than 15 cm. VK3ACD, QTHR. Ph. (058) 21 2484.

Manual/Circuit Diagram or similar Information on Teletronix RF speech processor, Datong Mod. FL1, $120; RF speech processor, Datong 836; ex taxi use, will fit in a tandem trailer, Tower, urgent sale, $575, VK5MO, QTHR. Ph. (08) 886 2516.

Kenwood TS-890S, CW filter, DC supply etc., little use, as new, $750; Icom IC-245, SSB and FM, with mobile/home station, $475; Icom IC-215, 3W portable with nicad, charger, flex antenna, interior and case, complete, $450; Icom IC-280, centre-tap with at least 400 mA and not to have a greater height than 15 cm, VK3ACD, QTHR. Ph. (058) 21 2484.

For a very long time commercial advertising has not been accepted in AR Hamads, but as the result of discussions at the 1978 Federal Convention a decision was made to open up a "Hamads-Trade" section. The rate will be $10 for 4 lines plus $2 per line (or part thereof), minimum charge $10, payable. Copy is required by the first day of the month preceding publication. This will mean that in future ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

TRADE HAMADS

GSL Cards, Log Books, Contest Sheets — send 20c stamp for samples and prices to Linda Luther VK4JV, PO Box 486, Nambour, Qld. 4560.

SILENT KEYS

It is with deep regret that we record the passing of—

Mr. L. A. McPherson VK2AMK
Mr. I. Bailieu VK2TN
Mr. A. Maynard VK6AO
Robin Clark VK4CL (ex VK3BCL)

OBITUARY

PETER NORMAN VK5PN

It was with deep regret that members of the South-East Radio Group learned of the tragic death of Peter (aged 22) and his XYL, (of only eight weeks), Gail (aged 19), on June 15th, 1979. Result of car accident.

Peter had been an enthusiastic SWL before being licensed in 1976 and was one of the early novice stations to be heard on air. He was very active on 80, 15 and 10 metres and was frequently heard mobile and portable. Peter had applied to sit for the August 1979 AOCP. He was an example to Amateur Radio, enthusiastic about construction and experimenting.

Peter had a bright and cheerful approach to everyone and will be sadly missed by all his amateur friends. To the families of Peter and Gail, amateurs extend their deepest sympathy.

T. R. Hutschness VK5TH.

TRADE HAMADS

For a very long time commercial advertising has not been accepted in AR Hamads, but as the result of discussions at the 1978 Federal Convention a decision was made to open up a "Hamads-Trade" section. The rate will be $10 for 4 lines plus $2 per line (or part thereof), minimum charge $10, payable. Copy is required by the first day of the month preceding publication. This will mean that in future ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

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NOW THE FM321
70cm amateur rig

40 channels fully synthesised
Australian designed & made

for only
$299*

Check these features:
- 40 synthesized channels with electronic channel change and LED readout.
- Channel selection up or down from front panel or hand microphone.
- A LED each for power on, transmit and receive.
- 5 Watts RF and 1 Watt audio power.
- Combined signal strength and RF power meter.
- Single or two frequency simplex operation on any of the 40 channels.
- Instant selection of these modes plus any one nominated repeater channel.
- 5MHz Tx/Rx separation on repeater mode.
- PL259 antenna socket.
- 6 pole crystal filter combination for improved selectivity.
- High sensitivity

SPECIFICATION:

Frequency Range: Tx: 433.025MHz to 434.000MHz & 438.025MHz to 439.000MHz
Rx: 438.025MHz to 439.000MHz
Frequency Stability: Better than 6ppm 0°C to +60°C
Supply Voltage: 11 to 16.2 Volts -Ve earth.

TRANSMITTER
- Power Output: 5 watts
- Spurious Outputs: -63dB (out of band)
- Audio Response: 6dB/octave pre-emphasis
- RF: 300Hz to 2KHz.

RECEIVER
- Audio Output: >1.0 Watt at 10% THD into 8Ω
- Selectivity: >50dB at ±25KHz
- Sensitivity: 0.3µVpd (12dB SINAD)

PHILIPS

Please send me an FM321
by registered mail.

To: Philips-TMC (Radio Division)
P.O. Box 105,
CLAYTON, Victoria, 3168.

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TR-2400 TRANSCEIVER
WITH ADVANCED 
MICRO-PROCESSOR CONTROL

SYNTHESIZED — BIG LCDs — 
10 MEMORIES — SCANNING. 
LIGHT YEARS AHEAD 
OF THE OTHERS!

The TR-2400 is a highly advanced 2 metre 
synthesized hand-held unit with a large range 
of superior features. Big LCD digital readout, 
which you can read in the sunlight and in the 
dark with the lamps switch. Keyboard frequency 
selection from 144.000 to 147.995 MHz and up/down manual scan from 144.000 to 
147.995 MHz, all in 5-kHz steps. Has 10 
memories and automatic memory scan. 
Simplex and repeater operation. First 
hand-held to have Reverse mode momentary 
switch. Built-in Touch-Tone generator using 
16-button keyboard. LCD "arrow" indicators. 
Subtone switch. BNC antenna connector and 
2 lock switches to prevent accidental frequency 
change and accidental transmission.

500 FREE QSL CARDS WITH EVERY TS-520S 
SOLD BEFORE END NOVEMBER FROM AUTHORISED KENWOOD DEALERS
FEATURED IN THIS ISSUE:

★ CONSIDERATIONS FOR A WADLEY LOOP VHF RECEIVER FRONT END
★ FOUR 5/8 WAVE PHASED VERTICAL ARRAY FOR 2 METRES
★ BEAMS NOW MADE IN AUSTRALIA
★ REVIEWS — IC551D AND YAESU FT-7B
★ A LIVING LEGEND
NOW COMBINE AMATEUR RADIO AND COMPUTERS WITH A SOUTHWEST TECHNICAL PRODUCTS COMPUTER FROM GFS

We have a system to suit you, from hobby level all the way up to a business level system with 2.4 Mega-Byte of on-line disk memory. Also available is a comprehensive range of software packages including many that are orientated to amateur use. Write or call us for full details of SWTPC’s products.

GFS FOR RECEIVERS

STANDARD C-6500............................ $359.

HF Wadley Loop Communications Receiver. Manufactured by Munro Japan the C-6500 is a state-of-the-art HF receiver covering 0.5-30 MHz in 30 x 1 MHz bands. Its sensitivity is extremely high at 0.5uV and selectivity is 4 kHz on SSB and 7 kHz on AM.

JILL SX-100 16 CHANNELS VHF/UHF SCANNING RECEIVER........... Price $407.

Still the best value in Programmable Scanners, the SX-100 covers the 6.2 and 70 cm Amateur Bands plus over 32,000 other Frequencies including Channel 0 and Channel 5A TV Sound. Amateurs can use the SX-100 to monitor band conditions using beacons etc. Firemen can keep informed by listening to firebrigade frequencies, CBers can monitor UHF CB Channels. Fishermen can monitor VHF marine and Emergency frequencies. Servicemen can use the SX-100 to check virtually any commercial two-way frequency with its 32,000 channel coverage.

- Covers 40-54, 140-180, 410-514 MHz.
- SKHz Channel Spacing.
- Built-in Digital Clock & Date.

SEE REVIEWS IN NOV. 79

SKYACE R-517... $104.

The monitoring of aircraft communications has long been a requirement for emergency service organisations, flying schools and clubs, aircraft operators, aviators themselves as well as a band of communications enthusiasts. GFS has a range of ariplane receivers that should suit all these requirements.

Designed for the enthusiast, the R-517 is a Palm Sized Receiver which features Full 118-144 MHz Tuning plus the 3 Crystal Locked Channels.

- Active built in AGC
- Built-in Telescopic Antenna
- Excellent Selectivity
- VFO main tuning with
- High Sensitivity

NEW!! COMNI R-1010 AIRBAND RECEIVER. The R-1010 is a Professional Receiver that uses frequency synthesis thus giving the following outstanding performance......$529.

- Frequency range 108-136.975 MHz.
- Channel Spacing 25 KHz.
- Digital Frequency Readout
- 12 VDC or 240 VAC operated.
- Lo-Channel Selector.

SCANNER BASE ANTENNAS

Scan-X 65-520 MHz 3dBi Gain .................... $35.00

GDX-1 85-480 MHz Heavy duty .................. $60.00

Write for a comprehensive price list and Catalogue of the complete GFS Product Range. Trade Enquiries Welcome.

G.F.S. ELECTRONIC IMPORTS

15 MacKen Road, Mitcham, 3132. (03) 873 3939

ANNOUNCEMENT

TEN METRE OPERATORS, NOW ENJOY FM OPERATION WITH THE COMTRONIX FM-80.

Enjoy the thrill of FM operation that has been so popular amongst 2 Metre operators for years, but with the advantage of being able to work OVERSEAS DX (10 metre FM is very popular in the US with over 70 repeaters already operating). With the FM-80 you have the choice of 60, 10kHz spaced channels. 291-297 length can easily be boosted to 281-287 (10 kHz) power output is 10-15 Watts, deviation is ±3 kHz, receiver sensitivity is 0.5uV for 20dB quieting.

Don’t miss out on experiencing this exciting new form of communication. Call or write to us for your FM-80 now. SPECIAL INTRODUCTORY PRICE $289.

ATN ANTENNAS

Write to us for a catalogue and price list on ATN’s large range of VHF/UHF & HF antennas.

DSI COUNTERS

GFS are Melbourne agents for the comprehensive range of DSI FREQUENCY COUNTERS. Keep us a list or just give us a call for your DSI counter.

SPECIAL!! METAL DETECTORS

Limited Stocks Only. Available at the special low price of $38 + $3 P&P

NEW 1980 CALLBOOKS EXPECTED SOON

FREE Foreign Callbook, 300 listings $1.95
DECEMBER 1979
VOL. 47, No. 12
PRICE: 90 CENTS

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Cover Photo

“A LIVING LEGEND”

Mrs. F. V. McKenzie, O.B.E., being presented with her Membership Certificate to the Royal Naval Amateur Radio Society by T. R. Clark VK2ALG, the Australian Branch Manager of R.N.A.R.S.

August 29, 1979 — See story “A Living Legend”, page 34.
Many Radio Amateurs have secured their licences within the past five years, indeed the past two years, and yet, we still have Radio Amateurs who have been licensed for 50 years.

It is right to say that our hobby is a highly individualistic pleasure. In saying this, I must acknowledge that what we do as individuals is to build on the efforts of those who have gone before us. To put it bluntly, very few of us have that innovative streak in us. As a final thought, I must state that I am a Radio Amateur first with a feeling that I need to keep informed, more capable, and more knowledgeable in some branch of my hobby. What is more, this help has always been forthcoming.

Having said this, I must emphasise that all of us have varying talents, and I would suggest to you, you personally, that your talent may be just what the Amateur fraternity needs. Consider this, ponder over it, and see what part you can play which will benefit others of like mind, or greater ability or insight.

It therefore seems that our hobby must be a blend of the individualistic and the corporate. For myself, I have always found another willing Radio Amateur who is better informed, more capable, and more knowledgeable in some branch of my hobby. What is more, this help has always been forthcoming.

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EMPLOYMENT OPPORTUNITIES

Due to an aggressive expansion programme VICOM is seeking self-motivated enthusiastic people to join a most successful team:

AMATEUR RADIO SALES PERSON (2)

This position includes customer interface and some pre-delivery checking of ham equipment. A full limited or novice licence is a prerequisite. Location: 1 position Melbourne, 1 position Sydney.

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A qualified technician is required for our Melbourne service centre. Previous experience in communications equipment digital technology essential. An Amateur Radio licence is a prerequisite.

SALES ENGINEER

Location Sydney. The Vicom professional products division handles a range of quality communications and test instrument equipment. An experienced sales person is required to market this equipment to Government and Commercial bodies.

APPLICATIONS:

Initial applications should be in writing stating work experience, qualifications and other relevant details marked "Confidential" attention: "Director".

VICOM

68 Eastern Road.
South Melbourne,
Victoria, 3205.
(03) 699 6700

WIANews

Information about WARC 79 is included in the "International News" columns in AR.

One meeting of Executive in October — on the 11th — presided over by the Acting Federal President, Peter Wolfenden VK3ZPA.

INTRUDER WATCH

It was noted that no volunteer had come forward to take over from VK3LC.

Market research was required to assess the possible sale of WIA ties. If any reader believes a tie should be available on sale to members please write to WIA, Toorak. The price of a reasonable quality tie would be about $9 or $10 each.

As the result of Institute efforts, a donation of equipment suitable for UHF repeaters has been received and gratefully accepted. Almost all Divisions will benefit.

A videocassette in colour of the JARL Okino Torishima DX-pedition last year is now available for Divisions from the Federal Videotape Co-ordinator, John Ingham VK5KG. This was finally recorded from the JARL 16 mm film which they kindly loaned to the WIA for the purpose. A very interesting programme according to all accounts.

The Executive office expects to be under notice shortly, as the building now occupied is scheduled for re-structuring. Suitable office space at a reasonable price in or not too far distant from Toorak appears to be almost non-existent. Even a suitable house...
would suffice. Efforts to find alternative accommodation are proceeding.

The Executive wishes to acknowledge with grateful thanks the receipt of the following donations from members towards the expenses of WARC 79 —

**LIST No. 8**

<table>
<thead>
<tr>
<th>Callsign</th>
<th>Amount</th>
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<tr>
<td>L50426</td>
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<tr>
<td>VK2JR</td>
<td>$5.00</td>
</tr>
<tr>
<td>Oxley Region ARC</td>
<td>$50.00</td>
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<tr>
<td>Per WIA Victorian Division</td>
<td>VK3AJT</td>
</tr>
<tr>
<td>VK2AHF</td>
<td>$10.00</td>
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<tr>
<td>WIA WA Division</td>
<td>VK6SJ</td>
</tr>
<tr>
<td>Geeelong Amateur Radio-TV Club</td>
<td>VK30MJ</td>
</tr>
</tbody>
</table>

The total of donations received from members and non-members so far during 1979 is $9,029.54 towards WARC 79 expenses. Even by world standards this is an excellent response and everybody concerned should rightly congratulate themselves. Incidentally, the appeal for funds for this purpose has not closed.

This is the time of the year to wish you all a very Merry Christmas and a Prosperous New Year. Are we fortunate or unfortunate that we cannot foresee what the 1980s has in store for us? Long live the optimists.

---

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VK3 — Mr. A. Noble VK3BMB.
VK4 — Mr. D. T. Laurie VK4DT.
VK5 — Mr. C. J. Hurst VK5HI.
VK6 — Mr. P. J. Savage VK6NC.
VK7 — Mr. P. D. Frith VK7PF.

---

**QSP**

**PREFIXES**

According to October 1979 Radio Communications the ITU has allocated prefixes H8A-H9Z to the Republic of Panama and T3A-T3Z to the Republic of Kiribati (formerly VR1 to VR3). To mark the 50th anniversary of the issue of the first amateur licence in the Netherlands the amateurs in this country will be permitted to add “50” to the figure in their call signs from 10th October to 10th November, 1979. Thus PAO becomes PA50, PA5 becomes PA53, etc.

---

**ORANGE JELLY**

In “TT” by Pat Hawker G3VA, Radio Communications September 1979, there is a short comment on the sunspot cycle. “The idea of a 22-year rather than an 11-year cycle is supported by the fact discovered by Harold Babcock some two decades ago that the solar magnetic field reverses polarity in successive 11-year periods (like that of an AC waveform) . . . Professor Dick (of Princeton University) puts forward a speculative hypothesis as to the nature of the buried “clock.” He writes: “It seems very likely that it is a magneto-fluid oscillator. A crude analogue is an oscillating bowl of jelly. The magnetic field lines in the conducting solar gas act like stretchable threads of rubber facing the ‘jelly’ together.” When it comes down to basics our RH DX depends on that flaming orange jelly. The magnetic field lines in the conducting solar gas act like stretchable threads of rubber facing the ‘jelly’ together.”

---

**99 - 73 - 88 - 33**

They passed as she went down the hill, And he came from below; Their eyes met in a fleeting glance, He turned and breathed, “hello”; But, wary, she continued down

— How could she know his line? — And when he caught up by her side, She threw him, “ninety-nine”.

He kept his distance — not too far — Appraising from behind; He wasn’t put off by her code

Of charlie-whisky nine.

And every one chirp-free; He softly whistled low and sweet, An eager, “seventy-three”.

It jumped her circuit-breaker switch, And fused her overload; And in each other’s fond embrace

They whisper, “thirty-three”.

They’ve made their home in Cargill Town And live in Rosedale Heights — Away above the q r n Where sigs are static-free, And in each other’s fond embrace They whisper, “thirty-three”. 99 means Keep off my frequency. 73 means Best Wishes, Kindest Regards. 88 means Love and Kisses (women operators). 33 means Love.

(From “Break-In” June 1979)
AT VICOM WE’VE GOT THE BALANCE OF POWER!

* MORE OUTLETS
We've over 250 outlets scattered throughout Australia.

* PRODUCT & DEALER QUALITY
The Vicom product line-up and our dealers are carefully selected to provide the best possible service.

* TECHNICAL BACK-UP
At Vicom all transceivers sold are pre-delivery checked and backed by our 90-day warranty.

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Wagga 21 1275
Newcastle 69 1222
VICTORIA

Melbourne 836 8635
Shepparton 21 9760
Bacchus Marsh 67 2244
Horsham 72 2156
Ouyen 3490
Yarram 86 1254
Wangaratta 25 7207

Darwin 81 3491
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Perth 446 3232
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Brisbane 48 6601
Brisbane 38 4480
Gold Coast 32 2644
Bundaberg 72 3288
Mackay 57 5918
Rockhampton 28 2843

Cairns 54 1035
Ipswich 28 8535
Townsville 72 2633
TASMANIA

Hobart 43 6337
Launceston 44 3882
Launceston 31 3945
NEW GUINEA

Lae 32 2253
NEW ZEALAND

Wangaratta 25 7207

Ballarat
Benalla
Geelong
Bendigo
Bacchus Marsh
Ballarat
Bacchus Marsh
Horsham
Ouyen
Yarram
Wangaratta

Daiwa Low Pass Filters

FD30LS 32 MHz, Fe. 200 w, 3 stages — $20.00

Baluns

AS-BL 50 ohm, 4 KW, 1:1 for dipoles — $32.00
BL50A 70 ohm, 4 KW, 1:1 for dipoles — $32.00

Leader Test Equipment

LAC 895 25 MHz — $182
LPM 885 25 MHz — $130
LDM 815 TR Dip Meter — $89.00
LBO 310 3" Ham Oscilloscope — $330
LA 31 Ham monitorescope adapter — $26.00

Tubes

6K6 Finals for Yaesu linears — $9.00
6U6C Finals for Yaesu transceiver — $9.00
12BY7A Driver — $3.75
6I46 Finals — $12.00

CW Filters

FT101E Yaesu — $39.00
TS520S YG3395 Kenwood — $57.00
TS280S YG88C Kenwood — $59.00

Morse Keys

HK202 Deluxe Key with marble base — $41.00
HK708 Economy Key — $23.00
HK706 Operator’s Key — $25.00
MK701 Manipulator (side-swiper) — $45.00
PALOMAR 1C Keyer — $149.00

Jaybeam Antennas

5Y/2m 5el, 7.8 dBd gain, length 1.6 m — $43.00
8Y/2m 8el, 9.5 dBd gain, length 2.8 m — $51.00
10Y/2m 10el, 11.4 dBd gain, length 4.4 m — $84.00
10XY/2m 10el, cross yagi, 11.3 dBd — $114.00
DB/70cm Twin 6el, 70 cm, 12.3 dBd, 11.1 m — $64.00

Parabolic Dishes

PBA 1200 70 cm and 1.2 GHz complete — $349.00

Hy-Gain Antennas

HYQUAD 10/15/20 m, 2 element quad — $279.00
204BA 4 el monobander for 20 m — $259.00
TH60XX 6 el monobander — $310.00
TH4-K3 10/15/20 m 3 el beam — $249.00
TH3JR 10/15/20 m 3 el beam — $229.00
203BA 3 el beam 20 m — $199.00

Scallar

M22T 1/4 wave 2 m mobile whip, top only Qty 1-4 — $7.00
M25T 5/8 wave 2 m mobile whip, top only Qty 1-4 — $14.00
BASE B/L for above — $4.00

Microphones

VM-1 Noise cancelling, hand ptt, low z — $10.00

Coaxial Cable

RG58AU mil spec. 30m reels — $13.00
RG213/U mil spec. per metre — $1.40

Kenwood Transceivers

TS520S HF transceiver — $635
TS120S 100w — $600.00
TS180S 10w — $735.00

R-1000 Communications Receiver — $498.00

Monitor Receivers

747 Vicom Aircraft Scanner — $199.00
210 Bearcat 210, scanner — $469.00
HF12 VHF pocket, 12 channels — $149.00
NEW!

AUTOMATIC ANTENNA TUNER

CNA 1001 200W $269
CNA 2002 2.5 KW $569


SWR & POWER METERS

<table>
<thead>
<tr>
<th>Model</th>
<th>Freq.</th>
<th>PWR</th>
<th>Cross-Needle</th>
<th>Price</th>
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<tbody>
<tr>
<td>CN620</td>
<td>1.8-150 MHz</td>
<td>20/200/1KW yes</td>
<td>99.00</td>
<td></td>
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<tr>
<td>CN630</td>
<td>140-450 MHz</td>
<td>20/200 yes</td>
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<tr>
<td>CN650</td>
<td>1.2-2.5 GHz</td>
<td>2/20 yes</td>
<td>169.00</td>
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<tr>
<td>SW210A</td>
<td>1.8-150 MHz</td>
<td>20/120 no</td>
<td>99.00</td>
<td></td>
</tr>
</tbody>
</table>

Cross-needle type offer DIRECT readings.

ANTENNA COUPLERS

<table>
<thead>
<tr>
<th>Model</th>
<th>Freq.</th>
<th>Power</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL67A</td>
<td>1.9-28 MHz</td>
<td>500 wpep</td>
<td>135.00</td>
</tr>
<tr>
<td>CNW217</td>
<td>Includes SWR/PWR Meter, 200W</td>
<td>165.00</td>
<td></td>
</tr>
<tr>
<td>CNW417</td>
<td>Includes SWR/PWR meter, 500W</td>
<td>199.00</td>
<td></td>
</tr>
</tbody>
</table>

High quality couplers, 2 models includes cross-needle SWR/PWR meters.

SPEECH PROCESSORS

RF660 Phasing type dc: 109.00
RF440 Phasing type ac/dc: 126.00
RF550 Fitter type, ac/dc: 169.00
MC330 Speech compressor: 99.00

Increase talk power with splatter free operation. RF clipping (not in MC330) assures low distortion. Simply install between microphone and transmitter.

Typical specs RF660:
- Talk power: Better than 6dB
- Freq. Response: 200Hz-3000Hz at 12dB down
- Distortion: less than 3% at 1 KHz, 20dB clipping.
- Power Req.: 13.8 Vdc at 50mA.

ROTATORS

DR7500S Medium Model: 189.00
DR7600S Heavy Duty Model: 259.00

* High dependability: weather sealed
* Quiet operation
* Complete with attractive controller

Rotation Torque: 500 Kg-cm
Braking torque: 2000 Kg-cm

COAXIAL SWITCHES

<table>
<thead>
<tr>
<th>Model</th>
<th>Freq.</th>
<th>Power</th>
<th>Price</th>
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<tbody>
<tr>
<td>CS201</td>
<td>100W pep max model</td>
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</tr>
<tr>
<td>CS401</td>
<td>200W pep max model</td>
<td>59.00</td>
<td></td>
</tr>
</tbody>
</table>

Professionally engineered cavity construction, high isolation.

Power rating: 2.5 KW pep, 1 KW CW
Impedance: 50 ohm
Insertion loss: less than 2dB
Maximum frequency: 500 MHz
Isolation: Better than 60dB at 300MHz.

COAXIAL RELAYS

<table>
<thead>
<tr>
<th>Model</th>
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<td>CX2L</td>
<td>100W pep max model</td>
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<tr>
<td>CX2H</td>
<td>200W pep max model</td>
<td>69.00</td>
</tr>
</tbody>
</table>

Quality change-over relays use 10-15 vdc.
Frequency Range: CX2L 1.8-170 MHz.
CX2H 1.8-450 MHz.

Available from your Vicom Dealer

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68 Eastern Road,
South Melbourne,
Victoria, 3205
Ph. (03) 699 6700
ICOM HARDWARE
WORKS HARDER!

HF TRANSCEIVER IC701
* solid state
* 2 VFOs
* digital display
& state of the art
every conceivable option included
160-10m
Price $1199
(ac pwr supply extra)

6 METRE TRANSCEIVERS
IC551 10w ac/dc $799
IC551D 100w dc $850
GRAB THAT DX!

2 METRES MOBILE
IC280
FM remotable transceiver
144-148 MHz
$450

ACCESSORIES
ICSM2 Condenser-electret mike $45.00
LC-25 Leather case for portables $12.00
BC-20 Nicad pack for portables $69.00
HC-HP1 Headphones $54.00
HM-3 Military-style hand mike $25.00
IC-CF1 Cooling fan IC701PS $45.00
FA-1 Rubber Ducky $12.00

ICOM
VICOM 68 Eastern Road
South Melbourne
Victoria 3205
(03) 699 6700
IC255A — 2M FM MOBILE
25 Watts!
$425

ICOM

Features:

* FM TRANSCEIVER INCORPORATING A MICROCOMPUTER
  CPU control with ICOM's original programs provides various operating capabilities. Frequency control, band-edge detection, and the display are accomplished by the microcomputer. The 5-channel memory is controlled electrically by the use of a 256-bit RAM area. The circuits for these IC-255A functions are equivalent in capability to conventional circuits having a large number of C-MOS MSI's.

* TWO VFO'S BUILT-IN
  No extra equipment needed for split-frequency operation. Easy writing and reading of the five memory channels. Smooth and easy tuning with 25KHz and 5KHz steps.

* MULTI-PURPOSE SCANNING
  Memory Scan allows you to monitor five different memory channels. Program Scan provides scanning between two programmed frequencies. Adjustable scanning speed. Auto-stop stops scanning when a signal is received, or a frequency is not being used.

* SUPERIOR RECEIVING CHARACTERISTICS
  The use of newly developed low-noise and large dynamic range junction FET's (for the RF amplifier and the first mixer) and of helical cavity filters (for the antenna and RF circuits) provides excellent sensitivity and intermodulation distortion characteristics. A pair of high quality monolithic crystal filters and ceramic filters facilitate very stable receiving and excellent durability.

* HIGHLY STABLE TRANSMITTING CHARACTERISTICS
  Both the directly amplified VCO output without the use of multipliers or mixers and the use of a power module in the PA unit produce very clean transmitting signals without spurious radiation. RF power is selectable 25W (HIGH) and 1W (LOW). 25W HIGH output power will increase your QSO range.

* COMPLETE
  Comes with mobile mounting hardware, dc cable & microphone.

* BACKED BY VICOM
  90 day warranty and technical/spares support.

IC255A Specifications: General
- Numbers of semi-conductors: Transistors 49, FET 4, IC 29, Diode 80.
The lower VHF region of the spectrum, between 30 MHz and 100 MHz, promises to be of great interest propagation-wise over the next few years. During my spare time over the recently passed sunspot minimum, I optimistically mused on the possibilities of the peak of sunspot cycle 21 and thought of ways and means I could monitor what, to me, is one of the most interesting portions of the spectrum—to wit, the lower VHF region.

Lots of VHF converters to cover 2 MHz or 4 MHz slices of the spectrum seemed like a good way to do it and, naturally enough, I did a little figuring on how to achieve this using an IF receiver covering either 14 MHz or 28 MHz and a series of modified 6UP VHF converters (remember the 6UP converters?). It was easy enough to do but the prospect of buying 30 or more crystals to cover a range of 60 MHz (i.e., from 40 MHz to 100 MHz say) was a little daunting.

I examined the idea of using a frequency synthesiser which, to cover such a wide range, was either beyond my development resources or had unacceptable limitations. However, I haven’t given up the idea . . . quite.

Next I looked at the Wadley-Loop, that famous front end band selection system devised by Mister Wadley, popularised by Barlow (as in the Barlow-Wadley XCR-30) and brought to its technological zenith by Yaesu et al. Racal got in there somewhere along the line too.

Commencing with a basic block diagram, I tackled the mathematics of the system, rapidly getting confused. But, with a little juggling, I came up with a system that, while practical on paper (??), suffered from a few possible nasty problems. After several trial runs (on paper) and a few development sessions on filters and harmonic generators, I let the project lapse.

Recently, my interest in a VHF Wadley-Loop front end was rekindled when I had occasion to examine an FRG-7000 during a time when I was examining the recent performance of the six metre band and its future possibilities.

Before I explain the system proposal in detail, it will be necessary (and instructive) to examine the basic Wadley-Loop tuning system.

**VHF WADLEY-LOOP SYSTEM**

The basic block diagram is shown in Figure 1, along with some system equations. I’ll examine how it works with reference to the familiar HF Wadley-Loop receivers such as the FRG-7, XCR-30, FRG-7000, etc. Clearly, there are several ways of realising a system, they’re not all the same.

The “baseband” oscillator is a crystal-locked oscillator on a frequency equivalent to the basic tuning range. For the familiar Wadley-Loop HF receivers, this is 1 MHz. The whole tuning range is generally 1-30 MHz for these receivers. The IF receiver covers 3 MHz to 2 MHz to tune up the band selected, that is, it is a reversing tuning system. We shall see why shortly. The IF receiver is really a conventional receiver acting as a tunable IF, the Wadley-Loop front end selecting 1 MHz bands in the range 1-30 MHz which you tune across with the IF receiver.

Now, the “band”, or “MHz” tuning as it is commonly designated, oscillator is a free-running, tunable VHF oscillator covering (for example) 56.5 MHz to 84.5 MHz. The “transfer” filter is centred on 55 MHz and is 1 MHz wide. The “baseband” oscillator will be on 1 MHz and the harmonic generator will provide harmonics every 1 MHz. The harmonics are generally limited by a filter as only a range of them are used; in this example, only the harmonics from 3 MHz to 32 MHz are required. The second injection frequency is 52.5 MHz, which of course will heterodyne the signals in the transfer filter to the 3-2 MHz IF receiver range.

To get a clearer picture of a typical HF Wadley-Loop system, take a look at Figure 2. If you do a little substitution in the equations in Figure 1 you’ll see how the numbers resolve themselves.

Having got this far, let’s examine the numbers relating to how you tune in a signal on, say, 28.9 MHz.

The band oscillator would be set to 83.5 MHz (to tune the range 28-29 MHz). This frequency would then be heterodyned with 31 MHz from the harmonic generator to produce an output in the passband of the re-mix at 52.5 MHz—the second injection frequency.

The signal on 28.9 MHz would be heterodyned to 54.6 MHz, by the first signal mixer, into the passband of the transfer filter. The 54.6 MHz “transferred” signal would then heterodyne with the 52.5 MHz second injection frequency to appear at 2.1 MHz. Setting the IF receiver to 2.1 MHz would then tune in the signal transferred from 28.9 MHz.

Well, that’s great, and it saves a whole lot of crystals and converters and covers a very wide band, but what’s the other big advantage of the Wadley-Loop system, you say?

Drift cancellation.

Now, a receiver covering 3-2 MHz can be made quite stable, superb in fact. But a VHF oscillator is another kettle of fish. More like a can of worms really. In order to get sufficient stability to keep an SSB signal resolved, one would have to build a rather extraordinary oscillator for the band or MHz oscillator. It is, in fact, an impractical task. (I didn’t say impossible!)

What the Wadley-Loop does is to cancel the effect of any drift in the band oscillator. Any error in setting the band oscillator is also cancelled. Thus, design stringencies on the band oscillator are reduced.

For argument’s sake, let’s say the band oscillator drifted up in frequency by 20 kHz. Thus, instead of remaining on 83.5 MHz like it was told, it wandered to 83.52 MHz.

When mixed with 31 MHz in the pre-mixer, this would heterodyne to 52.52 MHz, which becomes the new value for the second injection frequency.

The signal on 28.9 MHz would be transferred to 54.62 MHz by the first signal mixer. When mixed with the new second injection frequency of 52.52 MHz in the second signal mixer, the result is still 2.1 MHz!

There are practical limitations on the amount of allowable drift and setting error in the band oscillator and the bandwidth of the re-mix filter is chosen accordingly. The figure of ± 80 kHz indicated in Figure 2 would seem difficult to achieve at 52.5 MHz but it can be done by a rather cunning, yet simple, scheme as we shall see later.
A 1 MHz bandwidth with reasonable stop-band roll-off for the transfer filter is not too difficult to attain at 55 MHz.

MATHEMATICALLY
To understand how a signal, $f_a$, is "transferred" to the IF receiver at frequency $f_a$, the mathematical relations can be expressed as follows:

The signal, $f_a$, is first transferred to $f_s$ by the first signal mixer and then converted down to $f_a$ by the second signal mixer. We can relate $f_s$ to $f_a$ and $f_ar$ with the following equations:

Now, $f_s = f_a + f_r$  
(also $f_a = f_s - f_r$)  
thus, $f_s + f_r = f_a + f_r$
therefore, $f_r = f_a - f_ar - f_s$  
(c)

Referring to the example in Figure 2,

$f_a = 83.5 - 52.5 = 31 MHz$

To determine which harmonic is required (determining the "band" selected) to produce the second injection frequency (which we know is fixed by other considerations), $f_a$ is related to $f_s$ as follows:

$$f_s = f_a - f_r$$  
(d)

from Figure 2 example:

$$f_s = 83.5 - 52.5 = 31 MHz$$

The IF receiver frequency, $f_a$, can be related to $f_ar$ in another way as follows:

from equation (c),

$$f_a = f_s - f_s - f_r$$

re-arranging equation (d),

$$f_a = f_s - f_s$$

substituting this in equation (c)

$$f_s = f_s - f_r - f_s + f_s$$

thus, $f_s = f_s - f_r$  
(e)

From equation (e) it can be seen that $f_ar$ and $f_s$ are related purely by which harmonic is "selected" (by the band oscillator setting) to produce the second injection frequency, $f_s$, and $f_r$ will be independent of "errors" in $f_s$ resulting from inaccurate setting or frequency drift, provided these are within the limits of the re-mix filter bandwidth. The latter is determined by separate considerations.

To illustrate mathematically how the error or drift cancellation works to provide an output signal, $f_s$, which is independent of errors in $f_s$, let's designate the error component of $f_s$ (drift or setting error) as $\delta f$.

Now, by re-arranging equation (a), we get

$$f_s = f_r - f_s$$

We know from equation (b) that

$$f_r = f_a - f_ar$$

and by re-arranging equation (d), we get

$$f_r = f_s - f_s$$

Re-writing these to include, say, a positive error component $+\delta f$,

$$f_s = (f_r + \delta f) - f_s$$

and $f_s = (f_s + \delta f) - f_ar$

Substituting in the re-arranged equation (a),

$$f_s = [(f_r + \delta f) - f_ar] - [(f_s + \delta f) - f_s]$$

then

$$f_s = f_r + \delta f - f_ar - f_s - \delta f = f_s$$

the $f_s$ and $f_ar$ terms will therefore cancel resulting in:

$$f_s = f_r - f_ar$$

which is equation (e) and thus, as explained, $f_r$ is independent of errors in $f_s$.

VHF WADLEY-Loop SYSTEM
Having reached an understanding of the basic Wadley-Loop system, I can now lead you on to my proposal for a VHF front end using the system.

First up, a reasonable choice for the base-band needs to be made. I chose 2 MHz. Firstly, because a receiver covering a 2 MHz range around the middle of the HF spectrum is easy to construct and/or a general coverage receiver may be used. Secondly, using the 28-30 MHz range on an amateur HF receiver or transceiver, with all its attendant advantages, was a possibility tucked away in the back of my mind. Base-band ranges of 1 MHz and 4 MHz were rejected for a number of reasons, 1 MHz having technical problems and 4 MHz being too broad a range.

Next, what represents a reasonable coverage across the lower VHF spectrum? As suggested in the preamble, 30 MHz to 100 MHz is the area of interest. Owing to conflicting requirements, explained later, I eventually settled on 35 MHz to 95 MHz. From prior experience of monitoring the lower VHF spectrum for observations of unusual propagation, this range represents quite a reasonable compromise.

As the transfer filter has to be above the upper frequency of the input range, breakthrough from strong broadcast transmissions (i.e., TV) would have to be avoided and thus the selection of the limits of the transfer filter needed to take this into account. Another consideration was the practical achievement of a filter with a 2 MHz bandwidth and acceptable shape factor. The FM broadcast band at 88-108 MHz and TV channel 5a at 137-144 MHz therefore had to be avoided. This placed the transfer filter somewhere between 108 MHz and 137 MHz. However, a "guard" band of about 5 per cent would be necessary to place any possible interference well down the skirts of the transfer filter. Thus, it had to be between 113 MHz and 130 MHz.

Now, the re-mix frequency (or second injection frequency), $f_r$, has to be below the transfer filter. Again, to avoid possible breakthrough problems, $f_r$ should be located away from the broadcast bands. Thus, both $f_s$ and $f_r$ need to be located between 113 and 130 MHz.

Breakthrough problems with the re-mix filter are not likely to be as great as with the transfer filter.

Substituting a few numbers in equation (6) (from Figure 1), the possible upper limit of the IF receiver, $f_{if}$, is 17 MHz. However, $f_{if}$, need only be a minimum of 10% of $f_{if}$ (or $f_r$ for that matter) to achieve adequate rejection of the $f_s$ image above the frequency of the transfer filter, even though this image may be located within the TV channel 5a band (the skirts of the transfer filter assist).
Thus, \( f_s \) may be around 10 MHz at a minimum.

Several trial runs on paper showed me that a tuning range for the IF receiver of 13 MHz to 11 MHz (remember, reverse tuning) would be an advantage. Firstly, a calibration signal at 12 MHz is available from VNG, aiding construction and calibration of the project—especially if the IF receiver is constructed from the ground up. The other advantage of the 13-11 MHz range for the Wadley-Loop system output was the possibility of easily providing a forward-tuning 28-30 MHz IF output!

I devised a cunning scheme which I shall shortly introduce.

OK, now let's look at a few numbers.

\[
\begin{align*}
 f_{\text{i}} & = 2 \text{ MHz} \\
 f_{\text{up}} & = 35 \text{ MHz}, \ f_{\text{up}} & = 95 \text{ MHz} \\
 f_{\text{a}} & = 11 \text{ MHz}, \ f_{\text{a}} & = 13 \text{ MHz}. \\
 f_{\text{a}} & = 128 \text{ MHz}. \\
 f_{\text{a}} & = 165 \text{ MHz} \\
 f_{\text{a}} & = 233 \text{ MHz}.
\end{align*}
\]

From equation (6), \( f_8 = f_{\text{a}} - f_{\text{s}} \) and thus, \( f_8 = 117 \text{ MHz} \).

From equation (3), \( f_{\text{a}} = 165 \text{ MHz} \)

From equation (4), \( f_{\text{a}} = 233 \text{ MHz} \).

The harmonic generator will produce spikes every 2 MHz but only harmonics from 48 MHz to 106 MHz inclusive will be required from equation (5). Thus, \( f_{\text{a}} = 48 \text{ MHz} \) and \( f_{\text{a}} = 106 \text{ MHz} \).

**TRANSFER FILTER**

In practical terms this presents few problems. Several double-tuned circuits will provide the necessary characteristics. Some amplification (possibly with AGC applied) will be necessary between the first and second signal mixers. I have actually constructed a practical circuit for this stage using a dual-gate FET and standard Neosid coil components to provide double-tuned, over-coupled tuned circuits with a 2 MHz bandwidth and acceptable shape factor. Other methods allow a better shape factor and may provide improved performance, but for the application, I would think it unnecessary.

**RE-MIX FILTER**

Here's where we have to be cunning. First, a reasonable figure for setting error and drift in the band oscillator needs to be decided on. Setting the band oscillator to better than 100 kHz of the required frequency is possible but presents physical problems in the tuning system. Setting it to within 200 kHz or 300 kHz makes the job a whole lot easier.

But achieving a bandwidth of this order at 117 MHz is no mean feat. A cunning trick employed in the FRG-7000 is to heterodyne the output of the pre-mixer \( f_s \) down to a more convenient frequency (10.7 MHz in the FRG-7000), where a more practical filter provides the required characteristics, and is then re-heterodyned back up to the second injection frequency, \( f_s \). See Figure 3.

The harmonic generator will produce harmonics between 2 MHz and 106 MHz. The popular HF Wadley-Loop receivers generally use a diode pump followed by a low pass filter having a cut-off just above the frequency of the highest required harmonic.

For the VHF system, harmonics between 48 MHz and 106 MHz only are required. A simple 2 MHz crystal oscillator driving a diode pump followed by a low pass and high pass filter with cut-offs below 48 MHz and above 107 MHz, respectively, should suffice. You don't want more harmonics than necessary, for obvious reasons.

**HARMONIC GENERATOR**

There are as many ways of doing this as there are harmonics between 2 MHz and 106 MHz. The popular HF Wadley-Loop receivers generally use a diode pump followed by a low pass filter having a cut-off just above the frequency of the highest required harmonic.

The harmonic generator will produce harmonics between 48 MHz and 106 MHz only are required. A simple 2 MHz crystal oscillator driving a diode pump followed by a low pass and high pass filter with cut-offs below 48 MHz and above 107 MHz, respectively, should suffice. You don't want more harmonics than necessary, for obvious reasons.

![FIGURE 2: Typical HF Wadley Loop front end.](image)

![FIGURE 3: The "Heterodyne Re-Mix Filter" System.](image)
FIGURE 4: Block diagram of the Wadley Loop VHF front end system.

BAND OSCILLATOR

A straightforward Colpitts oscillator will readily cover the required 60 MHz range with adequate stability. Setting accuracy depends on the mechanical reduction of the dial system. Other oscillator configurations are possible, naturally.

Isolation between the first signal mixer and the pre-mixer local oscillator injection ports is necessary and may be provided by a high-pass filter on the input of the pre-mixer. Alternatively, the output of the band oscillator may be fed to the two mixers through a wideband hybrid transformer coupler which would, typically, provide 25-38 dB isolation between output ports, providing effective isolation between the two mixer local oscillator injection ports.

INPUT FILTERING

To avoid breakthrough problems from powerful broadcast signals getting through to the transfer filter, and possible cross-modulation and intermodulation problems on input signals in the 35-95 MHz range from the same source, a low pass filter before the first signal mixer input would be necessary. For similar reasons applying to signals in the HF range below 35 MHz, a high pass filter would assist.

Thus a high pass filter, having a cut-off at, say, 32 or 34 MHz, and a low pass filter with a cut-off at, say, 98 MHz, in series between the antenna and first signal mixer input would be a requirement.

Low noise, high performance mixers are readily available so RF amplification and its attendant problems is not really necessary. An RF amplifier needn't be ruled out though.

A system of switched preamps (a la the tuned preselector in the HF Wadley-Loop receivers) could be considered, each covering a particular portion of the input range.

THE SYSTEM

A final (more or less) block diagram is shown in Figure 4, complete with optional outputs on 13-11 MHz or 28-30 MHz. Note that a tuned buffer follows the up mixer of the heterodyne re-mix filter system. This serves to remove unwanted mixer products and raise the second injection frequency to an adequate level. Secondarily, as is provided on the FRG-7, FRG-7000, etc., an UNLOCK indicator can be added by detecting the presence of $f_s$ at the output of the tuned buffer and using this to extinguish the UNLOCK indicator.

A bandpass filter between the second and third signal mixers is also indicated, its purpose being obvious. It needn't be anything fancy but it should be flat across the 2 MHz range.

CIRCUITS

This is not a construction project . . . I'm not going to give you everything!

Out with the calculator, turn over a clean leaf on the scratch pad and warm up the soldering iron.

EQUATIONS

$$f_{m1} = f_{i1} - f_{r1}$$

$$f_{m2} = f_{i2} - f_{r2}$$

$$f_{m3} = f_{r2}$$

$$f_{m4} = f_{r3}$$

$$f_{m5} = f_{r4}$$

Conversely:

$$f_{r1} = f_{i1} - f_{m1}$$

$$f_{r2} = f_{i2} - f_{m2}$$

$$f_{r3} = f_{i3} - f_{m3}$$

$$f_{r4} = f_{i4} - f_{m4}$$

$$f_{r5} = f_{i5} - f_{m5}$$

In practice, $f_{m1}, f_{m2}$ and $f_{m3}$ are design choices.
FOUR 5/8 WAVE PHASED VERTICAL ARRAY FOR 2 METRES

F. J. Stirk VK2ABC
164 Parr Pde., Beacon Hill 2100

Beams were out of the question and the thought of increased power unacceptable. The germ of an idea concerning a colinear phased array was sparked into bloom by an article written by Ian Pogson (VK2AXN/T) for EA August 1978. His antenna used two stacked ½ λ radiators and he claimed beneficial results over the standard ground plane. There was, however, a problem of feeding the antenna. If fed from the lower end there would inevitably be some lack of electrical balance, but the mechanical stability would be reasonably easy. If fed from the centre, the electrical imbalance would be satisfied, but it would present mechanical problems. The solution as presented may suit your circumstances as it did mine.

The antenna is part of a system and had to fit in with the existing layout. While organizing the new antenna the existing mast system was upgraded to benefit both present and future requirements.

Four ½ λ radiators are mounted vertically in phase and fed symmetrically in the centre. That is the essence of the system. Without providing complicated graphs and diagrams it can be stated with sufficient authority (see ARRL Antenna Handbook), that the ¾ λ radiator is about optimum for low angle radiation. Stacking of such radiators, in phase, can only accentuate the low angle and increase the power of the doughnut type radiation pattern. (A gain of some 8 dB should be achieved.—Ed.) The result has been, in this case, to keep the radiated signal almost to ground level, over the hill and, hopefully, far away. The frequency band of interest was from 146 to 147 MHz.

Beyond this range some deterioration may result and the SWR rise from the existing 1.4 : 1. This figure was achieved by adjustment of the coax connection to the ¼ λ centre stub. As it was reasonable, no attempt was made to improve matters by fiddling with the small phasing stubs. The feed line was 50 ohm coax with a bazooka matching section and no problems were involved.

CONSTRUCTION
The mast proper consists of two 10 ft. lengths of 3½ in. square timber secured to the fence line for base support, separated by 3 in. to allow fitting the second section, 20 ft. of 2¾ in. square section oregon post. This section had secured to it with bolts a 10 ft. length of 1 in. diameter dowel, close grained and straight. To this dowel is fixed the top elements of the radiator extending some 3 ft. above the dowel. The tip of the top radiator is approximately 30 ft. above ground level and clear of surrounding trees and buildings by at least 15 ft.

Mechanical details of construction are outlined below. The solution as presented may suit your circumstances as it did mine. The mechanical design is similar to the existing layout, but the electrical imbalance was satisfied, but it would present mechanical problems. The solution as presented may suit your circumstances as it did mine.

If your QTH is located in a situation such as mine, close up to a hill, with all the action on the other side, you may be interested in the following details of a really low angle radiation antenna.

If your QTH is located in a situation such as mine, close up to a hill, with all the action on the other side, you may be interested in the following details of a really low angle radiation antenna.

Four 5/8 wave phased vertical array was sparked into bloom by an article written by Ian Pogson (VK2AXN/T) for EA August 1978. His antenna used two stacked ½ λ radiators and he claimed beneficial results over the standard ground plane. There was, however, a problem of feeding the antenna. If fed from the lower end there would inevitably be some lack of electrical balance, but the mechanical stability would be reasonably easy. If fed from the centre, the electrical imbalance would be satisfied, but it would present mechanical problems. The solution as presented may suit your circumstances as it did mine.

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CONSTRUCTION
The mast proper consists of two 10 ft. lengths of 3½ in. square timber secured to the fence line for base support, separated by 3 in. to allow fitting the second section, 20 ft. of 2¾ in. square section oregon post. This section had secured to it with bolts a 10 ft. length of 1 in. diameter dowel, close grained and straight. To this dowel is fixed the top elements of the radiator extending some 3 ft. above the dowel. The tip of the top radiator is approximately 30 ft. above ground level and clear of surrounding trees and buildings by at least 15 ft.

Mechanical details of construction are open to suggestion, however, in the writer's case, the radiators are ¾ in. OD HD copper tubing supported to the dowel by insulated screw eyes stood off approximately 1 in. from the timber. Heat shrink PVC tubing is used to further insulate the elements from the screw eyes.

The phasing stubs were made from brass brazing rods and securely soldered to the copper elements. The phasing stubs are bent into approximately 6 in. diameter with the top one curved at the end of a 4 in. x ½ in. dowel stud fixed into the mast dowel.

The ¼ λ stub and feed point was made from ½ in. OD brass rod and formed to fit along the length of ½ in. OD hardwood dowel fitted to the mast at the centre point of the radiators. The two sections of ¼ λ stub were held in position with small paxolin insulating blocks. The end blocks acting as a firm anchor point for the 50 ohm coax feed line.

Support for the lower radiator extending below the 1 in. dowel was provided by 300 ohm TV ribbon stand-off screw hooks with neoprene inserts. These have a longer shank than the screw eyes and cope with greater stand-off distance between the radiator and the mast.

The lower phasing stub was found to be secure enough without any support, and is similarly curved to the upper one, around the mast.

The feed line, 50 ohm coax ¾ in. OD type, was fitted with a balun section and attached to the ends of the ¼ λ stubs secured at the anchor point. The coax line was returned to the mast and clamped for strain relief at one point approximately 2 in. below the antenna centre. It was then fed away to the roof of the dwelling which, fortunately, was approximately just below that level and allowed the coax feeder to be removed from the radiator field in the most direct route.

RESULTS
It is very difficult to be specific with actual DBs of gain in installations surrounded with obstructions and buildings, however the following results may be used for comparison.

The antenna was compared with a

<table>
<thead>
<tr>
<th>ANT 1 — ¼ λ Ground Plane</th>
<th>ANT 2 — ¾ λ Ground Plane</th>
<th>ANT 3 — 4 x ¼ λ colinear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed 50 ohm coax</td>
<td>50 ohm coax</td>
<td>50 ohm coax with balun</td>
</tr>
<tr>
<td>SWR —</td>
<td>1.6 : 1</td>
<td>1.4 : 1</td>
</tr>
<tr>
<td>CH 1 — heard S0.5</td>
<td>S1.5</td>
<td>S5</td>
</tr>
<tr>
<td>CH 2 —</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>CH 3 — heard S0.5</td>
<td>S2.5</td>
<td>S6-7</td>
</tr>
<tr>
<td>CH 4 — S2-3</td>
<td>S4-5</td>
<td>S1</td>
</tr>
<tr>
<td>CH 5 — heard unworkable</td>
<td>heard S1</td>
<td>heard S1-2</td>
</tr>
<tr>
<td>CH 6 — heard S1</td>
<td>S2.5</td>
<td>S1</td>
</tr>
<tr>
<td>CH 7 —</td>
<td>—</td>
<td>S1</td>
</tr>
<tr>
<td>CH 8 — heard unworkable</td>
<td>S1 workable</td>
<td>S3</td>
</tr>
</tbody>
</table>

CH 1 — heard S0.5
CH 2 —
CH 3 — heard S0.5
CH 4 — S2-3
CH 5 — heard unworkable
CH 6 — heard S1
CH 7 —
CH 8 — heard unworkable

— — —

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standard $\frac{9}{10} \lambda$ ground plane which is referred to as Ant 2. This was in turn referred to a $\frac{1}{4} \lambda$ ground plane (Ant 1). All antennas were well mounted and approximately in the same height and position.

The colinear antenna is referred to as Ant 3.

The above chart is indicative of the gain involved which is a combination of lower radiation angle with increased gain, better matching of coax, obvious in slight improvement of SWR.

Results have been very gratifying, enabling stations to be worked under noise free conditions and with greater reliability. Further improvements may be possible with more precise tuning, however the improvement in SWR would not greatly increase the dB gain and frankly is hardly worth the effort. (Adjusting the spacing of the $\frac{1}{4} \lambda$ centre stub would help.—Ed.) Increasing the number of antenna elements is also a doubtful proposition since this antenna is almost 17 ft. long. To obtain another 3 dB gain would require doubling the length.

The accompanying drawings generally explain the mechanical set-up without any further words. Give it a try, you will be surprised.

(Adjusting the spacing of the $\frac{1}{4} \lambda$ centre stub would help.—Ed.)

(The coax cable and balun should be weatherproofed and sealed. To ensure many years of trouble free operation it is strongly recommended that all wooden parts of the structure be sealed, undercoated if desired, and given at least two coats of an external type plastic paint.—Ed.)
ANOTHER FT101 MODIFICATION

A. Crewther VK3SM
28 Reynolds Pde., Pascoe Vale Sth. 3049

Following the modifications to the FT101B described in "Break In" to improve the AVC range I decided that extra gain could be used in the receiver on the 21 and 28 MHz bands.

Plessey recently introduced an RF amplifier IC type SL1611C giving a gain of 26 dB, 50 dB AVC range and maximum input signal of 250 mV RMS and a bandwidth of 140 MHz. This seemed ideal.

A tuned circuit consisting of 7 turns tapped at 3 turns wound on a ½ inch type 4327/R2/F25 toroid in parallel with 100 pF variable condenser gave a tuning range of 14 to 30 MHz. The antenna coil was one turn.

The toroid and all other components were mounted on a small hand drawn printed circuit board (Fig. 2). The holes were punched through the paper on to copper laminate, the required copper area filled in with a felt tipped spirit pen and then etched. The whole board is mounted on the wires from the 100 pF capacitor which is mounted in a small aluminium box fastened to the side of the transceiver.

The gain of my unit is one "S" point greater than the 20 dB Input attenuator and one weak signal shows a remarkable change in readability.

The SL1611C is obtainable in Melbourne from Telephone Construction C., 108 Bank Street, South Melbourne.

The Publications Committee and WIA Executive, on behalf of the Divisions, wish all our readers a Merry Christmas and Prosperous New Year.

A special thanks to all the various contributors who forwarded us articles and snippets to help bring "Amateur Radio" into world-wide acceptance and "number one" in Australia — (VK3UV).
BEAMS NOW MADE IN AUSTRALIA

Roth Jones VK3BG

Australia now has its first full-time amateur radio antenna manufacturing company already making inroads to the once exclusive antenna market from the USA and Japan.

It's here to stay as the word gets around and the signals from these beams are heard all over the country.

Here's the story which makes me feel proud to be Australian.

Amtenna Co. Ltd. was formed in mid-1978. Its first antennas, a 10-15 metre dual band beam and a four-band trapped vertical, appeared on the market in late November.

Sceptical at first, believing the heavily-advertised imported antennas were the ultimate, the amateur radio enthusiasts were hesitant to buy.

Once a few were sold and the hefty signals started up on the 10 and 15 metre band it was a popular topic of conversation on all the bands.

The orders which followed were far beyond the wildest dreams of the two young amateur radio enthusiasts who started the company . . . Tony Owen VK3NCC, a former civil and radio engineer with a flair for antenna design and construction, and Fred Swart VK3NBI, of Chirnside Electronics, one of the best radio service-men and salesmen in the business.

Amtenna Co. Ltd. has kicked its first goal . . . to establish itself and be accepted. The next, already under way, is to expand into the tri-bander, multi-band doublet and VHF antennas.

The company's first duo-bander, the AM4-2, is already on the air and making itself heard from a number of experienced DX operators and young novices.

Reports being received from these duo-banders indicated they are up there with the best antennas from Japan and the USA.

Fred and Tony claim their antennas are far ahead in construction and are built to withstand tougher weather and storms. They are predicting a life of at least ten years, if not more.

The history of this tiny company, the devotion and dedication of these two men is one of the success stories of amateur radio in Australia.

Rightly they kept their planning to themselves and didn't announce their products until they had been proven. This is now history, but let's put the calendar back and recall those hectic six months and the men who made a project a reality.

Fred became interested in amateur radio eight years ago, although, since a boy, he had been intrigued with electronic gadgets, stereo and hi-fi.

Once he had mastered the elementary theory of radio he began studying electronics seriously and soon joined the communications department of Phillips TMC for five years, gaining experience which would prove invaluable to him for the years to come.

Three years ago he joined Bail Electronic Services where he gained more experience in amateur radio servicing, sales, importing and after-sales service, a field which he claims he has specialised in since branching out on his own 12 months ago.

The frustrations of importing worried him as he thought how wonderful it would be if Australia were to have its local amateur radio industry like the USA, Japan and the UK.

He thought of manufacturing transceivers, but this would be economically impossible due to the large numbers necessary to make the price competitive, but antennas were a different story.

"I knew all the time there was money to be made in this field, and one day when the time was right, I would make the move," Fred recalled last month.

The dream came true last year when there was a slump in the antenna importing business due to Hy-Gain ceasing production, supplies became erratic and prices soared.

It was like the proverb of the wise ancient Greek—When one door closes look for the other that's just starting to open.

• Roth Jones VK3BG is one of Australia's best known journalists having covered most major stories in more than 30 years of journalism. He has visited more than 60 countries in peaceful and turbulent times. Rarely does he write on amateur radio, yet he has never been off the air since the mid-1930s except for war service with the Royal Australian Air Force. When he heard this story of two VKs who successfully started an antenna manufacturing company he said he could not resist writing it exclusively for Amateur Radio.
And this is just what Fred did. Waiting at the opening with similar ideas, and a good friend over many years, was Tony Owen, who had just resigned from the management of a civil engineering company to "go it alone".

They pooled their ideas and were in agreement on all. Like a maiden handicap down the straight at Flemington they were both quick off the mark and already they could see the finishing post.

It was a short, but not an easy race. They made it all right well ahead of the field.

Overnight Antenna Co. Ltd. was registered with Tony as managing director and Fred looking after all sales.

Like any good engineer, Tony started planning and tooling up while Fred looked at the marketing, the sales potential, his advertising and how they would break into and take a share of an already established antenna market.

As Tony recalled last month:

"We both worked long, hard hours designing and testing into dummy loads and on the air. We spent more than 100 hours researching plastics before we settled for products suitable for radio frequencies with high moulding temperatures and good in ultraviolet light.

"Traps were made up and tested for strength, stability and reliability.

"After three months of solid hard work and more testing of front-to-back ratios, side rejection, etc., the AM4-2 was born," said Tony.

"The very rugged, low-priced duo-band beam is proving very popular and orders are increasing every month," said Fred.

Many more hours of work and much money later the 80-10m trapped vertical was perfected. This is selling at less than $100 complete with radials. Then came the tri-bander which consumed more time than predicted.

It had to be deferred temporarily due to the mounting orders for the duo-bander, but Tony is hopeful of commencing construction on these before the winter.

Tony and Fred have based their business on the well-established three aims of service, quality and price and in that order.

Now the company is established. It seems certain more and more of these antennas will be pushing out hefty signals all over Australia as interstate representatives have already been appointed.

Like any other success story this one had more than its share of bad chapters. The worst was when they asked themselves "Is it really worth it?" when the response to the first ads in the radio journals was a flop.

But that alone was not to worry them. Instead it spurred them on. Soon a few Melbourne novices bought them to "give them a go".

They had, at last, conquered the biggest barrier which they were unaware had existed — the belief held by so many Australians in all walks of life that imported goods be they wine, fashion, cars or electronics are better than the Australian-made product.

They had conquered the big one. They had been accepted because their product had proved itself and was better-priced than the imported ones.

"How silly is it for people to be blindfolded by fancy names and the fact that it was imported," Fred recalled to me over a cup of tea last month.

Recently they placed their AM4-2 alongside an imported equivalent and were convinced beyond all doubt the ruggedness of their traps was far superior to the imported sample.

Performance is hard to compare, but they genuinely believe their antenna is as good, if not better in forward gain, front to back than the imports.

The rest of this story is history. As more antennas were sold the unsolicited compliments came in, proof if there ever was one, that they were on a winner.

Naturally there was the odd complaint but this, they say, was due to the initial rush and enthusiasm and was personally corrected.

Packing facilities have been improved and new easy-to-follow instructions prepared. The whole operation has become as professional as a prize fighter.

According to Tony the AM4-2 is one of the easiest and quickest antennas to assemble on the Australian market.

The Colour coding is so simple instructions are almost unnecessary.

This final comment by Tony and Fred seems to sum up the whole operation — "We receive many compliments now which we appreciate after our struggle.

"We will now streamline production and turn out more and better antennas quicker with quality utmost in our minds.

"Then we'll start exporting and Australia will have a new local and international industry it will have reason to be proud of."

This has been a success story because two men set themselves a goal and worked through almost insurmountable difficulties to achieve it.

They won through because they didn't give up and that's what life is all about.

Success comes to those who work for it . . . and it's a great feeling.

---

CONFIRMED LIFELONG DX FANATIC DEPARTS THIS WORLD Confirmed lifelong DX fanatic departs this world, finds himself in Hades being interrupted by Satan. Opening the conversation, Satan said: "People on Earth like to believe that this is a terrible place, but that really isn't so. Here you can have anything you like — girls, grog, sports cars, anything at all. What is your wish?"

The DXer was astounded, but quickly regained his equanimity. "Well," quoth he, "my only real interest for most of my life has been working DX on Amateur Radio. The thing I always wanted and could never have was a 300 foot tower, complete with perfectly matched high gain beams to cover all bands. The beams would be fed with zero loss coax. Cables through the perfect coax switch. I don't suppose that would be possible here?" Satan gave a little smile, and said: "No worries, OM — here all things are possible. We'll fix that in a flash!" — which he did. Puff of smoke, and there stood the DXer's dream complete to the last detail, even including the rotators he'd forgotten to ask for. Completely flabbergasted, the DXer tried to stammer out his gratitude, but Satan cut him short. "Look, mate," said Satan, "that whopping great array is no good to you without some gear to go with it. What would you like? Name it, and it's yours." Having somewhat regained his poise by this time, our DXer thought deeply into all the catalogues and reviews he'd ever read — and proceeded to name every piece of gear, regardless of price, that he'd ever drooled over. Satan listened carefully and, when the list reached its end, smiled and said: "No problems there — we'll fix that in a flash!" Puff of smoke, and every single piece of gear nominated appeared — absolutely brand new. Not only that, every single piece was tailored into the most beautiful operating console ever seen. "Though you'd like the job finished properly," said Satan, "what do you reckon?" The DXer inspected Satan's hand work carefully and, after making his thanks, said: "Crikey, I can't wait to get on air and tell the fellows back there how good Hades really is. But tell me, Satan, what is that great cable hanging out of the back of the console?" Satan looked where he pointed, and said: "Oh, that's the power cord for all the gear."

"Right," said the DXer, "let's plug it in and I'll get cracking." Satan looked at him, smiled and said: "Sorry to tell you this, old chap, but we don't have any power down here!"

Reproduced from Smoke Signals, June 1979.
ASTRO 150/151

Mode: CW, CWN, LSB, USB
RF Input Power: 235 watts all modes, all bands
Carrier Suppression: Better than 50 dB
Side Band Suppression: Better than 60 dB
Microphone: 47 K ohms with push button tuning
AF Response: 300 to 3000 Hz

P.O.A.

ASTRO 102BX Performance Specifications

Transmission:
RF Input Power: 235 Watts all modes, all bands
RF Output Power: 100 Watts all bands — limited by ALC to 100 Watt output PEP or CW

VSF Shutdown: Full power up to VSWR = 1.7:1

General:
Frequency Range*: 160M Band 1.8-2.0 MHz
80M Band 3.5-4.0 MHz
40M Band 7.0-7.5 MHz
20M Band 14.0-14.5 MHz
15M Band 21.0-21.5 MHz
10M Band 28.0-29.999 MHz

*approximate 50 to 100 KHz overrange on each band

Receiver Sensitivity: 10 dB S+N or better at .35μV
Image Ratio: Better than 60 dB
Receiver Stability: 10 Hz/hr after warm-up
Receiver Selectivity: SSB & CW 2.7 KHz (8 pole filter) Shape Factor 1.6:1
CWN 300Hz (Xtal)

Audio Output Power: Greater than 3 Watts into 4 ohms
Power Requirements: 13.8 VDC → 18A peak (Xmit)

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DR-7500S. Medium Duty. $175.
DR-7600S. Heavy Duty. $249.
REVIEW

THE IC551D SIX METRE 100 WATT TRANSCEIVER

The IC551D is a new six metre transceiver. It is a high power version of the recently released IC551.

The packaging and styling is like the IC701 and the IC211, however the IC551 and the IC551D have inbuilt microprocessor control. In previous rigs this could only be provided by the remote controller.

The microprocessor sorts out the signals from the knobs and switches and controls the dial display and the phase locked loop frequency control.

With all such arrangements you should always remember that the display is not an actual counter output. ICOM recognise this and provide an accessory marker. In Melbourne this is not necessary as you may check calibration on a harmonic of VNG. Yes, even Telecom have harmonics.

The unit tested was not fitted with FM as the FM unit is sold as an accessory overseas. They will be fitted to later shipments and may be retrofitted to units without them. This is very simple, as many of the features are in bolt-in, plug-in modules.

The VOX is very interesting as it uses a bucket brigade delay line to eliminate the clipping of the first syllable. This is a very advanced feature and is indicative of the thought and development ICOM put into their equipment. The circuit is similar to the circuit AR readers have seen in Evan VK3ANCS VOX Advance.

Another feature not often seen on VHF equipment is Pass-band Tuning. This can be quite handy for dodging annoying Channel 0 sidebands when listening for beacons.

Together with the Pass-band Tuning ICOM have provided an RF processor which helps greatly under weak signal conditions. The reviewer was able to use this to great advantage when working tropospheric DX. Under such conditions the extra punch provided by the processor helps considerably.

One of the advantages of having a built-in microprocessor is the number of VFOs and memories which may be provided. In this context VFO is probably a misnomer as the VFO function is really achieved by a variable memory storage. There are two such VFOs provided together with three memories.

Facilities are provided to transceive on either VFO or any memory. Split frequency operation may be achieved using either VFO for receiver transmit. This can be a very handy feature for DX working. You can also align VFO B with VFO A by a flick of a switch.

Scanning is provided by any of the three memory frequencies or between two of the memory frequencies. This can be very useful for monitoring beacons or to search for signals in a band segment. The scanner stops when a signal exceeds the squelch threshold.

The squelch is operated from the AGC line in the SSB and CW modes and for FM it is the normal FM squelch or mute. The squelch is triggered by minute AGC voltage and is a considerable operating convenience. It was not possible to test it in the very subjective threshold between just hearing weak signals and imagining you are. Band conditions did not oblige in this area.

The power supply type IC S20 is interesting in that it uses a high frequency DC to DC converter to convert the rectified mains voltage to 13.8 volts DC. This results in a much lighter power supply at the expense of some extra complication of circuitry. The shielding is good and the power supply does not radiate noticeable RFI. However, don’t sit your transistor radio next to the transceiver front panel as the microprocessor and display radiate for a few inches near the panel.

A similar power supply is built into the IC551 which is the 10 watt output version.

One interesting point in the power supply is the use of Swedish interference suppression capacitors. Evidently ICOM wanted quality components and were prepared to search for them. This is an indication of the engineering design effort that ICOM put into their gear.

Another interesting point is the extent to which ICOM have developed and refined the VXO or rubber rock. In this rig
there are three such oscillators and they are stable. A great deal of design effort has evidently been put into this development.

On the air the IC551D draws compliments for the quality of the signal and the receiver digs out the weak signals. During the test period the band obliged with a tropospheric opening and with an opening to Japan. The IC551D performed admirably in both instances.

Another area the IC551D shines in is cross modulation performance which is most critical in a Channel 0 area. When tested, using a KLM 11 element beam, with line of sight to Channel 0 15 km away, the IC551D was able to read signals which were unreadable on a couple of other 6 metre rigs. This is a pretty severe test as previously at this location it had not been possible to point the beam close to Channel 0. A very big plus feature in any area plagued by Channel 0.

One difference between the IC551 and the IC551D other than the power output is in the retention of the memory when the rig is switched off. The IC551 has a power supply built in which may be used to retain the memory whilst the IC551D merely has the provision for an accessory power supply to perform this function. The result of this is that at switch-on the VFOs and the memory are initialised out of the Australian Band. To get back up to 52 MHz is quite a chore even when using the fast tune position with 1 kHz steps. There is, however, a neat way to get 10 kHz steps by selecting the FM mode. Select FM, give the knob a couple of turns and then switch back to SSB.

The receiver sensitivity was found to be 0.09 microvolt for a 10 dB signal plus noise to noise ratio. A little bit better sensitivity is obtainable by using the Pass-band Tuning to narrow up the IF selectivity.

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**REVIEW**

**OPERATOR’S REPORT**

**THE YAESU FT-7B**

The FT-7 is a Yaesu transceiver well known to most readers. Until recently it was available at the bargain price of $389. Now the FT-7B is available. This article reviews the FT-7B and compares it with the FT-7.

**GENERAL**

The FT-7B is a small compact rig of about the same size as the older FT75/FT75B series. It uses the same case as the FT7 and is only 30 mm deeper due to the addition of an external heatsink for the larger PA. The transceiver runs a nominal 100W input, is completely solid state and does not require adjustment of tune and load controls as do rigs with valve PAs. The receiver is almost identical to the FT-7 and is therefore very sensitive and provides a generous 3W of audio to cope with the usual background noise when mobile. The operator has the choice of AM as well as CW and SSB operation.

**TECHNICAL FEATURES**

The transceiver operates on the 80 through 10m bands. Unlike the FT-7 a full 2 MHz coverage is provided for 10m. The VFO is tuned by a large centrally placed knob and covers 500 kHz. The scale has 1 kHz divisions. Once calibrated the readout error is less than 1 kHz. One revolution of the tuning knob covers 16 kHz. A 100 kHz calibration signal, derived from a 12.8 MHz crystal, is provided. Both receiver and transmitter use fixed and tunable bandpass circuits at signal frequencies. Both the receiver RF amplifier and PA driver circuits are peaked by a single knob labelled TUNE.

A clarifier is provided to allow reception of signals up to 3 kHz either side of the transmitted signal. As with the FT-7 semi-break-in CW operation with sidetone is provided. An audio filter has been added and this is a worthwhile feature for CW reception, as it has a nominal 80 Hz bandwidth.

Although the FT-7 could be used with an external VFO this option is not available with the FT-7B but has been replaced by the ability to use the YC-7B remote digital display of frequency. This display can be mounted in a more convenient position for the mobile operator than under the dash with the transceiver.
The RF drive is adjustable, an important feature for AM operation and for the Novice CW operator. An effective noise blanker is provided and another feature not found in the FT-7, a 20 dB RF attenuator, has been added. Although the power rating has been increased by a factor of five and many features added, the weight has increased by only 0.5 kg. It appears that there was a little room left in the FT-7, after all.

CIRCUIT DESCRIPTION

The incoming signal passes through a tuned circuit and is amplified by a single gate MOS FET which has AGC applied. The amplified signal passes through a balanced mixer using Schottky barrier diodes. This gives excellent sensitivity and a low noise figure, most noticeable on 10m, and a high degree of freedom from cross-modulation. The IF is at 9 MHz and the mixer output is coupled to a monolithic filter to give some modest selectivity before passing through an amplifier and a diode noise gate. An 8 pole crystal filter is used to obtain excellent selectivity. The selectivity figures claimed are the same as claimed for most modern transceivers.

Further amplification follows before the signal is detected by a ring demodulator and then passed to the audio stages. An IC provides up to 3W output into a 4 ohm speaker.

For CW reception the audio filter is switched in to give an 80 Hz bandwidth at 6 dB. The centre frequency can be adjusted once the cover has been removed.

There are several unusual features. For example, the noise blanker has a separate mixer and a 455 kHz IF coupled from the output of the main mixer prior to the first filter. There are no adjustments for threshold level, however the blanker was found to work well in both base and mobile situations. The marker generator uses a single IC to divide the 12.8 MHz crystal oscillator signal down to 100 kHz. Coupling to the antenna terminal is via a diode switch. Almost all the RF signals are diode switched, a notable exception being the antenna changeover, which uses a relay.

The VFO tunes 5.0 to 5.5 MHz and the adjustment for calibration is done with a varicap diode controlled by a lever control situated below the main tuning knob. Except on 80m the VFO is premixed with a crystal oscillator before being applied to the Schottky diode balanced mixer. This mixer, along with the filter and part of the IF amplifier, are used for both transmitting and receiving.

For SSB transmission a single IC amplifies the microphone output and drives a diode ring modulator. The resulting 9 MHz signal is amplified, passed through the Schottky diode mixer. After amplification by a dual gate MOS FET, at what now is the signal frequency, the signal passes through the same bandpass filter used in the receiver to a broad-band pre-driven amplifier. This is coupled through a tunable LC network to the PA.

The PA consists of 4 RF transistors operating in a broad-band circuit to produce a nominal 50 watts output. The two output transistors operate in class B in a push-pull circuit using broad-band transistors and many features added, the weight has increased by only 0.5 kg. It appears that there was a little room left in the FT-7, after all.

The selectivity figures claimed are the same as claimed for most modern transceivers. The immunity to interference is excellent even in heavy traffic where the noise blanker proved to be quite adequate.

More extensive tests were carried out in the quiet of the shack using the set as a base. An inverted trapped dipole was used on 40 and 80m and a THDX for the other three bands. Band conditions were only fair yet three lengthy QSOs were easily obtained. A number of other stations were running 200 to 300W out and reports up to S8 were obtained. A number of other stations were contacted on other bands. In all cases the reports were complementary and under weak signal conditions the reports were better than might be expected for a 100 watt rig. The recovered audio was of good quality, very good in fact, when the size of the inbuilt speaker is considered.

CONCLUSIONS

The FT-7B is a fine, compact rig. It does not have some of the features of the top-of-the-line sets, for example there is no speech processing. It is of course only half the price of these sets and if desired these facilities can often be added externally. The extra power over the FT-7 is most useful and makes the rig useful for serious DX work. The current drain is modest and allows for extended operation from a stationary vehicle without the fear of a long walk home.

It represents good value for money and appears to have serious competition in the market only from the TS120S. It is a rig worthy of consideration whether it is to be your first rig or whether you are trading in your old FT200. The FT-7B gives a good account of itself in both mobile and base use.

The unit tested was kindly made available by Ball Electronic Services.
Before you invest in new amateur communications equipment or accessories, spare 60 seconds to read this advice.

"Any salesman will find a way to give you a better price — but for every dollar you save that way, you spend twice as much to find the after sales service you need. Before you buy, ask another Ham where he gets good sales assistance and concerned service attention."

At Bail Electronic Services we continue to offer first class equipment with a sure back up service. Now, look back over the products we offer, you will be surprised how little it costs to have satisfaction and security.

Quote type of set, serial number, date of purchase, and inv no, when ordering spares. All prices include sales tax. Freight is extra. Prices and specifications subject to change without notice. Allow 50c per $100 for insurance. Availability depends on stock position at time of ordering. Send 50c postage for latest Yaesu catalogue.

MORSE KEYS, by KATSUMI & HI-MOUND

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>HK-807</td>
<td>Professional key, needle point bearings</td>
<td>$60</td>
</tr>
<tr>
<td>HK-702</td>
<td>Marble base: similar to HK-710</td>
<td>$48</td>
</tr>
<tr>
<td>HK-706</td>
<td>Operators key</td>
<td>$25.00</td>
</tr>
<tr>
<td>HK-707</td>
<td>With dust cover and standard knob. On standard base</td>
<td>$19.50</td>
</tr>
<tr>
<td>HK-708</td>
<td>Economy, with flat knob</td>
<td>$14.99</td>
</tr>
<tr>
<td>HK-701</td>
<td>Side Swiper key to actuate an Electronic keyer</td>
<td>$40.00</td>
</tr>
<tr>
<td>HK-100</td>
<td>Semi-automatic bug key, fully adjustable</td>
<td>$49.00</td>
</tr>
<tr>
<td>VALVES</td>
<td>for Yaesu equipment, 572 B $59.00, 6KD6 $12.50, 6J56 $11.00, 6JM6 $12.00,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S2001 $13.50, 12GB7 $10.00, 7360 $22.00, 6GK8 $6.50, 6146B $16.00, 12BB14 $10.50</td>
<td></td>
</tr>
</tbody>
</table>

BAIL ELECTRONIC SERVICES

60 Shannon St., Box Hill North, Vic., 3129. Phone 892213
Distributors in all states and N.T.
## Quality Antennas and Antenna Accessories — from Bail —

Continuing to offer first class equipment with a sure back-up service.

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA-1, Lightning Arrestor, for installation in standard 52 or 72 co-axial feedline, designed to MIL specs</td>
<td>$76.00</td>
</tr>
<tr>
<td>LA-2, smaller size co-ax arrestor</td>
<td>$4.95</td>
</tr>
<tr>
<td>BN-86 Hy-gain ferrite Balun, 2 kW, 1:1</td>
<td>$28.00</td>
</tr>
<tr>
<td>VS-BN Hidaka ferrite Balun, 2 kW 1:1</td>
<td>$26.00</td>
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<tr>
<td>HN31 Dummy Load Cantenna Kit 1 kW oil cooled (oil not included)</td>
<td>$59.00</td>
</tr>
<tr>
<td>FF-501DX Low Pass Filter, 3 Section, 1 kW</td>
<td>$39.00</td>
</tr>
<tr>
<td>KW Electronics L.P. Filter, 5 Section, 1 kW</td>
<td>$59.90</td>
</tr>
<tr>
<td>TV-42 Drake L.P. Filter, 3 Section, 300 W</td>
<td>$15.00</td>
</tr>
<tr>
<td>TV-75 Drake High-pass filter 50MHz UP</td>
<td>$12.00</td>
</tr>
<tr>
<td>Porcelain Egg insulators</td>
<td>98 cents</td>
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**WIDE RANGE of Co-axial cable and connectors in stock.**

### SWR AND POWER METERS

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>SWR-40, REACE</td>
<td>single meter type, combined SWR and FS meter, 50 ohms, inc. FS pick-up whip, size 5” x 2” x 2 1/4”, 3-150 MHz, UHF connectors</td>
<td>$19.00</td>
</tr>
<tr>
<td>FSI-5, REACE</td>
<td>— dual meters, 50 ohms. Simultaneous reading of forward and reflected power, 5” x 2” x 2 1/4”, 3-150 MHz, UHF connectors. Very sensitive, ideal low power use</td>
<td>$29.00</td>
</tr>
<tr>
<td>SWR-200 Osker-Block</td>
<td>large dual meters, switched 50-75 ohms, with calibration chart for direct power readings to 2 kW in three ranges. A very elegant instrument, 7/8” x 2 1/4” x 3 3/4”</td>
<td>$75.00</td>
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### ANTENNA COUPLERS

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<thead>
<tr>
<th>Model</th>
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<tr>
<td>HC-75</td>
<td>Tokyo Hy-power labs. Trans-match 75w PEP</td>
<td>$65.00</td>
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<tr>
<td>HC-250</td>
<td>Tokyo Hy-power labs. 250w</td>
<td>$89.00</td>
</tr>
<tr>
<td>HC-500</td>
<td>Tokyo Hy-power labs. inc. 160m x 50w PEP</td>
<td>$119.00</td>
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### ROTATORS

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<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tr>
<td>Emotor:</td>
<td>103LBX Medium duty, disc brake</td>
<td>$183.00</td>
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<tr>
<td></td>
<td>502CXX Heavy duty, disc brake</td>
<td>$259.00</td>
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<tr>
<td></td>
<td>1102MX Heavy duty, mechanical brake</td>
<td>$395.00</td>
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<tr>
<td></td>
<td>1103MX Extra Heavy Duty, high turning torque</td>
<td>$410.00</td>
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<tr>
<td></td>
<td>1211 Mast clamp for 103LBX</td>
<td>$18.50</td>
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<td></td>
<td>1213 Mast clamp for 502CXX</td>
<td>$30.00</td>
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<tr>
<td></td>
<td>1215 Mast clamp for 1102/3</td>
<td>$50.00</td>
</tr>
<tr>
<td></td>
<td>300 Mast Stay bearing</td>
<td>$32.50</td>
</tr>
<tr>
<td></td>
<td>301 Tower top bearing</td>
<td>$32.50</td>
</tr>
<tr>
<td></td>
<td>High quality tough PVE insulated cable especially for external use with rotators</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VCTF-7, 7 core cable (for 1100 series)</td>
<td>$1.40 per m</td>
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<tr>
<td></td>
<td>VCTF-6, 6 core (for 103 &amp; 502)</td>
<td>$1.25 per m</td>
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<tr>
<td></td>
<td>Flexible coupler 451 (for 1102/3 &amp; 502)</td>
<td>$34.00</td>
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<tr>
<td></td>
<td>Flexible coupler 450 (for 103)</td>
<td>$16.00</td>
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All items subject to stock availability.
**HF MONOBANDERS**

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<thead>
<tr>
<th>Beam Type</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>VS-20CL</td>
<td>3 elem. W.S. 20m beam, inc. Balun</td>
<td>$199.00</td>
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**HF TRIBAND BEAMS**

<table>
<thead>
<tr>
<th>Beam Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>THSDXX</td>
<td>6-element trap Beam</td>
<td>$499.00</td>
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<tr>
<td>TH3Jr</td>
<td>3-element trap Beam</td>
<td>$275.00</td>
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<tr>
<td>HY-QUAD</td>
<td>2-element Quad Beam</td>
<td>$300.00</td>
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<tr>
<td>VS-33 Hidaka (Eqiv. TH3Mk3), inc. Balun</td>
<td>$360.00</td>
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<td>2-element Quad Beam</td>
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<tr>
<td>VS-33 Hidaka (Eqiv. TH3Mk3), inc. Balun</td>
<td>$360.00</td>
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**VHF ANTENNAS**

<table>
<thead>
<tr>
<th>Beam Type</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>VS-6GH</td>
<td>6 metre ½ wave G.P.</td>
<td>$59.00</td>
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<tr>
<td>VS-07GH</td>
<td>7 element 2m Beam</td>
<td>$48.00</td>
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<tr>
<td>VS-2GL</td>
<td>7 element 2m Beam</td>
<td>$66.00</td>
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**Fittings**

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<tr>
<th>Fitting Type</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>BDYF, heavy duty adjustable body mount</td>
<td>$24.00</td>
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</tr>
<tr>
<td>VS-BPM Bumper Mount</td>
<td>$18.00</td>
<td></td>
</tr>
<tr>
<td>VS-LBM Ball Mount &amp; H.D. Spring</td>
<td>$25.00</td>
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<tr>
<td>H.D. Spring</td>
<td>$18.00</td>
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<tr>
<td>AS-GM Guttermount</td>
<td>$10.00</td>
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</tr>
<tr>
<td>VS-NGM Guttermount inc. M ring and Co-ax</td>
<td>$24.00</td>
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**HF VERTICALS**

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td>18AVT High Gain 10-80m</td>
<td>$121.00</td>
</tr>
<tr>
<td>VS41/80KR Hidaka 10m thru 80m</td>
<td>$129.00</td>
</tr>
<tr>
<td>VS-RG Radial Kit for VS41/80 KR</td>
<td>$28.00</td>
</tr>
<tr>
<td>VS-TR, loaded rod radial kit, 10-80m</td>
<td>$68.00</td>
</tr>
<tr>
<td>VS-81W 5 band Vertical Ground Plane</td>
<td>$180.00</td>
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<tr>
<td>18V 10m thru 80m base loaded, exc. portable ant.</td>
<td>$45.00</td>
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**VHF ANTENNAS**

<table>
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<td>VS-2GL</td>
<td>7 element 2m Beam</td>
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**VHF MOBILE ANTENNAS**

<table>
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<tr>
<th>Beam Type</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>AS-2HRF</td>
<td>½-wave cowl mount type</td>
<td>$39.00</td>
</tr>
<tr>
<td>HOPE-2R</td>
<td>2 metre gutter mounted helical, only 22 cms long incl. co-ax connector</td>
<td>$26.00</td>
</tr>
<tr>
<td>VS-TOWN</td>
<td>2 metre flexible helical on PL-259</td>
<td>$19.50</td>
</tr>
<tr>
<td>VS-MM</td>
<td>magnet mount for VS-TOWN, incl. co-ax</td>
<td>$20.00</td>
</tr>
<tr>
<td>HU-2HRH</td>
<td>Hidaka 2 metre ½ wave 6 m ½ wave gutter mount incl. co-ax and connector</td>
<td>$39.00</td>
</tr>
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**OTHER ACCESSORIES**

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>EKM-1A Audio Morse CP Osc with speaker, one transistor, and tone control, requires one UM3 cell, in metal case</td>
<td>$13.90</td>
</tr>
<tr>
<td>TC-701 Morse Practice Osc. with built-in key and spkr. Inc. battery and auxiliary earpiece. Copy of morse code on case</td>
<td>$19.50</td>
</tr>
</tbody>
</table>

**DENSO**

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>430 anti-corrosive compound for jointing antenna and beam elements (as used by electrical authorities)</td>
<td>$2.90</td>
</tr>
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</table>

**DENSO**

<table>
<thead>
<tr>
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<td>$2.90</td>
</tr>
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</table>

**Standard Accessories**

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR-C146A 2m hand held 5 chan. 2W Transceiver inc.</td>
<td>$199.00</td>
</tr>
<tr>
<td>CMP08 Hand mic. for SR-C146A</td>
<td>$25.00</td>
</tr>
<tr>
<td>CAT08 Rubber antenna (helical) for SR-C146A</td>
<td>$10.00</td>
</tr>
<tr>
<td>Heavy Duty Carrying Case for hand held units</td>
<td>$16.50</td>
</tr>
<tr>
<td>CSA AC Adapter and charger for hand held units</td>
<td>$25.00</td>
</tr>
<tr>
<td>AC Charger only</td>
<td>$11.00</td>
</tr>
<tr>
<td>Ni-CAD Penlight Cells, type AA</td>
<td>$2.90</td>
</tr>
</tbody>
</table>

**Specials and Limited Stock Items**

- **FT-7B TRANSCEIVER.** 80-10m, 100W peak solid state. Can be modified for novice use. $359.
- **FT-227R** 2mx, 10W FM Tcvr, 800 Ch. with Dig. Readout memory, rev. etc. $319.
- **FT-227RB** 2mx, 10W FM Tcvr, 800 Ch. with Dig. Readout memory, rev. etc. $399.
- **YC-500E 500MHz FREQ. COUNTER.** Accurate to 0.02 ppm. $656.
- **YC-500S 500MHz FREQ. COUNTER.** Accurate to 1 ppm. $499.
- **8GEM1 Morse Keyer with memory and typewriter type keyboard.** Limited stocks, future indent only. $475.

**EXTRA SPECIALS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>LP-30TVI Filter low pass</td>
<td>$1.90</td>
</tr>
<tr>
<td>Lighted Dummy Load</td>
<td>80 cents</td>
</tr>
</tbody>
</table>

**INDENT ORDER.**

All items subject to stock availability.

**STAN ROBERTS VK3BSR**

**JIM BAIL VK3ABA**

60 Shannon St., Box Hill North, Vic., 3128. Phone 89 2213

Distributors in all states and N.T.
Amateur Communication Equipment from the World's leading manufacturers

FT-101ZD HF TRANSCEIVER: Includes variable IF bandwidth, digital plus analog frequency display, a built-in RF speech processor, and wide receiver dynamic range. $929.

FT-101Z, HF TRANSCEIVER, Analog Model: Precision VFO with analog display, variable IF bandwidth, RF speech processor, noise blanker, VOX. $779.

DIG COUNTER UNIT for FT101Z optional extra. $150.

FT-901DM DE-LUXE SSB, CW, AM, FSK, FM, HF TRANSCEIVER, 160-10m, P.A. 2X6146B, Dig. readout, freq. memory, elect. keyer, rejection tuning, variable IF, audio peak filter, automatic tune-up timer, AC-DC operation, etc. etc. A host of new advanced features including, of course, Yaesu's up-to-date modular construction utilising plug-in circuit boards to minimise service time. See review in "Amateur Radio" Oct. '78. This symbol of technical excellence is real value for money at $1380. (Mic., English Language Inst. Book, Connectors, and Pwr. Cables are included.)

FT-901D, less keyer, memory, DC-DC, $1220.

FT-901DE, less FM, memory, DC-DC, $1204.

FV-901DM Synthesised scanning external VFO, 40 memory storage, electronic tuning, etc. $475.

FC-901 Antenna coupler, 500w, inc. SWR and PWR meters, ant. switch and connectors. $245.


HAND MICS. FOR YAESU, YD-846 etc. with connector. $21.50.

YH-55 YAESU HEADPHONES: 8 ohm. $19.00.


RS SERIES HF GUTTER MOUNT MOBILE ANTENNAS: RS Base and Mast (doubles as ¼ wave on 2m), complete, inc. co-ax lead attached RSE-M2. $29.90. Coil and Tip Rods: RSL-3.5 $22, RSL-7 $21, RSL-14 $20, RSL-21 $19, RSL-28 $19, RSL-145 (½ 2M) $24.

CRystal FILTERS for CW and AM. $55 each.

FL-2100B LINEAR AMPLIFIER: 80-10MHz, uses 2 x 572B triodes in G.G. twin 1Mf cooled, styled to match FT-101E. Equally suitable for other rigs. $579.

FRG-7 WADLEY LOOP RECEIVER: All solid state: 0.5-29.9 MHz in thirty 1MHz bands. Electronic band selection. $319.

BATTERY HOLDER FOR FRG-7, holds 8 size "D" cells for internal battery operation. $10.

FRG-7000 WADLEY LOOP RECEIVER: Improved version of FRG-7, extended freq. coverage, digital readout, digital clock etc. $599.


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First edition available in March, 1980; fall supplement in October.

Special Charter Subscription rate available until December 31, 1979 includes listing, directory and supplement for $20. CAN or $18. US. After January 1, 1980 rates will be $25. CAN or $22.50 US funds or equivalent.

Please write for more information and an application form. Deadline for the spring directory is Jan. 31, 1980.

QTH Exchange Service
BOX 3329, MISSION, B.C. CANADA V2V 4J5
The atmosphere in No. 6 Royal Arcade was always friendly and fellow amateurs dropped in for tea and a chat with this young lady who knew so much about radio. From the early days when she learned from her customers, they now came to Mrs. Mac to learn. She seemed a natural telegraphist and amazed people with her skill. Another important asset was developing at that time — the art of passing information and skills — of teaching.

Around this time Mrs. Mac, together with three others, formed a magazine called "Wireless Weekly". Eventually she had to bow out when the financial pressure got too great and the "Wireless Weekly" went on to become Australia's premier electronics monthly, "Electronics Australia".

Mrs. Mac acquired one of the very first electric cookers. She looked around for a book to tell her how to use it to the best advantage. There wasn't one, so true to form, Mrs. Mac sat about rectifying the situation. She was not an experienced cook, so she purchased a dozen cookery books — English, French, German and American. She patiently went through all of them, picking out those recipes she considered contained good sensible ideas. Then she practised them on her husband! Her electrical cook book was such a success it sold out on the first edition.

She then went on to form the Electrical Association for Women and gave electric cooking demonstrations all over the city and suburbs. She wrote a safety book on electricity for children at the request of the NSW Education Department. This was the very successful "The Electrical Imps".

This now brings us to 1939, a time when dark clouds were gathering over Europe. When Neville Chamberlain returned from Munich and said there would be peace in our time — Mrs. Mac did not believe him. She started thinking what she could do and what part women could play in the coming war. She realised that the most important part of the war would be communications and that was one job that women could do. So she opened a school in Sydney to train girls in morse code and radio.

Mrs. Mac took in more than 50 enthusiastic girls in the six months before war was declared at her school at No. 9 Clarence Street, Sydney. It was soon discovered that women have a natural aptitude for morse code and others forms of signalling. The number of trainees increased rapidly, so the Women's Emergency Signalling Corps was formed.

It was not long before the premises at No. 9 Clarence Street became overcrowded. A large old wool store at No. 10 Clarence Street was found to have the first and second floors vacant, access being by two long flights of very steep and narrow stairs. The rent, however, was very reasonable, and finance being a serious problem, it was decided to move to these premises.

One day a keen amateur pilot came to Mrs. Mac and asked her to teach him morse so he could join the Royal Australian Air Force. At this stage a sufficient standard in morse was required for entry into the RAAF. Soon more and more young men with military aspirations were coming to Mrs. Mac to learn morse code. It is interesting to note that later on, several of Mrs. Mac's WESI girls were co-opted into the Air Force Recruiting Centre to conduct morse tests.

From then on scores of servicemen from all services came to Mrs. Mac for morse training. It is estimated that Mrs. Mac and her girls trained between 10,000 and 12,000 telegraphists from Australia, the United States and India.

Mrs. Mac installed audio equipment so that twelve different classes could be conducted at the same time. There were enough partly-trained girl telegraphists to cope with the scores of servicemen and recruits who flocked in. The RAAF installed Bendix radio equipment for training purposes. The Australian Army sent lorry loads of soldiers to have early training in morse before going to the Middle East. The RAAF sent several groups of servicemen in uniform, with their own instructor, Lt. L. George, to use the WESC equipment.

The Royal Indian Navy sent their communication ratings to keep their morse and visual signalling skills up whilst their four corvettes were being completed at Cockatoo Island Naval Dockyard.
Numerous Royal Australian Navy mustering went to the WESC Signalling School to improve their morse.

There were many nationalities attending the school, but never at any time was there any disorder or need for obvious discipline. The conduct of the girls and all who taught the was always above reproach, and as up to 12,000 men passed through the school in war-time, some idea of the atmosphere of dedication may be gained. Life at the radio school was never dull. There were always lorry loads of new pupils arriving.

Frequently Military Intelligence would appear on her doorstep with complaints from nervous guests in the hotel next door who thought a spy was at work when they heard Morse code in the middle of the night!

Mrs. Mac also trained scores of American servicemen, both from the USAF and the USMC. It is worth quoting from the "Sydney Morning Herald" of 1943: "The Americans were greatly surprised to find our girls signallers capable of sending and taking messages equally well, but that girls had the patience than men in the instructing job,'" said Mrs. F. V. MacKenzie of the Women's Emergency Signalling Corps, today. Seventy members of the US Air Corps attend the WESC rooms each day, where Australian girls are instructors at classes ranging from beginners in signalling to those doing 30 words a minute.

At least 10 girls are at the rooms all day and from 50 to 100 come at night, after office hours. "The only change we've made for the US lads is to alter our morning and afternoon tea to morning and afternoon coffee," said Mrs. McKenzie.

Already 170 WESC girls have enlisted in the three forces, and a new group of members will begin training in May. Mrs. McKenzie finds that boys and girls learn signalling equally well, but that girls make better instructors. "They have more patience than men in the instructing job," she said.

No fees were ever charged for any tuition. The girls of the WESC gave one shilling per week towards the rent, etc. There was also a visual signalling section which was mostly used by Merchant Navy officers sitting for their Second Mate's, First Mate's and Master's Certificates. There was very seldom an occasion for any of them to sit a second time for their examinations. The visual signalling section was equipped with signalling lamps, flags and code books, etc.

According to Mrs. Mac the Americans were anything but ready for war. And she still remembers the frantic young American who rushed up her stairs on a Thursday and begged her to teach him just one thing by the following morning. How to get his craft out of Sydney Harbour safely.

Mrs. Mac thought for a few seconds and then asked him did he know the flag "D" (I am not under command — get out of my way). He said he did. So she told him to fly the flag and to keep his siren going until he reached the sea.

The following afternoon one of her students reported that there was quite a shemozzle on the harbour that morning. "Some crazy Yank, flying D, had sped out of the harbour with his siren going non-stop, bringing all shipping to a standstill." She knew he'd made it!

One day, a particularly dedicated girl brought in an English magazine with an illustrated article about the WRNS, and she was soon joined by a number of the girls, all of whom were fired with the ambition of becoming WRANS if the Royal Australian Navy could be persuaded to use them.

Mrs. Mac immediately wrote to the then Prime Minister, Billy Hughes, to see if Australia could establish a similar service to the WRNS. But he just dismissed it. So she flew to Melbourne to see the Naval Board. The chairman said "Girls in the Navy! What could they do?" Mrs. Mac told him to send an examiner to Sydney and she and her girls at WESC would show him. Eventually Commander Newman, R.A.N., went to Sydney and was astounded at the operations of the WESC. However, all was not plain sailing. There was still a great resistance towards women in the Navy and Mrs. Mac had a long battle with the Naval Board.

She remembers that Board members kept asking about sex, so she told them she had hundreds of men and women working together studying Morse code and there had never been any goings on. Finally she threatened to take her girls to the Army or RAAF, and the Naval Board gave in. Twelve of her girls were recruited into the Navy, but with the proviso that there be no publicity on this break with tradition. The WRANS were formed in 1941 and for some time the first recruits kept their green WESC uniforms.

Mrs. Mac and her girls continued training servicemen all through the war. She remembers one Army Major who came to her when his signallers were sent to WESC for Morse training and asked her not to teach them fast Morse, but just slow and sure, as he did not want his messages mutilated under difficult receiving condition under gunfire. The detachment was eventually sent to the Middle East. After the war this same Army officer wrote to Mrs. Mac to thank her and commend her training as not one of his messages were sent or received incorrectly.

For her services during the war she did not take any form of payment. There were times when she went for days without a meal, as that would have interfered with her work of training telegraphists. After the war she received the OBE for her services.

Even though peace was achieved, there was still work for Mrs. Mac to do in training telegraphists. RAAF pilots were returning to civilian life and looking at the commercial airlines for employment. But Morse was required. Who could they go to for training?

Almost without exception the original pilots of QANTAS after the war were trained in Morse by Mrs. Mac. She also taught forty policemen Morse. Today she proudly wears a special medallion conveying the thanks of the NSW Police Commissioner, who was one of her "boys".

For nine years after the war she kept up her work in training telegraphists. During this time and until his death in 1955, Mrs. Mac corresponded regularly with Professor Albert Einstein. He was intensely interested in Aborigines and she sent him all kinds of data about them.

By 1954 the services all had sufficient training establishments for their own needs and the commercial airlines had set up their own schools. There seemed no more work for Mrs. Mac; even though she was still training the Captains of the Torres Strait Pilot Service. After the Torres Straits Pilots had left, she closed the Signal School and retired to put her feet up in her home in Greenwich, where she still had her original cooker. She would not part with it despite having a more modern one, as the original one had a lot of sentimental value. One of her other hobbies was collecting fine china, with Wedgewood being her favourite. She still taught the occasional student at her home.

Two years ago Mrs. Mac suffered a stroke which left her paralysed down the right side. She now lives in a nursing home in Greenwich. But she is far from lonely. Her girls and boys remember her.

She has a constant stream of visitors, ranging from her wartime pupils, some of them now grandparents, to the Police Commissioner, senior QANTAS Captains and retired Admirals. Prior to her stroke she would hop on a train at a moment's notice if one of her girls needed help. Re-unions of the WRANS have taken Mrs. Mac across the country and every year on Mothers' Day her boys throw a champagne party and present her with an enormous cake.

That then is the story so far of Mrs. Mac, a delightful lady and a fantastic person to meet. A woman who made her own place in a man's world before it became fashionable. But she is not a feminist and has no time for "pushy females", for in her own quiet way she has achieved far more. "I was born on the same day as Confucius, so it seemed only natural that I became a teacher," Mrs. Mac told me. Even today she still reads the work of Confucius.

In view of the outstanding work of Mrs. Florence McKenzie, OBE, during the Second World War in training telegraphists from all of the Allied armed forces, plus the role that Mrs. McKenzie played in the formation of the Women's Royal Australian Naval Service, the Royal Naval Volunteer Radio Society has great pleasure in
announcing that Mrs. Mac has accepted membership of the Society. The Society is honoured to have Mrs. Mac as a member and hopes this will be considered as a small recognition of her work.

Mrs. Mac was presented with her membership certificate by Terry Clark VK2ALG, the Australian Branch Manager of the Royal Naval Amateur Radio Society, on August 29th this year.

The cover photograph shows Mrs. Mac and VK2ALG admiring her membership certificate of the Royal Naval Amateur Radio Society.

Membership of the RNARS is open to all amateurs and SWLs who have been or are serving in the Navy, Merchant Navy or been civilians working for the Navy. Details can be obtained by contacting the Australian Branch Manager, T. R. Clark VK2ALG, PO Box 537, Albury, NSW 2640, or by checking into the Society's 80m nets on a Monday night at 1030Z on 3613 kHz or a Tuesday night at 1030Z on 3527 kHz.

Mrs. Mac, RNARS number 1321, we are pleased that you have accepted membership of the Royal Naval Amateur Radio Society, we are honoured to have you as a member.

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NOVICE NOTES

ELECTRICAL SAFETY
Extract from the Brisbane Water County Council house journal "Currents", reprinted here in the interest of electrical safety:

At the beginning of each year, statistics are supplied by the Electricity Association of Australia, relating to fatal accidents. An analysis of fatal electrical accidents reported shows 94 per cent of these occurred in domestic dwellings involving the use or handling of extension three core leads.

Each of us at some time becomes a "do-it-yourself" handyman, and uses an extension lead. I felt a closer look at some of these accidents may help prevent a similar incident in your house. Here are a few examples:

1) THE DECEASED, while standing on damp ground in slippers, contacted the activated frame of a portable electric saw. The saw was supplied from an unearthed general purpose outlet via three flexible extension cords. This three-pin plug connected to one of the extension cords was broken and the earthing conductor, which was not terminated, was in contact with the active conductor, thus activating the frame of the saw.

2) THE DECEASED was repairing a motor car in a concrete-floored garage. The car was supported on metal stands and a metal jack so that the engine was at earth potential. Deceased was lying on a low metal trolley with metal wheels, and of a type used by motor mechanics when working under vehicles. A metal edge of the trolley cut a flexible cord connected to an inspection lamp and made contact with the active conductor, thus activating the trolley. When deceased applied a metal wrench to the engine his hands and body were in simultaneous contact with earth and the active conductor.

3) THE DECEASED received a fatal electric shock when he contacted the exposed live pin of a three-pin plug which was attached to an extension lead. The lead was fitted with a three-pin plug on either end.

4) THE DECEASED received a fatal electric shock of approximately 240 volts when he contacted the metal frame of an electric drill - which was energised due to an incorrect connection in an extension lead.

5) THE DECEASED was electrocuted when he made contact with the exposed metal of single insulated hedge clippers which were made alive because of transpositions in TWO OF THE THREE extension cords he was using.

6) THE DECEASED received an electric shock which proved fatal when rolling up a live electric extension cord. The flexible cord had been used to supply power to a mixer from a power point approximately 90 metres away, and was lying on muddy ground over which motor vehicles had passed, making it subject to damage. The deceased disconnected the live cord from the concrete mixer and began to roll it up. Upon reaching the area where vehicles had been passing over the cord, he made contact with the active conductor and received an electric shock.

7) THE DECEASED was leaning against the scaffold pipes drilling the metal work of the building which was alive. The threepin adaptor was pulled slightly out of the extension lead, exposing live pins, which had come into contact with the sheet metal fixed to the building.

On the basis of this information it seems fairly obvious we should immediately carefully examine any extension leads we may have, to ensure:

1) That plugs on both ends of the lead are in good condition with no internal wiring exposed.

2) That each core is correctly connected, particularly the earth, which should be green, or green and yellow.

3) That each core is clamped tightly by the terminal screws, with no stray strands protruding.

4) That sheath covering cores is in good condition with no obvious damage, and that the lead is serviceable in all respects.

Old type plugs should be discarded for the more modern type which have an insulating barrier between the wires inside and also means for clamping the sheathing of the flexible cord and for relieving the strain on the cores at the terminals.

Reproduced from Smoke Signals, September 1979.

ABSORPTION FREQUENCY METERS
The simplest type of frequency meter consists of a coil and a variable capacitor, tunable over the frequency range desired.

A frequency meter of this type, when tuned to the frequency and coupled to the output, will extract a small amount of energy. This energy can be used to light a small torch bulb. See Figs. 1, 2. A more accurate measure of resonance can be obtained by using a diode and milliammeter. See Fig. 3.

Although this type of frequency meter is not suited to precise measurement of frequency, it is useful for checking a transmitter, e.g. fundamental frequency, harmonics, parasitic oscillations, neutralization of an amplifier, field strength measurements, or any application where it is desirable to detect a small amount of RF energy and measure its frequency.

HELP!! PLEASE!!
Pictures of Novices etc. required for this column — URGENTLY!! Contact EDITOR.

The inherent losses in the absorption type frequency meter limit its useful accuracy but it is indeed a very useful instrument. Its sensitivity depends upon the indicating device. By using a microammeter very small amounts of RF may be detected. I have one device with a link of coaxial cable and using a 0 to 0.5 mA meter as the indicator with which I can probe into a faulty transmitter and find the offending stage very quickly. BEWARE of HIGH tension voltage!

FIG. 1. A simple Absorption Frequency Meter.

FIG. 2. In this circuit the lamp is inductively coupled giving a sharper resonance point — due to less load on the tuned circuit.

FIG. 3. Absorption Frequency Meter using a diode and meter. "A" is a small pick-up antenna used when the device is used as a field strength meter. It can be a piece of bronze welding rod — length 18 inches. Plugged into point "X". By extending the leads at point "Y" the meter may be used near the operating position.

COIL TABLE — Using 100 pF at C1.

<table>
<thead>
<tr>
<th>Freq.</th>
<th>Size</th>
<th>Turns</th>
<th>Length</th>
<th>Wire No. of</th>
<th>No. of</th>
</tr>
</thead>
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<tr>
<td>1.8</td>
<td>28</td>
<td>80</td>
<td>1 3/4&quot;</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td>24</td>
<td>35</td>
<td>1 3/4&quot;</td>
<td>10</td>
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<tr>
<td>7</td>
<td>20</td>
<td>15</td>
<td>1 1/2&quot;</td>
<td>6</td>
<td></td>
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<td>8</td>
<td>1 1/4&quot;</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>16</td>
<td>4</td>
<td>1&quot;</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

All coils are 1% in. diameter and may be plugged in. Calibration of the instrument may be made by means of a grid oscillator. Harold VK3CM.

Reproduced from GAR/TV Club Newsletter June 1979.
THE OSCARS
Oscar 7 is still with us providing communication, on mode "B" particularly; mode "A" not so good. What a great unit Oscar 7 has proved to be and a credit to its constructors. Get yourself on to mode "B", 70 cm up, 2 metres down, where there is plenty of room and results are excellent. Oscar 8 is going fine but mode "J" has many baffled as yet (myself included). The AMSAT September 1979 Newsletter has some solutions to the problems.

AMSAT
For the newcomer AMSAT is the organisation with world-wide membership located in Washington, DC, and co-ordinates amateur satellite activities. AMSAT publishes a quarterly bulletin (newsletter) for members. The September issue contains "A New AMSAT for the 80s", "Satellite Tracking for the TRS-80", "Echo 70 Improvement for Mode J", "Orbit Determination Techniques", "Phase III Satellite AZ-EZ Programme for HP 67/97", "Phase III Scientific Special Service Channel" and "Success at Last with Mode J", which latter article tells of trials and tribulations before achieving satisfactory mode "J" operation.

Membership of AMSAT is US$10.00 per annum, Life Membership is US$100.00, to AMSAT, PO Box 27, Washington, DC, 2044, USA.

NETS
You may have noted mention of an 80 metre net, Sunday evenings, 1000Z, on satellite matters? This net, because of QRM and QRN, has transferred to 7065 ± QRM, and Vks 2RX, 3ACR and 4PJ usually participate.

The AMSAT Asia-Pacific net, JA1ANG net controller, commences at 1100Z Sunday evenings, 14275 kHz and takes in most Western Pacific countries.

PHASE III
Here are some notes from Harry JA1ANG on "How to get 100 watts ERP from your current gear".

If your present rig delivers 10 watts output on 70 cm, use an array that has 20 dB power gain. Suppose that the feeder loss is 3 dB, then you will lose half your 10 watts. Thus 5 x 100 = 500 watts ERP. You might be able to get away with this, especially if you are going to be on CW most of the time. If SSB then you will either have to:

1. Use a 20-50 watt linear amp.
2. To be on the safe side, use an array that has 20-23 dB gain.
3. Invest in low loss coax, and aim for a 1.5 dB or less feeder loss.

Elevation control will become a "must" in any case.

However, when the satellite Is near apogee, it will almost "stay put" and thus is called a semi-stationary satellite. When at apogee it will be at an altitude of approximately 36,000 km. The period will be 11 hours (approx.), and when at perigee the altitude will be at 1,500 km, approximately.

When the satellite is at apogee, it will see practically half the globe. If right over the North Pole it will see all the northern hemisphere. Thus for 4-5 hours round-table QSOs between Tokyo, London and New York will be commonplace. Position of apogee will change very slowly. In the northern hemisphere for the first 2-3 years, then over the equator, and in 2-3 years over the southern hemisphere. Regardless of the above, Oscar 3A will enable world-wide QSOs.

RECEIVING SET-UP
AO-7 mode "B" users will not have much difficulty, other than perhaps a 1S unit or so weaker signal. However, since the satellite will be spinning at about 60 r.p.m., and uses a "Tristar" antenna, a "funny" modulation of about 3 Hz may cause reception on SSB to be almost impossible. AMSAT suggests the use of a circular polarised receiving antenna such as a crossed Yagi, which can be switched.

PREDICTIONS
This month's Oscar 8 predictions are by courtesy of Norman VK4NP, a front runner in micro-processor operations. He has taken the AMSAT newsletter, December 1978, page 21, period and progression for December to calculate for 1979. The calculations by my observations are quite satisfactory and compare favourably with the W1AW RTTY broadcasts of predictions given daily.

Period: 103.22403 minutes. Progression: 25.807305 degrees.

VK4NP's programme also provides other needed data. Comments please.

Oscar ORBIT PREDICTIONS — DECEMBER 1979

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AMATEUR SATELLITES
Peter Brown VK4PJ

A wealth of information should have been available in last month's Amateur Radio. Is that information going to be utilised successfully? Will it further amateur activity in satellite communication by many and not just a few? We need more amateurs communicating by satellites, thus widening and developing our VHF and UHF expertise. We need more 70 cm activity. Do we have more projects than we can handle?
**RESULTS OF THE 1979 VK/ZL/OCEANIA RTTY CONTEST**

1. G3HJC 319,700 (100)
2. HB9AVK 317,804 (84)
3. JA8ADQ 295,580 (62)
4. SM6ASD 284,996 (104)
5. F6ECI 280,742 (91)
6. VK2CBW 273,420 (65)
7. EA4XW 252,375 (103)
8. W7DPW 223,755 (84)
9. DJ6JC 216,835 (78)
10. VK3KF 194,724 (79)
11. F8XK 146,920 (41)
12. WD8IU/P 144,400 (44)
13. JE2XWK 120,375 (41)
14. VK4AHD 119,424 (48)
15. ZL2BR 115,668 (41)
16. W4Y2C 114,460 (36)
17. VK1NOS 113,725 (31)
18. VK2ATQ 93,345 (31)
19. VK2YL 78,320 (29)
20. OZ2X 75,400 (49)
21. DK5FS 67,876 (34)
22. VK2AYK 67,440 (28)
23. OZ2GA 66,890 (55)
24. VE3AXO 56,120 (30)
25. VE7BTD 47,848 (28)
26. JR2TDL 42,040 (24)
27. DK5WJ 37,493 (38)
28. VK2BJS 32,040 (19)
29. DL0WU 28,320 (38)
30. DM6AK 26,776 (39)
31. VK2BGL 25,380 (19)
32. VK2HY 24,856 (14)
33. W2KQ 15,744 (22)
34. DF7FB 12,287 (22)
35. DM2DLE 11,875 (27)

36. G3RDG 9,277 (34)
37. DK5FA 9,116 (16)
38. VK2AHB 8,820 (11)
39. DL6WZ 4,907 (16)
40. I0S5ES 4,264 (9)
41. SM0EOZ 1,430 (20)
42. SK7THW 1,260 (6)
43. OK2BJT 650 (16)
44. HASKFU 64 (5)

(No. of QSOs in brackets)

**MULTI-OPERATOR STATIONS**

1. 15MYL 1,156,744 (184)
2. VK3TITY 381,780 (62)
3. DK5MM 269,525 (79)
4. VK2WGP 184,788 (47)
5. VK2BYI 138,360 (38)

**SWL STATIONS**

1. Horst Ballenberger DL SWL 333,764 (91)
2. Hans Norbert Sokol DL SWL 115,155 (84)
3. Kurt Wustner DL SWL 95,450 (77)

Logs from OK1-11857 and OK1-20677 disqualified due to not recording both sides of the RTTY QSO.

**SUMMARY**

Conditions for the second contest were not at all good. Comments from individual operators indicate that the "woodpecker" caused many loss of points. It is hoped next year to expand the time of the contest as similar to the SARTG contest. The number of VK/ZL stations operating was disappointing, but it is hoped next year more will be on.

Two late logs received well past the closing date were not accepted. We would like to see more logs submitted as only 55 were received from over 300 different stations operating.

On behalf of the VK/ZL RTTY group we would like to thank those who participated, and see you and your friends again next year.

**AWARDS OF CERTIFICATES WILL BE SENT TO THE WINNING CONTESTANTS.**

73s and good DX de VK2EG/VK2SG
(VK/ZL/Oceania RTTY Contest Committee)

---

**TRADE HAMADS**

For a very long time commercial advertising has not been accepted in AR Hamads, but as the result of discussions at the 1978 Federal Convention a decision was made to open up a "Hamads-Trade" section. The rate will be $10 for 4 lines plus $2 per line (or part thereof), minimum charge $10, payable. Copy is required by the first day of the month preceding publication. This will mean that in future ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

---

Page 40 Amateur Radio December 1979
COMPUTERISED 2 METRE FM RIG

NDI HC 1400

- Microprocessor controlled
- PLL circuitry
- Repeater Offset
- Tone Burst
- 800 Channels with 5KHz Spacing
- 144-148MHz
- 3 Memory channels
- LED Displays both TX & RX frequencies
- 25 Watts Power Output (5 watts on Low)

ALL FOR ONLY $399

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- Hobart: DILMOND INSTRUMENTS — Phone 47 9077

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We have lowered our prices on many items and regret the necessity to increase prices on Hy-gain antennas. However our new antenna prices are still below wholesale replacement cost on these items. Rotators and cables still hold at very attractive prices, good stocks on most lines. Send a stamped, self-addressed envelope for a more detailed price list.

ROY LOPEZ

<table>
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<th><strong>HENRY RADIO</strong> — A famous brand, new linear amplifier 1KD-5 10-80M 1200W PEP linear</th>
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<td>TH6-DIXX 10-15-20M 6-el yagi</td>
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<td>HY-Q (USA) 50-ohm 1KW balun</td>
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<td>HY-Q (USA) multiband 10-80M dipole kit, wire, balun insulators, spreaders, etc</td>
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<td><strong>ROTATORS &amp; CABLES</strong></td>
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<td>All rotators now come with bottom brackets and control-indicator boxes wired for 28V AC operation</td>
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<td>KEN KR-400 medium duty</td>
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<td>CDR BT-1A light duty 4 position push-button programmable</td>
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<td>CDR tail-twister extra H.D.</td>
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<td>RG-8U foam coax cable, per metre</td>
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<td>8-cond. rotator cable, per metre</td>
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<td><strong>ACCESSORIES</strong></td>
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<td>12V DC 3A output</td>
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<td>240/18V AC transformer</td>
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<td>Mobile bumper mounts 3½&quot; 24 thread</td>
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<td><strong>KYOKUTO</strong> FM-2016A 800 channel</td>
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<td>2 meter FM transceiver with 4-channel memory &amp; scanner 15W</td>
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<td><strong>TRIO-KENWOOD PRODUCTS</strong></td>
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<td>VFO 520 for TS 520S</td>
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<td>LF 30A low pass filter</td>
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<td>SP 120 for TS 120 series</td>
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<td>DK 520 adaptor TS 520 to DG 5</td>
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<td>All further Trio-Kenwood accessories and transceivers at competitive prices</td>
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<td>FRG-7.5 to 30 Mhz receiver, still</td>
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<td>Right angle &amp; T connectors, ea.</td>
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<td>Mike sockets 3 &amp; 4 pin, ea.</td>
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<td><strong>NOVICE SPECIALS — TRANSCEIVERS</strong></td>
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<td>10M Sideband SE-502 USB/AM 15W PEP-240V AC 12V DC-inbuilt SWR/RF meter 28.3-28.6 mhz clarifier tuning transmit and receive</td>
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<tr>
<td>10M Universe 224-M USB/AM 15W PEP 12V DC 24-ch. 28.480 to 28.595 mhz, 5-khz steps-clarifier tuning transmit and receive</td>
<td>$95</td>
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<td>CONVERSION CRYSTALS for amateur licence holders — set of 8-crystals to convert 23-ch. 27-mhz CB units to 28-mhz. Suitable for Kraco, Sideband, Universe, Hy-range V etc., converts as per Universe 10M above — CRYSTALS and instructions</td>
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<td>Set of 4-crystals converts to 28.3-28.6 mhz</td>
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All Prices are NET, ex Springwood, NSW, on a pre-payment with order basis. All risk insurance is free of charge, allow for freight charges by air, road, rail or postal, excess will be refunded. Prices are subject to change without prior notice. All orders cleared on a 24-hour basis after receipt of order with payment.

Roy Lopez (VK2BRL) Manager
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### AMATEUR BAND BEACONS

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50.005 MHz is running with 1½ watts at present, no other details... from VK5KK.

### DIRECT NEWS FROM JAPAN

A letter from Hatsuko JA1VOK via Peter VK5ZPS re 6 metre conditions makes very interesting reading. The following are all of note: JA1VOK has worked 37 countries on 6 metres as of 20-10-79 over a period of 10 years, and several other JA/VQ has also been carried on 40.5 MHz, DXQI, VE, VK9KI, ZL1BIQ/Kermadec and 9N1BKM. Hopes to work VK2/Lord Howe Island, VK6BC, 47STEA and VK3AR next March/April.

During February 1978 JA1VOK worked KH6IJ, KH6SIJ, AL7C, K7LAP, KL7GD, KL7JAI, KA6ADE, P2B8H, KSCM, W6K, VK3, 4, and 8.

March: KC6IN, KG6RO, KH6XX, LUs, PYs, P2P9N, YJV8P, KN6MS, W6K, VK3, 3, 4, 5 and 6.

April: ARKQ/VM near Y2S, DUS, P29PN, H44PT, VK4ZZI/H44, KX6BU, LUs, YBOX, ZK1AA, VK6, 4, 5, 6, and 7.

May: WBSP5/KH2, UV2MR, YJ8OT, VK4 and VK6.

June: HMs, HS1WR, JD1s, P29ZFS and VK6EG.

July: P29ZNL.

August: C21AA, JD1s, WASCX/KK6, VK6EG and VK6.

### ZL2MHV South America

Several times British TV on 40.5 MHz has been propagated by F layer and other modes. On 27-10 VK6HK copied 48.25 MHz for VK5 etc. and from Now Zealand. As from 28-10-79, ZL amateurs have been able to use 50 MHz outside TV hours but allowable during periods of non-programme transmission (i.e. fast pattern periods). The situation is not quite clear with regard to transmission during programme periods outside the service area of Ch. 1. If it is still on a non-interference basis then it would seem allowable will be made for operation in this period.

However, that's ONE BIG STEP in the right direction and moves have been afoot in VK for some time to get a similar agreement. I have advocated in these notes many times that there seems to be a case for operation on 50 MHz on a non-interference basis in VK, particularly outside the service areas of the Ch. 0 transmitters. When stations outside those areas would be wanted to work DX on 50 MHz the Channel 0 transmitters are not audible, being at a distance not being propagated by F layer and other modes.

Generally speaking, I feel the VK amateurs in the southern hemisphere have been many occasions when overseas stations could have been worked on 50 MHz but the temptation has been resisted. VK5KL has been a good boy and not worked P08DR, XE1GE and a KJ6, all available on 50 MHz, and there are plenty of other operators just as good! (We also know of several other VKs not bothered by calls of notoriety—E.D.)

If P. and T. see fit to allow us to Join the worldwide company of stations operating on 50 MHz, it is hoped the segment could be a little wider than the New Zealand one, say at least 50.000 to 50.500 MHz. On 50 MHz the band will be filled with stations on special programmes, possibly a few others too to feed into the extra services. It would seem a very good idea for VK to work JA during periods of good conditions on 52 MHz, shifting down to 50 MHz as the band becomes available. This pleases the VK operators the space is made as a result of the fact that JA is likely to be worked from VK much more often than ZL.

It would seem from earlier experience this year, and from the September/October period, that March/April/May next year could be the peak for good operation on 50 MHz. It is hoped that if we are not granted operation on 50 MHz it will be done as soon as possible and not after that period—many
operators will need to improve or change antenna systems to successfully work on both 50 and 52 MHz. It can be done but it takes some time.

**Looking Overseas**

As usual everything is happening overseas. First news is from VE1s copying 49.750 MHz TV from Russia on 22-10.

During the period Andy worked JH7E on FM using his PRC10 and ASO-12 linear, 8 watts output, 5 x 9 watts, as a VR10 to W6XJ and ZL70K. His report is P92002-JH7E, JA3, 5, 6, 9, 11-1, 12-9: 0936-10022 JA3, 4, 5, 11-1: 0855-10232 JA3, 5, 6, 9, 11-1: 18-9: magnetic storm 0906: 19-9: 0905-10232 JA1.

From "Break-In" comes a report there appears to be quite a high level of interest in VK in monitoring the 2 metre path between VL and VK. Rod Graham VK5BG has a microprocessor controlled 2 meter scanning receiver programmed to cover the ZL repeaters, whilst other amateurs appear to be monitoring the ZL repeater output frequencies.

From "Hamlarks" comes a warning from Emu VK30V, who advises If you are in the habit of carrying nicad batteries in your pocket, or use a short as part of the recovery process for nicads with a "memory", beware, these innocent devices can and will explode during high current discharge with disastrous effects!

This column this month represents the start of the 11th year of production from the VK5LP establishment. (A tremendous effort, Eric, and greatly appreciated by all.—Ed.) A separate article published elsewhere this month will describe the VK5LP's H/V/HF bands is almost ready, and it should make interesting reading—lots of things have happened in that time, old call signs have migrated to other bands, new call signs have come into prominence, such is the passage of time.

This month will also include Christmas once again—may I take the opportunity of wishing all my readers the Compliments of the Season, and to thank the various contributors who have so generously supported me during the past year, and the Editor of AR for his tolerance. I especially would like to thank David VK5KK for his extra help filling in the gaps in VHF activity in this State, the things I don't hear, and the result of his band monitoring. I think it's pretty clear that there are no signs of the Christmas tree lights teach the family a valuable moral lesson—the whole strand is only as strong as its weakest bulb.

73. The Voice in the Hills.

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**Some Useful VHF Beacon Frequencies**

The Aerodrome Terminal Information Services (ATS) Location Service is available and uses a VHF beacon system for aircraft to use. The receiving terminal can be seen on VHF beacon systems for aircraft to use. The receiving terminal can be seen on the map below.

**ATIS Location**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>50.000</td>
<td>Adelaide</td>
</tr>
<tr>
<td>50.100</td>
<td>Sydney</td>
</tr>
<tr>
<td>50.200</td>
<td>Perth</td>
</tr>
</tbody>
</table>

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**From Western Australia**

Andy VK6DJ at Carnarvon has written outlining activities from northern VK6. An outline is given here to allow you to compare notes with your own area. 6-9: JA Class 1 TEP); 6-9: JA2, 3, 4, 7 (1); 7-9: 0420Z strong burst of noise on 52 MHz. 0555 to 0622Z worked HLTG on 52.005 5 x 9 both ways, no signs of JA. 10-9: 0523-1200Z JA1, 2, 3, 4, 5, 6 (1); 11-9: 0816-092202 JA2, 3, 6, very strong (1); 12-9: 0936-10022 JA3, 4, 5, 11-1: 0855-10232 JA3, 5, 6, 9, 11-1: 18-9: magnetic storm 0906: 19-9: 0905-10232 JA1.

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**From the Antarctic**

K64AAD is going to the Antarctic. Normal watt driver stage from Honiara. FK8AB has 5p but does not have a set schedule yet. KC6SZ isn't running much power compared with the W1, but does not have a set schedule yet. KC6S2 is active from 12-10 to 26-10, W4TLM/K7L leaving Shemya in November. ELSFY's equipment would seem to have been being taken to another area.

vk5020, the superbe QTH near Mt. Lofty, and with 5x9 both ways! 25-9 : 0944-1025Z JA1, 3, 4, 5, 7, 8, 9, 11-1: 10-1: 0510-20121 4 way contact with KH9TG, VK622ZC (local) and Wayne VKW6 in Perth (backscatter). HLTG 5 x 8, Wayne 3 x 9, 10, 11; 9:03 GRC9Z, 11 (and V/II). At 1218Z worked 89KQ/MM on a tanker somewhere in the South China Sea. Uses an IC552 to a small antenna. Signals 5 x 5 out, 5 x 6 in.

Finally Andy reports that JH7EPR on pass that is working TS500 and 6 element Yagi, and may possibly run a beacon on 50.120.
INTERNATIONAL NEWS

WARC 79

By the time you read this WARC 79 will be past history. It may take at least two or three months before the final conclusions can be put together for publication. Meanwhile listen to Divisional broadcasts for official news as it becomes available. Pay no heed to rumours.

When this article was scripted very little news had come forward because WARC 79 was still at the working groups stage and some of the work was running behind schedule.

Perhaps the most important warning was that any decisions can be modified at subsequent meetings of working groups or main committees as well as at a plenary meeting. In some instances a see-saw situation might develop.

Any country can enter reservations on any particular final decision, by means of footnotes to the tables — assuming something of this nature continues into the future.

The WARC 79 “work” was “delayed” whilst deliberating the choice of a chairman. Mr. Roberto Severini of the Argentine was elected chairman and 9 committees were set up, of which not all were of direct interest to the amateur service — as examples, credentials and budget control. Committee 5 was the frequency allocation committee chaired by Mr. Harbel of Algeria, and with him were five working groups, each responsible for a segment of the frequency spectrum.

Later, one of these working groups was split into two sub-groups of 6ba and 5bb. 6ba dealt with allocations below 4000 kHz under Mr. Cook VY5FJL, and 5bb dealt with 4000 kHz to 27.5 MHz under Mr. Peter Barnes VK3GH.

Committee 6 (Mr. Jim Wilkinson, the leader of the Australian delegation, was vice-chairman of this) handled Regulatory Procedures, Committee 4 Technical Regulations and Committee 8 the restructure of the Radio Regulations.

Altogether 137 radio amateurs had been identified as among the Conference attendees, totalling over 1,900 from 147 countries and 38 international organisations.

Working Group 5c dealt with allocations from 225 to 2275 MHz, a segment of the frequency spectrum. The amateur service was strongly supported by the USSR as it needed that spectrum to develop In Region 1 for an amateur allocation at 1225 MHz.

There appears to be general support for increasing the amateur satellite frequency bands. At a full meeting of Committee 5 on 20th October there was a lengthy discussion on HF broadcasting, a view which was supported by the USA. India, in a long prepared statement, considered there should be a firm frequency assignment plan for broadcasting (in contrast to the present system in which there is a flexible quarterly review of individual needs by the users on a co-operative basis), which was supported by the USSR as it needed that spectrum for its fixed services.

Committee 5 ended up by forming a working group which is to study all of the proposals related to HF broadcasting and to consider, inter alia, the preparatory work that would be necessary to organise an HF BC conference, including the development of principles and the technical bases for planning.

Once again, please view all these comments with caution — anything could happen to them late in this WARC.

The Radio Amateur Societies of Cayman and Fiji have been duly elected as the 106th and 107th members of the IARU.

COMMONWEALTH CONTEST 1979

As is well known, the ratio of the number taking part in any contest to those who go to the trouble of sending in an entry is very small indeed. This year’s Commonwealth Contest was no exception to the rule, but the total entry at 126 was a continuing improvement on that of recent years. In fact, the entry received from VK was a record 41, topped only by the United Kingdom 45, with 22 VE, ZLs and 12 others from 11 different countries.

The points range of the first 6, 6613 to 5251, was very similar to 1978, 6677 to 5249, but the leading VKs improved their positions to 12, 14, 19, 23, 27 and 34 last year.

The leaders were—

The leaders were:

1. VE3CC 6613 5. G3FXB 5516
2. VESKZ 5786 6. G3MXU 5251
3. VESRG 5646 a. VK4LV 1090
4. VESBV 5527 12. VK2BPN 4400

RECEIVING SECTION

2. Eric Trebilcock BCRS195, 2830 points.

AUSTRALIAN SCORES

Points
1. VK3BPN 4400 80. VK4LV 1090
2. VK3XA 4933 85. VK4UR 1000
3. VK3MT 4976 90. VK3L 1000
4. VK3AFG 3635 91. VK2DU 948
5. VK3MD 3405 91. VK3CG 948
6. VK4KX 3160 97. VK5L 780
7. VK3B 3090 98. VK3RG 770
8. VK3BC 2900 101. VK5BD 740
9. VK3GZ 2348 103. AX6IE 655
10. VK3WZ 2345 105. VK2U 625
11. VK3AEW 2059 106. VK6SU 610
12. VK7TRY 1955 108. VK3BDH 565
13. VK3PB 1850 110. VK3FG 555
14. VK3X 1813 111. VK4LJ 505
15. VK7AR 1685 112. VK7GC 490
16. VK3AYO 1545 118. VK5DL 400
17. VK3SW 1425 121. VK7CH 358
18. VK3UH 1265 122. VK3QT 358
19. VK1KY 1218 123. VK5HO 200
20. VK7JB 1175 124. VK3ABA 75
21. VK9GG 1095

AUSTRALIAN SCORES

Points
12. VK3BPN 4400 80. VK4LV 1090
13. VK3XA 4933 85. VK4UR 1000
14. VK3MT 4976 90. VK3L 1000
15. VK3AFG 3635 91. VK2DU 948
16. VK3MD 3405 91. VK3CG 948
17. VK4KX 3160 97. VK5L 780
18. VK3B 3090 98. VK3RG 770
19. VK3BC 2900 101. VK5BD 740
20. VK3GZ 2348 103. AX6IE 655
21. VK3WZ 2345 105. VK2U 625
22. VK3AEW 2059 106. VK6SU 610
23. VK7TRY 1955 108. VK3BDH 565
24. VK3PB 1850 110. VK3FG 555
25. VK3X 1813 111. VK4LJ 505
26. VK7AR 1685 112. VK7GC 490
27. VK3AYO 1545 118. VK5DL 400
28. VK3SW 1425 121. VK7CH 358
29. VK3UH 1265 122. VK3QT 358
30. VK1KY 1218 123. VK5HO 200
31. VK7JB 1175 124. VK3ABA 75
32. VK9GG 1095

AUSTRALIAN SCORES

Single band entries among the above were:
14 MHz: VK3AYO Overseas leader, VK3BDH, VK3YL, VK5DL.
21 MHz: VK3AZA.
28 MHz: VK4AU.

OTHER PACIFIC AREA RESULTS
Points
10. 5W1ZB 4736 73. V98EJ 1250
11. TS820 4519 83. 9V1TL 1023
25. 5Z1HV 2900 69. ZL2BCO 995
31. 5Z1VR 2850 102. ZLuB 759
67. P29EJ 1385 116. ZL2MM 423

AUSTRALIAN AWARDS
The Silver Medallion for the leading VK entrant was won by Peter Naish VK2BPN, who repeated his success of 1974.
The Bronze Medallion for the VK middle placing was taken by Colin WJ2AS, with 16 bonus QSOs.
How the leaders made their scores:
OSO/Bonus areas per band, 80 to 10.
VE7CC 31/23 106/42 144/54 158/47 78/43
VE3KZ 34/12 94/38 196/51 149/28 114/24
G3FBX 11/6 86/60 121/59 86/64 66/35
VK2BP 17/15 36/31 105/48 70/35 37/26
VK4XU 17/15 27/25 54/44 43/26 22/18
RSGB COMMENTS
This year's Commonwealth Contest again produced a satisfactory entry, with the total number of logs received increased by eight percent over 1978. Many comments reflected the unique nature of this contest, with, perhaps, G3DVDY summing up the overwhelming view: "The friendly contest— that's what it should be called." Without doubt, it is one of the most demanding events in terms of strategy and experience, but also requiring a high degree of efficiency in equipment and a comprehensive range of antennas.
Band conditions were generally good throughout the contest, although the lower frequency bands, and 7 MHz in particular, were not as good as in 1978. Conditions on the day seem to have favoured Western Canada and the Pacific area, as reflected in the number of those stations high in the table.
After two years in the runner-up position, Lee Sawkins VE7CC took top honours. The good trans-pacific openings enabled him to build up a total of 207 bonus OSO's which put him in a commanding position ahead of Bob Nash VE3KZ. Al Slater G3FBX continued his dominance of the UK side of the contest, notching up his seventh successive win of the contest.
The Receiving Section continued to be a tussle between Ron Thomas VRS1822 and Eric Trebl- cock BC9SH, with the Receiving Rose Bowl going to the latter.
In recent years the top of the table has been dominated by western Canada and Oceania, but anyone who feels that this is an unacceptable situation should look at the results for 1975 when the leading G station was only 26th place due to the very fast sunspot cycle. The top VE7/VK/ZL could only achieve seventh place.
The other areas of the rules mentioned in logs is the actual duration of the contest, with a number of comments that it should revert to 24 hours, or that it should be 24 hours out of 36 or 48. About an equal number of entrants would like it to stay at 24 hours. The rules are reviewed each year, and I feel that the Contest Committee would be pleased to receive any comments and suggestions at any time.
Next year sees the 50th anniversary of the first Beru contest, and the committee hopes that there will be bumper activity, and that many stations who took part in the first event in 1930 will be able to make an appearance.
1980 CONTEST
1200GMT 8 March to 1200 GMT 9 March. Rules will appear in February AR.

LETTERS TO THE EDITOR
Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

1/3 Waverton Ave., Waverton 2060
17 October, 1979
Dear Sir,
With the very large increase in the number of bands, there will be many of them who will have some difficulty becoming aware of the excellent technical articles which have appeared in AR from time to time.

It would seem to me that there would be a real benefit in reprinting some of the articles which have aroused special interest, or which have included designs which have become specially popular over the years. For example, the GORB antenna is widely used, is cheap to construct and would appeal to a lot of new amateurs. As far as I can see, one would have to go back to the January 1973 issue of AR to get details, although, of course, many amateurs who use them could describe them. However, people like to read the whole article for themselves, I would think.

In addition to original articles, some of the variations and improvements could be included.

As an amateur of only three years standing, I do not know what other good, old articles might be considered, but such things as the linear amplifier for Australia and conditions could be constructed for the majority of people, and would still offer scope for home-brew construction.

I hope this suggestion will be of some interest.

Yours faithfully,
J. Jim Somerville VK2BJX

EDITOR'S NOTE:
Consideration has been given but costs to date have precluded such a venture.
It is responsible for the efficient clearance of traffic on the net and the maintenance of net discipline.

LINK: Two stations operating on the same channel for the purpose of communicating to one another is termed a Link.

NET: A number of stations on the same channel for the purpose of communicating with the one serving the senior Headquarter.

PROWORD: (I) Prowords are pronounceable words or phrases which have been assigned meanings for the purpose of expediting message handling. A proword, or a combination of prowords, must be used as the text of a message.

MESSAGE TYPES

5. There are four types of radio telephone communication:

(a) Conversations: Usually a series of alternate voice transmissions between two users in which speech is interrupted by information and information exchanged. The transmission must be as brief as possible.

(b) UR messages: A user may wish to ask a question, send information, etc., without discussion. He can do this by giving his message verbally to the operator or by writing it down for transmission by radio as an Unregistered Message (UR). This is simply the user's text with an indication of the addressee where necessary. A UR message may be written on a message form with "UR" written over the Classification/Originator's Name Spaces.

(c) Formal messages: A formal message is one that is written down and signed by the originator. It is normally written on a message form (COF2). Records of formal messages are kept in signal centres or, if there is no signal centre, at the radio terminal.

(d) Service messages (SVC): A service message is one between communications personal concerning any phase of signal facilities or circuit conditions.

Service messages are identified by one of the following: (i) Reference to another service message; (ii) The abbreviation SVC as the first word of the text of the radio message being specifically addressed to a signal centre.

Service messages generally concern messages previously handled, addressed to or referred by the originating station, and will normally be assigned a precedence equal to that of the message to which they refer.

HOW TO SPEAK

6. Clear speech is necessary to help the receiving operator to understand you. The following factors are important:

1. For radiotelephony
   - Pitch: Any phase in ordinary conversation to make sense, and not word by word, e.g. — Ratios will be brought up as soon as point Y is reached.
   - R — RHYTHM; S — SPEED; V — VOLUMINE; P — PITCH.

2. Speed: (a) Speak steadily at medium speed. If you speak too quickly your speech will be received as an unintelligible jumble of words. Remember that the receiver often has to write what you say. (b) The speed of speech must be constant throughout. (c) The less important words must not be said as quickly as the important words. (d) If the message has to be written down by the receiver, pauses between the transmission of phrases must be longer.

3. Volume: (a) Volume must be kept to an absolute minimum — which drain can be calculated from measurement of the voltage drop across R21. (b) Do not say "er" after a word, or insert it between phrases.

4. Pronunciation: (a) Prowords are pronounceable words or phrases which have been assigned meanings for the purpose of expediting message handling. A proword, or a combination of prowords, must be used as the text of a message.

5. Signalling: (a) Calling signals are the call sign of the amateur concerned or, in the case of a group station, the nominated call sign.

(b) Control: One station on a network or "net", normally the one serving the senior Headquarters, is appointed Net Control Station (NCS).
DIGITAL DISPLAY COMMUNICATIONS RECEIVER WITH CPU DIGITAL CLOCK & TIMER FRG-7000

FEATURES
* Digital frequency display gives resolution to 1 kHz, using large, bright LED's for maximum readability.
* The built-in digital clock can be set to your local time plus GMT time. Just flick a switch for selection of the desired time!
* If you want to record a program, but have to be away from your station, the FRG-7000 will do it for you! The clock contains a timing feature that activates the receiver and internal relay contacts. Set the time you want to start and stop recording, hook up your tape recorder, and the FRG-7000 will do the rest!
* An FET front end provides excellent sensitivity, and the "Wadley Loop" heterodyne oscillator yields rock-solid stability. Separate SSB and AM filters allow selection of the optimum selectivity for your application.
* The built-in AC power supply allows operation from 100/110/117/200/220/234\ volts AC, 50/60 Hz. The front panel lamps and digital display may be turned off, too, for energy conservation. A 12 volt DC supply is an available option.
* Ease of operation is ensured by careful selection of positions for controls and switches. You'll never own a receiver that's easier to use!

SPECIFICATIONS
GENERAL
Frequency range: 0.25—29.9 MHz
Modes of Operation: AM, SSB, CW
Sensitivity: SSB/CW—Better than 0.7 \( \mu \)V for S/N 10 dB AM—Better than 2\( \mu \)V for S/N 10 dB (400 Hz 30% modulation).
Selectivity: SSB/CW ±1.5 kHz (-6 dB), ±4 kHz (-50 dB), AM ±3 kHz (-6 dB), ±7 kHz (-50 dB)
Stability: Less than ±500 Hz drift for any 30 minute period after warm-up.
Antenna requirements: Random wire for 0.25—1.6 MHz, 50 ohm unbalanced feed for 1.6—29.9 MHz.
Speaker impedance: 4 ohms
Audio output: 2 watts
Power requirements: 100/110/117/200/220/234 V AC, 50/60 Hz
Power consumption: 25 VA
Size: 380(W) x 125(H) x 295(D) mm
Weight: Approx. 7 kg
** 117 volts AC for UL-approved model.
THE QUEENSLAND AUTHORISED DEALER

MICROPHONES
VM-1 Noise cancelling, hand ptt, low z

VM ELECTRONICS

RADIO TELETYPE TERMINAL
0-7000 TONO RTC

DAIWA LOW PASS FILTERS
FD30LS 32 MHz, Fc, 200 w, 3 stages

BALUNS
AS-BL Asahi 50 ohm for beams
BL50A 50 ohm, 4 KW, 1:1 for dipoles
BL70A 70 ohm, 4 KW, 1:1 for dipoles

TUBES
6KD6 Finals for Yaesu linears
6JS6C Finals for Yaesu transceiver
12BY7A Driver
6146B Finals

CW FILTERS
FT101E Yaesu
TS520S YG3395 Kenwood
TS820S YG88C Kenwood

MORSE KEYS
HK702 Deluxe Key with marble base
HK705 Economy Key
HK706 Operator's Key
MK701 Manipulator (side-swiper)
PALOMAR 1C Keyer

JAYBEAM ANTENNAS
5Y/2m 5el 2m, 7.8 dBd gain, length 1,6 m
8Y/2m 8el 2m, 9.5 dBd gain, length 2.8 m
10Y/2m 10el 2m, 11.4 dBd gain, length 4.4 m
10XV/2m 10el 2m, cross yagi, 11.3 dBd
DB70cm Twin 8el, 70 cm, 12.3 dBd, 1.1 m
PBM 18/70 18el, 70 cm, 14.9 dBd, 2.8 m
MBM48/70 48el, 70 cm, 15.7 dBd, 1.83 m
MBM88/70 88el, 70 cm, 18.5 dBd, 3.98 m
PMH/2C Phasing harness
8XY/2m 2m cross yagi, 8el, 9.5 dBd, 2.8 m
12XY/70 70 cm cross yagi, 12el, 13.0 dBd, 2.6 m

SCALAR
M22T 1/4 wave 2 m mobile whip, top only Qty 1-4
M25T 5/8 wave 2 m mobile whip, top only Qty 1-4
BASE B/L for above

MICROPHONES
VM-1 Noise cancelling, hand ptt, low z

ICOM GEAR
IC701 transceiver
IC22S 2m transceiver
IC551 6m transceiver
IC280 2m fm remoteable
IC502 6m sb portabe
IC202S 2m sb portabe
IC211 2m all mode
ICRM3 Remote control unit

IC-551 6M TRANSCIVER
WITH SCANNING FACILITY

CNR MARSHALL RD & CHAMBERLAIN ST.
TARRAGINDI - BRISBANE PH. (07) 48 6601
P.O. BOX 274, SUNNYBANK, OLD, 4109.

OPEN THURS. NIGHT & SAT. MORN.
LBO 508A OSCILLOSCOPE
Bandwidth DC-20 MHz. Sensitivity 10mV/cm. 130mm highly C.R.T.

LAC 895 ANTENNA TUNER
Built-in SWR and in-line Watt meter. 5 bands from 3.5 to 28 MHz. 500W pep transmitter input.

LAG 26 AF SIGNAL GENERATOR
100KHz-100MHz Solidstate RF signal generator. Suited for aligning the IF circuits in AM, FM and TV sets.

LDM 170 DISTORTION METER
20Hz-20kHz 0.3% F.S. Measures distortion, signal-to-noise ratio, signal levels.

LBO 510A OSCILLOSCOPE
20 mV/4MHz. FETS input

LSG 16 RF SIGNAL GENERATOR
20Hz-200kHz Stable generator for all types of audio circuit.

LFM 39A WOW AND FLUTTER METER
For accurate and easy determination of the wow and flutter characteristics of tape recorders to JIS, CCIR and DIN standards.

LMV 181A AC MILLIVOLT METER
AC Voltages from 100yV up to 300V. 5Hz-1MHz.

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STORE (07) 48 6601, OFFICE (07) 341 5377
TELEX AA 40811 A.H. BRIAN 341 4767
CRES. 273 2552, BEV. 341 282 (GOLD COAST)
The Pet has a television screen, a keyboard as simple to use as a typewriter and a self-contained cassette recorder which is the source for programmes and for storing data in connection with these programmes. And it has, in its standard configuration, an 8K user memory. (This is in addition to the 14K operating system resident in the computer).

SPECIAL AT NO EXTRA COST
$200 value of programmes will be provided with each PET purchased prior to December 31st, 1979.

The CBM Computer is now a truly sophisticated Business System with the announcement of these Peripherals.

The CBM Computer, with the Floppy Disk and Printer makes an ideal business system for most professional and specialized fields, medicine, law, dental, research, engineering, toolmaking, printing, education, energy conservation, etc. The CBM Business System as a management tool, delivers information to all levels of Business previously attainable only with equipment many times more expensive. In the CBM Business system is one of the most cost efficient business tools today. It offers a wide range of applications from logging management strategy in major corporations to organizing accounts and inventory control in small businesses. Here are just a few of the cost saving uses in the corporation, professional office or small business stock control, purchasing, forecasting, manufacturing, costing, customer records, mailing lists, etc.

Dual Drive Floppy Disk

The Dual Drive Floppy is the latest in disk technology with extremely large storage capability and excellent file management. As the Commodore disk is an "intelligent" peripheral, it uses none of the RAM (user) memory of the CBM. The Floppy Disk operating system used with the CBM computer enables a programme to read or write data in the background while simultaneously transferring data over the IEEE to the CBM. The Floppy Disk is a reliable low cost unit, and a convenient for high speed data transfer. Due to the latest technological advances incorporated in this disk, a total of 340K bytes are available on the two standard 5 1/4 disks, without the problems of double tracking or double density. This is achieved by the use of two microprocessors and memory I.C.s built into the disk unit. Only two connections are necessary: an A/C cord and CBM interface cord.

Tractor Feed Printer

The Tractor Feed Printer is a high specification printer that can print on paper (multiple copies), all the CBM characters - letters (upper and lower case), numbers and graphics available in the CBM. The tractor feed capability has the advantage of accepting mailing labels, using standard preprinted forms (customized), cheque printing for salaries, payables, etc. Again, the only connections required are an A/C cord and CBM connecting cord. The CBM is programmable, allowing the printer to format print for width, decimal position, leading and trailing zero's, left margin justified, lines per page, etc. It accepts 8½” paper giving up to four copies. Bidirectional printing enables increased speed of printing.

CNR MARSHALL RD & CHAMBERLAIN ST. TARRAGINDI - BRISBANE PH. (07) 48 6601 P.O. BOX 274, SUNNYBANK, OLD, 4109.
The M-65 is a complete Morse Code and RTTY system for the PET microcomputer. It is made up of two parts: the hardware and the software consists of one PC board which is connected to your rig and to your PET user port. No modifications are required to either your radio equipment or to the PET — everything plugs into existing jacks. No external power supply is required.

The software consists of two computer programs — MORSE and RTTY — supplied on one audio cassette. Both programs are written in BASIC with machine language subprograms. Each requires 8K bytes of RAM. Program MORSE allows continuous speed adjustment from one to 100 words per minute in any of three modes of operation: Receive, Send, and Code Practice.

In addition, up to ten programmable message memories (2550 characters total) allow "brag tapes", pictures, etc. direct from the keyboard. A special feature allows sending the time automatically at the press of a single key!

Other MACROTRONIC modules include the M650 Deluxe RTTY and Morse System Interface with software cassette. MLK-1 loop Keyer module. MSK-1 Solid State Keyer module. FSD-1 Phased-locked loop de-modulator, especially for the RTTY enthusiast. If you have a TSR-80 or a Sorcerer, we can help you too!

State of the art design features make the TU-170 ideal for HF and VHF autostart operation at an unchallenged price.

- Stable audio frequency shift oscillator produces phase coherent sine wave tones.
- TTL compatible inputs and outputs for auxiliary equipment.
- High level output for scope tuning.
- 100 Hz shift CW keying input.

CNR MARSHALL RD & CHAMBERLAIN ST.
TARRAGINDI — BRISBANE, QLD.
"YL’s and XYL’s call me for Christmas advice — Brian"
IONOSPHERIC PREDICTIONS
Len Poynter VK3ZQ/P/NAC

DIAL-A-PROP
A telephone service, telephone (02) 269 8614, provided by the Ionospheric Prediction Service, detailing the state of the sun, the ionosphere and the earth's magnetic field, began on 1 October, 1979. The daily report includes the following details:

1. The current status of IPS disturbance warnings. If one is current, its text will be given. The warnings include details of solar activity, sudden ionospheric disturbances (daylight fade-outs), and current and expected geomagnetic disturbances.

2. The current state of solar activity (flares, active sunspot regions), and the expected course of solar activity over the next three days. Flares are described on the M (1-9) and X (1-9) scales which refer to their medium or strong X-ray effect.

3. A report on ionospheric conditions in the Sydney area and a forecast of general radio propagation quality for the next three days (good, fair, poor).

4. The current state of the geomagnetic field and its expected behaviour over the next 24 hours.

5. The Ottawa 10.7 cm solar radio flux for the previous 24 hours and the predicted values for the next three days.

6. The observed magnetic A-index (Fredericksburg) for the period two days previously and the predicted values for the following three days.

The duration of the message is between 45 and 90 seconds and the contents of the message is updated daily at about 1000 AEST (0400 UTC), with more frequent amendments at times of high solar, geomagnetic, or ionospheric activity.

This service is titled the IPS Daily Solar Geophysical Report and the telephone number is (02) 269 8614.

YOU and DX
Mike Bazley VK6HD
8 James Road, Kalamunda W.A. 6076

I enjoy chasing DX! No doubt you do too, otherwise you would not be reading this. Unfortunately VK6HD only has a few hours per month to spend on this hobby and therefore does not, by any means, hear all that is going on. If you really believe that AR should have a DX column why not do your bit by providing information. All that is needed is a short note on a piece of paper stating that you heard so and so was going to "Woop Woop". When I wrote the first copy for this column I mentioned that I only got the job because no one else was willing; I assumed that others would think it worthwhile and would chip in. I'm happy to collate the information but I cannot be on the bands 24 hours a day; between us all we can cover most bands, most of the time for the benefit of all. How about you? What have you heard worked? Have you any DX photos? Remember, it's our column, if you want it to be, or will you let it die a natural death.

Please spend 20 cents this month.

DX NEWS, RUMOURS, FACT AND FICTION

A couple of months ago I asked whether anyone had received a QSL from YI4SC. No sooner had this query gone to print when the QSL was received. YI4SC was a special call issued to a scientific camp and the QSL was received via Box 5864, Baghdad. These things come in cycles, of course, and at about the same time the QSL arrived a QSO was made with YI1BGD/P, who complained to me of the lack of VK stations in his log! He asked me to pass on to those interested that he operates around 14210 kHz most days from about 1700 GMT. That time is a bit of a killer, especially in the eastern States. QSLs via the QTH given above. The amazing thing with the QSO I had with him was that there was absolutely no pile up and after our QSO he had to make a couple of CQ calls to get his next contact. It looks as if this country at least as far as
Europe is concerned is off the wanted list. Thinking about the trouble I had in finally nailing this country, my thoughts went back to the late forties and early fifties when we didn't have decimal currency then and the band was full of C, V8S, XZ, etc., all countries I now need from VK6.

Did you QSO one of the T4s the other day? Stations have been reported, T4A, 28AES/T4 and WA6QFC/T4. QSL the last named via 9K4KX. T4 is independent of the state within South Africa, along with S8 and H5. Rumour has it that those areas will be counted as new countries by the ARRL DXCC committee after March 31st, 1980, but QSLs will be accepted from the date of independence. The moral of this story is that if you are a DXCC QSL chaser it might be as well to make sure you have all the QSLs from the three.

For those of you who chase LF DX I hope you did not miss the superb two day openings during midwinter. If you did next time ten metres appears to be really flat check the LF bands at sunrise or sunset. For VK6DH 160 metres produced 25 W QSOs plus one European and the opportunity to hear, but not work, my first U8 station on the band. Lots of other VKs were heard making DX QSOs and everyone seemed to have their own mini pile-up.

At the other end of the scale 10 metres has been just as good, with the following being reported: AP, A2, A7, A6, CP, D2, DQ, FI, J6, KH2, FZ, S8, ST, VP6, ZD7, ZD8, ZP, 369, ST5, SH, 7P, 9X5, to name just a few. One really needs to keep an occasional check on 14225 kHz.

VK8 - Kingman Reef and Palmyra. Seven operators plan to put these spots on the air in November using 4 stations, all bands 10-160, CW and SSB. It is reported that the US government intends to purchase Palmyra for use as a nuclear waste dump. If this is true it could mean that this would be the last from this area.

Marion Island, Z52MI, still being reported active on 14240 from about 1200 GMT. If you still need this one It looks like a bit of midnight oil burning is required but at least the band is open to South Africa at that time of morning. Please QSL.

K5EEA is a new station active from San Andreas Island. QSL via PO Box 484, San Andreas Island, California.

That XZ operation mentioned in an earlier column is still going good. Keep checking 21225 kHz with an occasional check on 14225 kHz.

LW3Y, Sandwich Islands, is now being reported on all bands from 40 to 10 metres CW. Mostly working into Europe or North America. It has been reported that he has been on 21240 kHz. It is therefore possible that this will do for further TL8 operations! On the positive side Murray reports RT8FF (QSL via DL7TJ), VP8SB (QSL via G3ZMF), 6Z2V/36D, DJ9H/KB, AP2TN, 36UCD to mention a few on 14 CW, and QV9NS, ST9J, QSL via Box 502, Inklin, Crete), ST9DD, J6CCT, T2ATA, 9S5PP, to note a few on 20 SSB. All in all, taking all the DX bands it looks like we have never had it so good.

Pse QSL! A phrase that is said more often to an Australian amateur than used by him. What is your reaction to a request? Most will reply "QSL" but only a few mean it. QSLs now represent a reasonable outlay in funds, so let's try and have an honest QSL policy. If you do not QSL, say so; if you only QSL on receipt, say so; if you only QSL against an addressed envelope and return postage, say so; don't let the person at the other end waste his lime and money. Remember there is no obligation on the part of a station to QSL, but there is a moral obligation to be honest in your reply to the request "Pse QSL".

Abu All OE6XG/7.

That this operation from Abu All produced 12,700 contacts, and I'm sure that anyone who heard them on 10 metres was able to make a QSO. The equipment used apparently was supplied by Y1 King Husen, the operators being I2CKM, I2GFP, J2A2, DX9VE via 9O8EEG. Ken also mentions that 5V7GE is very active in 14192 or 14340, QSL via VE2AS, and that OX3EA often calls into the Pacific DX net (14265 Tuesdays and Fridays).

Murray VK4KK notes a few goodies for the rumour corner. P6FQ/TT8, TT6KP, supposed to be QRV, also TL6JM, is reported as being back on the air. At the time of writing there has been a change of government in TL8 land, so I don't know what will happen next. Operating will be spasmodic as this is a holiday and not a DXpedition trip, but he suggests that checking 80 metres upwards from 0900Z to 2100Z may find him. All QSLs will be answered via the bureau.

NEW PREFIXES

H8A has been allocated to Panama. T4 has been allocated to Vandeland. Did you catch T4AHC on RTTY or WA6QFC/T4, T4A, Z8ESE/T4 or Z8AF/T4? QSL T4A via Z8EAK, Z81AF and Z8ESE via Z8AEML. T3 has been allocated to Kiribati. Kiribati comprises Gilbert Islands and Ocean Island VR1, Phoenix VP9 and Christmas Island VR3). Those PA50, 51, etc., stations are in recognition of 50 years of amateur radio in the Netherlands. Operation was from October 10 to November 10. PA0 equals PA50, PA3 equals PA53, etc.

The tentative dates for the N2KK DXpedition are as follows, November 24 FR7, December 1 FR7/T, December 10 FH8, December 15 FR7/G, January 1 FR7/J, January 10 3B8, January 12 3B8, January 20 5R8 and January 30 602. Cost is set at $30,000!
Dave will be accompanied by KSCO and NSWU, CW/SSB operation on all bands 10-160m. Donations to WBSWIE, Indian Ocean DXpedition Trust Funds, Commonwealth Bank, Box 3494, Sydney, New Sth 2000. (Thanks G. Watts.)

During the recent ZK1 Manakiki DXpedition the boys rattled up over 15,000 QSOs. There is no doubt about it, the QSO rate in a DXpedition is about three times above the rate, of say, 10 years ago. Do we all have better gear or are we better organised?

ZS2MI still very QRV on 15 and 20 SSB, but is reported to use CW on either band in the 5th of the month. He has not been heard at my QTH on CW, though has been copyed several times on SSB.

If you QSOed U9Y during October-November you should direct your QSL via U900A. This DXpedition was very active and was reported on all bands 80 to 10m CW and SSB. QTH Tanna Tuva, which is in Z200CW for WAZ.

ATXQ is QRV every Sunday on 28050 at 1200Z working to a list taken earlier by a DL station. To get on that list I would suggest monitoring PO Box 20, A-4023, Linz, Austria. Donations are to CN. 3V, 5U, XT, C5, etc., November 1970 to KC6SZ — Via JE1JKL.

KC8SX — Via JA1NRH.

FW0XR — Via DK6XR.

FP8AA — Via K2RW.

FG7AS — Box 444, Guadeloupe.

D68AK — BP 50 Moroni, Comoros.

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AWARDS
COLUMN
Bill Verrall VK5BV
7 Lilac Ave., Flinders Park, S.A. 5025

SUN VALLEY AWARD
Here are the details of an award Issued by the VK4 Brisbane Sun Valley 10X Chapter. The award is available for working 10X Chapter members on 10 metres.

NET FREQUENCY AND TIME
Saturday on 28.595 MHz at 2330 UTC.

BASIC AWARD
Requires 10 points, including one BC or one VIP member. Cost $2.00 airmailed — award value 1 point.

FIRST ENDORSEMENT
Requires 50 points, including one BC or one VIP member. Cost $1.00 airmailed — award value 1 point.

SECOND ENDORSEMENT
Requires 100 points, including two BC or two VIP members. Cost $1.00 airmailed — award value 2 points.

VIP PENNANT
Requires 250 points, including five BC or five VIP members or combinations. Cost $3.00 airmailed — award value 6 points.

Any station may be worked twice for the VIP Pennant and the points totalled, provided the contacts are 24 hours or more apart. All points can be carried forward to the next endorsement.

Basic award holders are classified ASSOCIATE members and are denoted by the suffix “A” — award value 2 points.

Chapter members by number only — additional $1.00, worth extra 1 point. Charter members are designated by suffix “C” — additional $2.00, worth extra 2 points.

First State and First Country add one point to credit value.

NEW FROM VK YL
In Tasmania, there are a few YLs who are active on the bands. Helene VKTHD has regular skeds on 20m and 10m each week. You can catch Helene during the day providing she’s not relieving a vacationing pharmacist or assisting her three teenagers with their activities. She is also the secretary of the Southern Branch Tasmanian Division WIA and the State Co-ordinator for ALARA.

Sue VK7NSU/2SU has had the double call sign since February 1978. Her radio activities involve her on the executive of the Southern Branch Tasmanian Division WIA, as Southern Scribe for their QRM Newsletter, and on the Tasmanian Amateur Advisory Committee. On the air, Sue is very active on 2m. She was on holidays in Queensland during October with her two children and made contacts through the local 2m repeater.

Pauline VK7NPK passed her NAOCP last year, along with her husband. Both sat for the last AAOCP exam and are awaiting the results.

In the north is Lucy VK7NSB, who received her Novice ticket in October 1976. Lucy is secretary of the Northern Branch Tasmanian Division WIA.

The Annual General Meeting of ALARA was held at the home of Heather VK3AZU in Brighton, Victoria. Results of the elections will be posted next month. YLs interested in joining ALARA are invited to write to the Secretary, Box 110, Blackburn, Victoria 3130.

The ALARA net is Monday evenings at 1030 GMT on 3.56 MHz ± QRM.

Mavis VK3BIR, president of ALARA, travelled to Port Villa in October and operated with a YJ call sign. The pile-ups were incredible and Mavis worked the DX stations easily and tirelessly.

Congratulations to Daurel VK3ANL (VK3NCS) for her award from the YL-OM Contest. Her category was YL from Australia on CW.

ALARA
AUSTRALIAN LADIES’ AMATEUR RADIO
ASSOCIATION

NEWS FROM VK YL

VK2

The University of NSW Amateur Radio Society will hold its 7th annual amateur radio study course from 14th December. The course extends for 6 weeks, is held on Tuesday, Thursday, Friday and Saturday, 18.00-21.00h at the WIC, 14 Atchison Street, and enrolments can be for either the Novice course or the AAOCP course. Cost $22 per head ($5 more only), all textbooks and notes are supplied.

COPPER
LEAD/ZINC plus 5 points.

SILVER
LEAD/ZINC plus COPPER plus 5 points.

When applying for this award CHC/GKR rules shall apply.

DESCRIPTION
The award measures 255 mm x 400mm printed in three colours on high quality matt finish white card — border and background in yellow, illustrations in brown and black.

Applications should be submitted to the Awards Manager, Mount Isa and Districts Radio Group, PO Box 232, Mount Isa, Qld. 4825, including 4 IRCs or equivalent ($1.20) to cover P & P and costs.

Good hunting.

HAMADS

• Eight lines free to all WIA members. $9 per 3 cm for non-members.

• Copy In typescript please or In block letters to P.O. Box 150, Toorak, Vic. 3142.

• 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 1979 Call Book.

FOR SALE

12 Brand New 4-125a, still in cartons, $15 ea.; also like to purchase or swap sockets to suit same. ABCED, QTHR.

THE-DX Beam, 6 ft., 15-10-25m, with BN-66 balun; two C42 38-60 MHz FM transceivers with 24V DC PSUs, mics, cables, ATU. Offers to VK2BRB, QTHR. Ph. (065) 45 1527.

Swin 580C EC, ext. 508 VFO, VK2-VOX, 230X and 141X, DC power supplies, box spares and tubes, $400, O.NO. Jack VK3MQA, QTHR. Ph. (03) 523 6557.

Palomer (USA) IC Keyer, brand new, now unwanted, sends manual, semi-auto, dot memory, squeeze and lambic, 5 to 50 w. o.m., operates from 9V transistor battery, purchased direct ex USA, including duty, for $122 (retail in VK 1391), will sell $120, O.NO. VK2BFLJ, QTHR. Ph. (03) 42 5758.

KDK FM2001, 6A, 1000 ch. 4 memory with memory scanner, 15W output, $300, O.NO. Barry. Ph. (02) 99 4993 after 6.30 p.m.

Yokuko 2m FM Transceiver, synthesised, 800 ch., with Inst. book, as new, $250; OFL2000 Yaesu, linear, with Inst. book and 2 sets spare tubes, $250. VK3KPR, QTHR. Ph. (056) 62 2711.

Kenwood TS520S TCvr, as new, transmitted only into dummy load, $550, O.NO. Will consider swap for micro-computer equipment. R. Pardini VK6ZAE, QTHR.

FT101B, exc. cond., little use, all access, new linacs, $500; Kenwood TS600 6m all mode Trx, new, complete in factory packing, $500; Kenwood TR2200G 2m portable, exc. cond., nicads, built-in charger, $450; FT200B, exc. cond., little use, all access, $250, O.NO. Dave VK7NPK, QTHR. Ph. (03) 62 4575.

Wallaroo linear, with Inst. book, as new, $280, ONO; FL2000 Yaesu synthesised, 800 ch., FM Transceiver, 2m, $300; Kenwood TS1200, exc. cond., little use, all access, ONO. Barry Ph. (02) 99 4993 alter 6.30 p.m.

YAESU FT101B, exc. cond., little use, all access, new linacs, $500; Kenwood TS600 6m all mode Trx, new, complete in factory packing, $500; Kenwood TR2200G 2m portable, exc. cond., nicads, built-in charger, $450; FT200B, exc. cond., little use, all access, $250, O.NO. Dave VK7NPK, QTHR. Ph. (03) 62 4575.

Kenwood TS8200, complete, display, DC-DC power supply, 4 fix xtal fitted, aux. band installed. Phillips 30, 2000, 4000, 6000 w. o.m., exc. cond., $200; Kenwood TS8200A, 6000 w. o.m., exc. cond., $250; Kenwood TS8200B, exc. cond., $300. Bob VK3BG, QTHR.

PF8200, exc. cond., little use, all access, $250; Kenwood TS8200A, 6000 w. o.m., exc. cond., $250; Kenwood TS8200B, exc. cond., $300. Bob VK3BG, QTHR.

280 VA 20m Monobander, 4 elements, $140. Ph. (03) 592 7662.

Kenwood TS520S with 12V op., good cond., $600; also FT2000, unmodified, ideal for Novice use, $400 (both are sold); and 2 x 12V power outlets for access 12V, foot PTT, recorder, factory mods done, Hi Gain FETS fitted with sockets, owner’s manual, workshop service manual with bulletins, cables, original carton, $500. VK6BVL, Ph. (02) 57 4648.

264 BA 20m Monobander, 4 elements, $140. Ph. (03) 592 7662.

Kenwood TS8200 with 12V op., good cond., $600; also FT2000, unmodified, ideal for Novice use, $400 (both are sold); and 2 x 12V power outlets for access 12V, foot PTT, recorder, factory mods done, Hi Gain FETS fitted with sockets, owner’s manual, workshop service manual with bulletins, cables, original carton, $500. VK6BVL, Ph. (02) 57 4648.

Amateur Radio December 1979 Page 57
Converting Johnsson Viking, covers full 10m Novice band, $120. VK3BXS, QTHR. Ph. (03) 439 9328.

Swan 500 with power supply, spare valves, 400V PE PEP, excellent cond., $400. ONO. VK2BLK, QTHR. Ph. (02) 57 5606.

Converted CB for 10m Universe SSB 224M, 23 ch. In 5 kHz steps, 5 kHz clar., 28.460 to 28.595 MHz, complete with mic., power cord, mounting bracket and 10m old, works exc., sell for $90. John Bresten VK3NH, QTHR.

Signetics KT9500 (2650) with RMSB, 16k ram, PSU, manuals and software, all working. $400. VK3ACE, QTHR.

2m FM Multi 7 Tcvr, simplex 40, 50, repeaters 2, 3, 4, 5, 6, 7, 8, 3185; 8m AM, SSB Tcvr, Belcom Liner 6, 8W AM, 25W PEP, $240. VK3CGA. Ph. (03) 232 2005 A.H.

Yaesu FT221 all Mode Tcvr, little use, as new, spare PLL Board, Inst. English man., control and packing, $500. ONO. VK4GB, QTHR. Ph. (07) 399 2321.

Yaesu FT228RMD, all Mode Ta/Rx with digital memorey, AC or 12V DC, is made equal to FT901, FT9112, and FT625, 25W out, In mint cond., comp. with highgain long yagi, no further use due to change in QTH, $750 firm; ATU-HY FM Tcvr, $240. Yaesu FT200, 9 months old, all solid comp. with base and spring, $65; Oskerblok SWR 200, as new, English manual, $50; Drake W-4 watti- meter, 0-2, 0-200W, $60. Laurie Wade VK2AOW. Ph. (02) 848 5653 A.H.

Trio TS550 HF Tcvr, $350; home-brew frequency counter, 200 MHz, requires 1 MHz crystal, $90 or offer. Steve VK2ZSC. Ph. (02) 674 2104.

Kenwood TS-520S for sale or exchange for TS-120V, VK3KNL, QTHR. Ph. (03) 35 7563.

Kenwood TS-820S with CW filter, $850; external UFO VFO 820, $120; Kyokuto 2m FM Tcvr, $240. Kenwood KP202 hand-held 2m Tcvr, with charger and helical whl, $150; KP202 good cond., all mic. includes new G. H. Herden VK3EJK, QTHR. Ph. (08) 297 4950.

Oregon Masts, 1/33 ft., 2/22 ft., cAPPED, painted, for 2m to buy, $200. On airtight, $80. Ono. VK3EJ. Ph. (03) 20 2330.

Transceiver IC202, with H/4 8 element yagi, $175. VK3BCY, QTHR. Ph. (03) 648 4775.


6m Linear Amp YL1080 Final, 250W PEP, incl. power supply, $85; Vinten MTR20 2m FM Tcvr with ch. 2, 40 and 50, $40. VK2CTE, QTHR. Ph. (09) 276 6265.

Yaesu FTDX1000 Tcvr, good working order, all solid state except driver and finals, recently o/hauled and aligned, includes new set of finals and handbook, $175. Bert SMre VK5NMS, QTHR. Ph. (03) 56 8311.

Hamcallers NT3T Tx, CW/SSB, 80-10m, In very good cond., with manual, $130. ONO. VK3AUA, QTHR. Ph. (03) 99 2470.

FT-850 6m Transverter, complete with all leads and manual, $170; FR101D digital Yaesu Rz, 160 to 2m, has all xtalts and filters, mint cond., necessary connection leads and manual, $500. VK4UJ, QTHR. Ph. (07) 56 2596.

Yaesu FT200/FP200, late model (black front panel), good wkg order, plus some useful mods, including 6EH7 RF and IF mods, some spare values and handbook Included, $350; Swan 350, 40W DC supply, by Hampro, uses 2N3055 transistors, works OK, $40. Greg Nixon VK5ZER/NGN, 6 West Tee., Tumby Ba, SA. Ph. (086) 88 2455 A.H., (086) 88 2456 Bus.

Yaesu FTDX100 Tcvr, good working order, all solid state except driver and finals, recently o/hauled and aligned, includes new set of finals and handbook, $175. Bert SMre VK5NMS, QTHR. Ph. (03) 56 8311.

Trifo-Kenwood Amateur TX590 Custom Special and JR599 custom special with speaker SP520 and multi., units can be used combined or separate, as new, $950. M. Gerda, PO Box 80, Pennant Hills 2126. Ph. (02) 848 0414 A.H.

Johnson Viking Matchbox, 10-80m, coax in/out or wire, 2 wire line, relay switching, 2 kW PEP rating, $75; home-built anti. matching unit, 10-80m, VSWR indicator, roller Inductor Tx capacitors, wide impedance matching range, prof. appearance, sell for component costs, $50; Swan model 45 mobile ant., 10-80m, with switching, complete with base and spring, $65; Oskerblok SWR 200, as new, English manual, $50; Drake W-4 watt-t. meter, 0-2, 0-200W, $60. Laurie Wade VK2AOW. Ph. (02) 848 5653 A.H.

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