amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 49, No. 1 JANUARY 1981

FEATURED IN THIS ISSUE:

- ★ A NEW FREQUENCY COUNTER
- ★ A SOLID STATE KEYBOARD FOR RTTY
- ★ HOME BUILDING
- ★ MORE WORLD-WIDE COMMUNICATIONS WITH HAND-HELD TRANSCEIVERS

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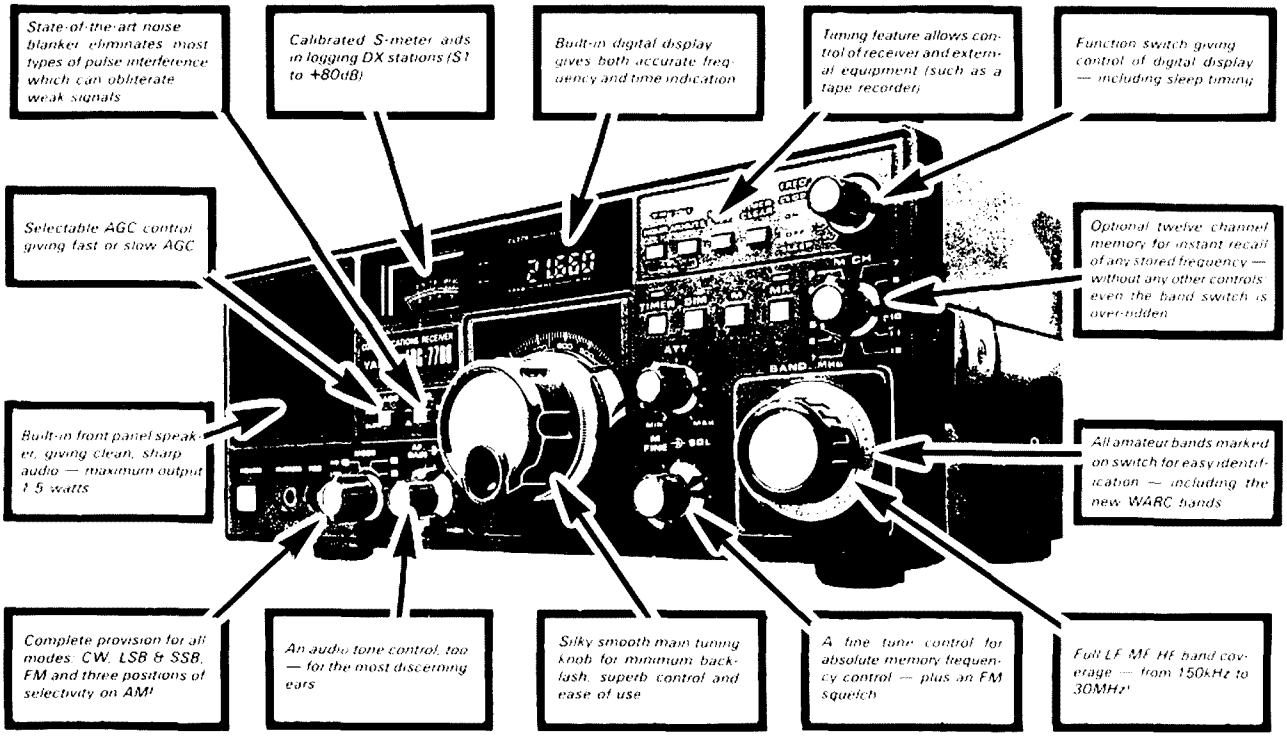

Of course, the front panel is only half the story.
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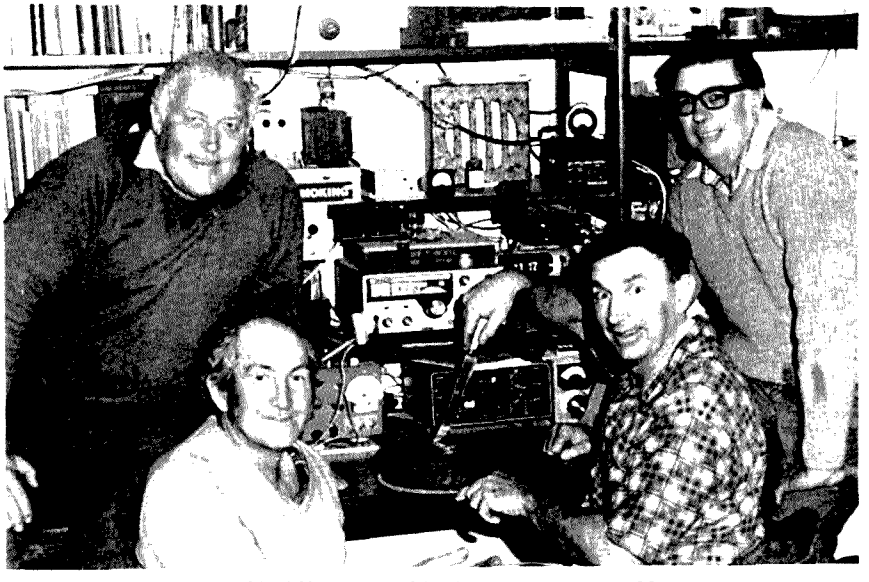
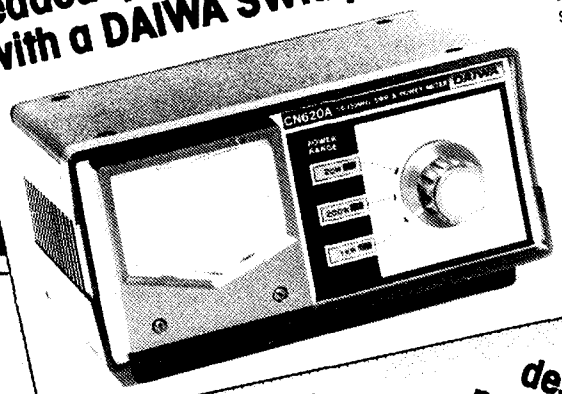


Cockies' Net, Second Birthday — See page 26.
Basil VK6BS does the honours, watched by (l. to r.) Brian VK6NOM, Malcolm VK6XM and Don VK6UW.

Simultaneous readout put you ahead with a DAIWA SWR/power meter!



Daiwa's cross needle system provides direct readings of SWR, Forward power and Reflected power. The CN620A covers 1.8-150MHz. Its power mode offers 3 ranges for more accurate and precise measurement.

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	Vicom 2 metre whips	
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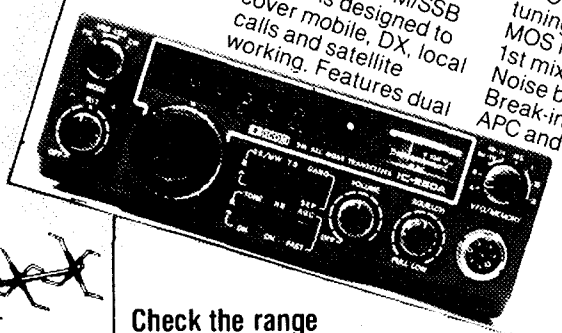
VAW/2/4S	¼ wave stainless steel	$5
VAW/2/5	5/8 wave fibreglass	$12
VAW/2B	Base for whips	$4
	Vicom 2 metre Beams	
VAB/2/10	10 element 12dB gain	$79
VAB/2/5	10 element 8dB gain 500W	$37
VAB/2/X	Crossed Yagi 10 element 12dB gain	$99
	Vicom HF whips	
VAH/10	Mobile whip 10 m	$30
VAH/15	Mobile whip 15 m	$30
VAH/20	Mobile whip 20 m	$31
VAH/40	Mobile whip 40 m	$30
VAH/80	Mobile whip 80 m	$31

ICOM'S advanced design provides better performance with Mobile Transceivers



IC260A 2m., FM/SSB Mobile is designed to cover mobile, DX, local calls and satellite working. Features dual VFO's, continuous tuning (LED Readout), MOS FETS in RF and 1st mixer stages. Plus Noise blanker, CW Break-in, CW monitor, APC and much more. 10w output.

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IC2A	2 m FM synthesized handheld	$312
IC22S	2 m FM synthesized transceiver 10W	$299
IC255A	2 m FM synthesized mobile 25W	$436
IC251A	2 m all mode transceiver 10W	$877
IC260A	2 m FM/SSB/CW synthesized mobile 10W	$665
IC280A	2 m FM synthesized remotable 10W	$450
IC502A	6 m SSB portable	$289
IC551	6 m All mode (not FM/VOX/PBT)	$599
IC720	HF all band solid state 100W	$1379
ICPS20	240V AC power supply	$239

Katsumi Morse Keyers

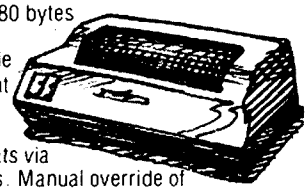
MK 1024 Programmable, electronic keyer $219
EK 121 Keyer with dot memory $69
EK 150
Electronic keyer $131

Bits and Pieces

BL50A
50ohm 4KW Balun $25
BL70A
70ohm 4KW Balun $25
PD30LS
DAIWA low pass filter 32MHz $23
AD103X DAIWA masthead divider 70 m/2 m/HF $67
RD300 Kenwood 300W dummy load $82
VM1 Noise cancelling mic. $15

Tono dot matrix printer gives you radio teletype capabilities

Bi-directional impact printer which prints at 125 ch. per sec. Offer adjustable form width (uses sprocket fanfold paper from 115-240 mm). Full upper/lowercase with programmable character width. Internal buffer holds 80 bytes. Software programmable vertical format unit permits full control of vertical formats via control codes. Manual override of main control functions. Takes readily available paper and ribbons.



Model HC800 $999

Tono Theta 7000E
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QSP QSP QSP

THE DAY THAT "ZERO" CAME TO TOWN

Sydney had lived in television isolation from the channels which worried Amateurs In other cities. Channel 0 had passed us by, 5A was not really a problem as it was at nearby Wollongong, and later Newcastle. When the now retired Minister for Postal and and Telecommunications, the Hon. Tony Staley, announced at the 1979 Federal Convention that the Government decided to use UHF exclusively for the proposed new Special Broadcasting Service for Ethnic television, we considered we had won. We settled back, further reassured that Ch. 0 was on the way out when it was also announced that the Melbourne commercial Ch. 0 was also changing to another channel.

1960 however, dawned badly. Within days of Ch. 0 Melbourne moving to 10, an announcement that "short" term use would be made of VHF in Sydney and Melbourne to simulcast the SBS programme with UHF until viewers obtained UHF facilities. The SBS (its title was then being changed to the Independent and Multicultural Broadcasting Corporation — IMBC) picked October the 24th, United Nations Day, for the grand opening. Amateurs still felt safe, they either casually commented that "I don't use 6, so it doesn't worry me", or "there is the UHF service — viewers will use that".

Six metres is one of the last regions of that part of the spectrum where an Amateur can easily research characteristics. It is not new ground, 50 years ago the late Ross Hull — In whose memory the annual national VHF contest is conducted — did much of the pioneering work on the then segment of five metres. Amateurs knew the characteristics of these bands (6 and 5 metres) and were surprised when in the early 1960s the even lower frequencies of 45-52 MHz were selected for the television service, and even more surprised when the locations for the transmitters were announced.

Last October when the "low powered" IMBC Ch. 0 transmissions commenced there was outcry on the poor coverage; but not a word about the excellent UHF signal on Ch. 28. The media seldom mentioned 28, nor did the programme guides, nor did the station. Then, on opening night, the 6 metre amateur band opened just after the start of the programme. Even weeks later, there was little mention of the UHF signal or how to receive it. Strange indeed when Recommendation Two from the third report of the Ethnic Television Review Panel — 6 February 1980 — states (in part) "Multicultural television must be accessible to the community at large". To me, this means education of the public that Ch. 0 is only an interim service. It has technical limitations and that they are not receiving the best service. Amateurs should draw attention to excellent UHF service, but should not belittle the *programme or* its concept; that is not our concern.

The WIA has already done considerable work in trying to have non-standard television channels removed (report to the Minister, March 1979, on Ch. 5A, constant requests for return of a portion of the 50 MHz band for Amateur use). This is a good start but it still needs the weight of the Amateur Service to achieve the goal.

To amateurs who live in other major centres — do not think Ch. 0 might not come to you. The last paragraph in the report estimates some of the costs of extending IMBC to other cities. There are seven major centres listed, namely: Canberra, Wollongong, Newcastle, Adelaide, Brisbane, Perth and Darwin. Television likes to "network" and "0" is a convenient symbol.

Do your bit — now — lobby to remove Ch. 0 transmissions, and encourage viewers to use Ch. 28 — the promised and superior service.

TIM MILLS VK2ZTM,
Federal Councillor VK2 Division. ■

FM FOR CB

According to Radio ZS of August 1980 the Netherlands recently legalised CB radio for type-approved FM gear limited to 0.5W output on 22 channels on the 27 MHz band. One reason for FM 0.5W was that the postal authorities, after conducting extensive tests for BCI and TVI, found that interference could be considerably reduced or completely avoided. Only vertically polarized omni-directional antennas may be used. ■

160m BAND

Danish amateurs (about 50 designated licensees) have been given permission for one year to operate CW with 10W DC input in segments 1720-1740 kHz and 1830-1850 kHz subject to non-interference clauses.—*IARU RI News October 1980.* ■

LIMITED SUFFIXES

According to the latest call sign listings for Victoria a new suffix "X" supplements the Zs and Ys. ■

US PHONE SEGMENTS

According to IARU RI News October 1980 the Board of ARRL directed the filing of a petition to FCC requesting that the 14 MHz phone sub-band be increased by 50 kHz, with an Extra Class sub-band for 14.15 to 14.175 MHz and an Advanced/Extra sub-band from 14.175 to 14.225 MHz. Also that Extra Class Voice operation be permitted between 7075 and 7100 kHz without eliminating CW or RTTY use by other licensees. ■

WIANEWS

1981 FEDERAL CONVENTION

The first Agenda Item for the 1981 Federal Convention has been received from the VK6 Division and seeks to cancel a motion from the 1975 Federal Convention which, in essence, granted authority to the Federal Contest Manager to make or amend any of the R.D. Contest Rules. Various reasons were given for seeking a return to previous traditional methods relating to the rules of this Contest.

WAVCKA AWARD

At the Executive Meeting on 20th November it was agreed that the WAVCKA Award should be opened up for Australian amateurs with effect from 1st January 1981 (for contacts on or after 1.1.1981). The rules of the Award will be suitably amended and will include a total of 77 contacts to qualify (10 on at last 3 bands for each of VK2 to 7, 5 on 2 bands for each of VK1 and VK8, 4 in 3 call areas of VK9 and 3 in 2 call areas for VK0); a separate award will not be available for any particular mode; proofs by production of QSL. The original suggestion from VK6.

GENERAL

New Chairmen are to be sought to replace Keith Malcolm VK3ZYK of the VHFAC and Bob Arnold VK3ZBB of Project ASERT, both of whom have resigned owing to pressures of work.

INTERFERENCE

AMATEURS SHOULD AVOID CAUSING INTERFERENCE TO OTHER SERVICES — WILFUL INTERFERENCE SHOULD BE AVOIDED LIKE THE PLAGUE. WHILE MANY AMATEURS ARE CONSCIOUSLY TRYING TO ENHANCE THE PUBLIC'S IMAGE OF OUR HOBBY, IT HAS BEEN REPORTED THAT SOME ARE DOING THEIR BEST TO UNDO ANY GOOD THAT HAS BEEN DONE IN THE PAST.

ALL AMATEURS SHOULD READ CAREFULLY SECTIONS 5.37, 5.38 AND 5.39 OF THE HANDBOOK AND UNDERSTAND THE IMPLICATIONS — COPIES OF THE HANDBOOK ARE AVAILABLE FROM YOUR DIVISION.

P. WOLFENDEN VK3ZPA, Federal President ■

WIRELESS INSTITUTE OF AUSTRALIA

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VK6 Mr. N. R. Penfold VK6NE
VK7 Mr. B. J. Morgan VK7RR

Staff: Mr. P. B. Dodd VK3CIF, Secretary.
Part-time: Col. C. W. Perry, Mrs. J. M. Seddon and Mr. Bill Baly (AR Production).

Executive Office: 3/105 Hawthorn Rd., Caulfield North, Vic. 3161. Ph. (03) 528 5962.

Divisional Information (all broadcasts are on Sundays unless otherwise stated).

ACT:
President — Mr. A. Davis VK1DA
Secretary — Mr. F. Robertson-Mudie VK1MM.
Broadcasts— 3570 kHz and 2m Ch. 6 (or 7): 10.00Z.

NSW:
President — Mr. A. D. Tilley VK2BAD
Secretary — Ms. S. J. Brown VK2BSB
Broadcasts— 1100 local. 1.825, 1.8125 (Ncle), 3.595, 7.146, 28.32, 52.1, 52.525, 144.15 MHz, Rptr. Ch. 6650 Oberon, 6750 Gosford, 6800 Lismore, 6850 Wollongong, 7000 Sydney, 8525 Sydney.
1930 local. 52.1, 52.525, 144.15 MHz, Rptr. Ch. 6650 Oberon, 6750 Gosford, 6850 Wollongong, 7000 Sydney, 8525 Sydney. Relays on 160, 80 and 10 metres.
RTTY 0030Z. 7.045, 14.090, 146.6 MHz. 0130Z. 21.095 MHz. 0930Z. 3.545, 146.6 MHz.
Mondays 1930 local. Newcastle. 3.595 MHz, 10m, Rptr. Ch. 6750 Gosford, 6900 Newcastle.

VIC.:
President — Mr. A. R. Noble VK3BBM
Secretary — Mr. J. D. M. Dowie VK3BVE
Broadcasts— 1840, 3600, 7135 kHz — 53.032 AM, 144.2 USB and 2m Ch. 2 (5) repeater: 10.30 local time.
Gen. Mtg. — 2nd Wed., 20.00.

QLD.:
President — Mr. A. J. Aarsse VK4QA
Secretary — Mr. W. L. Gielis VK4ABG
Broadcasts— 1825, 3580, 7146, 14342, 21176, 28400, kHz; 2m (Ch. 42, 48): 09.00 EST.
Gen. Mtg. — 3rd Friday.

SA:
President — Mr. I. J. Hunt VK5QX
Secretary — Mr. W. M. Wardrop VK5AWM
Broadcasts— 1820, 3550, 7095, 14175 kHz; 21.160 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.
Gen. Mtg. — 4th Tuesday. 19.30.

WA:
President — Mr. B. Hedland Thomas VK6OO
Secretary — Mr. Peter Savage VK6NCP.
Broadcasts— 3560, 7075, 14100, 14175 kHz. 28.47, 53.1 MHz. 2 metres Ch. 2 Perth, Ch. 6 Wagin. Time 0130Z.
Gen. Mtg. — 3rd Tuesday.

TAS.:
President — Mr. R. Emmett VK7KK
Secretary — Mr. B. J. Morgan VK7RR
Broadcasts— 7130 (SSB) kHz with relays on 6 and 2m Ch. 2 (S), Ch. 8 (N), Ch. 3 (NW), 09.30 EST.

NT:
President — Mr. T. A. Hine VK8NTA
Vice-Pres. — Barry Burns VK8DI
Secretary — Robert Milliken VK8NRM
Broadcasts— Relay of VK5WI on 3.555 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 9.45-13.45h).
P.O. Box 123, St. Leonards, NSW 2065.
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 7535 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 — 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.

Slow morse transmissions — most week-day evenings 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 OSL Bureau, Mrs. B. Gray VK3BYK, 1 Amery Street, Ashburton, Vic. 3147.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse VK3XY, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001
VK5 — QSL Bureau, Mr. Ray Dobson VK5DI, 16 Howden Road, Fulham, S.A. 5024.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 1418, Darwin, N.T. 5794.
VK9, 0 — Federal QSL Bureau, Mr. N. R. Penfold VK6NE, 388 Huntriss Rd., Woodlands, W.A. 6018.

From ICOM, of course. Each of these brilliantly designed transceivers utilizes a special *micro-computer* equipped with ICOM designed programming to offer you features and operational flexibility you won't find elsewhere. *Memory Scan* allows you to monitor three different memory channels. *Program Scan* scans continuously between two programmed frequencies. Scanning speed is adjustable.

VICOM carries ICOM's compact all mode transceivers in configurations to cover 143.8-148.2MHz and 50-54MHz. (The IC551D model will even provide 100 watts on 6 metres!)

All are backed with VICOM's 90 day warranty and technical/spares back-up. But of course, all this is the kind of quality and service you naturally expect when ICOM and VICOM get together.

3 Highly intelligent ways to cover your transceiver needs at Vicom

IC260A 2M. FM/SSB MOBILE: For mobile, DX, local calls and satellite work. Features dual VFO's, continuous tuning (LED readout), MOS FET's in RF and 1st mixer stages–plus Noise Blanker, CW Break-in, CW monitor, APC and much more. 10w output.

IC251A 2M. ALL MODE FIXED OR PORTABLE: FM, USB, LSB and CW coverage makes this unit ideal for use in mobile, DX, local or satellite work. Features include continuous tuning, of course, with 7 LED readout, dual VFO's, built-in 240 AC and DC power. 1.5w audio output makes for easy listening even in noisy surroundings.

IC551 10w 50-54MHz FIXED OR PORTABLE: All of ICOM's best features including all mode capability, SSB, CW, AM and FM. Two VFO's, built-in 240 AC or DC power. Noise blanker. Excellent spurious and intermodulation characteristics. 2 watts audio output.

Vicom International Pty Ltd

68 Eastern Road,
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Phone (03)6996700

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Crows Nest, NSW. 2065.
Phone (02)4362766

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Townsville 7722633

Wollongong 291455
Cairns 541035

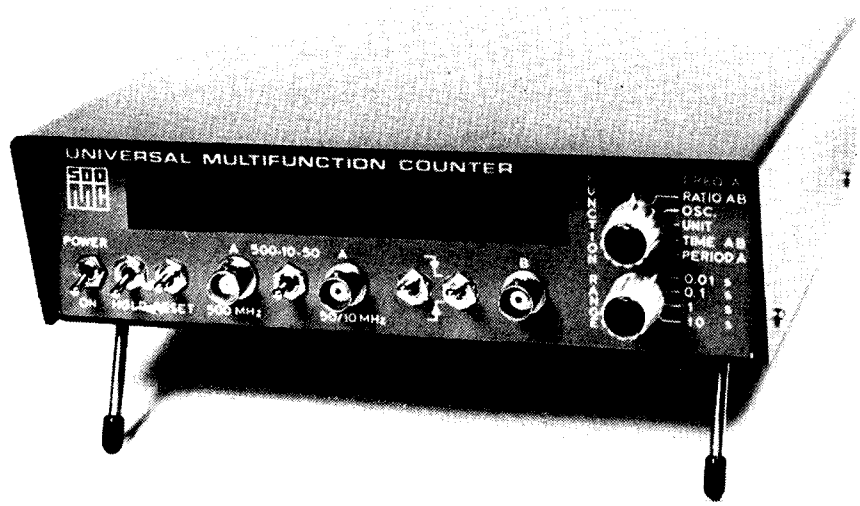
Adelaide 437981

Wagga 212125
Melbourne 8368635

A New Frequency Counter

W. Beyer VK3BHW
6 Anna Court, Sale, Vic. 3850.

This multi-function counter was developed by Mr. E. H. T. Van der Heyden and Mr. O. A. Kuhn, whom I met during a radio amateur meeting at Wagening, in Holland, last year. The counter was demonstrated for the first time that night and was very impressive. I hope that it might be interesting for Australian amateurs to see how the PA0s make their test equipment.



The idea for the counter started when Intersil marketed their ICM7226A/B in the USA. It is a multi-function chip which can perform all of the following functions: frequency counting, period measurement, frequency ratio, time and unit counting. The upper frequency limit of the chip itself is 10 MHz.

The complete counter is comprised of four boards, each forming a logical unit.

(a) The counter proper.

(b) Readout and control panel.

(c) Pre-amplifiers.

(d) The power supply.

A block schematic of the ICM7226, the heart of this counter, gives a breakdown of its basic functions (Fig. 1). This chip is a counter by itself with the remaining circuitry being peripheral, but adding to the unit's sophistication. The versatility of this chip is best demonstrated by example of the counter's functions.

FREQUENCY COUNTER

Frequency measurement, up to 10 MHz, is performed directly by the chip. The input is raised to TTL level by the pre-amplifier (A1) before being fed to the chip. Using the time base switch, count periods of 10 msec. to 10 sec. can be selected, giving resolutions of 100 Hz to 0.1 Hz. The position of the decimal place is made automatically ensuring that the readout is always in kilohertz. Leading zeros are automatically suppressed. Over-range, when the most significant digit is lost, is indicated by an over-range LED.

Time between counts is 200 msec. and is independent of the selected count period. The reset enables the user to re-start a count cycle at any time, a useful feature with the 10 sec. count period.

When measuring frequencies higher than 10 MHz, the pre-scalers are used. Up to 50 MHz a TTL 74196 is switched in. It drives an extra 7 segment decoder driver ensuring that short measuring times are maintained. Placing of the decimal point is still automatic. Counting up to 500 MHz is done with a pre-scaler (SP8515) chip. To compensate for the pre-scaler, the clock signal is also divided by 10 with an extra decade counter, maintaining correct decimal point positioning. While using the pre-scaler the smallest count period (0.01 sec.) cannot be used.

PERIOD COUNTER

Period measurements are made directly with the chip: no pre-scaler is used. The smallest measurable period is 0.5 usec. Display is made in microseconds with automatic positioning of the decimal point. The time base switch is used to select the number of periods to be measured and an average is displayed. Selection is made from 1, 10, 100 and 1000 periods.

TIME INTERVAL MEASUREMENT

When measuring time intervals ,both A and B inputs are used. A negative going edge at A starts the cycle and a negative going flank (trailing edge) at B stops the counter. The time interval is then displayed. It is also possible to use a positive going edge to terminate the count and a positive going flank to begin. These are selected using a pair of "exclusive OR" gates and set by front panel switches. To measure a single event (e.g. pulse length) the signal is connected to both inputs.

FREQUENCY RATIO

Frequency ratio measurements are restricted to 10 MHz as no pre-scalers are used. The ratio of input frequencies A and B is measured and the sample can be averaged over 1 to 1000 periods of the B Input frequency.

CIRCUIT DESCRIPTION

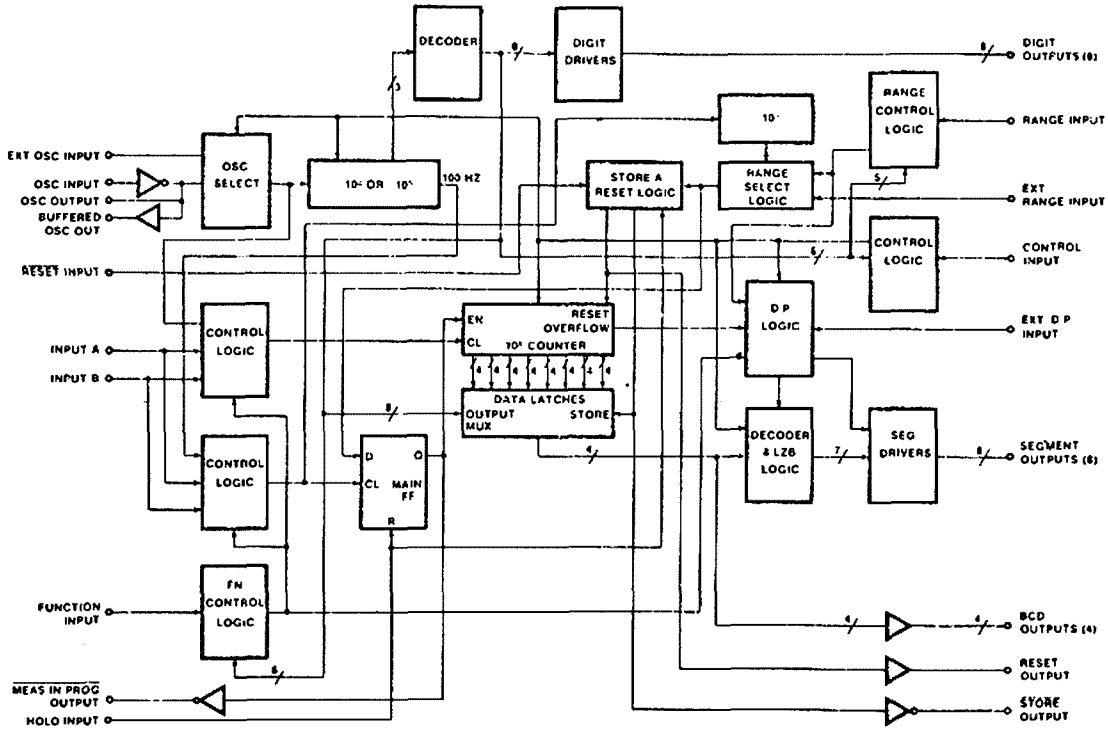
The best place to start in a counter such as this one is with the central chip: the ICM7226A.

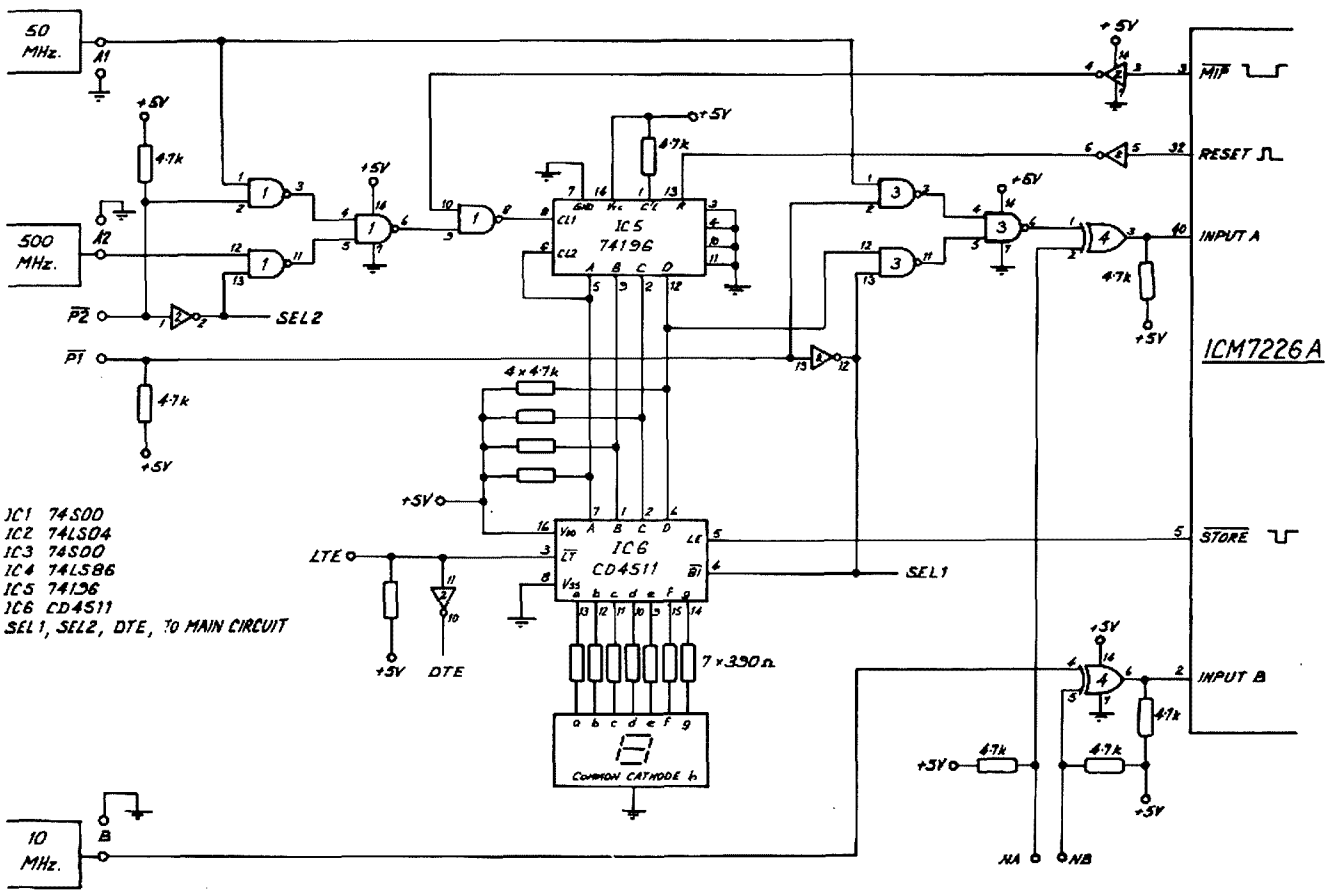
The clock, or time base, oscillator consists of a pair of complementary FET inverters within the chip. The frequency determining components are connected to pins 35 and 36. The 22 Mohm resistor sets the bias for the oscillator. The chip is designed for a 10 MHz crystal which should be made for a series resistance and parallel capacity of 22 pF. The 50 pF trimmer is used to fine tune the crystal.

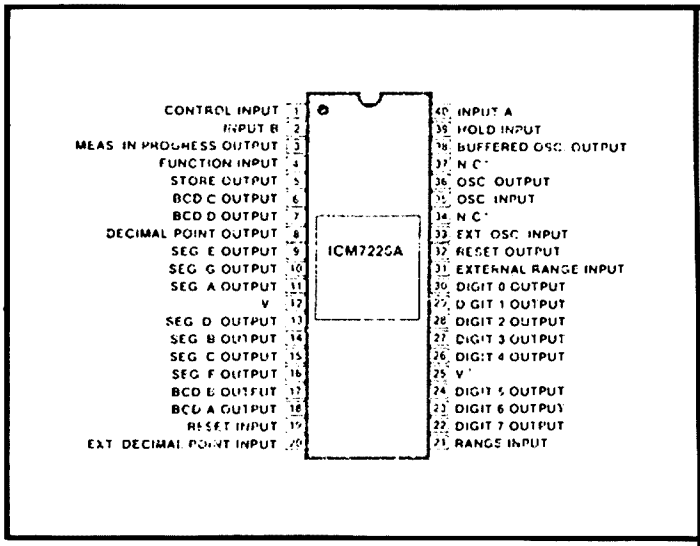
There is also provision for an external time base. In fact the time base can be taken from any of four sources. This is done using a CMOS dual 4052 analogue multiplexer/demultiplexer chip. Table 1 gives the possible combinations.

The external oscillator switching is controlled by both the pre-scaler and external oscillator control lines (pins 9 and 10 of IC8). There is a 1 pole 4 throw switch controlled by these two inputs; there being combinations on four lines. There are two switches in the chip, the second being used in the control circuitry. The use of this chip and IC9, a quad 1 pole 1 throw, in order to obtain automatic switching of

FIGURE 1 (opposite top) shows a block diagram of the heart of the counter, the ICM7226A/B where FIGURE 2 (bottom) shows the Input circuit for the counter.


DECODER
DIGIT DRIVERS
DIGIT OUTPUTS (8)
EXT OSC INPUT
OSC INPUT
OSC OUTPUT
BUFFERED OSC OUT
OSC SELECT
10⁷ OR 10⁶
100 HZ
10⁷
RANGE CONTROL LOGIC
RANGE INPUT
STORE A RESET LOGIC
RANGE SELECT LOGIC
EXT RANGE INPUT
CONTROL LOGIC
CONTROL INPUT
RESET INPUT
EN
RESET OVERFLOW
CL
10⁸ COUNTER
DP LOGIC
EXT DP INPUT
INPUT A
INPUT B
CONTROL LOGIC
DATA LATCHES
OUTPUT MUX
STORE
DECODER & LZB LOGIC
SEG DRIVERS
SEGMENT OUTPUTS (8)
D
CL MAIN FF
R
FN CONTROL LOGIC
FUNCTION INPUT
BCD OUTPUTS (4)
RESET OUTPUT
STORE OUTPUT
MEAS IN PROG OUTPUT
HOLD INPUT


50 MHz.
500 MHz.
10 MHz.
A1
A2
B
+5V
4·7k
P2
P1
SEL2
SEL1
IC5 74196
IC6 CD4511
4 x 4·7k
7 x 330Ω
LTE
DTE
COMMON CATHODE h
MIP
RESET
INPUT A
INPUT B
STORE
NA
NB
ICM7226A
IC1 74S00
IC2 74LS04
IC3 74S00
IC4 74LS86
IC5 74196
IC6 CD4511
SEL1, SEL2, DTE, TO MAIN CIRCUIT



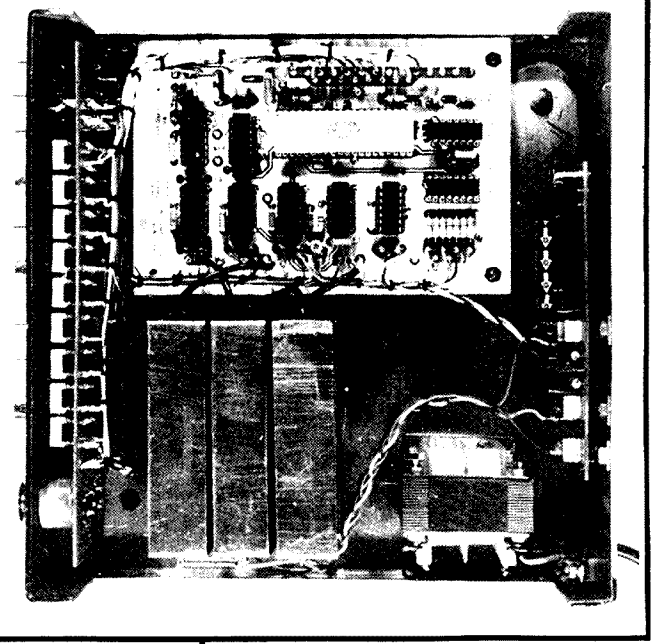
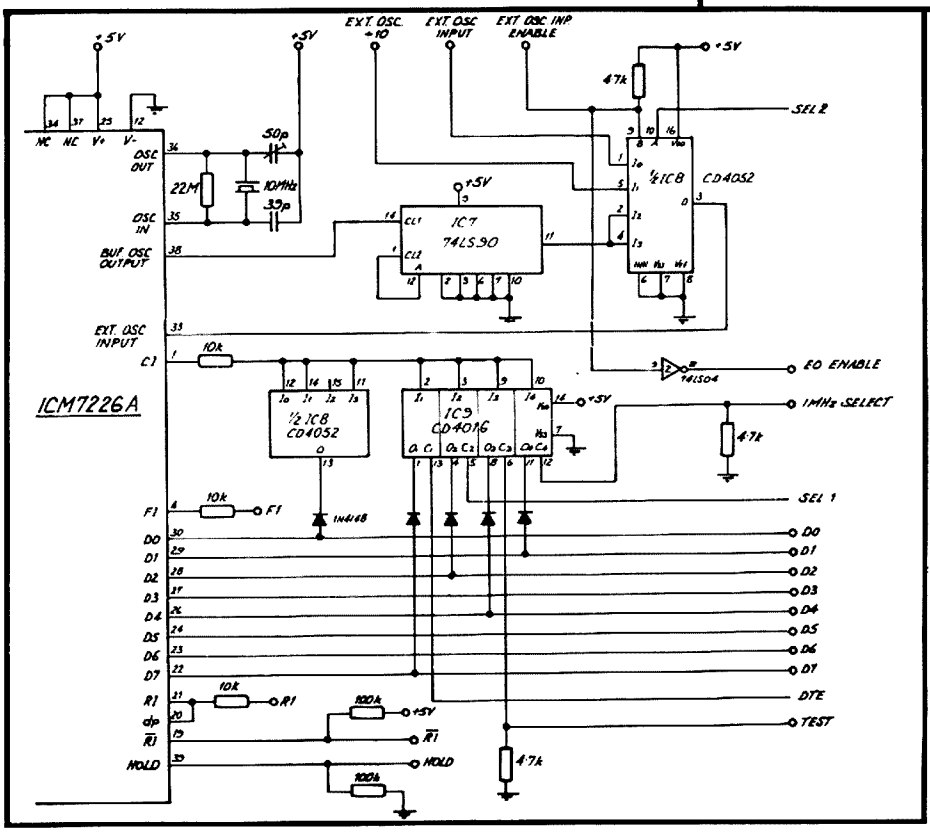


FIGURE 2A (above): The ICM7226A pin configuration. For maximum frequency stability connect to V+ or V—. At right, PHOTO 2 shows the neat lay-out of the counter, while FIGURE 3 (below) depicts the control logic configuration.



"EXT OSC INP enable" going LOW turns ON EXT OSC.

External Oscillator	Prescalar	
OFF	OFF	Internal time base in use: normal operation. Note that the external time base still receives a signal input, but this is not in use.
OFF	ON	Time base is derived by passing the internal oscillator through the decade counter (IC7) to compensate for the SP8515 pre-scaler.
ON	OFF	External oscillator is used for the time base. Note that the EO ENABLE will be high (ON) and could be used to drive external switching for the oscillator.
ON	ON	The time base is now derived from "EXT OSC ÷ 10" input. Decimal point placement requires the lower frequency with the pre-scaler.

TABLE 1: How the timebase signal is obtained.

multiplexed outputs has considerably extended the factilities and power of this counter. It is a circuit technique that should find more scope as this sort of LSI becomes more available to the home-builder.

When using either pre-scaler, the control line SEL1 goes high. Apart from re-directing the signal through the 74196, it is used to control a bilateral switch (¼ of the '4016) which is used to connect the output D2 to the control input (CI). This moves the decimal place. When the 500 MHz pre-scaler is used the control line SEL2 goes high, which ensures that the time base frequency is also divided by ten, preserving the correct decimal placing.

External standards should be at 10 MHz, but by connecting the EO ENABLE to the 1 MHz SELECT line, a 1 MHz standard can be used.

In order to be able to have as many functions as the 7226 has, the control circuits have had to be multiplexed using the digit drive lines (D0 to D7). Referring to the switch wiring schematic gives a good idea of how the function (FI) and range (RI) inputs are multiplexed, but the control input (CI) needs a little more explanation. By using a quad bilateral switching chip ('4016) four of this input's functions can be remotely controlled. The decimal point

placing has already been dealt with. By grounding the DTE line the LED display can be lit (all 8s) to check the display. Grounding the TEST line allows the internal oscillator to be counted. The display will show 10 MHz no matter what the actual frequency is. If it doesn't then something is wrong. The 1 MHz SELECT line allows you to use a 1 MHz time base without converting the counter's reading.

The 50 MHz pre-scaler is also housed on the main PCB. This is a TTL 74196 decade counter with the BCD output connected to a 4511 lamp driver/decoder. When the pre-scaler is not in use the SEL1 line blanks the display (IC6 pin 4). The 4511 drives a common cathode display but the 7226 drives common anode displays.

The remaining logic gates just regulate the signal directions.

Note that the B input is connected straight into the chip and the maximum frequency on this line is 2.5 MHz. The only signal processing on this line is done by the pre-amplifier.

INPUT AMPLIFIERS

A most important part of any counter is the input pre-amplifiers for they determine the counter's sensitivity. An input should have an impedance of 1 Mohm with a parallel capacitance of about 50 pF. The impedance is strongly influenced by this input capacitance and above 50 MHz it will be difficult to maintain this specification. This design does not entail any special circuitry in the 500 MHz pre-amplifier as 75 ohms seems adequate.

The 50 MHz amplifiers are designed to amplify and square the sine wave input. A triple differential amplifier 9582 (Fairchild) achieves this. The BF245AA buffers the input and the first stage is the actual pre-amplifier. The second amplifier is wired as a Schmidt trigger to square the waveform. The third stage does most of the amplification and this is buffered by the two trailing transistors. The final transistor brings the signal to TTL standards.

The input sensitivity of the pre-amplifier is about 35 mV and the two diodes form a clamp to prevent over-driving. These amplifiers are very sensitive: 5 mV at HF, 35 mV at 145 MHz and 100 MHz at their upper frequency limit (about 350 MHz). They are very hot when running, due to class A operation of their transistors, dissipating 500 mW in heat.

The B input uses the same amplifier design, thus requiring two pre-amplifiers in the completed counter.

500 MHz PRESCALER

The pre-scaler uses a SP8515 (Plessey) chip which is sufficiently sensitive to warrant deleting the input amplifier. The input is again protected by diode clamps, however the schottky diode would be a better choice, e.g. HP5082-2800 series. The pre-scaler is ECL and so requires a level converter, filled by the transistor stage. A tendency to oscillate has been found with some of these chips. This still

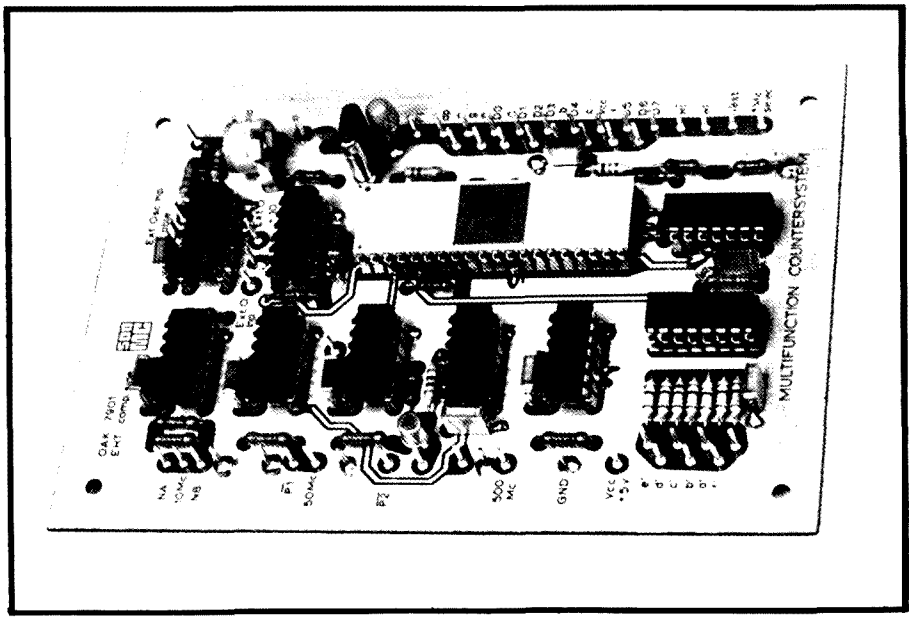
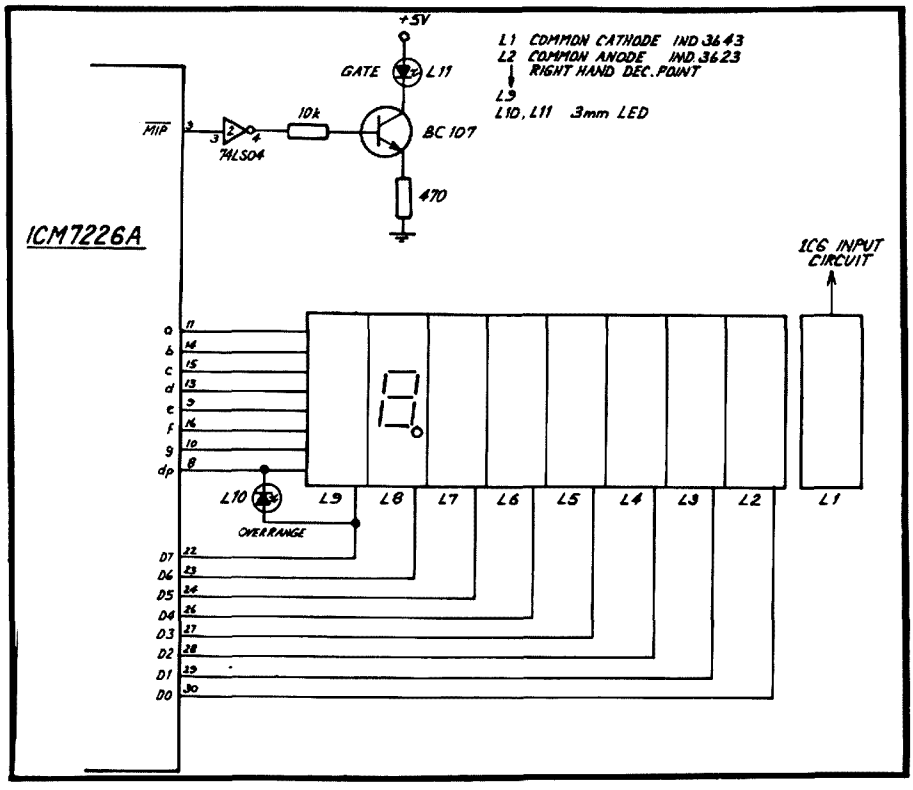


PHOTO 3 (above) shows the lay-out of the counter system, the heart being the **ICM7226A.**
FIGURE 4 (below) shows the display circuit.



happens with the input disconnected and is caused by exceptionally high gains in a *few* chips. The manufacturers specify a peak in the gain at about 250 MHz. If the counter reads with no input this is the cause. It can be remedied by placing a resistor between the input pin and (10) the value of which must be determined by experiment. Start with a value of 100 kohms and swap for the next lower value until the counter gives a steady zero reading. Even with the lowest of values (15 kohms) the sensitivity will be hardly impaired. Do this, if necessary, after the "setting up" adjustment of resistor "**R**".

POWER SUPPLY

The counter requires two supply voltages: 5 volts for the counter and display boards and 12 volts for the pre-amplifiers. The 5 volt supplies in the pre-amplifiers are obtained with separate 7805 regulator chips.

The counter and display boards draw about 400 mA and a 7805 attached to

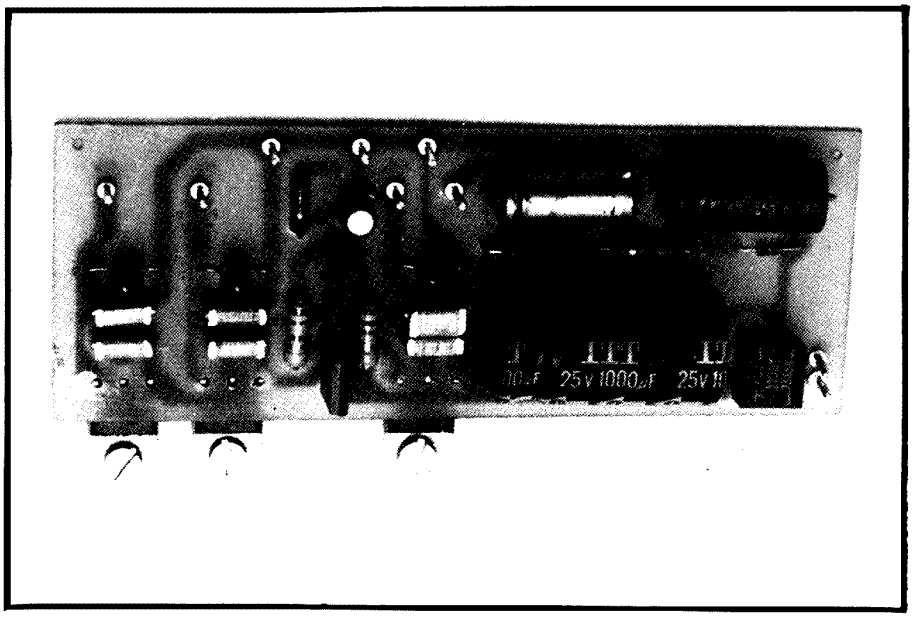
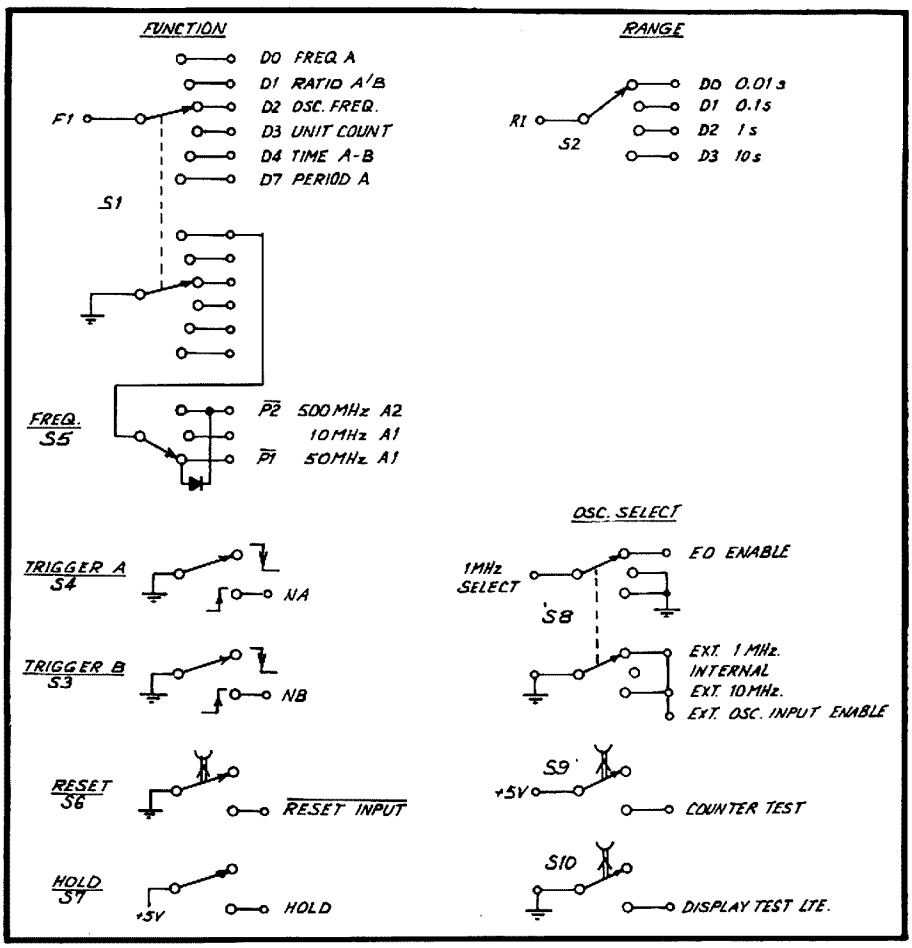


PHOTO 4 (above) shows the power supply board lay-out — while FIGURE 5 (below) illustrates the wiring of switches.



the chassis supplies this requirement easily. The 12 volt supply is controlled by a zener diode regulator.

The pre-scaler board draws around 70 mA and dissipates a fair amount of heat. (It's those class A amplifying transistors in the 8515). Consequently the supply is turned off when the pre-scaler is not in use. The supply to the pre-amplifiers is switched for the same reason (and for the same cause.—Ed.). Transistors T1 and T2 do the switching, guided by the input selector control line P2.

CONSTRUCTION

The usual precautions apply to the building of this counter as would apply to the construction of any digital project. It is best to use the following sequence when soldering the boards:—

1. IC sockets and molex pins.
2. Resistors and capacitors.
3. Diodes and transistors.
4. Integrated circuits.

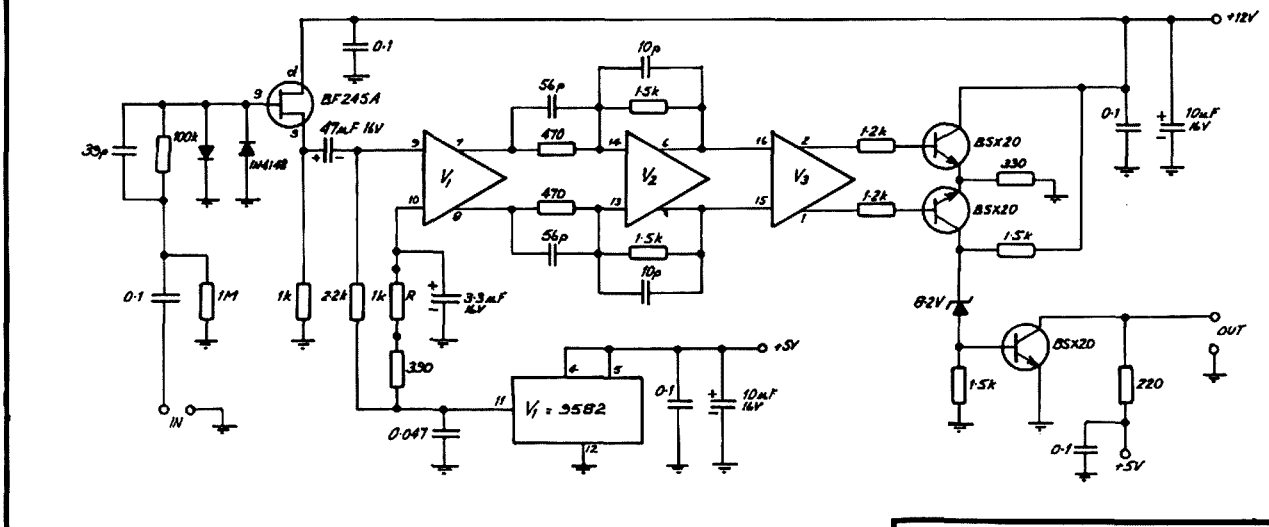
On the counter board the TTL chips can be soldered without pins except where a connection is required on both foils. Here it is better to use molex pins. The ICM7226A requires a socket (or molex pins) if not because of the chip's expense, then because three diodes have to fit under it; see photograph.

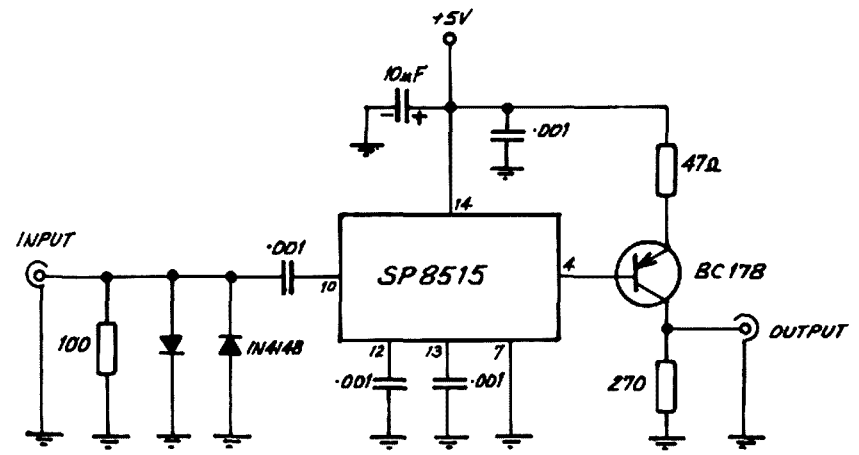
On the input amplifier board all the ICs should be soldered otherwise its performance may be impaired at high frequency. The resistors marked "R" should be temporarily replaced with potentiometers for Initial adjustment. After that they will be replaced with a fixed value resistor. After everything Is mounted a piece of tin metal (about 2 cm high) is bent around the board and then soldered to the component side. This is for screening. The supply voltages are brought to the amplifiers through feed-through capacitors on one of the shorter sides of the PCB. Directly opposite two holes are required in the screen to accommodate the input and output cables; coaxial cables please. Mounting holes are drilled in one of the longer sides.

The LED displays would be better mounted on sockets. That way replacement, if required, will not cause any pain. All the rest of the circuitry is straightforward, but remember that the power supply regulators need to be mounted so that they use the chassis as a heatsink.

One of the photographs shows the component placement on the chassis; its dimensions are 50 mm x 200 mm x 200 mm (h. x w. x d.). The boards are mounted with stand-off bolts; 10 mm long. The three input amplifiers are mounted along one of their long sides: the one with the mounting holes. The display PCB has not been included because it uses switch types that are not available in Australia. Use of different LED displays has been allowed as the specified types are difficult to obtain. The display can be easily mounted on veroboard if you are unable to design a suitable PCB. All switches and BNC connectors are mounted on the chassis.

Once all the boards and components are mounted in the chassis the counter should be wired up except for the input amplifiers and the pre-scalers. The power transfomer wiring and fuse should be kept as far away from the counterwiring as possible. Check the wiring and power supply voltages (they shouldn't deviate





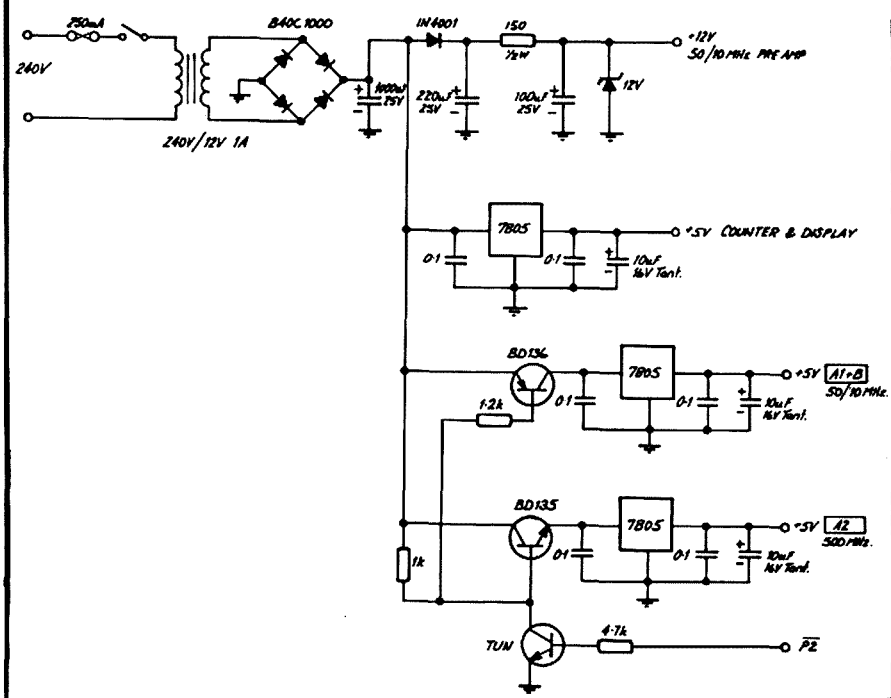


FIGURE 6 (above): Input circuits **(A1 and B), 50 MHz and 10 MHz preamplifiers. FIGURE 7** (left): **500 MHz prescaler circuit. FIGURE 8** (below left): **power supply circuit.**

from spec. by more than 5 per cent). Put all the controls in uppermost position and the mode switch in "OSC" position. The counter should read 10 MHz ± 1 count. The LED display can now be checked by grounding the "LTE" pin. The display should show all eights. If all is correct the input modules can now be connected to the counter. Try and use as high an impedance on the input coax. as possible.

The counter is now ready for setting up and initial adjustment. If you are not going to use the external time base option then the "1 MHz SELECT" should be strapped to ground.

INITIAL ADJUSTMENT

The two resistors marked "R" need to be adjusted and the time base calibrated before use.

The resistors are in the bias networks of the 9582 amplifiers (ECL is very fussy about supply voltages if maximum sensitivity is desired). Connect a 10 kohm potentiometer between the two terminals and turn to its highest resistance. Connect a sine wave source (100 kHz) to the input. Increase the sine wave amplitude until a steady reading is obtained, this should not be more than 200 mV. Decrease the signal strength until the reading just loses stability, then decrease the resistance until stability is restored. Continue doing this until no further improvement can be obtained. Basically this gives a square wave at pin 2 (output) with a minimum of signal. The potentiometer should be replaced with a fixed resistor. Now repeat this with the other 9582 amplifier.

The time base can only be adjusted with an accurate frequency source. The capacitor trimming the time base crystal should be trimmed until the counter shows the frequency of your standard exactly.

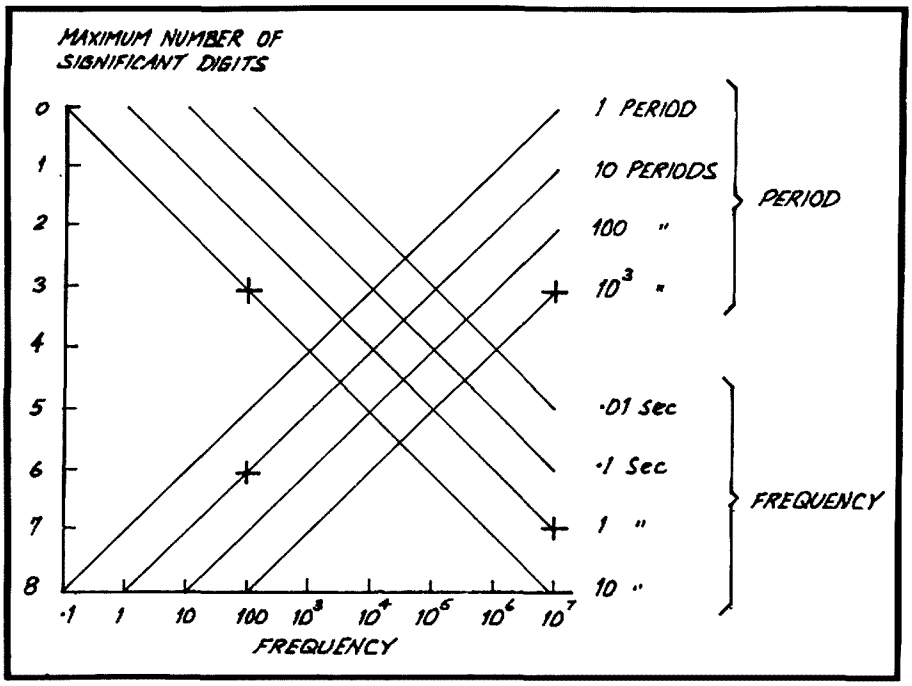


FIGURE 9 (above): Accuracy of frequency and period measurements at different positions of timetable switch.

USING THE COUNTER

The counter can only measure with an error of 1 in the last digit, plus any error in the time base. Because of this it is best to obtain as many significant digits in the display as possible. As an example try the frequency of 100 Hz. The frequency display will only show three significant digits. If instead the period is measured, then six digits are significant (display is in microseconds), so this result is the more accurate. The higher the frequency to be measured, the more accurate the frequency measurement becomes. The graph shows which measurement is going to be more accurate at a particular frequency or period. Frequency is just the reciprocal of period.

EDITOR'S NOTE

It is understood that a kit is available overseas for this project. Enquiries may be directed to the author. The IC7226A is now available as a display kit which may include some parts required for the above counter. ■

BAND PLANS

Band plans were published on page 24 of the 1979 Call Book. At the 1980 Federal Convention all amateurs were requested to adhere to these band plans. This applies especially on HF where CW alone is to be used in the CW-only band segments, but can also be used anywhere else on any of the bands. Nothing has yet been decided concerning the proposed new bands at 10, 18 and 24 MHz.

The 1980 Federal Convention also looked at the FM portion of the 70 cm band and agreed on a band plan for recommended uses for repeaters and FM simplex frequencies. These are as follows:

70 cm REPEATER OPERATION

Repeater Input Frequency MHz	Recommended use
433.025	—
.050	—
.075	Mobile voice
.100	—
.125	RTTY
.150	—
.175	—
.200	—
.225	Mob. voice secondary
.250	—
.275	RTTY
.300	—
.325	—
.350	—
.375	Mobile voice
.400	—
.425	Data
.450	—
.475	—
.500	—
.525	Mobile voice Nat. primary
.550	—
.575	Data
.600	—
.625	—
.650	—
.675	Mobile voice Soc.
.700	—
.725	SSTV
434.275	Mobile voice
.300	—
.325	RTTY
.350	—
.375	—
.400	—
.425	Mobile voice
.450	—
.475	—
.500	—
.525	—
.550	—
.575	Mobile voice
.600	—
.625	—
.650	—
.675	—
.700	—
.725	Mobile voice
.750	—
.775	—
.800	—
.825	—
.850	—
.875	Mobile voice
.900	—
.925	—
.950	—
.975	—

Channels with no specific recommended use may be used for any purpose.

70 cm FM SIMPLEX

Frequency MHz	Recommended use
438.750	—
.775	RTTY
.800	—
.825	Voice secondary
.850	—
.875	Data
.900	—
.925	SSTV
.950	—
.975	—
439.000	Voice Nat. primary
.025	—
.050	—
.075	—
.100	—
.125	Voice secondary
.150	—
.175	—
.200	—
.225	—
.250	—

Channels with no specific recommendation and channels between 433.750 and 434.250 may be used for any purpose. ■

QSP

TALLANGATTA RADIO CLUB

Some club details are as follows:—

Club formed October 1978. Number of members 16. Full call members 4. Limited and Novice 5.

Meets 0930 GMT fourth Friday each month at the Tallangatta High School.

Club nets: 3.600 MHz ± QRM at 0930 GMT Friday nights.

For further details write to the Tallangatta Radio Club, 4 Womaatong Street, Tallangatta. ■

A Solid State Keyboard for RTTY

J. McDonnell VK6O
14 Hardio Road, Albany, WA 6330

Having acquired a Siemens T100 teleprinter with a numerals only keyboard, it became necessary to find some way of converting to a full keyboard. A mechanical keyboard was ruled out because of the difficulties in machining code bars, etc.

John VK6JY suggested utilizing a computer type keyboard which was available from Dick Smith under the brand name of Video Brain, which, once the keys were removed and replaced on to a new PCB, gave the basis of the new keyboard. It was found that the markings on the keytops could be readily changed off with steel wool then re-marked with instant lettering and sealed with a clear spray. The layout of the keyboard gives a figure shift at each end of the top row, a space key at each end of the centre row, and a letter shift at each end of the bottom row, but this is a matter of personal preference. Also to preserve keyboard symmetry a NUL key was included which prints no character, but is useful when "waking up" the printer.

The encoding of the keyboard was achieved using germanium diodes off an old computer board scrounged from somebody's junk box. Each character requires a diode for each logic zero plus one to indicate the key has been pressed. The diodes were mounted vertically in a piece of 32 strip veroboard using one strip for each character, the tops of the diodes being joined by six pieces of tinned copper wire, at right-angles to the strips, to give the five bit baudot code plus the key pressed connectors.

The output from the matrix gives parallel data but the printer requires the data in serial form. A circuit in EA for April 1979 was found using half a UART and this was adapted to suit, the biggest problem being setting the clock to the correct frequency. This was achieved by making R2 total approximately 100k using a fixed resistor and a pot in series. The clock can then be set to either 800 Hz (50 Bd) or 727.2 Hz (45 Bd). Problems were encountered with the initiate circuit triggering the UART too soon, so a debounce circuit was fitted to the key press line ensuring that the UART data inputs are programmed before the device is initiated.

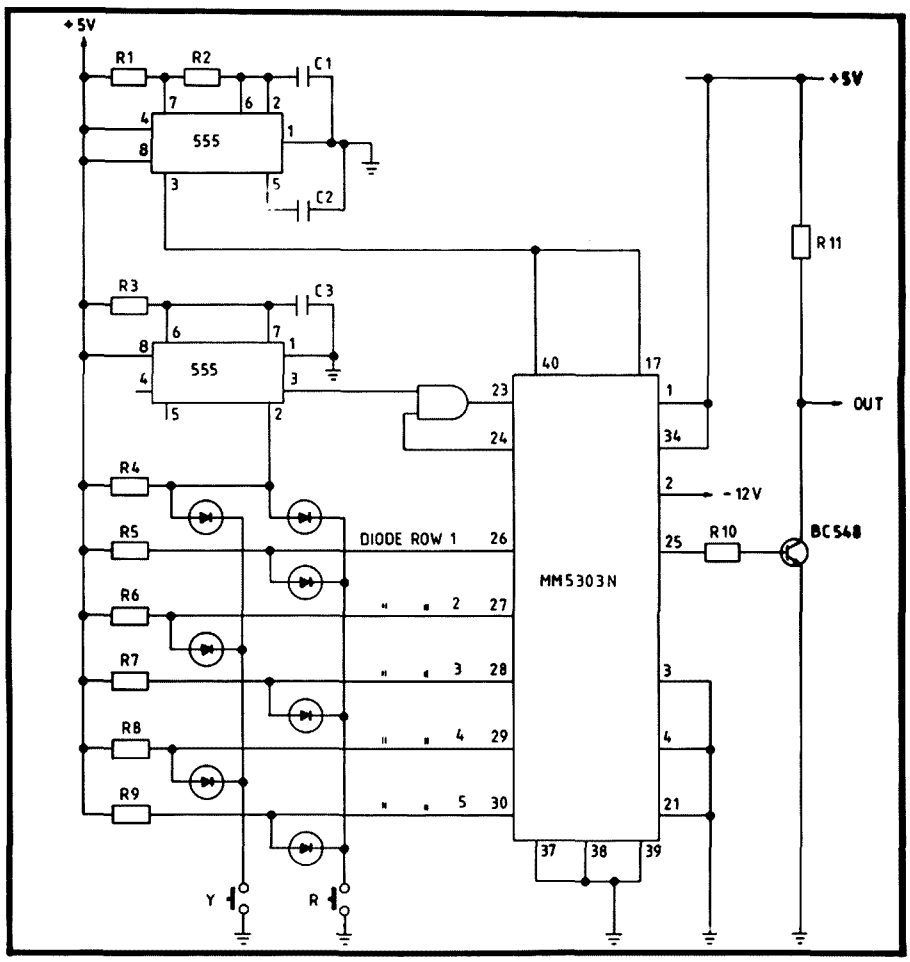


FIGURE 1: Parts List.

PARTS LIST
R1 = 10k
R1 see Note 1
R3 = 10k
R 4 — R9 = 2k2
R10 = 10k
R11 = 1k
C1 — C2 = 0.01 mR
C3 = 1 mF Tantalum
All diodes germanium (e.g. OA90, OA95)
AND gate is 7408
NOTE 1
R2 comprises a trimpot in series with a fixed resistor to total approximately 100k. Adjust the frequency to 800 Hz (50 Bd) or 727.2 Hz (45.45 Bd).

In my case a tin box was built, which was soldered to the back of the keyboard PCB, to house the diode matrix and UART boards. The whole unit then fits in the normal keyboard position. It can, however, be removed and run as a remote keyboard. Using this keyboard the printer always runs in the receive mode so the keyboard must be connected to a sending modulator board and the printer to a receive demodulator with a link between the two boards on transmit to enable the output to be monitored. The same system is used for local loop, the modulator is disconnected in receive mode. Alternatively the UART output can be used to trigger the loop

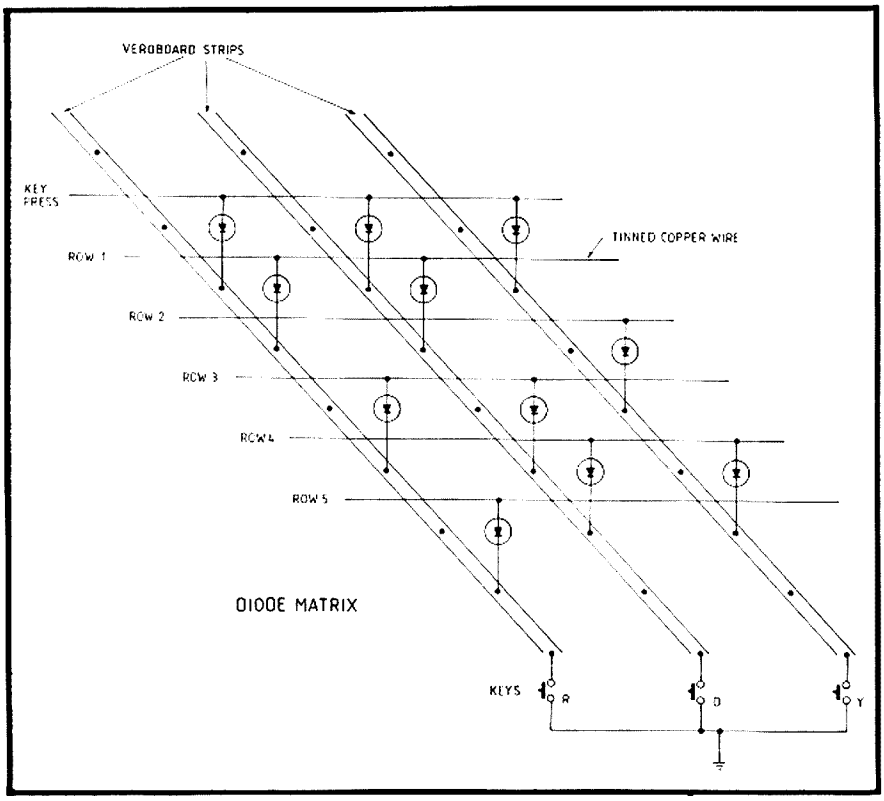


FIGURE 2: RTTY Remote Keyboard.

supply to the magnet using a BC338 or similar, but this does not monitor output on transmit. This keyboard system can also be used remote from the machine or to convert a "print only" device for two-way QSOs.

TECHNICAL EDITOR'S NOTE

A diode should be included to each letter for debouncing, e.g. (Line 2 555 No. 2).

RTTY REMOTE KEYBOARD DIODE MATRIX

Diodes should be fitted where a logic 0 is shown. The chart shows the code with the least significant bit on the right, i.e. diode row 5 is left bit and row 1 is right bit.

Letter	equals	Letter	equals
A	00011	R	01010
B	11001	S	00101
C	01110	T	10000
D	01001	U	00111
E	00001	V	11110
F	01101	W	10011
G	11010	X	11101
H	10100	Y	10101
I	00110	Z	10001
J	01011	Space	00100
K	01111	Carriage return	01000
L	10010	Line feed	00010
M	11100	NUL	00000
N	01100	Letter shift	11111
O	11000	Figure shift	11011
P	10110		
Q	10111		

"NUL" is really a paper tape advance. ■

Home Building

J. A. Gazard VK5JG
39 Glenhuntly St., Woodville, SA 5011

In the early days of Amateur Radio all the apparatus used was home built. There was no other source of supply. By modern standards, the gear was very simple.

In the mid-1920s in Australia a transmitter was most often a self-excited oscillator using one or two receiver power valves and the receiver had a triode detector and one or two audio stages using battery operated valves.

BREADBOARDS

Both the transmitter and receiver were constructed on wooden boards and often a breadboard was purchased for this purpose. The term "breadboard construction" is still used to describe a layout on a single surface.

The cost of parts for this simple station was equal to about five weeks of the average wage at that time. This cost in terms of wages is not far different from the cost of the elaborate SSB transceiver of the present day. The intending amateur first built his receiver as part of his theory study and used it to learn Morse code. The required code speed was 14 w.p.m. in those days.

Although a few commercial receivers found their way to Australia, amateurs continued to build most of their equipment until amateur radio was closed down at the start of the war in 1939.

DISPOSAL ERA

When amateur radio resumed after the war conditions had changed. There were large quantities of war surplus radio gear available and transmitting valves and parts could be obtained very cheaply. War surplus receivers of high quality were also available and many amateurs were able to acquire these receivers. However the surplus transmitters were not so suitable for amateur use and the practice of home building transmitters continued in most cases.

Home building and experimenting was a big part of amateur radio and much talk on the air related to this aspect. Having built the gear himself the amateur had little difficulty in correcting faults and repairing breakdowns, and acquired a good knowledge of amateur radio theory and practice.

SINGLE SIDEBAND

About 1948 the SSB mode of transmission was introduced to amateur radio but as filter parts were not available and construction and adjustment of SSB equipment was difficult only a few ingenious and skilful amateurs were able to build these rigs. As time went on, however, the advantages of SSB became evident. When commercial transceivers specially built for amateur bands became available in the 1960s SSB gradually came into use so that by 1970 SSB was the only acceptable form of radio telephony in the HF amateur bands.

With mass production of SSB transceivers in Japan the price of SSB came within the reach of most amateur so that now almost every amateur operates a commercial transceiver. Newcomers to amateur radio go straight to commercial gear, home building has declined, and an enjoyable part of amateur radio has largely been lost. Whereas in the early days manufacturers sold the necessary parts for home building most of these are not now available.

CW TRANSMITTERS

There are probably many among the newcomers to amateur radio who would like to indulge in home building but are deterred by the complexity of the SSB rigs they see and the lack of parts. Suggestions to these people are that they build a simple CW transmitter and obtain the parts from discarded B and W TV and radio receivers. These old receivers contain most of the parts for a simple full power or novice power CW rig, and they are often given away, so that home building can be carried out at little expense.

At VK5JG it was considered that the use of an SSB transceiver for CW working was uneconomical, and a CW rig has recently been built using old TV and radio parts. This rig has more output than the station SSB transceiver on CW and is now used for all CW work. The SSB transceiver is reserved for telephony, the purpose for which it was designed. The cost of this CW rig was only a fraction of the cost of the previous CW rig built about 1950 and it has about four times the power output. ■

Transmitter PSUs built from Discarded TV and Radio Receiver Parts

The early black and white TV and old valve-type radio receivers which are given away these days contain many of the parts required for building amateur transmitters power supplies.

First there are the power transformers. Those taken from early TV receivers have been:—

1. The type used with 5AS4 rectifiers. These have high voltage secondaries of 500V or 660V CT plus 6.3V and 5V windings.
2. Those used with solid state bridge rectifiers. These have a HV secondary of about 240V plus a 6.3V winding.
3. The type used with voltage doublers, having 110V and 6.3V secondaries.

The lamination size of these TV transformers indicates that they are capable of powering a 150 watt amateur CW transmitter. The first type can be used to supply 600 or 750 watts to the transmitter by using the full 500 or 660 volt secondary to a bridge rectifier. The second can be used to supply 600 volts by feeding the 240 volts to a voltage doubler. The third type is limited to about 300 volts output when used as a voltage doubler but is ideal for a novice transmitter.

RECEIVER TRANSFORMERS

Radio receiver power transformers are also useful. Those fitted in receivers made before 1940 had HV secondaries of about 700V CT but after 1940 this became about 550 volts. (This coincided with the introduction of permag speakers, eliminating the old voltage-dropping field coil.—Tech. Ed.) The largest of these radio power transformers have sufficient power capacity for a novice transmitter but they can also be modified for use as heater and bias supply transformers.

A check on the windings and voltages of transformers can be made by feeding 6.3 volts to the heater winding, which is unmistakeable because of the heavy gauge wire, and measuring the output on the other windings.

PROCEDURE

To modify transformers the laminations are first removed (noting how they are arranged) and the insulation over the windings is stripped. The outer windings, which are the heater windings, are thus revealed and the turns can be counted. If a 6.3 volt winding has 32 turns then the turns per volt are 5. If the transformer is to be modified to give a 6.3 volt heater winding and a 100 volt winding for negative bias then the secondaries needed will be 32 turns for the heater and 500 turns

for the bias. The original heater windings are then removed plus all but 500 turns at the HV secondary. If the original HV secondary supplied 500 CT it will have 2500 turns, so that it will be necessary to remove 2000 turns. Rather than count the turns removed it is easier to count the turns per layer of winding and then count the layers removed.

The ends of the 100V winding can then be soldered to hook up wire leads to bring them out clear of the laminations. The soldered joints should be well insulated and laid back on the windings which are then taped over with three layers of PVC tape. This will ensure that no strain is placed on the fine winding wires when the leads are moved. The new heater windings can then be wound on. Tables in handbooks give the gauge of wire required for heater currents to be used. Laminations can then be replaced, interleaving them as was noted when removing.

FILTER COMPONENTS

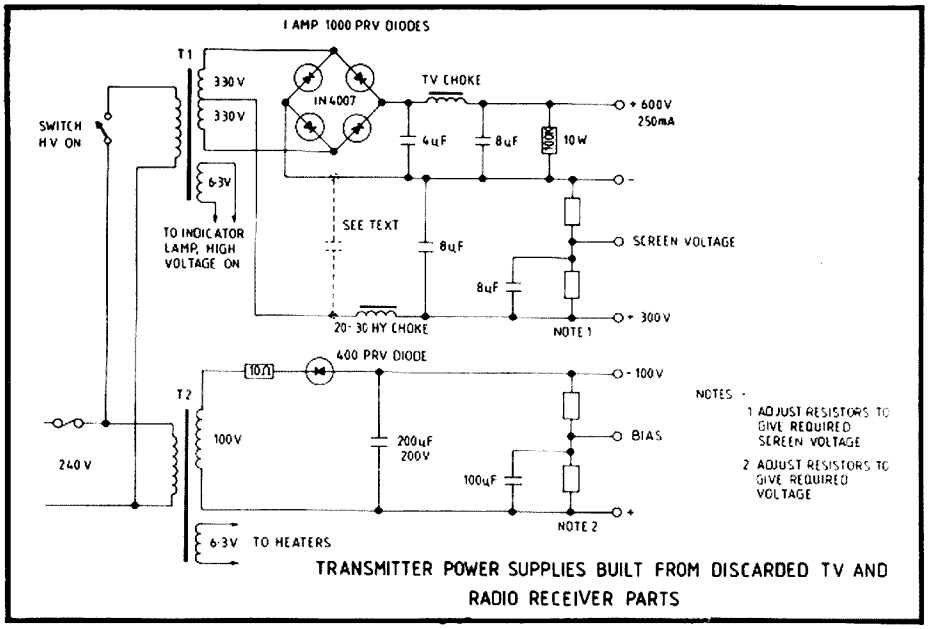
Filler chokes used in TV sets have a comparatively low inductance so that high values of filter capacitors are needed if TV chokes are used in the power supply. TV filter capacitors generally had a working voltage of about 300, so that if these are used they must be connected in series, and parallel balancing resistors must be used. The total capacitor rating should be 1½ times the transformer secondary voltage.

EXAMPLE

The circuit diagram shows how one power supply was made using a TV power transformer and a modified radio transformer. Judging by the lamination area transformer T1 had a capacity of about 200 watts and at 250 mA output to a CW transmitter final it became just warm. A TV choke should not be used to filter the screen supply as it has insufficient inductance to reduce the screen output voltage to 300V. The switching arrangement allows the heater and bias voltages to be applied without plate and screen voltage. This facilitates neutralisation and adjustment of input drive.

By increasing the input capacitor of the HV filter from 4 uF to 8 uF the output voltage was raised to 750V. A similar power supply used a 500v CT transformer. With a 16 uF filter input capacitor and a 32 uF output capacitor this gave an output voltage of 600. In this case it was necessary to provide a filter input capacitor of 2 uF in the screen supply to get 300 volts output.

The 1000V PRV rectifier diodes have a very small voltage safety margin when used with a 660V transformer but the power supply as set out in the diagram has had considerable use without failure. For a greater safety margin each diode could be replaced with 2 in series. ■



TRANSMITTER POWER SUPPLIES BUILT FROM DISCARDED TV AND RADIO RECEIVER PARTS

5m VHF back in the Wireless Horse and Buggy Days — Almost!

A little nostalgia laced with a laugh. Photo shows Al VK4SS up on the Range 900', just west of Brisbane, working 56 megs portable (??) on a VHF Field Day in the 1930s. (He was then in his teens and using the call VK4SA).

The 5mx VHF Band, more than 45 years ago, was mostly a silent space: no commercial gear was available for Hams. To get on air, it all had to be home-brewed. The rig used was a two tube super-regen transceiver, built in a box that previously housed a crystal set. An esthetic touch was added by the use of the main station home-brew mike atop the rig, hi! The latter day Ham has probably never used a super-regen receiver. It operates with a constant low level hiss which disappears when even a very weak signal is tuned.

Al says that it all worked fb but finger-tip tuning was needed or hand capacity QSYd the sig rite off the dial, hi! Note

the extended tuning shaft on main variable capacity to help minimize this effect. Sky hook was a length of 7/22 copper, cut to frequency and strung to the nearby tree. Radiated power would have been a fraction of a watt.

DX worked was approx. 100 Km — down into the Tweed Heads area of NSW, which compares favourably with present-day achievements under no skip conditions. If Al's memory is correct, calls QSOd were VK4AW, VK4WU and one or two other members of the then U gang.

But what Al can't figure is why he found it necessary to turn himself out in a suit, stiff collar and tie for a half-mile slog up the mountain, lumping the gear. Dress sure was conservative in those days. His "wheels", he remembers, was a 1926 Essex, running boards — et al. ■

QSP

INTERFERENCE

An article in one of the well known national newspapers dealt with the problems relating to two Sydney FM stations and complaints by listeners to TV Channel 10 reception. One spokesman was reported as saying that a cheap attachment to the receiver was not the problem which was possibly really one of "harmonious interference". Thanks to VK2BXT for a clipping and who aptly wished that all our TVI problems could be of a harmonious nature. ■

John Moyle Memorial Field Day Contest — Rules 1981

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 26 hours available.

CONTEST PERIOD

From 0400Z 7 February 1981 to 0600Z 8 February 1981.

OBJECTS

The operators of portable field stations or mobile stations within the VK and P2 call areas will endeavour to contact other portable, mobile or fixed stations in VK, P2, 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 open.

(d) Portable field station, transmitting phone, 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 hours, 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 permltetd, 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 (10-160) during the period of the contest provided tnat 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 division. 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.

21. All CW-CW contacts count double. Cross mode contacts count single.

22. Logs to be postmarked no later than 28 February 1981 and sent to FCM, Box 1065, Orange 2800.

RECEIVING SECTION

This section is open to all short wave listeners in VK and P2 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. ■

VK4DO — 57 Years a Radio Amateur

Harold Hobler VKDO
141 Hyde St., North Rockhampton, Qld. 4700

It was in 1913, 67 years ago, that from my seat at the children's kindergarten I went to at that time, I could see through the window, the 162 foot high mast of VIR, Rockhampton, with its cage antennae coming down from a cross-arm at the top of the mast to tie-off points. When I learnt that from these cages messages were sent through the air without intervening wires, I was fascinated.

That day after school, the first thing to do when I got home was to erect a piece of 3 x 2 in the back yard and string some wires down from the top of it (like VIR). A large packing case placed at the bottom served for a room to operate, and with my Dad's help a substitute was made for a morse key. I guess that was my start of interest in wireless. (Radio was not a word then.)

The fascination came again nine years later, in 1922, when a crystal set was my first attempt at construction, after trying to teach myself something about "wireless" from the small amount of literature available at that time. The next year a 3 valve receiver was built, followed by a 2 valve "Lo Loss" type. The size of the wire in the coils would have taken a few kW. A single valve self-excited transmitter was also taking shape. At this time there were no broadcast stations in Queensland. The first one, 4QG, came later. There was only 2BL and 2FC in Sydney, 3AR and 3LO in Melbourne and 6WF in Perth. Broadcasting had just been born and a few B/c receivers were getting into private homes in the Rockhampton area, but static marred reception of the southern stations to a great extent. So to add to the few and far programmes of 1923, a regular Sunday morning programme was transmitted from 4DO on 240 metres, using absorption loop of grid modulation of a single 5 watt UV202 oscillator valve. Some reports came from NZ.

There were no pick-ups in those times. I would wind up the portable gramophone, put on a 78 r.p.m. record, announce what it was, then drop the carbon mike down into the sound box of the gramophone. "B" batteries for the HT of 140 volts became too expensive, so a rectifier was made of aluminium and lead In a borax solution placed in large glass jars. To stop the evaporation of the solution and keep the moths out, a layer of kerosene was floated on top and the moths skimmed off every few days. From this rectifier the output was pretty rough (RAC), so to improve the HT supply a 500V DC generator was acquired, giving a pure DC tone. In 1925 you could pick a station by his tone. (T1 to T7 were common.)

This same year saw amateur radio getting a move on with new sttaions coming on the 80 metre band nightly. I well remember many of them, but many of them are "Silent Keys" now. My AOCP No. 110 was acquired on 1st May, the code speed then being 12 w.p.m. It was in April of this year that G2NM Surrey, G20D Berks, G2LZ Sussex and G2SZ London were heard on 45 metres.

With only a handful of BC stations in Australia in 1924 and 1925, it was possible to hear direct broadcasts from the USA on the broadcast band just around and after dark and many times Henry Halstead's orchestra from KG0, Oakland, California, on 312 and 371 metres, was good strength through the Amplion loudspeaker. In 1926 broadcasting was still a novelty to many up this way, and the Tivoli Theatre asked me about giving a demonstration. With a 6 valve AWA Radiola and home-made amplifier, the 2000 people listened to music from 2BL, Sydney, 900 miles away. Wouldn't like to try it today. This year saw the word "DX" come into the amateur's vocabulary, magazines were being published for the amateur, helping him to construct equipment. Contests were being organised and awards given for long distance, low power contacts. In June of this year, with 140 volts on a 5 watt UV202 valve, my first contacts were made with California, Oregon and Hawaii, for which the Jewell Miles-per-watt Contest was awarded to me for Queensland. The WIA and ARRL (USA) conducted the "1926 Trans-Pacific Tests", which provided for the copying of an official 500 word test message from Connecticut, USA, across the Pacific Ocean. For copying the message, 4DO was awarded an "A" grade certificate; was also made a member of ARRL, and a foundation member of the Rag Chewers' Club of Australia. Trying to get a few more watts in the transmitter, a UX210 tube replaced the UV202, powered by a battery for the filament and the 500V

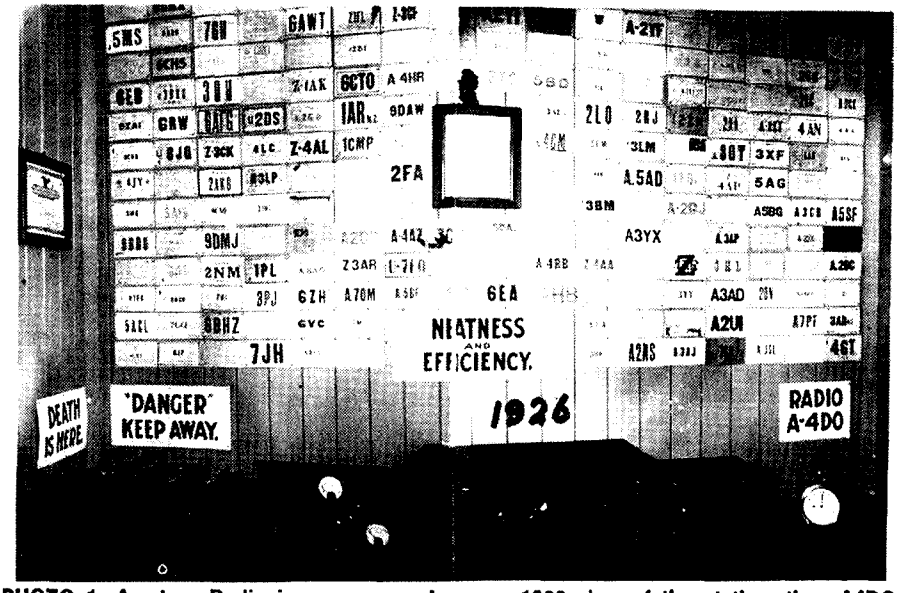


PHOTO 1: Amateur Radio in years gone by — a 1926 view of the station, then A4DO.

DC generator for HT. The coils were made from ¼ in. copper tubing, coupled by sliding along glass rods. The fixed condensers were made from foil and paper taken from T model Ford spark coils; their capacity was never known.

"Lo Loss" receivers were the rage in 1026, so a two valve was made on a breadboard, using a detector and one audio. Another was made on a ¼ in. plateglass panel. Try drilling that stuff some time with a hand drill and rat-tail files. The "B" batteries for the receivers were made up from old battery carbon rods, pieces of zinc, sal ammoniac and "Marmite" jars. I guess we made everything bar the valves.

To supplement my meagre Income I wrote a weekly "Wireless Notes" column for the local "Bulletin" newspaper from 1924 to 1940 (16 years), a total of 581 articles, and contributed constructional articles to the "Queensland Radio News" magazine. Still trying to get my morse speed up to 20 w.p.m. by listening to the "sounders" outside the telegraph office, by practice on 80 metres over the air with the original 4AN (Leighton Gibson) of Brisbane, by trying to copy "press" from VIS, Sydney, and ships traffic on 600 metres, eventually in April 1928 was successful in obtaining my First Class PMG Certificate, No. 1003. This entitled me to the position of a ship's operator, and although a position was requested, this chap from Rockhampton was forgotten. However a wireless operator was wanted at Brunette Downs, a cattle station in the Northern Territory, but after being informed that the cabinets turned inside out from the heat and you could not even work Darwin for ten months of the year due to atmospherics, the thought was forgotten. Some of the Novices today think "The Code" is hard to learn. Believe me, it was extra hard in the 1920s, with the nearest other amateur 400 miles away. I remember for the code test for my First Class ticket having to read the sounder in the telegraph office at Rockhampton. The land line was held open and Tom Armstrong, the RI, sent from Brisbane.

It was in June 1928 that the late Sir Charles Kingsford Smith ("Smithy") flew from California to Australia in the "Southern Cross", the first Trans-Pacific flight ever made. From the time "The Old Bus" (as "Smithy" called it) was 4 deg. 10 min. N and 168 deg. 52 min. W until within an hour's landing at Brisbane, messages were copied from the plane and featured in the Rockhampton newspapers. Some time later "Smithy" toured Queensland with the film "The Old Bus" and appeared on stage at my theatre in Rockhampton during the screening. In a chat with him we recounted that epic flight and the messages that came from the 50 watt transmitter aboard the aircraft. The 211 triode was powered by a wind-driven generator on the wing. The transmitter is housed with the "Southern Cross" at Brisbane's Eagle Farm Airport. From 1928 to 1936 equipment was improved, the transmitter being crystal controlled. The "Lo Loss" receiver had been replaced in May 1930 by a pilot "Super Wasp" 4 valver, and this in turn was superseded in May 1936 by the importation from Chicago of a Hallicrafters "Super Skyrider", the last word in receivers in those days. With the old faithful UX210 in the transmitter and 50 watts input, the six continents and then 48 USA States were worked in 1934.

PHOTO 2: Station lay-out and the author in 1962.

The WIA was soliciting members and my Membership Certificate is dated 6 November, 1936. CW and AM were the forms of communication. One would call CQ then tune the band for a reply. 14 Mc was THE DX band and world-wide contacts were regular with a few watts input. Over the years call sign prefixes changed from just 4DO to A4DO, then OA4DO and lastly VK4DO.

September 1939 saw the outbreak of World War 2 and the sealing of amateur equipment from the 2nd of that month until January 1946. By instructing the VDC in morse and signals at the outbreak one did not forget what was so difficult to learn in the 1920s. After hostilities ceased it was difficult to get parts to get back on the air, but gradually war surplus became available and the "Command" equipment allowed many of us to put out a signal once more. Friendships were made again, but "Silent Keys" were missing from the bands. From 1946 it has been a gradual improvement of equipment and antennae, and of course SSB and transceivers have long come into their own, and the VHF bands.

DX work has always had an appeal and I guess I set a challenge to myself some years ago to secure some of the worthwhile awards. With WAC in 1934, WBE in 1935 and WAS (PSA), next were the DXCC secured in 1948 and 1949, and the HARCEN and WAP in 1951. The particular awards I was after were the Worked All Zones for CW, AM, Phone and SSB. Getting the confirmation of the contacts was the trouble but they eventually were received and the three certificates came in 1950 and 1969, followed by the Captain Cook Bi-Centenary in 1970. Participation in contests were rewarding, with two Certificates for the VK-ZL Oceania, eleven firsts for VK4 in the "CQ" World-Wide, five for the Ross Hull VHF and the trophy itself for 1977 and 1979. Worked All Continents has been made many times within an hour, but the best time was in 11 minutes on 5th July, 1973, without any prior arrangement. The Old Timers' Club of USA and Australia saw fit to admit me as a member for my long association with amateur radio. Since the inception of the Boy Scouts Jamboree of the Air we have acted in an operating capacity.

My 57 years as a radio amateur has been a happy and rewarding experience in many ways, and over this period and my over 40 years as a member of the WIA, I have many happy memories of friends I have made and met in Australia and overseas. Twenty years ago a few dedicated amateurs formed the Central Queensland Branch of the WIA, and it has been my pleasure to be associated with them over this period in an official capacity, nine years as President. In 1978 the Queensland Division honoured me with their Merit Badge and Certificate for Meritorious Service to the Institute, and Life Membership was bestowed by the CQ Branch in 1949.

So what more could one ask for, except perhaps to add a few more QSOs to the 76,000 in the log at 4DO's. ■

World-Wide Communications from Hand-Held and Man-Pack Transceivers

Sam Voron VK2BVS
2 Griffith Avenue, East Roseville, NSW 2069
Phone (02) 407 1066 (7 to 9 p.m. nightly)

PART TWO

THE YAESU FT7 AND FT7B MODIFYING FOR 160 METRES

In part one of this series we looked at adapting a state-of-the-art Palomar Transceiver PTR130K into a hand-held HF unit. Unfortunately this unit also carries a state-of-the art price tag which will put it out of reach of some, so let's look at modifying the relatively inexpensive Yaesu mobile units.

The FT7 unit weighs 5.5 kg which, being identical to modern day military man pack radios, makes the FT7 ideally suited for mounting on to a back pack frame.

MODIFYING THE FT7/7B FOR BACK PACK OPERATION

A simple H frame can be obtained from camping and disposal stores; packs can be removed, and the frame, together with shoulder strap, remains. The mobile bracket is mounted halfway up the H frame and the FT7 is vertically secured on to the frame. A Yaesu bumper mount secures on to the top of the H frame and alongside the transceiver an elongated (army walkie-talkie) bag contains the 3 foot Yaesu mobile aerial mast and centre-loaded elements for 80 to 10 metre use. The other side of the back pack holds an antenna matcher (Dentron Junior) and an SWR meter, even though for most elements a very low SWR is obtained without the matcher.

Morse key and microphone are secured on the side of the frame so that they are reachable by the operator.

Power output can be dropped on SSB by decreasing the mike gain or on AM/CW by decreasing carrier control or altering the drive control setting. This conserves battery power.

Current consumption can be dropped by 200 mA by switching off the S-meter lamp and the two main dial lamps by a switch mounted on the back panel. A separate switch can activate one of the back dial lamps when accurate frequency readout is required.

In general operation a frequency is chosen, rig tuned, antenna arranged and the back pack is ready for use. Another idea is to bring the calibrator potentiometer out of the unit via a length of cable to allow some frequency variation by the operator without the need to take off the pack. This modification has not proven necessary in practise.

MODIFYING THE FT7/7B ON TO 160 METRES

No hand-held set-up could be regarded as complete without the advantages offered by the inclusion of the 160 metre band. Apart from the hundreds of experiments possible on this band the range 1.5 to 2 MHz allows the tired walker the opportunity to tune into the local broadcast stations and take advantage of the psychological energy boost obtainable by listening to the latest pop tunes!

Those interested in vehicular operation can of course add 160m to their mobile pleasure.

THE LOCAL OSCILLATOR
(Affects both receive and transmit)

A crystal on 16.0000 MHz will put your rig on the 1.5 to 2 MHz range.

FT7

Mount a switch just above the oscillator board P/O (PB — 1634A) and wire to the 10 metre socket so that either the 10 metre (43.0 MHz crystal) or the 160 metre (16 MHz crystal) can be earthed and so activated. This switch should in addition add a 180 pF fixed and 115 pF mica compression variable capacitor in parallel with the 10 pF trimmer (TC1904).

FT7B

Place the 16 MHz crystal in the 10D crystal socket and solder the above capacitors (see FT7 details above) directly across TC1907.

THE PREMIX STAGE
(Affects both receive and transmit)

Here the local oscillator 16 MHz minus the VFO (5 to 5.5 MHz) provides an output between 10.5 to 11 MHz. To achieve this we must drop the resonant frequency of the 40 metre parallel tuned circuits which currently tune 16.0 to 16.5 MHz.

FT7B

Cut the 10D wire linking across to the other 10 metre terminals on switch wafer S1901g and S1901f.

Connect the 10D terminal to the 40 metre terminal (both on S1901g).

Connect the 10D terminal to the 40 metre terminal (both on S1901f).

Connect two 115 pF variable capacitors on to a tag strip and connect one to S1901g and one to S1901f.

To bring the capacitors into action wire up a switch which will earth the other end of the capacitor thus effectively adding capacitance across the 40 metre coils and dropping the resonant frequency as required.

FT7

Arrange to switch out the 10 metre coil and switch in the 40 metre ones. Then carry out the two capacitor additions to 40 metre coil T1902 connected to wafer swtich S1901g and S1901l.

THE PREDRIVE INPUT COILS
(Affects both receive and transmit)

These coils proved to be too difficult to resonate. A .01 uF capacitor was placed between the two wafer contacts and the series tuned circuits ignored.

FT7B

Free both 10D terminals on S1901h and S1901i from the 10 metre link and place a .01 uF ceramic capacitor between these terminals.

FT7

The two terminals which need to be bridged by the .01 uF are S1901j and S1901k.

PREDRIVE OUTPUT COILS
(Affects only transmit)

FT7B

Free the two 10D terminals from the 10 metre links on wafers S1901k and S1901j.

Connect the 80 metre coil link turn to the 10D position on S1901k.

Connect the 80 metre parallel tuned circuit to the 10D position on S1901j.

Connect a 115 pF variable capacitor with a fixed ceramic equivalent of 172 pF across it on to a tag strip and connect one end to S1901j.

To bring the capacitors into action wire up a switch which will earth the other end of the capacitors thus effectively adding capacitance across the 80 metre coil and dropping its resonant frequency down to 1.8 MHz.

FT7

The two wafers involved are S1901m (equivalent to S1901k in the FT7B) and S1901l (equivalent to S1901j in the FT7B).

RF FRONT END COILS
(Effective on receive only)

FT7B

Free the two 10D terminals from the 10m links on wafers S1901l and S1901m.

Connect the 80m parallel tuned circuit to the 10m position on S1901l.

Connect the 80m coil link turn to the 10D position on S1901m.

Connect a 115 pF variable capacitor with a 220 pF fixed ceramic across it on to a tag strip and connect one end to S1901l.

To bring the capacitors into action follow the previous switch earthing procedure.

FT7

The two wafers involved are S1901n (equivalent to S1901l in the FT7B) and S19010 (equivalent to S1901m in the FT7B).

LOW PASS FILTER UNIT

FT7B

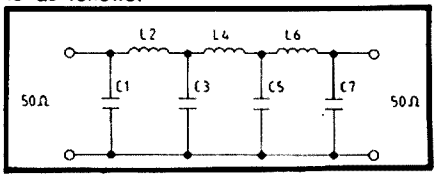
Free the two 10D terminals from the 10m links on wagers S2a and S2b.

Run a coax cable from these terminals into the LPF unit PB1880 and connect to the new 160m LPF.

FT7

Wafers involved are S2102a and S2102b. LPF unit is PB1636.

The new 1.8 MHz low pass filter required is as follows:—



L2 and L6 = 19 turns 22 gauge 1 in. dia. toroid or nearest size available.

L4 = 20.9 turns 22 gauge 1 in. dia. toroid or nearest size available.

C1, C7 = 1000 pF.

C3, C5 = 2400 pF.

This filter circuit came from an excellent article in QST (December 1979, page 45).

Insulation tape over existing LP filters allows the new filter to be placed on top of the existing filters if toroids are mounted horizontally.

ALIGNMENT

LOCAL OSCILLATOR

Switch on the marker. On the LSB mode tune the VFO either side of a 100 kHz point. If the marker carrier is not heard (a weak heterodyne) then vary the 115 pF capacitor. If still no go, vary oscillator coil T1901 and the 115 pF capacitor until oscillation occurs. Check all other bands to verify that their crystals are also oscillating reliably. The marker should be heard on each band by tuning the VFO. Adjust T1901 so that all bands are oscillating OK.

Unreliable oscillation may be due to a low activity crystal. A source of readily available untried 16.000 MHz crystals is currently advertised for $4.90 by Rod Irving Electronics, 499 High Street, Northcote, Victoria 3070.

For specially made 16 MHz crystals specify HC25/U type, 30 pF load capacitance, 25 ohm or less series resistance, 7 pF or less static capacitance, 5 mW drive level.

PREMIX STAGE

Tune the VFO to 1600 kHz and on the SSB mode heterodyne against the marker carrier. Adjust the 115 pF trimmer (connected to S1901g in the FT7B and FT7) for maximum S reading.

Now tune the VFO to 1900 kHz and, using the same procedure as above, adjust the other 115 pF trimmer (connected to S1901f in the FT7B or S1901i in the FT7) for maximum S reading. Repeat this procedure until maximum response is obtained. If a signal generator is available alignment could be carried out on 1650 kHz and 1850 kHz.

PREDRIVER INPUT COILS

No alignment is required since direct capacitive coupling is used.

PREDRIVE OUTPUT COILS

Use a power meter sensitive down to 100 milliwatts and a dummy load. Set the VFO to 1825 kHz and controls for maximum CW transmit output. Adjust the 115 pF trimmer for maximum power output; vary the transceiver's tune control to ensure maximum output. Under 3 watts with no low pass filter will be typical.

RF FRONT END COILS

With the VFO on 1800 kHz and the marker carrier running adjust the 115 pF trimmer for maximum S-meter reading. This reading should be near +20 dB over 9 if your modification has been successful.

LOW PASS FILTER UNIT

Swap input and output connections to find the best results. Output should be 1 to 2 watts.

THE LOW POWER OUTPUT

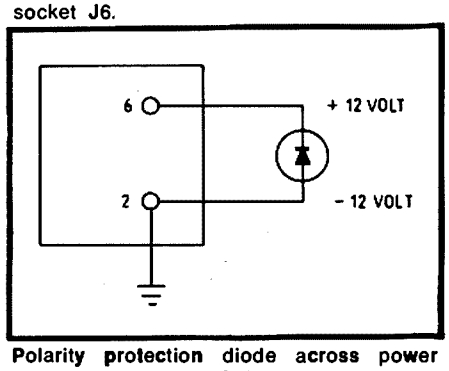
This power level is ideal for my hand-held, providing S9+ reports across Sydney. I have been unable to raise the power level. If anyone finds an easy method please write to my address and I will pass on the information to those needing higher power in mobile and home station situations.

IMPROVING AM RECEIVE QUALITY ON THE FT7B

Add a 1 pF capacitor between the input and output of the filter XF301 type 9M20A on filter unit PB1873A. Listen to that hi-fi AM now. Just beautiful!

DROPPING CURRENT CONSUMPTION BY ANOTHER 100 mA ON THE FT7B

The FT7B draws 100 mA extra on receive compared to the FT7 because of relay RL2. Deactivate RL2 and wire so that the 12 volt supply via the on/off switch is connected directly to the heavy wires on the relay contacts. You must now add a polarity protection diode across the power socket J6.



Polarity protection diode across power socket.

Note that you should not exceed 3 amps as indicated by the front panel meter, since removing the relay limits the amount of current we may draw otherwise wiring or switch may be damaged.

A 160 METRE HAND-HELD OR BACK PACK ANTENNA

The Yaesu 80 metre resonator can be easily turned into a 160 metre antenna by connecting a 40 pF variable trimmer from the top of the resonator to earth. Removing the trimmer returns the antenna back to 80 metres.

A wire with two lugs on each end is all that is required to change bands. The lug fits nicely on to the screw thread near the top of the resonator.

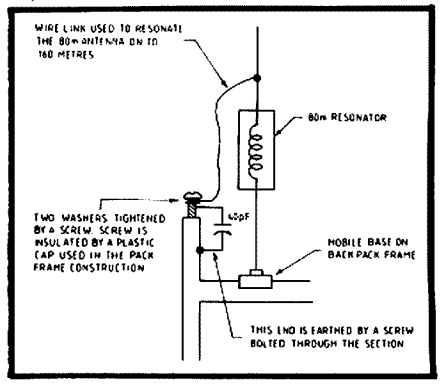


FIG. 3. Adding 160m to your Yaesu 80 to 10m mobile antenna system.

ADJUSTMENT

Tune receiver to 1825 kHz on a stormy night or at least when static crashes from hundreds of miles away are being propagated. Adjust 40 pF trimmer for maximum S-meter deflection. Your 1:1 SWR 160 metre antenna is now ready for use. ■

(To be continued)

VHF-UHF

An expanding world

Eric Jamieson,
VK5LP
Forreston, S.A 5233

VHF/UHF BEACONS

Freq.	Call Sign	Location
50.005	H44HIR	Honiara
50.055	ZL1UHF	Auckland
50.100	KH6EQI	Pearl Harbour
50.105	KC4AAD	McMurdo, Antarctica
50.110	KH0AB	Saipan
50.144	KC6NI	Ponape, Caroline Is.
51.999	YJ8PV	Vanuata
52.150	VK5KK	Arthurton *
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
52.400	VK7RNT	Launceston
52.435	VK3RWV	Hamilton *
52.440	VK4RTL	Townsville
52.450	VK2WI	Sydney
52.500	JA2IGY	Mie
52.500	ZL2VHM	Palmerston North
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
52.900	VK6RTT	Carnarvon
53.000	VK5VF	Mt. Lofty
144.010	VK2WI	Sydney
144.162	VK3RGI	Gippsland
144.400	VK4RTT	Mt. Mowbullan
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.800	VK5VF	Mt. Lofty
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.400	VK4RBB	Brisbane
432.450	VK3RMB	Mt. Bunningyong *
10.3 GHz	VK6RVF	Perth *

No additions to the beacon list this month. Advice should be given at the time of writing the VK5 beacons are off the air for a rebuild, but hopefully will be back on by the time you read this. Changes will include a new keyer for FSK mode, antenna overhaul, and return to usual power. It is not known at this stage if there will be any frequency changes.

BEACON FREQUENCIES

From time to time discussions, mostly on air, are initiated at least in VK5 on the merits or otherwise of the suggested bandplan for the various beacons, particularly on 2 metres. Two matters which are generally aired as being problems are (1) that at least in the case of the VK5 beacons they are located in such a prime position as to be received so strongly at various places in the metropolitan area that overload and mixing problems exist, and (2) having a very strong beacon so close in frequency to other beacons in other areas makes it difficult to hear the other beacons, if they are weak, as they generally are.

Let us look at these two matters in a little more detail. It is certainly true that in some of the better areas of the Adelaide metropolitan zone the 2 metre beacon in particular is exceedingly strong, and were it not for the fact that it is located 700 kHz above the calling frequency of 144.100, would be even more embarrassing. I guess it would be also fair to say that in some cases faults do exist at the amateur installations with poor conducting surfaces on antennae, etc., which can cause rectification and other problems. And the design of some equipment is open to question in its capability of operating in the presence of strong signals without overload and consequent generation of spurious signals. Accepting all these factors must of necessity lead one on to thinking that, as a general rule, strong permanent signals should not be too close in frequency to the usual operating areas of stations who in the first place were believed to receive some benefit from having a beacon anyway.

This fact then leads us to the second question of where the beacons should operate and how close together. I know there have been many band-plans proposed in the past, and there is supposed to be a plan prepared by the VHFAC to which it is hoped we would be adhering. On the present positioning of the 2 metre beacons, one wonders how many people in Canberra whose beacon operates on 144.475 would ever hear the beacon in Albany on 144.500 if such propagation existed, which is probable some time in the past. Similarly, would amateurs in Hamilton (beacon 52.435) be likely to hear VK4RTL (52.440) in Townsville at times perhaps other than good Es periods?

I suppose I will be accused of stirring, but despite having probably done as much as anyone in VK to help in the establishment of the Australia-wide beacon network, not once have I ever been asked for an opinion regarding operating frequencies. Blubber! Blubber!

If anyone would care to write to me I would like to know how VK2 amateurs in the Sydney area close to VK2WI on 144.010 work their DX, and do the Sydney gang hear VK4RTL on 52.440 when their own beacon is on 52.450? And do the Darwin boys find VK8VF embarrassing on 52.200 when the 6 metre band is open to other areas? How does VK3RGI on 144.162 affect the Gippsland boys for 2 metre working on 144.100? Do the Geelong boys still hear VK7RNT on 52.400 now they have a beacon on 52.330?

The problem in VK5, of course, is compounded because in working over the Mount Lofty Ranges into VK3, which is the most common interstate path, amateurs on the Adelaide plains look right at the beacons on the top of Mount Lofty, hence 30 watts into an antenna with a few dB of gain being received on the front of a large 2 metre beam with plenty of dB of gain can spell disaster. So what do we do? If the beacon was on the plains it wouldn't be heard interstate very often, and I can't imagine anyone being pleased to have it next door to them. Or do we put it on the other side of the Ranges where it will be constantly heard in Victoria but may not serve its purpose of being an indicator of band openings? In my own case the 2 metre beacon is more than 40 dB over 9 but I don't have to look through it, so it would be very easy to dismiss the matter as not being a problem; but I am aware of some difficulties existing and that's why I am asking some of you to write with feedback on your own situations. Thank you.

A LOOK OVER SIX METRES

The very high solar counts of the past month or so have produced some interesting contacts, despite the A and K index not being to our best advantage.

One of the better prizes would have to go to **Joe KG6DX,** who on 3/11 heard the **I5TOJ** Italian beacon on 50.318 at **S9+** from **0815 to 0915Z!** Not really being content with this he also heard the Jamaican beacon **6Y5RC** at the same time!

The best prize must go to the Japanese stations who worked **EL2FY** in Liberia on 4/10/80, time 2200 to 2400Z, area JA1. Similar conditions existed on 6, 7, 8, and 9/10 to JA3, 4, 5 and 6! Statements were made to the effect that it seems the contacts may have been made via the long path pointing South East; if this is so the distance seems to be in excess of 13,000 miles. The path would have extended over the top of New Zealand. **Hide JA2DDN** reported the ZL and VK TV video was copied on 46 MHz during the openings.

Although now confirmed it seems **ZD8TC** in the **Ascension Is.** south of Liberia may also have worked the Japanese stations, but **ZD8TC** did work **EL2FY** over the local 1400 mile distance. Signals were **599** on 10/10 at 2300Z.

About the same time it appears **KH6IAA** worked into **W6** along the west coast of USA on 144, 220 and 432 MHz via tropo. On 24/10 **KH6IAA** also worked **VK5ZPW** at 0845Z at 5 x 9, also to VK2 around 0830Z.

Es contacts have been becoming more frequent starting to VK4 on 7/11. The **VK3OT** beacon is being heard quite a lot, and up to **5 x 9 plus 40 dB** at **VK5ZPW.** More Es on 13/11, 14/11 spasmodically to VK2 and VK4. On Saturday 15/11 VK4 again, and heard that **Ross VK4RO** had worked into VE7 and W7. **VK4RTL** beacon in for most of the day, mostly about S2. On 15/11 JAs were noted calling Worked All States during the morning, and using the long path to everywhere! Also reported **Phil VK2BYX/4** had heard and been heard by **VE1SIX** but not able to make contact.

On 16/11 more Es, this time to VK3 and VK7 during morning period in VK5. VK2WI beacon in and out of noise. Band opened to JA around 0412Z for half an hour but signals generally were 5 x 3. Areas noted were JA1, 2, 3, 4, 7 and 8. Strongest signals from a **JA8** and **JI1IXW** to S7. Same stations also working into VK4 same time.

Report to hand of ZL working into KL7 Alaska and as far inland at Fairbanks — not a bad effort! Also heard the **P29SIX** beacon has been testing on 52.013 and should be operational by the time you read this, but on another frequency, not known at this stage. Thanks to **VK5ZBU, VK5ZRO** and **VK5RO** for filling In the information gaps.

A LETTER FROM VK4DO

Hal has written to say JA signals were becoming more consistent towards the end of October, and up to 3/11 had more than 100 contacts. Interesting figures for the last four years of six metre contacts by VK4DO with Japan, from February to November each year are as follows: **1977,** 12; **1978,** 1333; **1979,** 1534; **1980,** 1551. All with 40 watts SSB to home made transverter, and 4 element yagi 8 metres high.

JARL advise their WAJA Award is on its way to Hal for 2-way 52 MHz SSB QSOs with every one of the 47 JA Prefectures. All have been worked on 52 MHz CW as well, but he still awaits three confirmations for this one. Congratulations, Hal, I am sure they will be awards well earned.

NEWS FROM NORTHAM

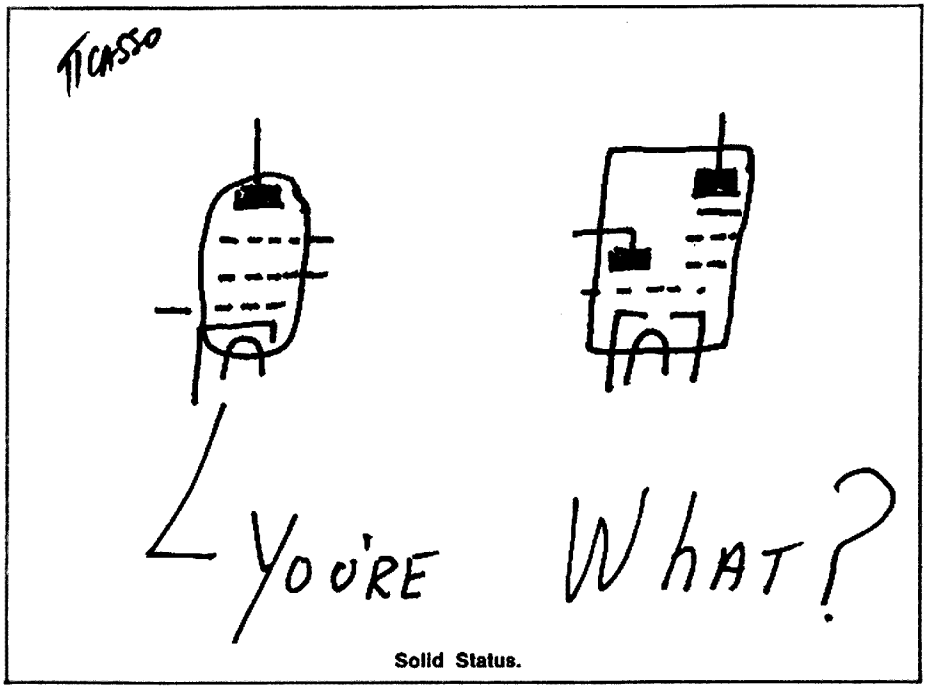
Tony VK6BV has written outlining the VK6 activity for October. 7/10: 0515Z on and 12/10 0430Z on — reception of 49.750 TV sound. 13/10: 0317Z VK5VF beacon. 0340Z worked **VK5ZPE** and **VK5AGM. Wayne VK6WD** worked VK5 from 0325 to 0340Z during which time the signals went over Northam as they were inaudible. 0545Z: JAs on 50 MHz. 1200Z: Coastal ducting on 2 metres to Carnarvon. Due to transverter failure at the critical moment not able to work VK6OX, who was 5 x 9 at time. He did work Perth though.

14/10: 0415Z 49.750 TV, 1200Z JA worked in Perth. Closed 1340Z. 15/10: 1200Z JA again into Perth. 16/10: 0415Z TV again, 0530Z JAs on 50 and 52 MHz. 1200Z JAs on 52 MHz, but weak and fluttery. 17/10: 0510Z TV. 0930Z JAs on 50 MHz. 19/10: 0730 TV on 49.750 and JAs on 50 MHz. 0805Z worked JA5 and JA2 until 0810Z. 1001Z worked JA2, 4 and 5 until 1020Z. 25/10: 0505Z JA1 and 4 until 0520Z. 28/10: 0630Z first good opening to Japan with signals S9+ both ways. **JA2IGY was 539.** Band closed 0459Z after working JA1, 2, 3 and 7.

Observations: Noted that during October signals from Japan have been of equal strength on 50 and 52 MHz, with the odd day stronger on 52 MHz. There were still days when the usual pattern applied. VHF antennae up at the moment are an 8 element yagi on 6 metres at 17m in height, on 2 metres a 16 element yagi at 20 metres, and on 70 cm a 13 element yagi at 18.5 metres. Thanks for your letter, Tony.

HIGHER THAN SIX METRES

13/11: **VK5ZRO** worked **VK5ZMJ** 1208 to 1323Z on **70 cm** over **110** miles path with signals 5 x 9 + 20 dB, which then led to an opening across to Albany on 14/11 when **VK6XY** was worked at 1200Z on 2 metres SSB, followed by **VK6KJ** and **VK6** on 144 and **432** MHz. It was open to VK3 also at the same time, as conditions brought about the very large high pressure system across the southern areas. **Bob VK5ZRO** has only recently come on 432 MHz so was a pleased man.



Solid Status.

MOONBOUNCE REPORT

Lyle **VK2ALU** in "The Propagator" reports on the **VK2AMW EME Station:**

"The dish was dismantled at its Dapto site and transported to its new site on the weekend of 18/19 October. The 30 foot parabolic reflector made the move in one piece after it had been separated from its counterweight assembly and lifted off the support tower.

"The journey was made by road early on the Sunday morning before there was much traffic about. There was very little room to spare on some of the narrower sections. No damage was caused by the move, which is a tribute to the expertise of the haulage contractor.

"The major components now rest on platforms where they will be checked carefully, any corroded steelwork replaced and all then repainted ready for erection on its new concrete foundations, yet to be poured.

"As much work still has to be carried out by the university staff and by whichever amateurs would like to help, it is expected it will be a number of months before we are operational again.

"The vandals struck again a few weeks before the move when they removed the 20 foot long tubular feed supports from the parabola. As these were of duralium for strength and lightness they may not be easy to replace."

ELECTRIC SHOCK FROM CAPACITORS

As the VHF fraternity are probably the most likely to be engaged in constructional projects using high grade capacitors, I thought the following printed in "The Propagator" and taken from "A Safety Handbook for Science Teachers", by Everett and Jenkins, is relevant, and worth including here.

"High grade capacitors and, in particular, large energy storage capacitors as used in pulsed capacitor banks, will recover a considerable proportion of the original charging energy if left on open circuit after discharge. This phenomenon is known as the 'residual effect', 'dielectric hysteresis' or 'dielectric absorption' effect and a capacitor is said to have an 'absorptive capacity'.

"Experience has shown that recovery may be as much as 10 per cent of the original voltage, and a 30 kV capacitor may build up to 2 or 3 kV in 10 minutes. Further, dangerous voltages can build up on open-circuited high voltage capacitors over a period of many months after discharge.

"It has been found that a discharge of energy exceeding 10 joules into the human body can be hazardous to life, while 0.25 joules gives a heavy shock. Ten joules would be obtained by complete discharge of a capacitor charged as in the following table:

CAJACITY (UF):

0.002	*0.2*	*20*	*80*	*320*	*2000*

CHARGED TO (kV):

100	10	1	0.5	0.25	0.1

"It is essential that each spare or disconnected capacitor should be kept individually short-circuited by a robust connection when not in use.

"It should also be remembered that 'new' capacitors have already been energised for test purposes, and should also be kept short-circuited when stored. Capacitors built into equipment which is not in use must similarly be short-circuited individually, otherwise hazard may exist when they are connected in series or it there is a circuit fault when in parallel."

TECHNICAL KINK

There are still plenty of QQE06/40 valves around and being pressed into service as SSB linears for 2 metres where they perform very well. With 600 volts or 700 volts on the plate if you are venturesome and 250 volts on the screen are fine. Sometimes instability can be encountered if you are using RF controlled switching when it seems the screen is capable of oscillating. Just touching the screen with a meter probe will stop the oscillation.

This seems to happen in those circuits where the screen is fed from a dropping resistor from the HT+. Quite often the oscillation can be cured by fitting a 10 uF capacitor right at the screen pin, or if you want to be more precise why not fit a Philips 3-30 pF trimmer at the screen pin and adjust for neutralisation.

CLOSURE

It's only a fortnight since the last epistle, so the end comes up now. May I wish all my readers a very happy year in 1981, with plenty of DX and a chance to purchase or build that new piece of equipment you have been wanting for so long.

LATE NEWS

15/11: **VK4RO** worked **VE4, W0 and W9** this morning. Also heard by **VE1.** 16/11: **VK9ZG** worked in Brisbane.

Thought for the month: **"Worry is like a rocking chair — a lot of action, but you don't get very far."**

73. The Voice in the Hills. ■

SMIRK UPDATE

The following list of new SMIRK members is provided for the interest of those looking for SMIRK members amongst their six metre contacts.

SMIRK membership Is available to anyone who contacts the required number of SMIRK members. In our case three. You then send $4 to the Secretary, **Ray Clark K5ZMS, at 7158 Stonefence Drive, San Antonio, Texas 78227,** together with log extracts of the contacts.

JG1WGI	3894
JH1KGX	3815
JI1OKK	3754
JI1UHZ	3747
JI1UJE	3816
JJ1HOD	3890
JJ1XUM	3895
JK1IQI	3893
JK1PTQ	3793
JK1TXK	3755
JL1BAX	3854
JL1LNS	3814
JL1WYE	3852
JL1XJD	3892
JM1EUQ	3891
JE2RDR	3899
JF2CXH	3753
JF2FYH	3777
JF2ITL	3874
JF2PLR	3873
JF3SVD	3853
JG3PCE	3786
JA7ARH	3851
JH7JNF	3881
JH7VGI	3882
JH7VGJ	3883
JH7UWZ	3880
JR7ODA	3790
JR7RFE	3791
JA8GSZ	3826
JH8CUJ	3827
JA9WPW	3792
VK3AT/LH	3809
VK9XT	3806
VK9XW	3807
VK9ZG	3861
H44OT	3862
YJ8OT	3808

■

Cockies' Net Second Birthday Get-Together

In July, 1978, a group of WA farmers ("cockies"), who were also amateurs, decided to meet on air once a week to chat and discuss mutual problems and interests. Thus was formed the "Cockies Net".

The net is on 3.575 MHz at 1300 hrs Z each Sunday evening. Generally four or five stations join in, and sometimes quite a lot more. The net is in no way restricted to "cockies", but the general tone of the conversations is definitely rural! All that is asked of participants is an Interest in rural affairs generally.

Amongst the regular net operators are **VK6BS, VK6XM, VK6KG, VK6NOM, VK6NYL, VK6NTM, VK6UW and VK6XJ,** with others at various times. It is understood that the net is quite ppoular with the SWLs.

To celebrate the second anniversary of the "Cockies Net" Basil VK6BS and his wife Mary invited all net operators to a get-together on their farm at Manmanning, some 200 km north-east of Perth, on Saturday, 2nd August, 1980.

Not everyone could attend, but there to meet each other, some for the first time, were Malcolm VK6XM, Brian VK6NOM and his wife Bev VK6NYL, Terry VK6NTM, Bert VK6NJB, Don VK6UW, John VK6XJ with Margaret, and Basil VK6BS, of course.

(Left to right): Dave (friend of Basil's), Malcolm VK6XM, John VK6XJ, Bev VK6NYL, Brian VK6NOM, Terry VK6NMT, Bert VK6NJB, Don VK6UW and host Basil VK6BS.

The day was a most happy and enjoyable one, and it looks like becoming an annual event, with operators taking turns at hosting the occasion.

See yer on the Cockies Net.

VK6XJ. ■

SIDEBAND ELECTRONICS ENGINEERING

"THE ANTENNA AND ROTATOR SPECIALISTS"

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WAREHOUSE 213 HAWKESBURY RD. SPRINGWOOD
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DO YOU OBJECT TO HUGE PRICE INCREASES?

If so, read on. We offer a 5% or better price reduction from now until 31st January 1981. Offer applies to all current stocks except for a few Trio-Kenwood items. For previous prices see November AR and ARA Vol 3 Issue 5.

ANTENNAS

TET HB35C	was $415	now $390
CUSHCRAFT A3	was $325	now $290
HY-GAIN TH5-DX	RRP $447	now $420
HY-GAIN TH3-JR	was $250	now $237
HY-GAIN 18-AVT/WBa	was $125	now $115
HY-GAIN 8el 2M	was $40	now $37
HI-GAIN 14 el 2M	was $50	now $47
HY-GAIN GPG-2	was $30	now $28
HELICALS	were $25	
10-15-40-80M w/adjustable tip		now $20
20M w/adjustable tip EXTRA SPECIAL		now $15

CONNECTORS & ACCESSORIES

PL-259	were .75c	now .50c
GLP Rt angle	were $1.50c	now .75c
MLS Rt angle	were .75c	now .50c
CABLE JOINERS	were .75c	now .25c
M-RING body mount	were $1.50c	now .75c
SWR METER	was $25.00	now $20.00
ASAHI Bumper mount	was $8.00	now $5.00
STANDARD Bumper mount	was $5.00	now $3.00
SPRING MOUNT	was $15.00	now $13.00
240V/2 x 9V transformer	was $8.00	now $5.00

ROTATORS

CDE T2X	was $300	now $285
CDE HAM-IV	was $225	now $210
CDE BT-1A	was $110	now $100
KEN KR-400	was $140	now $130
KS-085 BEARING	was $30	now $25

HENRY LINEARS

2KD-5 2KW	was $1000	now $950
1KD-5 1200W	was $800	now $750

YAESU MUSEN PRODUCTS

FT-101ZD W/FAN	was $850	now $810
FT-707 SERIES		POA

CABLE

RG-8U COAX PER METRE	was $1.20	now $1.10
RG-58U COAX PER METRE	was .50c	now .45c
CONVERSION XTALS	were $32.00	$25.00
BN-86 BALUN	was $25.00	now $23.00
HI-Q BALUN	was $15.00	now $14.00
SHINWA 10W UHF 3 CH 450-477 MHz COMMERCIAL TRANSCEIVER NEW		$375.00

STOP PRESS!

LATE SEPTEMBER – HUSH HUSH MEETING INTERSTATE AMATEUR RADIO DEALERS HELD SYDNEY STOP SYDNEY DEALERS EXCLUDED STOP "SMALL WONDER" SYDNEY DEALERS INCENSED STOP **OCTOBER 1** – PRICE INCREASES ANNOUNCED STOP TS-130S NOW $847 STOP **NOVEMBER 1** – SYDNEY DEALERS TO THE RESCUE STOP SOON AVAILABLE FROM SYDNEY DEALERS ONLY AT PREVIOUSLY QUOTED PRICE:

TS-130S $750

KEN WOODHOUSE – VK2TKA?

EAT YOUR HEART OUT!

TRIO-KENWOOD EQUIPMENT

R-1000 RECEIVER	RRP $541	now $480
TR-7200G TRANSCEIVER 2M	was $180	now $150
TR-7625 TRANSCEIVER 2M	was $325	now $315
R-599 RECEIVER W/SPEAKER		now $325
VP-1 MOBILE ANT. MOUNT	RRP $45	now $35
MC-501C MICROPHONE	RRP $31	now $25
SP-180 SPEAKER W/FILTERS	RRP $73	now $50
TV-502 TRANSVERTER	RRP $325	now $250
RD-300 DUMMY LOAD	RRP $87	now $75
LF-30A FILTER	RRP $35	now $30
DK-520 ADAPTOR	was $10	now $5

All prices are NET, ex Springwood NSW, on pre-payment with order basis. All risk insurance is free of charge, allow for freight charges by air, road, rail or post, excess will be refunded. Prices are subject to change without prior notice. All orders cleared cleared on a 24 hour basis after receipt of order with payment.

Proprietor – ROY LOPEZ (VK2BRL)

FORWARD BIAS

VK1 DIVISION

(Postal Address: WIA (ACT Division) Inc., PO Box 46, Canberra, 2600 ACT)

JANUARY 1981 MEETING

This will be held on the third Monday, the 9th, and not the 26th. The topic, and we'll have a guest speaker for this one, is the Defence Integrated Security Communications Network (DISCON).

ANNUAL GENERAL MEETING

In accordance with the Division's Constitution, our annual general meeting will be held on Monday, 23rd February, 1981, at 8 p.m. at the Griffin Centre. The ordinary business will be:

- to receive from the Committee, Auditor, Federal Councillor, Public Officer and other officers, reports on the Division's transactions and business during the 1980 financial year;
- to elect the officers and committee members for 1981;
- to elect Federal Councillor; and
- to appoint the Auditor and determine his remuneration, if any.

Nominations of candidates for election as officers of the Division or as committee members must be in writing, signed by two members of the Division, who are holders of current Australian amateur radio transmitting licences, and accompanied by the written consent of the candidate. The nomination is to be delivered to the Public Officer at least ten clear days before the date of the annual general meeting — hat is by Friday, 13th February, 1981. Nomination forms will be available at the January meeting.

SLOW MORSE BROADCASTS

These take place each Sunday evening after the broadcast on 10 metres (28,490 kHz). Fred Robertson-Mudie VK1MM wants to hear from members and obtain their views on these morse sessions. In particular, he wants to know how the 1981 programme should be arranged. Are the Broadcasts to continue? If so, do members want them on bands other than — or in addition to — 10 metres? So, you would-be candidates for the 1981 series of OACP and Novice tests, get in touch with Fred. ■

VK2 MINI BULLETIN

Output Freq.	Call Sign	Location, Owner
6625	VK2RPI	Maitland (RTTY), Maitland PIRC
6650	VK2RDX	Oberon, St. George ARS
6700	VK2RPM	Pt. Macquarie, Oxley Region ARC
	VK2ROA	Orange, Orange ARC
	VK2RMU	Milton, Mid. Sth. Cst. ARC
6750	VK2RAG	Gosford, Central Cst. ARC
	VK2RFS	Eden/Bega, Far Sth. Cst. ARC
	VK2RWG	Wagga, Wagga ARC
6800	VK2RLE	Sydney - South, St. George ARS
	VK2RIC	Lismore, Summerland ARC
6850	VK2RAW	Wollongong, Illawarra ARS
	VK2RAB	Gunnedah, Gunnedah ARC
	VK2RGF	Griffith, Griffith RC
6875	VK2RMB	Sydney - North, M. Warringah DRC
6900	VK2RAN	Newcastle, Hunter Branch C
6925	VK2RGL	Sydney - North, Gladesville RC
6950	VK2RMI	Moree/Inverell, North West ARG
7000	VK2RWI	Sydney - North, WIA NSW Div.
7050	VK2RBM	Springwood, Blue Mtns. ARC
7100	VK2RWR	Lake Macquarie, Westlakes ARC
7250	VK2RNS	Sydney - North, Hornsby ADARC
7350	VK2RHR	Mittagong, Sthn. H'lands ARS

NOTE:
Offset in 146 MHz is 600 kHz **down**, above 147 MHz, 600 kHz **up**.

8225	VK2RUW	Wollongong, Illawarra ARS
8525	VK2RUS	Sydney - North, WIA NSW Div.

NOTE:
Offset 5 MHz **down**.

The Gosford UHF repeater is to move to 8075. Applications from the following areas are for VHF repeaters — Coffs Harbour, Tamworth, Nowra, South West (Cootamundra) and Gilgandra. Applications for UHF repeaters have been received from Newcastle (2), Gladesville and Blue Mountains.

Details of six clubs affiliated with the NSW Division.

PARKES AND DISTRICT AMATEUR RADIO CLUB

247 Clarinda Street, Parks 2820.

Meetings: 2nd Tuesdays, Red Cross Rooms, Parkes.

President: R. Swindley VK2DDQ. Vice-President: J. Mowtell VK2BMJ. Secretary: T. Darcy VK2DD. Other Committee: B. Nash, P. King VK2VJQ, P. Scarlata VK2YRO, W. Field VK2NNF.

Club call sign: VK2BPK.

ORANGE AMATEUR RADIO CLUB

Box 1065, Orange 2800.

Nets: Sundays, 8.30 p.m. on rptr. ch. 6700 using VK2AOA. Sundays, 8 a.m., on 3615 kHz using VK2BVW.

Meetings: 1st Fridays, 7.30 p.m., at Orange Technical College.

Classes: Fridays, 7 p.m., at Kinross-Wolaroi School, Orange.

President: P. Carter VK2TK. Vice-President: K. Stevens VK2ASY. Secretary: R. Wilson VK2BRC. Other Committee: M. Cridland VK2VDJ, B. Carroll VK2DEQ, J. Clifford VK2DDN, E. Hicks VK2VOH.

Repeater: VHF VK2ROA channel 6700 at Orange (Fred).

ST. GEORGE AMATEUR RADIO SOCIETY

Box 77, Penshurst 2222.

Nets: Sundays, 8 a.m. on 3555 kHz using VK2LE/P. Tuesdays, 7.30 p.m., on 14110 kHz, 8 p.m. on 28520 kHz using VK2LE/P. Thursdays, 8 p.m., rptr. ch. 6800 using VK2LE/P.

Meetings: 1st Wednesdays at 7.30 p.m., Scout Hall, James Street, Blakehurst.

Classes: Tuesdays at SES Hall, Highgate Street, Bexley. NAOCP. Tuesdays at Engadine. AOCP.

President: D. Sellars VK2AZS. Vice-President: J. Button VK2NPA. Secretary: E. Carruthers VK2AQF. Other Committee: K. Conolly VK2DKC, D. Richardson VK2NRV/YIK, P. Smith VK2ZSA, A. Hartley VK2NNJ/ZIH.

Repeaters: VHF VK2RLE, channel 6800, at Heathcote, 30 km SW Sydney. VHF VK2RDX, channel 6650, at Mt. Bindo, near Oberon.

Newsletter: "Dragnet", available at monthly meetings.

Subgroups: Computer group and WICEN.

TAREE AMATEUR RADIO CLUB

PO Box 712, Taree 2430.

Net: Mondays, 1000Z, on 28.48 MHz using VK2NCK.

Meetings and classes: 6.30 p.m. Wednesdays at Chatham High School.

President: G. Hunziker VK2BGF. Vice-President: C. Withers VK2BVI. Secretary: M. Stahl VK2VPQ. Other Committee: J. Pinson VK2VOP/YMU, L. Gerity VK2KT.

ILLAWARRA AMATEUR RADIO SOCIETY

PO Box 1838, Wollongong 2500.

Nets: Sundays, 8.30 a.m., on 52.525 MHz. Sundays, 8 p.m., on 28.46 MHz.

Meetings: Second Mondays, 7.30 p.m., at the Congregational Hall, Coombe Street, Wollongong.

Classes: Fridays, 6 p.m., at Wollongong Technical College.

President: K. Curie VK2OB. Vice-President: D. McKay VK2DMR. Secretary: J. Doherty VK2NHA. Other Committee: G. Cuthbert VK2ZHU, G. Donk VK2VPD, R. Dorin VK2VOE, L. Kirchmajer VK2ALK, D. Meyers VK2PBP, I. Squires VK2DKS, K. Kennedy VK2DAN.

Newsletter: "The Propagator", Editor B. Wade VK2AXI, issued monthly.

Repeaters: VHF VK2RAW, channel 6850, at Robertson, 20 km SW of Wollongong.

Approximately 500m above sea level. UHF VK2RUW, channel 8225, testing at Warilla, 15 km S of Wollongong.

MANLY WARRINGAH DISTRICT RADIO CLUB

PO Box 186, Brookvale 2100.

Nets: Monday-Friday, 7.30 a.m. and 5 p.m., on rptr. ch. 6875.

Meetings: Wednesdays, 7.30 p.m., at Old RAAF Radar Station, Warringah Road, Beacon Hill. Lectures on 3rd Wednesdays.

President: J. Blackman VK2YIM/NTO. Vice-Presidents: G. Aggett VK2GD, C. Jackson VK2TD. Secretary: I. Dodd VK2DLU. Other Committee: R. Clarke VK2BYN, R. Tremble VK2BIS, P. Angilley VK2BDF, R. Grigson VK2RA, D. Wheeler VK2ZHV, S. Platt.

Repeater: VHF VK2RMB, channel 6875, at Beacon Hill, 15k N of Sydney, on 11 metre mast.

PUBLICATIONS

Some time in January or February, Divisional Office should receive a new delivery of ARRL books, including USA and Foreign Call Books. Listen to broadcasts for details.

OSL BUREAU

Have YOU notified the NSW QSL Bureau, c/- PO Teralba 2284, what to do with your cards? The QSL Manager, Bill Hall VK2XT, has many thousands of cards waiting for information from both members and non-members as to their distribution.

COMING EVENTS

22nd February (Sunday). Gosford Field Day at Gosford Showground. Write to Box 238, Gosford 2250, for a programme.

26th February (Thursday 10 a.m.). Close of agenda for AGM.

7th March (Saturday 10 a.m.). Close of nominations for 1981 Council, NSW WIA.

22nd March (Sunday). Liverpool Field Day at Catherine Fields. More next month.

28th March (Saturday 10 a.m.). AGM of NSW Division at 14 Atchison Street, Crows Nest. Proxy forms for members unable to attend can be obtained by sending SAE to Divisional Secretary, Box 123, St. Leonards 2065.

News for inclusion in VK2 Minibulletin must reach Box 123, St. Leonards 2065, by the first of the month prior to publication.

Susan Brown VK2BSB. ■

QRK5

A monthly transmission from the Victorian Division WIA.

Written and co-ordinated by VK3WW, QTHR.

WILLY WILLY'S WORDS

Congratulations to all who passed the various exams in November. I expect there will be a lot of new voices on 2 metres FM when I return to Melbourne and a few "old" voices with new labels. Welcome all.

ON THE REPEATER

It is a good idea and indeed good manners to maintain a set sequence when in a group QSO. Unless you have an emergency don't call out of turn.

MONDAY MORNING MUMBLE

This title has been given to the 8.00-8.30 a.m. session which tries to establish a new subject each week. Recently we have heard discussion on sport, Dr. Who and K9, nostalgia (radio), nostalgia (serials), Australian poetry, science fiction books, etc. For those who prefer to be on their TOD (technical only discussion) there is the other repeater. Unfortunately two regular Monday mumblers have been chastized for TOD on channel 2, while two Toddies used channel 5 for a Monday mumble!

Confused? So am I.

ADDRESS IN REPLY

The letter prominently displayed in the November column drew a lot of comment, which proves some do read QRK5. A reply was sent to the Editor in time for the December issue, but due to some strange trick of fate was referred back to me. In all fairness, regardless of content, I think it should receive equal prominence. The unedited letter follows.

"

The Editor,
Dear Sir,
It is obvious that your correspondent VK3NWO has no sense of humour. I fail to see how anyone could take offence at the QRK5 column in AR of September 1980.

Mike VK3WW is well known for his sallies at "Sacred Cows", and what is any more sacred about the Novice licence than any other grade?

The Australian Novice is on clover. In New Zealand the Novice licence is for 12 months only, and is NOT renewable. The holder must upgrade during this period. Perhaps an excellent idea for us too. The US Novice may use CW only.

I feel that the whole article was written tongue in cheek and was not a slight on either class of licence. It is suggested that your correspondent get rid of that chip on his shoulder and enjoy Amateur Radio — its triumphs, its problems, its comradeship, and its pleasures.

Thanks, Mike, for an interesting and stimulating column.

Yours faithfully,
John O'Rorke VK3ZFA.

"

The QWAFT award has proved most popular, particularly when presented on Thursdays. Recently awards were made to a couple of old thugs — John VK3AJI and Graeme VK3NE?, also to a new thug, Jim VK3YZW, who travelled all the way from Morwell to receive his award and to qualify for "full" membership.

THE CONVENTION

All readers will now know of the VK3 Convention planned for February 28/March 1. A lot of very enthusiastic people are working to make this a success. Please give them the support they deserve.

73. Mike. ■

R. I. P.

SOMEONE ELSE

The club was saddened to learn of the death this week of one of the club's most valuable members, Someone Else.

Someone's passing creates a vacancy that will be difficult to fill. Else has been with the club since its beginning. He did far more than a normal person's share of the work.

Whenever there was a job to do, a class to teach, a committee to be chaired, or a meeting to attend, one name was on everyone's lips — "Let Someone Else do it".

It was common knowledge that Someone Else was among the largest contributors of his time to the club; whenever there was a need for volunteers, everyone just assumed Someone Else would volunteer.

Someone Else was a wonderful person — sometimes appearing superhuman, but a person can only do so much. Were the truth known, everybody expected too much of Someone Else.

Now Someone Else is gone! We wonder what we are going to do. Someone Else left a wonderful example to follow, but who is going to do the things Someone Else did? When you are asked to help, remember — we can't depend on Someone Else!

From Worldradio August 1980. ■

QSP

VK2 after some considerable delay will be operating a 10m beacon. It will be located with the present 6 and 2m beacons at VK2WI Dural. It will commence on a test frequency of 28.335 MHz and change in the new year to 28.270 MHz.

The present 6 and 2m beacons will be rebuilt in the new year and the equipment will also serve the dual role of providing the SSB broadcast signal. The 2m frequency will change to comply with the national band plan. ■

HERITAGE OF OMAN — SINBAD

A note and brochure received from Joe McElvenney A4XIC, of Oman, gives details of the projected voyage of the dhow "Sohar" under Nahodha Tim Severin, who led the successful voyage of the oxhide skin boat from Ireland to North America in 1976/7. The voyage of the "Sohar" is sponsored by the Omani Ministry of National Heritage and Culture and approved by the Sultan, whose financial assistance makes the venture possible. The voyage begins in Oman to mark the 10th National Day of the Sultanate in November 1980 desination China using early Arab sailing techniques in order to investigate the origins of the Sinbad legend. Calls are expected to be made in the Laccadive Is. (mid-Dec.), Malabar Coast, Maldives (mid-Jan.), Sri Lanka, Andaman and Nicobar Islands (Mar./Apr.), Malacca, Singapore, Sumatra, Hong Kong and Canton. On board research programmes will be conducted by a team of marine scientists and full radio facilities will be installed using the call A4XSV/MM but the voyage is not a DXpedition. ■

COMMERCIAL KINKS

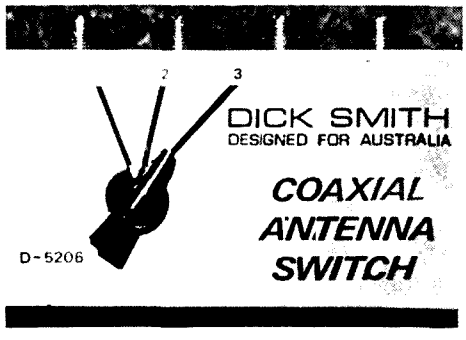
RON FISHER
VK3OM
3 Fairview Avenue, Glen Waverley 3150

KEEPING THINGS CLEAN

Several years ago In this column, I discussed several aspects of cleaning and keeping clean amateur radio gear. My observations over the intervening years have confirmed that Mr. average amateur hasn't changed. He still keeps his gear in rather dirty condition. But for those of us who are fussy about the appearance of our equipment and like to keep that showroom shine, I have discovered a new preparation that really makes old gear look new. It is called ARMOR ALL Protectant. An American preparation, it is sold by motor spart parts houses and also by the larger supermarkets. Give it a try, you will be delighted. But first make sure that the equipment is clean.

Now for a change of subject. Our Technical Editor, Ron Cook VK3AFW, has come up with an easy modification to improve the performance of a popular coax switch. Over to Ron.

Dick Smith sells a very useful coaxial antenna switch at a quite reasonable price. Unfortunately, although the switch's performance is satisfactory up to 30 MHz, the performance at 144 MHz is not acceptable. Photo 1 shows the switch.



The Dick Smith antenna switch.

Removing the cover showed the problem. The connections from the switch to the coaxial connectors were made with heavy stranded hook-up wire. This was removed and replaced with 50 ohm coaxial cable. A solder lug was fitted to each socket and the braids soldered to the appropriate lug. The braids at the switch end were soldered to a short length of tinned wire. This may be seen in Photo 2. Also shown in this photo is a small screen (arrowed). Although this may not be necessary it was fitted to reduce and minimise capacitive coupling across the switch. The screen was cut from sheet copper and held In position by soldering to the wire connecting the braids. This is shown in the photo.

The modified switch. Arrow shows the small screen added.

The coaxial cable used was the teflon insulated cable which is sold by Dick Smith. It is thin and easy to work with. RG58 could also be used.

Before the modification, placing the switch in a matched line produced a VSWR of 2 : 1 at 146 MHz. After there was negligible change when the switch was introduced.

VK3AFW. ■

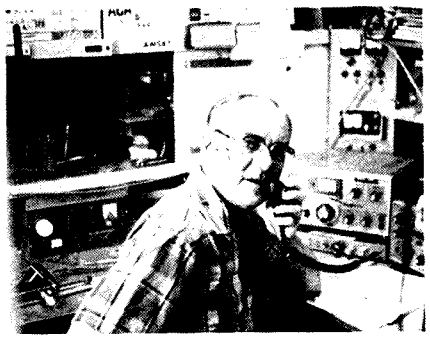
INCREASED GAIN FOR THE IC22S

Next a simple modification to the popular IC22S. Eric VK3ZSB has improved receiver performance in two ways. The first is to remove the shunting effect of R1 on the front end. This 150 ohm resistor is in parallel with the receiver RF input and shunts the incoming signal. The low value is needed to operate the RF switching diodes D1 and D2. In order to reduce the shunting effect on the signal, snip the resistor pigtail and slip several ferrite beads on to it and then resolder. A short piece of wire might be needed to lengthen the lead. The effect of this is to raise the impedance at RF and reduce the shunting effect of the resistor. An improvement of about 2 dB can be expected and this will make many previously marginal signals readable.

The second modification requires no actual work at all with a soldering iron and will increase the readability of weak signals whilst mobile, by increasing the IF gain and allowing limiting to take place. A small penalty is that the "S" meter will read somewhat higher on weak signals.

The modification is simple. Turn the trimpot R23 to the maximum position. Weak signals will now produce useful limiting with a consequent improvement In readability in the presence of noise. ■

AMATEUR SATELLITES



R. C. Arnold VK3ZBB

Due to the editorial deadlines for the holiday period it is only a few days since I was preparing the notes for the December issue of "Amateur Radio" and in the intervening period there has been no change in the status of our two operating satellites.

The demise of the Phase IIIA OSCAR has led some of my amateur friends to temporarily explore the progress of a number of commercial and military satellites following publication of articles in "Orbit" magazine submitted by Greg Roberts ZS1BI. Perhaps I should mention that "Orbit" magazine is published by AMSAT and is issued free to members of that organisation. (See my earlier notes for details of membership of AMSAT.) Although I would imagine Greg Robert's interest is primarily confined to satellites visible from South Africa, many of the satellites will have orbits within sight of Australia. Quite a number of these satellites operate in the bands 136-137 MHz, 149-150 MHz, 379-401 MHz and 460-480 MHz. He lists some 59 satellites operating in the 136-137 MHz band ranging from TIROS 5 which was launched in 1962, to NOAA launched in 1979, together with a number of Russian satellites operating between 149.9 and 150 MHz.

Charlie VK3ACR has already constructed a receive converter and has heard a variety of information from some of these satellites but as yet has been unable to decode either telemetry or pictures which are transmitted. I have no doubt his next phase will be to produce pictures, articles on which have been published in a number of amateur magazines. This is certainly a worthwhile interest to keep one's mind occupied until Phase IIIB is in operation.

Also in "Orbit" magazine for September 1980 is a list of satellites launched since the beginning of 1980. This quite impressive list includes 43 satellites — 12 American units and two Japanese, the remainder being launched from the USSR. The majority of the satellites are designed for military purposes but several are for navigation or communication and, judging from the orbital parameters, should be heard in Australia.

Perhaps the big problem facing the amateur is the diversity of the frequency of transmission — frequencies of which appear to range from VHF bands to SHF in the 30 GHz region.

Many amateurs have asked me what was lost when Phase IIIA failed and what is the cost of its replacement? I am sure it will be of interest to you to read the following article on spacecraft economics by Tom Clark W3IWI, President of AMSAT, and perhaps you can help in financing the satellites of the future.

WHO BUILT PHASE IIIA?

The word "built" has many facets. In general, the spacecratf was a joint project between AMSAT and AMSAT-DL. The basic design and architecture was the product of the technical arm of AMSAT-DL under the direction of Dr. Karl Meinzer, DJ4ZC, most if his group is affiliated with the University of Marburg. AMSAT-DL provided many of the spacecraft modules and sub-systems including the transponder, the attitude determination and control system Including two of the sensors and their associate electronics and the computer-controlled electromagnet, the computer's memory, and many of the mechanical fixtures. AMSAT provided the flight computer with its analog multiplexer and command detector, antennas, one of the sun sensors, wiring harnesses and cables, a set of batteries and most of the "sheet metal" and mechanical fixtures. The second set of batteries came from France. One of the tow sets of solar panels came from AEG Telefunken through AMSAT-DL, and the second from SOLAREX through AMSAT (the flight configuration was three panels from each source). AMSAT arranged for the kick motor through THIOKOL. A group at the Technical University of Budapest under the direction of Dr. Bandi Gschwindt, HA5WH, provided the battery charge regulator module. AMSAT's Japanese affiliate, JAMSAT, provided the band-pass filter for the transponder. AMSAT's Canadian members provided a number of mechanical fixtures.

One more cost that should be included to assess the "worth" of Phase IIIA is the equivalent value of volunteer labor. About 4 of the 30 p.y. mentioned earlier came from salaried AMSAT employees who were already included in the $210,000. The remaining 26 p.y. was certainly "worth" the median US engineer's salary of about $23,000 per year, so the labor was equivalent to about $600,000.

★

Adding up all these figures we come to the conclusion that Phase IIIA was a $1,000,000+ satellite. This is the "worth" of what we lost on May 23.

★

WHERE DID THE $210,000 GET SPENT? WHY DID IT COST SO MUCH?

Again the ledgers provide the answers. The single most expensive item was salaries. Our favourite "pin-up girl", Marie Marr, and Clark Greene (K1JX) were on the AMSAT payroll for a total of about 3½ years. Perry Klein (W3PK) and Jan King (W3GEY) each accounted for about ⅓ year; however most of Perry's and Jan's efforts on Phase IIIA appear on the volunteer side of the ledgers. The total of these expenses was about $100,000.

The next most expensive set of expenditures was for real hardware. We note that the solar panels, including the honeycomb substrates totalled $28,100.

This estimate does not take into account the countless hours spent in planning for Phase III operations, or keeping the "business side" of the organizations functioning, or fund raising, or the time invested by the users in building their own stations, etc. If these had been included the totals would have been much greater. Of the AMSAT crew, about a dozen people were in the 800+ person-hour (p.h.) category (remember that 2000 p.h. = 40 hours a week for 50 weeks = 1 p.y.). Another dozen or so individuals made up the rest of the group we call the "hardcore" that delivered AMSAT's part of Phase IIIA. While I don't have the breakdown for AMSAT-DL or the Bundapest group, I'm sure that their distribution is very similar.

HOW MUCH MONEY WAS INVOLVED?

We have reviewed AMSAT's ledger and find the following figures for the Phase IIIA expenditures:

1977	$11,000
1978	43,740
1979	91,810
1980	62,840
Or, in round numbers	$210,000

Co-ordination meetings and telephone calls to get the command station network ready were a non-trivial expense. In my total for this category, I didn't even Include any of the AMSAT-DL expenses, which were certainly comparable to AMSAT's.

The remaining $5000 in the total of $210,000 covered the myriad small expenses of outfitting the AMSAT-OSCAR Spacecraft Laboratory with workbenches, desks, tools, and even paint for the walls. Other miscellaneous expenses included in this figure were drafting supplies, office supplies, photographs, printing and other "business" expenses.

WHERE DID $210,000 COME FROM?

When a Life Member pays his $100 ($200 since July 1, 1980), or when a club joins as a Life Member Society, half the contribution goes into a Reserve fund. The interest derived from these reserves "pays" for the member's "Orbit" magazine and defrays some of the business office costs. These reserves also are used as security for long-term commitments and serve as a "cash-flow" buffer. The other half of the Life Member's donation Is immediately earmarked for spacecraft construction activities. There were about 1500 Life Members on launch day, so their contri-

bution was about $75,000 (or 36 per cent of the total). About two-thirds of the Life Members reside in the USA, and the remaining third are well distributed around the world.

Members, users and supporters made contributions through our "sponsor a solar cell" program ranging from $10 for a solar cell or $100 for a battery cell, all the way up to $1000 or more to sponsor larger modules. After modest administration costs were deducted, this campaign raised about $50,000 (24 per cent). About 93 per cent of these donations came from the USA, Canada and Japan.

Another $30,000 (14 per cent) came from a couple of large individual US donors who prefer to remain anonymous. Other donors made contributions earmarked for the amateur satellite activities through the ARRL Foundation (ARRLF). When combined with original Eitel-Hoover matching Fund monies remaining in the ARRLF, and the interest derived from these funds, the ARRLF contribution totalled about $40,000 (19 per cent).

The remaining 7 per cent, or $16,000, came from a donation by the ARRL. When AMSAT agreed to work with the ARRL to provide OSCAR 8 as a "gap-filler" following the demise of the AMSAT-OSCAR 6 spacecraft, the ARRL made a donation of $50,000 to defray our costs and provide a stimulus for the Phase III program. AMSAT's actual out-of-pocket costs for OSCAR 8 were $34,000.

Substantial funds donated by International Amateur Radio Union (IARU), Region I (Europe and Africa), and various European amater radio societies were transferred directly to the AMSAT-DL organization and were not included in this summary of AMSAT's finances.

I'M NOT A LIFE MEMBER
I DON'T SEE MY DUES IN THE LIST OF CONTRIBUTIONS
WHY NOT?

When you consider the publications costs for the AMSAT Newsletter, or its replacement "Orbit", PLUS the salary of our Office Manager, Martha Saragovitz, PLUS the rental on the office, PLUS telephone, postage and other "business" expenses, your dues just "pay" for the services you receive. In fact, the recent dues increase was necessary just to pay the bills! If we get more advertising support for "Orbit", or if we can increase the sales of "Orbit" at the book-stands in local radio stores, or if we can ammortize the office expenses over more members, then some of your dues will go to support the spacecraft directly. I note that the "pie-charts" in the July 1980 QST (page 50) shows a similar picture for the ARRL; the member's dues do not cover all the services that the member receives.

WHAT IS AMSAT'S CURRENT FINANCIAL SITUATION?

We had planned all of our activities based on a successful Phase IIIA launch and these plans were thrown into a state of turmoil on May 23rd. We had made commitments to publish "Orbit" as a professional journal of amateur satellite activities. We had spent virtually all our resources (except for the Life Member reserves) on the "bird". The outpouring of sympathy following the launch failure was accompanied by a number of freewill donations. About 250 new Life Members signed up in time to beat the July - dues increase. We tightened our belts and cut our costs to a minimum (this is the reason that "Orbit" hasn't as many pages as we would have liked). With the concurrence of AMSAT's Board, I committed a major portion of the Life Member reserves to keep Jan King's salary for two years in order to keep him on AMSAT's "first-string" team. All this leaves us in the black through 1980 — but just barely!

This situation was not what we had planned for. Had Phase IIIA been successful, our anticipation was that the interest in the new scatellite would create a sizeable new membership base. We had to gamble all our resources on success — and we lost.

SO THINGS ARE TIGHT
WE LOST PHASE IIIA
WHAT WILL IT TAKE TO BUILD A REPLACEMENT?

The answer to this question depends on the details of potential subsequent launches: When? Who? Where? Jan and Karl are hard at work trying to secure a launch for a replacement Phase IIIB, but the verdict is not yet in. For planning purposes to generate an estimate of our requirements, we have made the following assumptions, which may or may not prove to be correct:

(a) Phase IIIB will be launched in the first half of 1982 on a non-US (e.g. ARIANE) launch vehicle.

(b) AMSAT will also be providing some support to the University of Surrey for UOSAT, with a launch scheduled in September 1981.

(c) The inflation rate is zero (!) and hence all monies are reckoned in terms of 1980 US dollars.

(d) Principal groups and their roles will be the same as for Phase IIIA. AMSAT-DL will arrange for their own funding which will support their activities.

(e) Phase IIIB will make maximum use of Phase IIIA technology and existing resources (e.g. the spare solar panels) will be used.

(f) Phase IIIB testing program will be more extensive than Phase IIIA.

THAT'S NEARLY $270,000
WHY IS IT MORE THAN PHASE IIIA?

First, inflation is taking its toll; the costs for travel have nearly doubled in the past year. Second, salaries will account for a third more than they did for Phase IIIA; I'll address this point later. Third, although the "hard-core" put out $30,000 for Phase IIIA, it would be unfair to ask them to do it again. Fourth, I've included a new category, "Interns", which did not appear in the Phase IIIA budget, again a point which I'll address later.

These factors all serve to increase the budget; they are offset by those elements which were not lost on May 23rd: We have a full set of solar panels on hand. The telecommand station network is intact and ready to go. If the launch configuration doesn't change too much, we have the spare sheet-metal spaceframe and its shipping container, and the wiring harness is nearly complete. And most important,

Category	July-Dec. 1980	Jan.-June 1981	July-Dec. 1981	Jan.-June 1982	Totals By Category
Salaries	17,000	39,000	39,000	39,000	$134,000
Capital Equipment	500	1,000	1,000	2,000	4,500
Components, sub-contracts, printed circuit board, painting, plating, etc.	3,000	12,000	18,300	5,000	38,300
Travel, telephone, telex, shipping, customs, etc.	4,700	6,000	7,000	19,500	37,200
Office supplies, postage, printing, photos, etc.	1,100	1,000	1,000	1,500	4,600
Telecommunication station, ground systems, computers, test equipment, etc.	1,000	1,800	1,500	3,000	7,300
Test expenses and contingency	0	2,000	5,000	10,000	17,000
"Intern" Program	4,000	7,000	7,000	7,000	25,000
Totals by ½ Year	31,300	69,800	79,800	87,000	$267,900

the team, and all the knowledge, skills and technology that they developed, is still intact.

WHY DO WE NEED SALARIED STAFF TO BUILD THE SATELLITES? CAN'T VOLUNTEERS DO THE WORK?

Unfortunately, no. The need to interface our amateur activities with the professional aerospace community causes some unique problems. We must meet the professionals on their terms. This means that contacts must be made in the 9-to-5 weekday time window. We must show them that we are a responsible organization and this means that they must know how to contact us. We have to provide incredible volumes of documentation on the schedules that they lay down. Our principal contact must either have a benevolent employer who is willing to overlook (or perhaps even bless) the amateur activities, or AMSAT has to act as the employer. Up through OSCAR 8 and even in parts of the Phase III program, the volunteer mode was possible, but at the expense of the professional career development of some of the key individuals. These days now seem behind us. If the amateur satellites are to evolve from the "gee whiz" basement spectaculars into a long-term sustained service-oriented activity, then the handwriting is on the wall — the amateur satellite activities must themselves become professional. A nuclear staff of paid engineers, who have the responsibility to manage an ongoing program and who interface the amateurs with the professionals, seems to be the only way.

The volunteer/amateur workers certainly have a place in the future activities. Their expertise, talents and energies will continue to produce the concepts and hardware. These "amateur" amateurs will draw on the services of the "professional" amateurs for those co-ordination tasks that they cannot do because of their need to earn a living during the daylight hours.

THE BUDGET SHOWS A LINE LABELLED "INTERNS". WHAT IS THIS?

The Intern Program is a new idea to provide a mechanism to educate the next generation of satellite builders and to transfer technology between the various AMSAT affiliates. The general idea is similar to hospital Intern training in the medical profession. A new doctor, fresh from school, decides to specialize in some field. He makes application to a teaching hospital which emphasizes his field of Interest — perhaps neurosurgery. The intern learns by observing, lectures and eventually on-the-job training under the close supervision of the master. The intern also broadens his horizons by exposure to all the related fields. Although outside his specialty, the experiences learned in the Emergency Room taking care of the victims of a traffic accident will remain with him throughout his career. Coffee-room discussions on personal business management set in motion the ideas that, in future years, will allow him to accrue personal wealth. And the cameraderie engendered by personal contacts, both with masters and peers, will last him throughout his career.

Let us carry this analogy over to amateur satellite activities. The novice neurosurgeon becomes a young, eager engineer who wants to expand his horizons. He proposes to come work with the "masters" and in the course of doing so, both AMSAT and the individual prosper. Some fraction of the interns could be the future W3GEYs and DJ4ZCs; we must look towards the future by training our successors.

In a sense, we have already had some interns: Ron Dunbar (WOPN) spent several weeks during 1978 with DJ4ZC in Marburg, learning and understanding the IPS computer language and brought back the nucleus of the software that served the Phase III telecommand station network; Ron became our IPS "guru". Clarke Green (K1JX) and Ed Kaliin (K-RT) were detailed by the ARRL to assist with OSCAR 8 construction. Clarke returned to AMSAT as one of our key engineers in the construction of Phase IIIA. Will the next Jan King come from F, ZL, JA, or ZS? Only time will tell.

The modest funds in the budget to support interns are to cover per diem for living expenses and a limited amount of travel. If this program proves to be popular, AMSAT might find it expedient to have a "dormitory" in the form of an apartment convenient to AMSAT's laboratory. An allowance for this possibility has been included in the budget.

HOW CAN WE RAISE $270,00 OVER THE NEXT TWO YEARS?

The needs are clear ,but the solution will not be easy. The first $10,000 came in as "sympathy" offerings in June, but the river seems to have dried up. I want to thank Joe Schroeder (W9JUV) for his impassioned editorial pleas on our behalf in the July 1980 issue of "Ham Radio". In an article on page 45 of the July QST, Steve Place (WB1EYI) tells of what happened and answers many of the burning questions. I suggest that you all re-read these words and carry them to the rest of the amateur radio community. We need their help.

Dick Baldwin (W1RU), the General Manager of the ARRL, in his July 1980 editorial In QST told us to press on and persist. Contacts with Dick, Harry Dannals (W2HD), Jay Holladay (W6EJJ), "Chappie" Chapman (W1QV) and a number of other members of the ARRL "family" have now come to fruition. The ARRL Board, meeting in Seattle in July, passed two resolutions aimed at helping us. The first called on the ARRLF to establish a program to raise funds for the amateur satellite activities. The second authorized $10,000 as seed money for a matching fund campaign by the ARRLF. Additional seed money for the matching fund was committed by the Margaret W. and Herbert Hoover Jr. Foundation through Pete Hoover (W6ZH). **WE** — meaning both AMSAT and the ARRL — are hard at work to secure additional commitments for matching fund seed money. **YOU** can help. Your donations, large and small, will be matched dollar-for-dollar. All you need to do is write out a check to

The ARRL Foundation - Satellite Fund

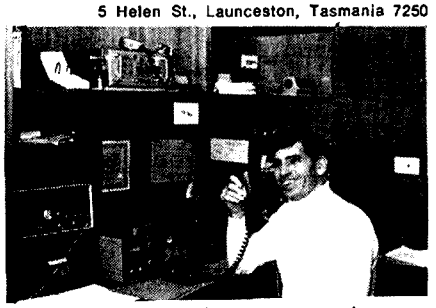
and mail it to the ARRL, 225 Main Street, Newington, CT 06111.

Remember that $210,000 of your money for Phase IIIA made a $1,000,000+ satellite. The labor donated by the "hard-core", and the industrial and commercial donations matched every dollar with the equivalent of at least four dollars more. With the support of the matching fund, you now have the opportunity to make every dollar you give have the leverage of ten!

On the international front, we are seeing our colleagues raising their share. From AMSAT-UK and USKA (Switzerland) we hear of Phase IIIB fund-raising campaigns. The IARU Region I has made another commitment to AMSAT-DL. Substantial contributions have come from South Africa and New Zealand. Commitments have been received from our Japanese affiliate, JAMSAT. To the AMSAT membership I offer the following challenge — will **YOU** continue your support? Will **YOU** help to raise money? Will **WE** have a long-term, continuing program or will our loss of Phase IIIA have been in vain?" ■

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
5 Helen St., Launceston, Tasmania 7250



Well, another year has come, and a new decade has commenced. What will happen during the next few months will be very interesting. Although the higher frequencies are still producing reasonable signals, they are starting to drop off to what they were in 1979-80. For example, the number of spurious second and third harmonic signals have decreased from the peak of observation 12 months ago. Also I have noticed that the European Long Path transmissions, particularly on 28 MHz, which I heard last summer, are very rarely observed now. However, transmissions above 14 MHz up to 22 MHz should still be satisfactory for Long Path observations over the summer period.

The period between the summer solstice (December 22nd) and mid-summer (January 15th) will provide numerous examples of the Sporadic E Propagation effects on the HF and VHF bands. Areas and regions that are not normally heard due to their close proximity, their signals bouncing over or skipping your area, will be noticed. The E layer is below the F layers, and is about 70 miles high. As can be inferred from its title, it is sporadic in nature, and usually observed when the ionization is at its densest, from late mornings to just after sundown. Transmissions are frequently up to a few hundred kilometres in distance, but occasionally longer distances of up to 5,000 kilometres, especially on transmissions above 30 MHz, have been logged during this period. You will notice that the signals will have a rapid fluttery characteristic similar to that experienced when an aircraft passes over and is between the transmitter site and your receiver.

The summer months will also see very good propagation on Short Path from Europe on bands above 14 MHz. Listen from 0900 GMT until 1300 or even later. There should also be signals from south-east US and Caribbean regions as well, from 1000 GMT to 1100.

However, there is another propagation path that is often overlooked. This is the **Polar Route**, over Antarctica. Those with beams could aim their antennas southwards from 0700 and also around 2300 GMT and listen. For example, RFE/R Liberty on 21455 and 25690 kHz respectively, can be heard without the constant jamming that is present on the Long and Short Paths. I wonder if there have been any experiments using this route on the amateur frequencies. I would be very interested in your observations on this.

The United Nations have designated this year as the **International Year of the Disabled.** As part of this, the two major international DX councils, the **European DX Council (EDXC)** and the **Association of North American Radio Clubs (ANARC),** have designated it **DXing FOR THE DISABLED** Year. Many of the major international broadcasters will also be enthusiastically supporting this with special programmes. The **Handicapped Aid Programme** is one organization that stands to benefit from this. HAP aims to promote and encourage the hobby to those who, being disabled, either have not been aware of the potential of this activity, or been prevented by the nature of their handicap from fully participating in it. I will hopefully have more details in the near future on what will be done here in Australia as part of the DXing for the Disabled Year.

Well, that is all for this month. In next month's column we will be looking at Band Charts. Until next time, the very best of DX and 73. ■

Ballarat Certificate

Here are details of a once only certificate which will be available for working stations in Ballarat, USA, and Ballarat, Victoria, on 30th, 31st January and 1st February, 1981.

A group of amateur enthusiasts from the Los Angeles (USA) area are planning an expedition, on 30th, 31st January and 1st February, 1981, to Ballarat in California. This Ballarat, in the Panamint Valley on the edge of Death Valley, is now only a ghost town of crumbling adobe walls. It was optimistically named, by an Australian, George Riggins, after the gold mining centre of Ballarat in Victoria. It was a rowdy supply town in the late 1880s for prospectors working claims in the Panamint Valley region.

Permission to have the expedition into the region had to be sought from various authorities, and could be a "once only" opportunity to work a station in that area. The significance between Ballarat, USA, and Ballarat, Australia, should also be considered. In the vicinity of Ballarat, USA, is also a town named Darwin, but I am uncertain if there is any historical connection between it and Darwin, Australia.

To commemorate the expedition, the Los Angeles amateurs have prepared a certificate for stations who contact them. To qualify for the certificate, stations are required to communicate with the station located at Ballarat, California, and must also communicate with TWO stations located in Ballarat, Victoria.

A large number of Ballarat, Victoria, amateurs will be active on various bands during this period, so contact with any of these two stations should not be difficult.

The expedition to Ballarat, California, will be using Collins KWM-2As, with 500 watt linear amplifiers, one for each band. Power will be provided from two gasoline generators for a total of 6 kW AC.

The organisers have planned the expedition in liaison with ARRL, and it is anticipated there will be an article in January 1981 issue of QST.

Summarising, to qualify for the certificate, stations must work:—

(a) **the Ballarat, California, station on any band;**

(b) **two stations located in Ballarat, Victoria, on any band; and**

(c) **during the period of 30th, 31st January and 1st February, 1981.**

The Ballarat, USA, station will use call sign **AB6C,** and use frequencies between **28100** and **28600** kHz, **21135** and **21370** kHz, **14275** and **14350** kHz.

Hours of operation will be from **0200Z on 31st January** until **1400Z on 2nd February, 1981.**

Calling stations will be given an identifier, which consists of the last two letters of the call sign of the Ballarat station contacted, plus a number.

Ballarat, Victoria, stations will use their own station call signs, followed by the word "Ballarat".

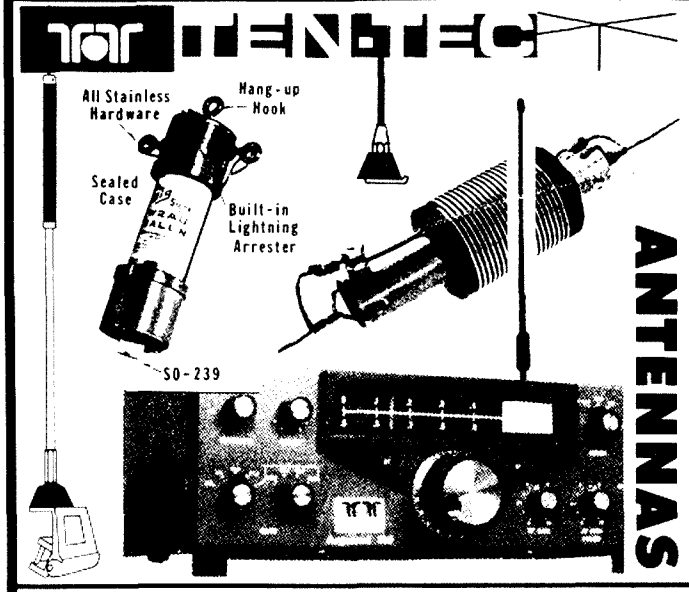
To obtain the certicate, forward your name, call sign, identifiers, address and return postage to **"Certificate", PO Box 425, Ballarat, Victoria 3350,** and your certificate will be on its way within a few weeks. This gives time to verify with the organisers in USA.

It does not matter which Ballarat you contact first. To qualify for the certificate you are required to contact the **Ballarat, USA, station,** plus **TWO Ballarat, Australia,** stations. ■

STOLEN EQUIPMENT

Kenwood TS520 S/No. 140610 with "SE" erased from "Send" switch and Kemtronic SWR meter. Anybody being offered this equipment contact police or phone King VK4ADS (07) 379 8245.

SCALAR — FOR THE DISCERNING AMATEUR



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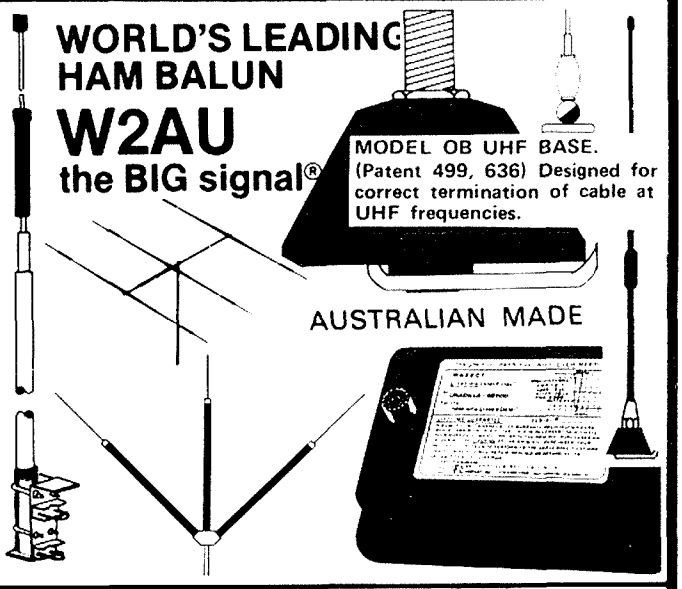

Frank Welsh VK3BPV
Mike Kilpatrick VK2DJP
Ron Smith VK2DCK
Brian Robinson VK4NQG

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W.A. Unit 5/319 Pearson St., Osborne Park, 6017 tel: (09) 446 4657

WIA 1981 SUBSCRIPTIONS

These are the WIA subscription rates for 1981. If you believe you have not received a subs notice please pay the rate shown for your grade (see your AR address label coding) and Division. Please pay direct to the Executive Office, Box 150, Toorak, Vic. 3142.

	$	Grades
VK1	25.00	All
VK2	24.00	F
	22.00	A
	24.00	C
	22.00	T
	14.00	G
	18.00	S*
	14.00	Family
VK3	30.00	F
	28.00	A
	30.00	C
	28.00	T
	18.00	G
	18.00	S*
VK4	22.00	F
	22.00	A
	22.00	C
	22.00	T
	18.00	G
	10.00	S*
	10.00	Family
VK5	26.00	F
	25.00	A
	25.00	C
	24.00	T
	18.00	G
	13.00	S*
	14.00	Family
VK6	24.00	F
	23.00	A
	24.00	C
	23.00	T
	18.00	G
	13.00	S*
VK7 (all zones)	24.50	F
	24.50	A
	24.50	C
	24.50	T
	14.90	G
	14.90	S*

* Subject to authentication.

Grade ceilings are:—
F — Full City.
A — Associate City.
C — Full Country.
T — Associate Country. Divisional Council).
S — Student.

Family members for States not listed will be appropriate grade less $8.10 in respect of AR element (i.e. for VK3 a family member without a call sign would pay $19.90). ■

WICEN

R. G. HENDERSON,.
Federal WICEN Co-ordinator,

171 Kingsford Smith Drive, Melba, ACT 2615
Ph. (062) 58 7904

WICEN provided a HF link from Perth to Canberra for a 6 hour period during the Annual Natural Disasters Organization (NDO) National Emergency Operations Centre exercise COMCOORD 3. The link on 14 MHz passed traffic by RTTY and SSB. The Perth station VK6WIE, located in the Metropolitan Regional HQ of WA SES, Mt. Hawthorn, was manned by Don VK6DY, Fred VK6FH, Glen VK6IQ, Syd L60206, the WA WICEN Co-ordinator, and Arthur L60213, his assistant Co-ordinator. The Canberra station, VK1WI, was located at the QTH of John VK1FT and was manned by John and Ron VK1RH, the Federal WICEN Co-ordinator.

During the period one SSB and five teletype messages were received from Perth and two SSB messages sent, thereby demonstrating the radio amateur's ability to contribute to emergency communications.

ABBREVIATED PROCEDURE

Following recent discussions with VK2BMM of NSW WICEN I offer the following suggestions on abbreviated procedure.

We take our guidance on procedure from Civil Defence and military publications to ensure inter-operability. This suggests two levels of abbreviation when conditions are good, e.g. FM repeater nets, and traffic dense with a minimum of formal messages. The first level involves omitting pro-words and call signs as in the following example. Full acknowledgement to an instruction **"VK1WI this is VK1RH ROGER OUT".**

Abbreviated response **"ROGER OUT".**

Please note that as identifications, e.g. call signs, are only necessary at ten minute intervals this is a valid action even on a training exercise.

The second level, which has been tested in NSW and ACT on very busy nets, is to replace the response with just the call sign. Furthermore, where abbreviated call signs are authorised they can be used; so the abbreviated response to the example becomes:—

"VK1RH"

or with abbreviated call signs "1RH" or "RH" (as authorised). Readers will notice the similarity with air traffic control procedures.

THIRD PARTY TRAFFIC AND THE HANDBOOK

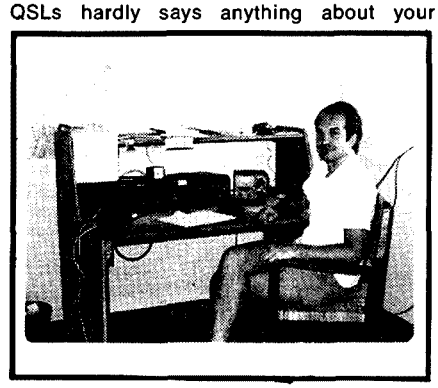
The Federal Executive in their dealings with the Department of Communications are following up the implications of third party traffic privileges, WICEN and the Handbook regulations. ■

YOU and DX

G. (Nick) Nichols VK6XI
6 Briar Place, Ferndale, WA 6155.

CONSIDER DXCC

Is it really the achievement it used to be? Judging by recent contests the only possible answer could be NO! In 24 hours on a single band, considered to be unreliable DX-wise, I counted a total of 112 countries with workable signals. Oh yes, you say, but try getting QSLs out of them — in my opinion that's hardly the point as provided your pocket is deep enough and the postal pixies blind enough the cards will be forthcoming — but chasing QSLs hardly says anything about your



VK5RP at Government House, Brunei.

operating skill, patience and general efficiency of your station. Work 100 mobile, all CW or QRP — well, that's a different matter entirely, but perhaps it is time to review this award in the light of the enormous improvements in technology. Do black boxes,, linears and computer designed triband yagis, coupled with the tremendous upsurge in amateur activity world-wide, make the award meaningless — think about it — isn't it time consideration be given to scrapping it? Replace it with a DX200 certificate — that at least would start to reflect an achievement.

On the other side of the coin "Worked All Zones Award" — and we don't have one available within VK???? — is, I consider, an achievement worthy of a piece of "wallpaper". To obtain it 40 zones covering every corner of the globe are required — sounds easy doesn't it — trouble is Invariably 2 zones, no matter what part of the world you live in, are difficult and at times seemingly impossible to hear, let alone work. Here in Western Australia Zones 2, 12 and 40 cause us problems; I gather VK2s have much the same trouble with 2 and 40, but find 12 relatively easy, whilst finding 34 is a real problem (a push-over for the VK6s).

Think about it, check your tallies, if you agree drop me a line and we'll see what can be done to get an award for this achievement going here.

COUNTRIES LIST

No, I haven't yet got down from my soap box, just what is the definition of a "Country"? A non-amateur asked me that after seeing one of our "countries lists" — now after having spent many hours pouring over a huge atlas looking for our "countries" I begin to wonder if the dart board method was used. Sand bars in the Caribbean (wet feet at high tide), nature reserves — you name it and we call them countries. On the logic currently employed Tassie, Rottnest, Kangaroo Island, etc., should be hurriedly put forward as "new ones". Yes, it sounds stupid but unfortunately it's true. World authorities acknowledge the existence of only 198 countries — that's only 121 less than us; if we split England into G, GI, GW and GM, surely then good old oz is entitled to 8 different (?) countries? Amateur radio is non-political, well it's supposed to be! And yet we give separate country status to provinces within a country, provinces that virtually disappeared decades ago; International Law accepts a 200 nautical mile economic zone surrounding each country (provided it's not land-locked) — surely then any island within such a zone and belonging to that country should not be classed separately. Logical? Well then on my calculations EA6, VE1 Sable would be automatic deletions and there are several others which raise other queries — in particular Jabal at Tayr — It's in the middle of the Nile basin; Abu All, well, that seems to belong to Saudi Arabia and it's only about 20 miles off the coast (it takes some finding, 27.20 N 49.33 E), but probably the most ironic situation of the lot is Antarctica — it classes for amateur radio as 7 zones, covers an area of 13,338,500 square kilometres (a larger area than Europe), it cannot be crossed without, to say the least, a major exercise in logistics and yet is ONE DXCC country. With sandbars, lighthouses and monasteries all rating separate mention, it really makes you wonder!

FACT AND FICTION

There are many rumours on the bands concerning the granting of a licence by 3X authorities to LA5KC — fingers crossed but don't get your hopes up too high.

Kermadec activity is also heavily tipped possibly this month — no call signs known at this time, but it looks promising.

ON THE BANDS

10 Metres:

Solar flare activity knocking it around but really fine propagation at times. On CW, Europe is thumping in at good strength, HS1AMX and KH3AB rate a mention, the latter, being newly licensed in November, promises plenty of activity CW-wise on all bands 8-10.

On phone W6QL/SV5, EA9EO, KH3GB/KH3, HZ1AB, VO2CW, 8Q7KK, 9N1MM, JT1AN, G3JKI/5A, CN5AMV, CN8DF, A9XCX, FP8HL and YK1AA were available for the patient 10 metre fanatic.

15 Metres:

Solid but remarkably quiet, it seems a neglected band at present, but for those who did give it some attention, on phone CX3BBH, G3JKI/5A, HC1HC, HC8GI, CE0AC, HK0EHM, HK0FBF and PJ2FR.

On CW VS5RP, VQ9NN, FO8EW, 7X2MB and KG4KK were heard on several occasions.

20 Metres:

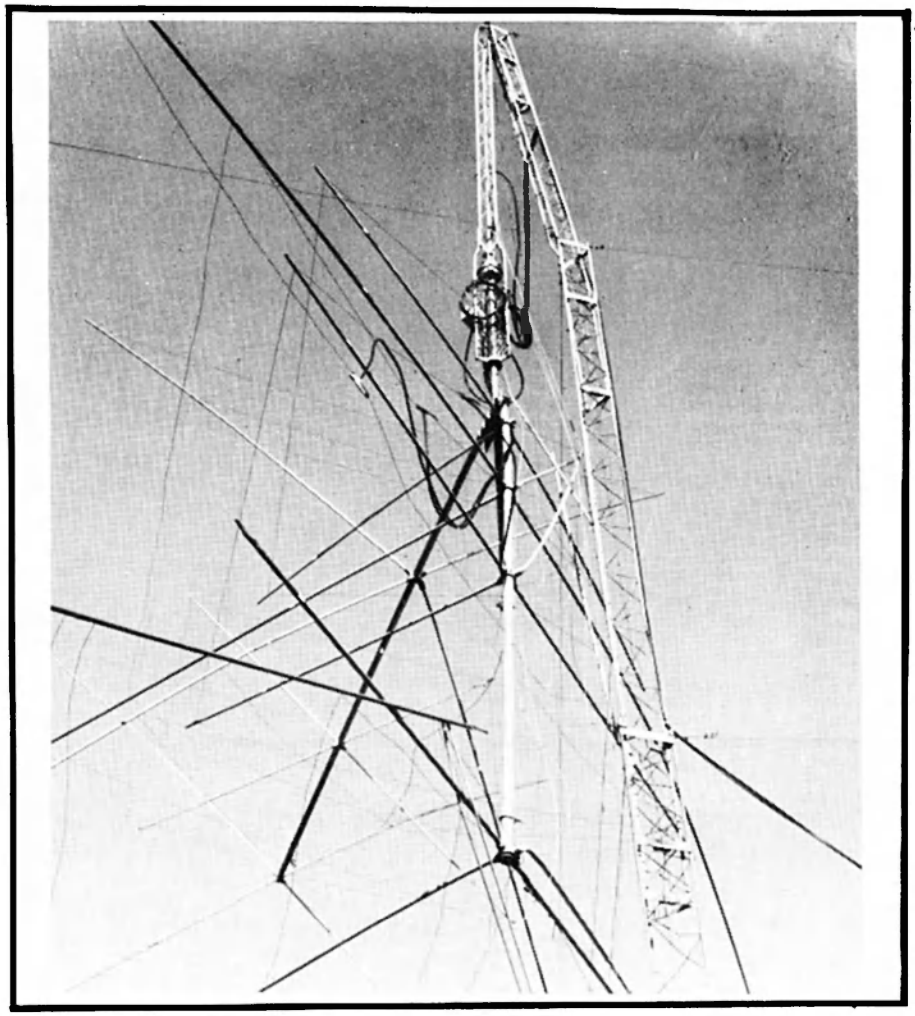
The QRM gets depressing but as always alive with DX, on phone ET3PG, FM7BX, FY7AN, PY0OD, PY0ZDX, 8Q7KK and FB8ZO and on CW HH5VP and TU4AW.

40 and 80 Metres:

Nothing much of real interest except 8Q7KK on both phone and CW, plenty of Ws and Europeans but 80 remains patchy.

QSL INFORMATION

HZ1AB — via K8PYD.
PY0OD — via WA4MDS.
YK1AA — via DJ9ZB.
8Q7KK — via W2FV.
W6QL/SV5 — via Yasme Foundation.
G3JKI/5A — via F6CYL.
WB4ZNH/5X5 — via K4PHE.
CN5AMV — via PO Box 22, Arabat, Morocco.
CR9B — via WA3HUP.



In my November column I mentioned that my tower and quad had come to grief. Every picture tells a story.

For QSL information you are having trouble pinning down, try the East West/North South DX information net — Mondays, 28.560, commencing 2000Z, call in with your problem or obtain the very latest DX information broadcast, usually at 2130Z. Net co-ordinator is KD8MR or occasionally a W7.

Best 73s. Nick. ■

QSP

RST

Ham Radio September 1980 editorial picks up earlier comments in other amateur magazines that the antiquated RST signal reporting system, valuable in the early days of amateur radio, is in need of revision. One suggestion is that there might be a simple three tier reception report based approximately on (a) no copy at all, (b) partial copy, or (c) full copy as the case may be. Such a system is suggested as helping to reduce on the air pollution in today's amateur bands. "Goodbye to the QSL hunters 5 and 9+ when he has had to get you to repeat your call sign several times!" ■

JOIN A NEW MEMBER — NOW!

NOTES ON THE PREDICTIONS

The mode of propagation used by IPS in compiling their predictions are reflected in the bar charts used to convert the Graflex symbols into a graphic picture.

When generating the Graflex charts (reproduced in a number of publications) the following symbols are used.

1. "." — Propagation is possible but probably less than 50% of the days of the month.
2. "%" — Propagation is possible between 50% and 90% of the days of the month.
3. "F" — Propagation is possible by the first F mode on at least 90% of the days of the month unless there is a severe ionospheric disturbance.
4. "M" — Propagation is possible by both first and second F modes. The strongest mode is normally the first mode, but the vertical aerial pattern may influence the mode received.
5. "A" — High absorption, i.e. above the absorption limiting frequency but probably too close to it for good communication.
6. "X" — Complex mixtures of modes including the second E mode.

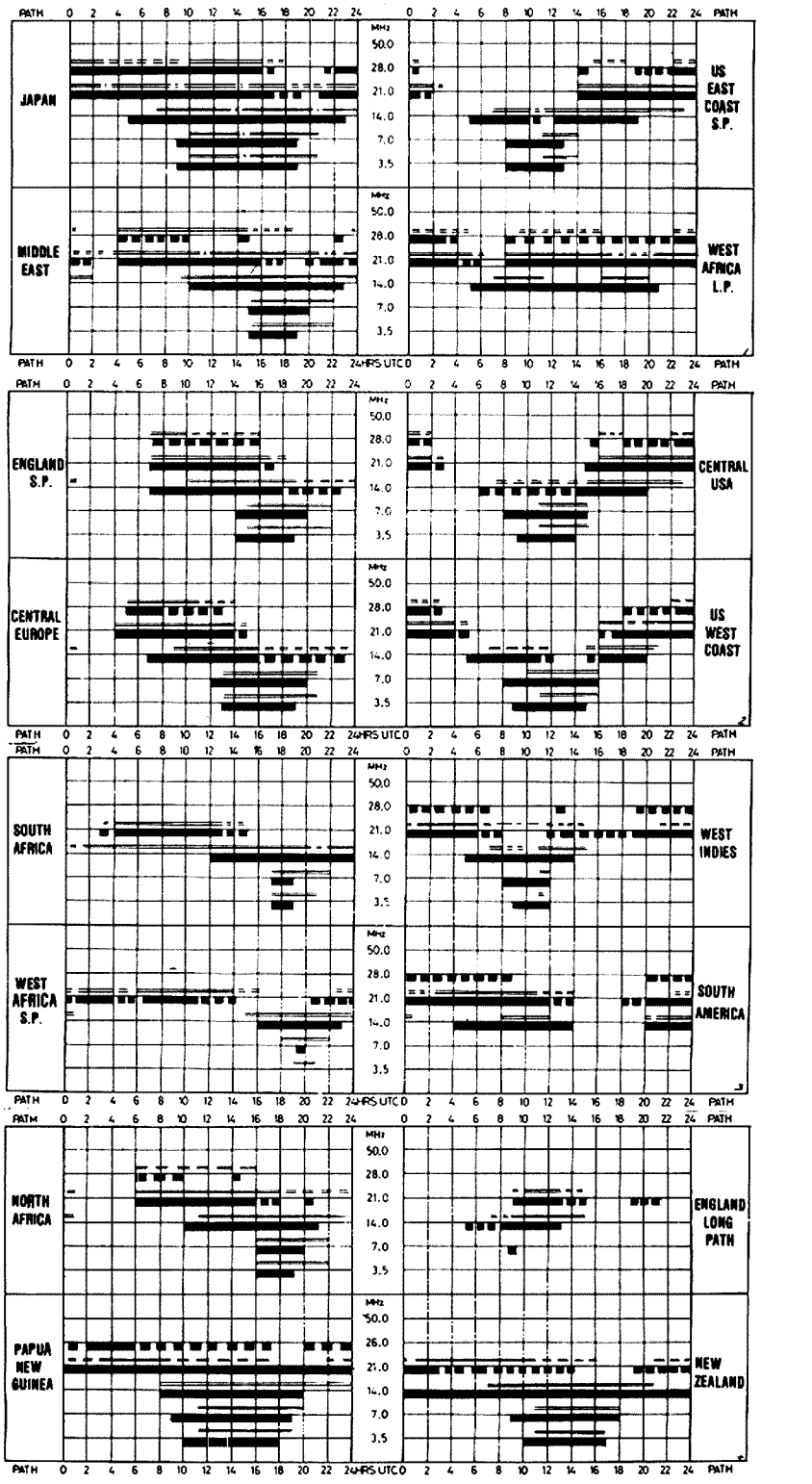
These are the most significant types we encounter. The full lines or bars on the chart cover 2, 3, 4 taking 5 into account. The broken lines or bars are depicted by 1, 6 is extremely hard to verify and is not taken into account.

The paths from Eastern Australia are based on Canberra. The paths from West Australia are from Perth. Suitable allowance should be made on Eastern paths for geographical differences. Times, as much as 1 hour difference between Victoria and Queensland in band openings occur. Often there is no signal available in one State, whereas the opposite effect occurs in the other State, they get the lot. Marginal differences produced by layer tilt and varying degress of ionisation can be very frustrating.

Generally the predictions show that time of day when the path should be open between the two areas. All other factors notwithstanding. ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



LEGEND

FROM WESTERN AUSTRALIA

FROM EASTERN AUSTRALIA.

BETTER THAN 50% OF THE MONTH, BUT NOT EVERYDAY.

LESS THAN 50% OF THE MONTH.

Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

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 publishsr.

The Editor,
Dear Sir,
We wish to thank all of the people in the WIA who have worked over the last three years for the successful removal of the long standing prohibition on the use of third party traffic by amateur radio operators in Australia, as announced recently by the Minister of Posts and Telecommunications.

As a result, a National Third Party Amateur Radio network has been formed and the following participants have asked to have their thanks registered:— VK2DGK, VK2VTN, VK2NSZ, VK2VW, VK2DNO, VK2BVS, VK3CCH, VK4PK, VK4ARZ, VK5DC, VK2BRI, VK2CBC.

73s. Sam Voron VK2BVS. ■

17 Willis Street,
E. Victoria Park 6101, WA
15th October, 1980

The Editor,
Dear Sir,
In AR (October 1980) VK4SS raised some interesting points re the VK/ZL Contest, but he seems to have missed the point of what a Contest is really all about.

Let us have maximum participation by all means, but do not let us forget that a Contest is, or should be, a competition between communicators to prove who is the most proficient in passing ACCURATELY basic pieces of information, viz., Call Sign, RS(T) 01 (001), etc. Of course DX location, Antenna, Power, etc., all have some bearing but 1979 VK/ZL results show some of the Novices did pretty well with their low power and multi-element Monobanders on 10 and 15. Unfortunately some people try to operate a contest like a DXpeditlon and try to get the most information, correct or otherwise, down on paper in the stipulated time. As a Communications Expert (Journalist) VK4SS must see this is not communicating.

Even a Log Sheet is a communication, and must be legibly written, and to present an illegible scribble is a discourtesy lor, after all, the pay received by the Contest Log Checkers ($ NIL) is rather poor so why be discourteous to someone who is trying to help out. I cannot understand his thinking in that a fixed cypher would be an improvement. For If VK6 sends 29 as a cypher and VK2, 3, etc., send 30, what is the point of a cypher Nearly everyone gives 59 (or 599), so all a contest would become would be an exchange of Call Signs, until some silly honest clot told the bloke he was 3 by 3. Now a real improvement, to confuse the opposition, would be to start at 01 (001) on each band worked. Why not? A separate log is required for each band.

As for saying mistakes do occur, well if there is a mistake made in receiving a cypher correctly no communication has taken place, so the contact should count for nil score. Accuracy is the name of the game. ZL is to be commended for insisting this year the exchange "be acknowledge" DX to DX working would wreck our contest. If proof is needed just try making a score in one of the European Contests like the Scandinavian Activities Contest. The only Europeans we would work would be the ones looking particularly for us.

Multi-Operation Section must be a NO NO. If 10 VKs all get together to work one Call Sign then the DX participants would immediately be robbed of the chance of 9 more QSOs with VK. Finally my pet hate in the CW section of a Contest is the "Communicator" who has his Bug Key, or Electronic Keyer, set too fast for his operating capability. These coves would very quickly earn "LID" from one of the old time Telegraphists.

Hope I have been able to communicate.

H. D. Spence VK6FS. ■

PO Box 109, Mt. Druitt, NSW 2770
30th September, 1980

The Editor,
Dear Sir,
"Brick-bats" to all those people who made the recent VK Novice Contest the non-event of the year!

The VK2 Division of the Institute paid scant attention to what I believe used to be a very enjoyable bash. The WIANEWS broadcast in this State carried only the time/date and "details may be had from AR for '.....', 1979. End of Item.

Not having the particular issue, I made numerous enquiries (to no avail). Finally contact was made with Eric VK2ATZ/VLX (Westlakes Radio Club), three hours into the contest. He apparently spent most of his on-air time explaining the rules. Thank you, Eric.

Many stations on air were completely oblivious to the fact there was even a competition! And some of the comments heard are unprintable, both from Novice and Full Calls alike, because of those "Blanky NOVICES" in the contest.

To the YLs, who incidentally scored well, congratulations, and to all those that made contact with me in the contest, thanks. It was a real pleasure to talk with you all, from ZL-P29-VK.

If the Institute wants the support of Novices in this country, then how about supporting the Novices. We make up considerable numbers in the books.

73. Colin Stevenson VK2VVA. ■

AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

I guess I had better head this month's column my "COMPLAINTS DEPARTMENT'.

During last winter I decided to try for some of the awards I have described in this column over the last couple of years. I have done quite well and now have collected about twenty new pieces of wallpaper. However I am somewhat disappointed in the way some of the awards have been prepared and mailed. Some have arrived with the details written thereon by hand. Others have been inadequately packed and arrived in a semi-mutilated condition.

If your Club is prepared to spend a considerable sum of money to have awards printed, why not spend a little more to provide your awards manager with a marking stencil and perhaps some good quality envelope or mailing lubes (ex Post Office). At least type on the details rather than write in by hand. If I hand wrote the details on our WIA awards, I would be faced with a massive rejection rate!

In January 1979, the rules for all WIA awards were amended to permit GCR certified lists in lieu of forwarding QSL cards with applications. This saves a lot of my time and considerably reduces postal expenses for both the applicant and the WIA. I prefer to receive certified lists for checking rather than a heap of cards, but there are a few comments I think necessary.

Please submit your DXCC lists in country order as they appear on the WIA or ARRL official DXCC countries list. For each application I have to make out a master record in country order, and it is time-consuming to continually flick from one column/page to another for GCR lists that are not in the right order.

Ensure that each list contains the six bits of essential QSO/QSL information as in WIA DXCC rule 4.3. I still receive lists without the QTH shown and, recently, one without the signal report. I will continue to reject incomplete lists.

When listing the QTH, I am only interested in the country as shown on the official DXCC lists and the QSL, not the town within the country. For example, list Australia not Sydney, and USA not Los Angeles, etc.

It is not sufficient for the QSL to contain a call sign only. The QTH must also be indicated on the card. I have rejected quite a few QSLs from overseas countries in the past few months because the card contains no indication of QTH other than a call sign. Return these to the sender and complain or throw them in the WPB and try to work another as I do.

See rule 4.2, the card must not be altered. I tend to be somewhat more liberal than perhaps the ARRL would be but I have rejected cards where call signs have been altered and/or alternative QTHs written thereon. Recent examples are QSLs from 5NOSID and FROFLO.

If you are asked to check and certify a list for a friend, and you have any doubt about a card, do not become bad friends! Send the card along with the application and I will have a look at it.

Thoroughly check the card against the list submitted. I've had recent examples of obvious errors (or I like to think so), e.g. cards that I have seen before and know that they are altered, a country claimed when every DXer knows that there has been nil activity at the time specified, claimed QSOs and presumably a QSL from unauthorised operations and duplications where the list is not in country order.

If there is any doubt about a QSL card, send it along with the list. You should also include those in the "don't know" calegory, as I can usually work out most cards received, particularly from the USSR. If I am not sure of a card, I will reject it and ask for more info or recommend that you try and work another station from the particular QTH

Don't be too perturbed if I ask for two or three cards for examination. This is usually to satisfy my curiosity because of some previous knowledge and/or information about the operation.

Try to keep an accurate record of credits you have already recoived for the WIA DXCC. I occasionally receive duplicated claims for updating the records but usually under a different call sign. I will always return your original list with any comments noted thereon so you may keep your own records accurate.

If I reject a QSL and you are not happy with my decision, by all means query it. I have changed my mind a few times over the past couple of years, mainly because of errors made in my own records.

AWARDS DIRECTORY

I recently received a copy of the book "Amateur Radio Awards", second edition, published by the RSGB. This book contains the rules and some illustrations of the principal amateur radio awards available from most countries to overseas operators. I recommend that all serious award hunters obtain a copy and it is available from "Magpubs", PO Box 150, Toorak, Victoria 3142, for $7.10 plus postage, or, by the time you read this, copies should be available from some of the Divisional Publications Officers.

CORRECTIONS

The following corrections should be made to the DXCC listings included in this column in the September 1980 issue:

1. DXCC — TOP LISTING, PHONE:
   Read VK5MS 318/359
   VK3AHO 294/326
2. DXCC — NEW MEMBERS, PHONE:
   Certificate No. 227 was issued to VK5NVW, Tally 106.

DXCC NOTES

JD — OKINO — TORISHIMA. This country was deleted from the DXCC listings on 1st December, 1980. Therelore only contacts made from 30th May, 1976, to 30th November, 1980, inclusive will count for DXCC purposes. All DXCC tallies are being progressively amended accordingly.

H5, S8 and T4. Please note that these homeland states of the Republic of South Africa do not qualify as separate DXCC countries nor are they likely to be approved in the foreseeable future. Therefore all QSL cards submitted with these prefixes will be credited as RSA (ZS).

Good hunting. ■

Index to Volume 48 — January to December 1980

THE FIVE-YEAR INDEX (1976-1980) WILL BE PUBLISHED IN FEBRUARY, 1981

AROUND THE TRADE

NEW TEN-TEC TRANSCEIVER

Scalar Industries announce the introduction of the Delta 580 HF transceiver from Ten-Tec.

The new Delta is a fully solid state unit providing 200 watts input on all bands from 160m through 10m (including the new WARC allocations). Frequency readout is provided digitally by 6 red LED numeral displays providing accuracy to 100 Hz. Broadband design of the 580 provides instant operation on all bands with no tuning needed.

Other features of the 580 include an 8 pole monolithic SSB filter, built-in notch filter variable from 200 Hz to 3.5 kHz, offset tuning, optional noise blanker, hang AGC and a unique SWR meter. Also included is adjustable threshold ALC and DRIVE, adjustable sidetone level and vernier tuning typically 18 kHz per revolution.

The Delta is capable of being powered from a 13.8V DC source for mobile use or may be used with an optional 117/240V AC supply.

For further information on the Ten-Tec Delta contact Scalar Industries, 20 Shelley Avenue, Kilsyth 3137, or telephone (03) 725 9677. Sydney (02) 502 2888, Brisbane (07) 44 8024 or Perth (09) 446 4657. ■

RAPID BATTERY CHARGER

Vicom International Pty. Limited, Australasian representatives for Redifon Telecommunications of United Kingdom, have a new rapid nicad battery charger which cuts down the time taken to charge these batteries from several hours to around 20 minutes. Charging can be done irrespective of the state of charge of the cell or its operating temperature and is done in complete safety. This new charger is directed to users of portable radio equipment using rechargeable nickel cadmium cells. The charger can be used as part of a planned maintenance programme to recondition nicads which have deteriorated through repeated slow charging.

The disadvantage of some rapid chargers lies in the fact that permanent damage can be done to a battery if the critical areas of temperature and pressure are exceeded towards the end of the charge period. On the other hand trickle chargers impair the general condition of the batteries and produces a progressive degredation in battery performance and rated power capabilities.

The Redifon system will charge a battery in less than 20 minutes from a fully discharged state and in safety, up to 95 per cent of the nominal capacity and avoids critical areas of temperature and pressure.

The system improves the condition of a battery even when it has been subjected to slow charging cycles, and will compensate automatically for battery initial temperature and state of charge.

The system relies upon the adoption of a pulse charging principle, which allows a high charge to be stored in a short space of time. It is this pulsing process that also improves the cell condition. A built-in microprocessor recognises a large change, in one specific cell parameter, which can vary as much as 600 per cent from the partial to the fully charged state. This wide range means that each charger can be individually programmed to operate right up to a full 95 per cent charge level and yet to cut out safely before internal gasing can occur. Indication is given when this charged state is reached.

Further details, prices and availability can be obtained from Vicom International Pty. Limited, 68 Eastern Road, South Melbourne. Phone 699 6700. ■

QSP

SHORT WAVE LISTENERS

A new, well printed monthly magazine in English, entitled "Voices — The Guide to International Broadcasting", has been received. It includes details, times and frequencies of broadcasts in English and other information of interest to the avid listener. Subscription rates, valid to 30th September next, are $A15 for one year, which includes airmail postage. The address is "Voices, PL226, SF-00171 Helsinki 17, Finland". ■

NEW ZEALAND

Break-In of September 1980 includes statistics showing there are 5,532 amateur licences issued in ZL, of which 25 are Novices and 1,696 are equivalent to our Limited calls. The membership of NZART is shown as 2,898 of the total licensees — 52 per cent — in a total of 77 branches. In this copy of Break-In there is also a letter from their administration confirming that ZLs will continue to be permitted to use the 7.1 to 7.3 MHz segment of 40 metres on a strictly non-interference basis to broadcasting services.

W. GERMAN LICENSING

Radio Communications, October 1980, "Marth on the Air" column contains some interesting details about West German licensing.

"From 1 June, 1980, a new class of licence has been made available in West Germany. It is designed to provide a transition from the Class C to the Class B and is called the Class A. Class C is VHF only, and the new Class A allows the use of the telegraphy modes (CW and RTTY) in the sub-bands 3,520-3,600 kHz and 21,090-21,150 kHz, with a peak RF output of 150W, as well as all permitted modes on all frequencies above 28 MHz. Class A stations will use the DH prefix followed by a single digit and three-letter suffix. The Class B licence allows all modes on all bands with peak RF output of 750W — except on the West German allocation 1,815 to 1,835 kHz where the power output may not exceed 75W. The prefix blocks DF, DJ, DK and DL followed by a number and two-letter suffix are almost exhausted and will be followed by the DL prefix, single digit, and three-letter suffixes. The VHF-only Class C licence holders use the DA4, DB, DC, DD and DG prefixes. It is interesting to note that at the time of writing over 85 per cent of West German amateurs are members of their national society." ■

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

There were six members at the November meeting. Mavis VK3KS, the Awards Manager, announced 22 ALARA awards have been issued. Please apply direct to Mavis, QTHR, for your award; this will speed up your receipt of it.

Congratulations to **Dawn VK3VJH** of Gunbower. New call is VK3DCW. Dawn has been on air about a year now and is looking forward to meeting girls on next activity day. Her OM is studying for novice call.

Narelle VK3NMV. Narelle lives at Bamawm. Full call pending. She has been active on 10m for two years on SSB, also 10m and 80m CW.

Rae Boyle VK3VUK, Echuca. Rae passed theory and sending CW in August, sitting CW receiving in November.

Marilyn VK3VUA, Irymple. Novice call in June, limited call in August. Marilyn is very active in Mildura Radio Club.

Congratulations to other girls who have passed exams, won contests, etc.

Please let me know if you have received any awards, or anything of interest to ALARA.

Tentative arrangements for next meeting at Bendigo, 21st February. This is the weekend of Midland Zone Convention (Sunday 22nd). Please keep this date in mind. We would love to see as many as possible. Come for the week-end, meet the Executive of ALARA and also you may have something to contribute for ALARA's continuation. Plans are to run ALARA on an Australia-wide level with State branches.

Please come and help the small group of girls who have kept our Association going. We need new members to keep increasing the strength of our group and also foster amateur radio among YLs.

Enquiries re joining ALARA to **Daurel VK3ANL, PO Box 110, Blackburn 3130.**

Publicity to **VK3DML** (VK3NHD, QTHR).

73/33. Margaret VK3DML. ■

State Convention 1981

The Wireless Institute of Australia Victorian Division State Convention will be held at Latrobe University, Glen College, Bundoora, 3083, between February 28 and March 1, 1981.

The convention will commence on the Friday evening with an informal social at 8 p.m. This will allow country visitors to meet their city counterparts. Saturday and Sunday functions include trade and industry displays, educational displays, ATV demonstrations by Rod VK3ZLW, Peter VK3BFG and the Melbourne ATV group and a live eye roving camera using a 10 GHz link!

Competitions will include Best Homebrew Item, Foxhunts, radio throwing contest for the ladies, antenna gain measuring contest and a guess the resonant frequency and capacitance contest.

The venue for the State Convention features full accommodation and catering facilities, lecture theatre, display areas, social facilities and car park set in an attractive open air parkland.

The cost of registration for the weekend is $10 ($5 for YLs). For other charges please refer to a registration form.

Registration forms are obtainable from the WIA Victorian Division Office, 412 Brunswick Street, Fitzroy 3065.

All Victorian amateurs are urged to attend this worthy event and in doing so ensure success of this Convention, organised on behalf of the Amateurs in the State. ■

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

Icom IC-255A, in exc. cond., 25W FM Tcvr., digital readout, 2 VFOs, multi-purpose scanning, simplex/duplex/reverse operation, 5 memory channels, low power position 1W, complete with mic., mounting bracket, handbook, $325. Arthur Solomon VK3LJ, 130 Ballarat Road, Creswick 3363. Ph. (053) 45 2031.

Yaesu FT101Z HF Txcvr., plus YO148 mic., exc. cond., one owner, $720, ONO. John VK3VUW. Ph. (03) 309 3737.

Tower, 5 sections each 6 ft. x 9 in. x 1¼ in. verticals, this tower can be seen erected (30 ft. plus fixing pipe), fully galvanised, price $110 as is (help provided). VK3YTC, QTHR. Ph. 878 2229 AH.

Kenwood TS120S, inc. mic. and service manuals, plus 13.8V 25A homebrew power supply, $750; will separate. Bert VK3YTJ. Ph. (03) 758 4086 AH.

Can't get out on 2m? Try this one, 16 element phased array with 9m UR67 coax; yes it does look like a TV antenna, $45. Ph. (02) 604 7137 after 8 p.m.; buyer must pick up.

Wind-up Tower, galv., 100 ft., $500; TH3JR, $75; AR22L rotator, $75; Kenwood TS 120V with cradle, $550; Robot model 70A SSTV monitor, $300; Lin Wearne ex VK4NES, QTHR. Ph. (075) 33 1172.

Icom IC701 and power supply, $900; High Gain 6 el. monoband 10m yagi, 24 ft. boom, $200; High Gain 5 el. monoband 15m yagi, 26 ft. boom, $250; many other extras. VK2NBB, QTHR. Ph. (02) 602 3368.

Linear Amp. Parts — 4CX250Bs $10 ea.; new SK620/SK606, $25; new SK600 $20; HV PSU parts, incl. transformer, $60; twin blower unit $20. VK4ZRQ, QTHR. Ph. (07) 343 5139.

UHF Signal Generator, Marconi TF1066/B2, 400 to 555 MHz FM, $340; Icom 701 txcvr., $790; Digitech TTY distortion analyser and test word generator, all solid state, $80. VK1VP, QTHR. Ph. (062) 49 2764 or (062) 49 6348 AH.

WANTED

RF Amplifier AM-4306/GRC, originally used in conjunction with AN/PRC 25 set. VK8CO, QTHR.

TS 120V FT7 or similar, any cond., must be cheap. VK4AYZ. Ph. (077) 43 5785 or PO Box 1015, Mt. Isa Qld. 4825.

Yaesu FT200 Txcvr., complete, will exchange almost new BWD 509B 10 MHz oscilloscope. VK4NUY, 14 Cooradilla Street, Jindalee 4074.

Type 3 Mk. 2 Tx-Rx, also want old morse keys. VK5DL, QTHR. Ph. (08) 277 2155.

Beg, Borrow, or Buy: Grob's handbook on television. An old edition, mainly or entirely on black and white TV sets would be suitable. A. Renton VK7RE, 51 Penquite Rd., Newstead, Tas. 7250. Ph. (003) 44 3044 or 82 1953.

Pair 6LQ6/6JE6C Tubes for TS900 Tcvr, or any information as to their availability would be greatly appreciated. Stan Rigney VK2BRZ, QTHR.

SILENT KEYS

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

Mr. G. A. LANE VK5CV
Mr. L. W. JOHNSON VK3YF

OBITUARY

George Lane VK5CV passed away suddenly on 5th October, 1980. A great number of Australian and overseas amateurs will miss Charlie Victor on all bands, both SSB and CW.

As a retired General Motors employee he was always active in the "Firebird World Amateur Radio Club" and did much to assist others in the amateur field.

His son Maitland VK5AO is well known for his activity on Amateur TV and indeed joined the amateur ranks before his father did so in 1961.

The many who knew George would wish to tender their condolences to his wife and family in their loss.

Rob Wilson VK5WA. ■

27/3.5 and/or 7.0 MC Transverter, Dick Smith Design or similar, price and particulars to VK2JS, QTHR. Ph. (02) 412 1508.

Urgently, Unconverted Hi-Band Set in going order for bush fire brigade use. Rob VK2ZZX, Ph. (062) 36 9271.

TRADE HAMAD

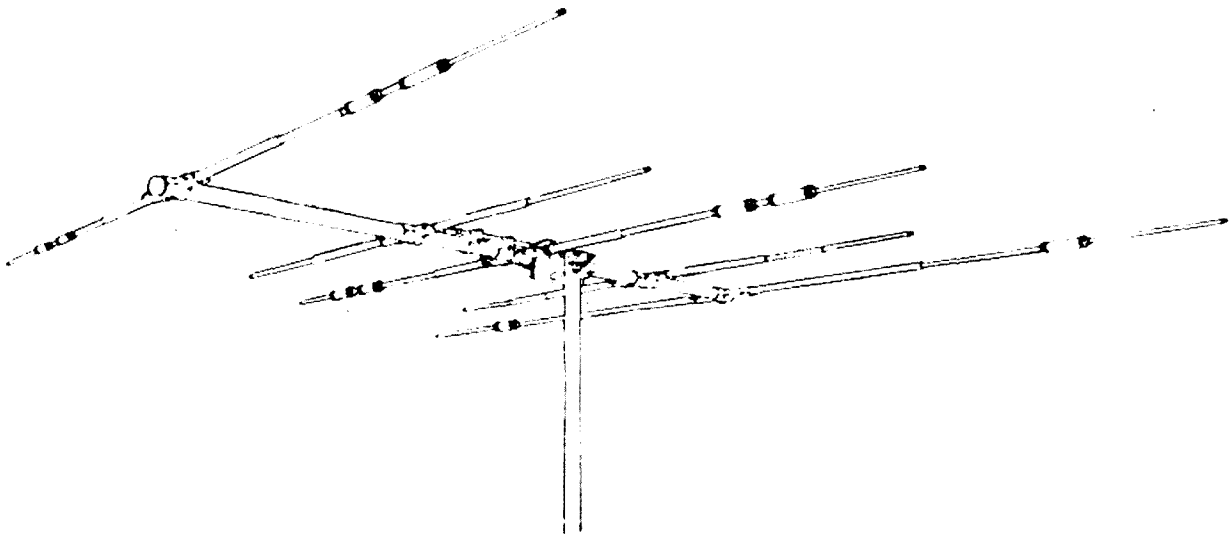
Amidon Cores — Iron-powder and ferrite, enlarged range available for tuned/wideband and supression applications in Rcvrs./Trans., large SASE for data/price list. Closed for business during November. RJ & US Imports, Box 157, Mortdale, NSW 2223.

ADVERTISERS' INDEX

hy-gain®
DIVISION OF TELEX COMMUNICATIONS, INC

TH5DX

10-15-20 METERS



We are proud to introduce the newest member of our famous Thunderbird line of Tri-Band antennas. The TH5DX offers outstanding performance on 20, 15 and 10 meters. It features 5 elements on an 18 foot boom, with 3 active elements on 15 and 20 motsrs and 4 active elements on 10 meters. The TH5DX also features separate air-dielectric Hy-Q traps for each band. This allows the TH5DX to be set for the maximum F/B ratio and the minimum beam width possible for a Tri-Band antenna of this size. Also standard on this antenna are Hy-Gain's unique Beta-match, rugged Boom-to-mast bracket, taper-swaged elements and improved element compression clamps.

Boom length	18 feet	VSWR at resonance	less than 1.5:1
Longest Element	31 feet	Power Input	Maximum Legal
Turning Radius	18 feet	Input Impedance	50 ohms
Surface Area	6.4 sq. feet	−3dB Beamwidth	66° average
Wind load	164 lbs	Lightning Protection	DC ground
Weight	50 lbs	Forward Gain	8.5dB
		Front-to-Back Ratio	25 dB

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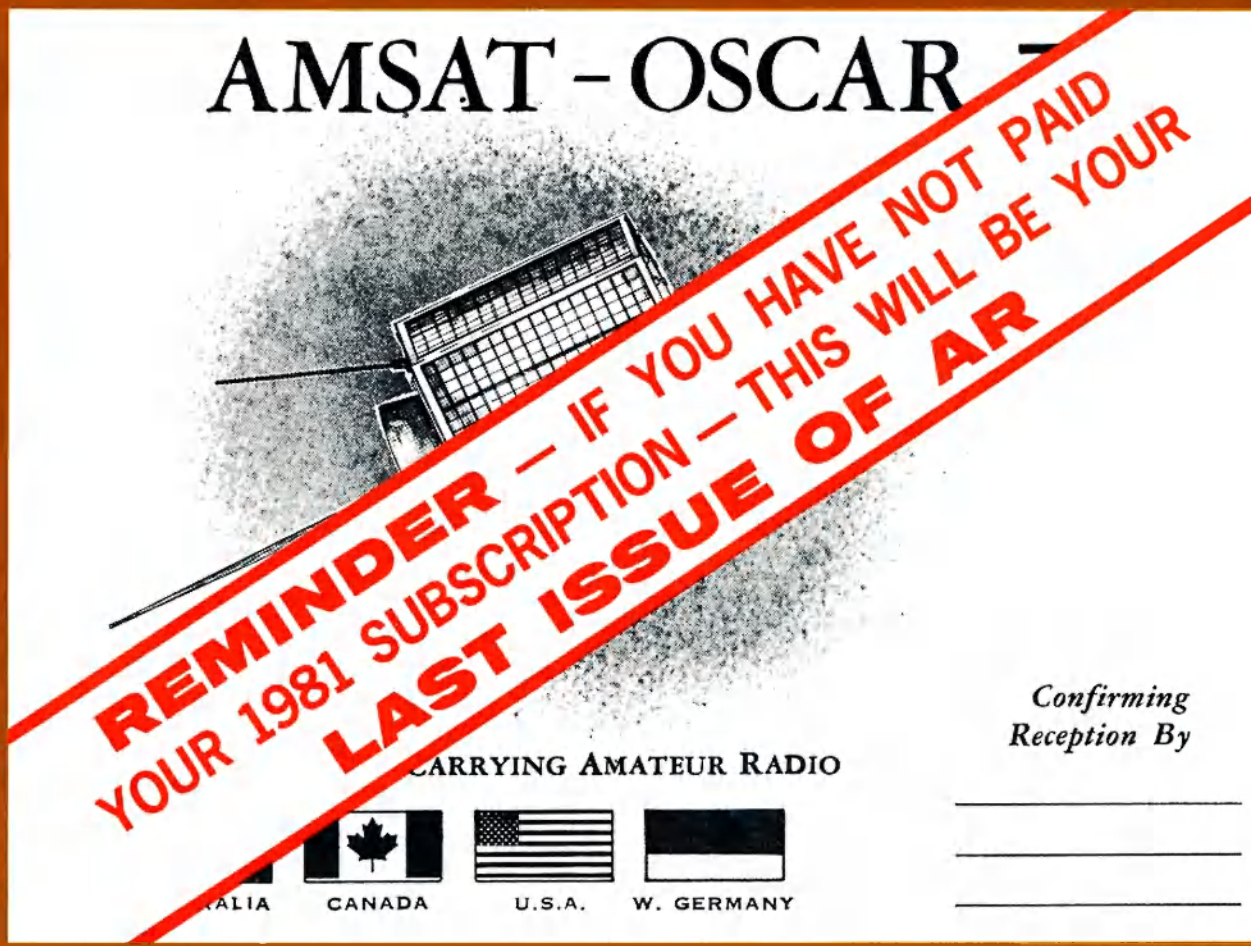
Telephone 833 4344

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA



VOL. 49, No. 2 FEBRUARY 1981

FEATURED IN THIS ISSUE:

- ★ JAMBOREE ON THE AIR
- ★ AN AUTOMATIC CQ CALLER
- ★ WORLD-WIDE COMMUNICATIONS FROM HAND-HELD AND MAN-PACK TRANSCEIVERS
- ★ FIVE-YEAR INDEX OF TECHNICAL ARTICLES

Registered for posting as a Publication — Category B

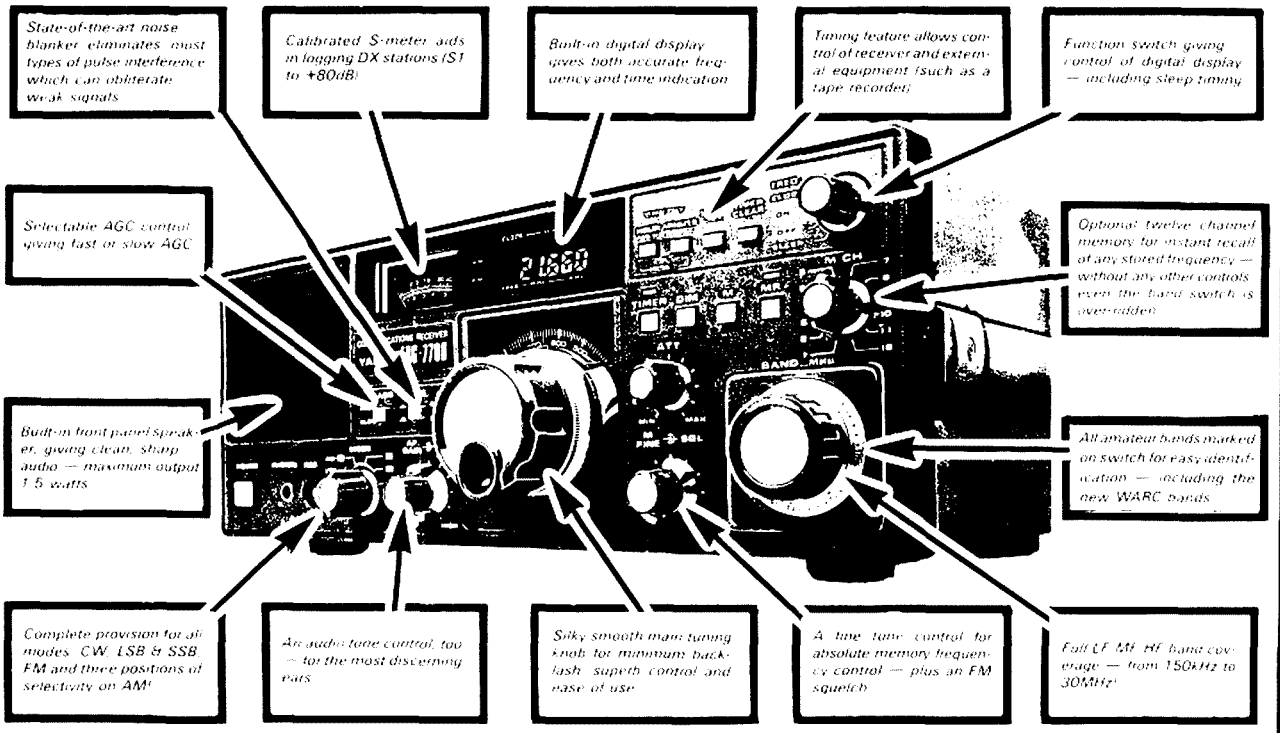
~~FRG-7 FRG-7000~~

NOW IT'S THE BRAND NEW

FRG-7700

WIN A TRIP TO HONG KONG CONTEST
BUY NOW AND ENTER!

We've sold thousands of the superb Yaesu 'FRG's. Now there's a brand new model: the superb FRG-7700 . . . All mode (even FM) and a brilliant new design. Isn't it time you up-dated your communications receiver (FM is great with converters!)



Of course, the front panel is only half the story.
Take a look inside the new Yaesu FRG-7700 and you'll find a superb state-of-the-art circuit, giving you outstanding performance and ease of use.
And the really good news: the FRG-7700 is actually cheaper than the model it replaces.
A better receiver for less money!
And with the optional memory unit, the FRG-7700 gives you the ability to store up to 12 commonly used frequencies — recalled at the touch of a button! (It even holds them when the unit is turned off!)
The all-mode Yaesu FRG-7700 is the receiver for the 80's — a worthy successor to the world famous FRG-7 & 7000.

YAESU FRG-7700 RECEIVER

Cat. D-2840
P&P $5.50

$525

Terms available from $55 dep & 25.74 mth (24 months)

OPTIONAL 12 CHANNEL MEMORY UNIT Cat D-2842 $145.00. P&P FREE IF PURCHASED WITH ABOVE UNIT

DICK SMITH ELECTRONICS

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	162 Pacific Hwy	GORE HILL	439 5311
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	125 York Street	SYDNEY	290 3377
	263 Keira Street	WOLLONGONG	28 3800
ACT	96 Gladstone St	FYSHWICK	80 4944
QLD	166 Logan Road	BURANDA	391 6233
	824 Gympie Rd	CHERMSIDE	59 6255
SA	60 Wright Street	ADELAIDE	212 1962
VIC	399 Lonsdale St	MELBOURNE	67 9834
	656 Bridge Road	RICHMOND	428 1614
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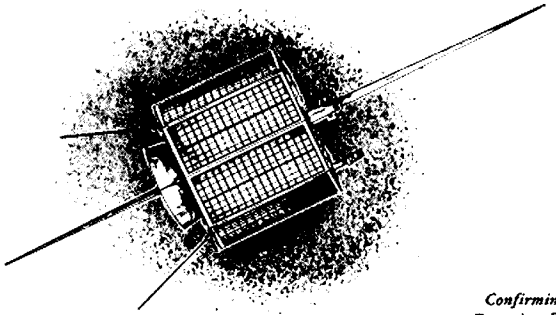

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Proprietor – ROY LOPEZ (VK2BRL)

QSP QSP QSP

Draft of Australian Table of Frequency Allocations

— How the Proposals affect Amateurs

The Minister for Communications has now released a Draft for public comment of the Australian Table of Frequency Allocations. A revision of the Table has been made necessary by the decisions of WARC 79. Each country, including Australia, will determine its own spectrum requirements within the framework of the ITU International Table. These proposals for a new Australian Table are of vital interest to Amateurs as that Table will finally determine the spectrum available to Amateurs in this country. The final date for comment is the 16th February, 1981 and Amateurs are urged to comment, not only to criticise proposals that are not liked, but also, and equally importantly, to support proposals that are attractive.

In describing the proposals, I shall indicate the present position of the WIA to those proposals.

THE BANDS BELOW 30 MHz

No changes are proposed to the existing bands at 80, 20, 15 and 10 metres. The only comment that the Institute would make in respect of these bands is to suggest that a small segment around 3.8 MHz to enable Australian Amateurs to seek international phone contacts would be desirable and may be practical.

Changes are proposed to the 160 metre band. At present the band 1800-1860 kHz is allocated to the Amateur Service on a secondary basis to Radionavigation. It is proposed that the band 1800-1825 kHz be allocated exclusively to Amateurs in Australia and the band 1825-1875 kHz be allocated to Amateurs as secondary to Radionavigation. The Institute supports the exclusive segment and the overall increase in the band.

The present allocation at 40 metres remains but with an increase from 7150-7300 kHz with the latter segment being on the basis of non-interference and is provided for by a new proposed Australian footnote. The Institute supports this proposal to increase the 40 metre band in line with the band available to Amateurs in New Zealand.

The new bands at 10.1-10.150 MHz, 18.068-18.168 and 24.890-24.990 MHz are provided for in the proposed Table. However, the Draft does not address itself as to when these bands will become available for use by Amateurs. The Institute believes that each of the bands should be available as from the 1st January, 1982. In addition, the Institute believes that the proposed footnotes should be recast to provide firstly, that no further assignments to the Fixed Service should be made in these bands and secondly, that existing assignments should be relocated as quickly as possible, it is suggested, by not later than the 1st July, 1984 in any event.

BANDS BELOW 960 MHz

A significant proposal for the 6 metre band is included in the Draft Table. It is proposed that the band 50-52 MHz be allocated primary to Broadcasting, secondary to Amateur with the band 52-54 MHz remaining exclusive Amateur.

The Institute does not believe that the present allocation to Channel 0 is sensible frequency management. However, the Institute recognises that that question involves a decision that will almost certainly be made independently of the question of the Australian Frequency Table and therefore the solution proposed must be strongly supported. It will, in particular, allow Amateurs to operate outside television hours on the band 50-52 MHz or to operate outside areas served by Channel 0 television transmitters.

No changes are proposed in Australia to the 2 metre and 70 centimetre Amateur bands. The Institute notes that the present footnote relating to the temporary Amateur use of the band at 576 MHz is not included in the Draft. This will be pursued. The greater utilisation of the 70 centimetre band is to be encouraged as a long term investment.

BANDS ABOVE 960 MHz

In conformity with the decisions of the WARC, the band will become 1240-1300 MHz.

Above this band no changes are made affecting the Amateur Service except in three respects. Fixed and Mobile are added to the already shared band at 2300-2450 MHz. The Institute believes that at least in the new Amateur Satellite band from 2400-2450 Fixed and Mobile should be deleted.

The Draft Table includes all the new Amateur bands above 40 GHz allocated by the WARC. The Draft also includes all the new Amateur Satellite bands allocated by the WARC.

Overall the Institute welcomes the Draft Table. It particularly welcomes the proposed expansion of the 160, 40 and 6 metre bands.

It is hoped that Amateurs will generally respond to the invitation to comment on the Draft Table. The Institute believes that it is important that the Amateur position is seen to have general support. Please consult your Federal Councillor for further information.

MICHAEL J. OWEN VK3KI ■

WIANEWS

DRAFT OF AUSTRALIAN TABLE OF FREQUENCY ALLOCATIONS

As already widely publicised, the draft table was released by the Minister for public comment on 22nd December 1980. Comments, generally in favour and/or with any specific suggestions, are required by the Department of Communications by 16th February at the latest. It will be to the future advantage of the amateur service if responses are submitted from as many amateurs as possible — in other words, the "numbers game".

— — — — — PLEASE RESPOND — — — — —

A copy of the draft table has already been sent to each Divisional Federal Councillor. As the printed copy of the draft tables extends to over 160 pages of script it is indeed a major work of its kind and therefore it is expected that copies will not be easily obtained.

PORTABLE WICEN REPEATERS

The DOC is prepared to authorise "portable repeaters" for WICEN use in the 2m and 70 cm bands subject to a number of conditions under current discussions with the WIA which made the initial approaches.

AMATEUR HANDBOOK

A number of amendments to the Handbook, Including some quite minor typographical error corrections and some changes since it was printed (e.g. third party concessions), are under discussion with DOC. At this time it seems doubtful if the number of amendments required would warrant a fresh printing of the Handbook.

KAA-KZZ SUFFIXES

Two days before Christmas news was received that some amateurs were being issued call signs in the series VKxKAA-VKxKZZ. This was confirmed on enquiry to Central Office and was in fact for-shadowed in WIANEWS in AR December 1980 under the heading "Joint Committee".

The new suffixes are obtainable on request by amateurs holding both Novice and Limited qualifications. It is understood the licence fee will be $15.00 per annum, the same as for full or limited licences. A new form of licence (RB94D) is to be used and it is assumed the holder will thereupon relinquish both his Novice and Limited calls for which he would be paying $25.00 per annum.

Special pro rata arrangements are to be applied when the holder of either a Novice or a Limited call qualifies for the other and requests a KAA-KZZ call.

The new form of licence is expected to state quite clearly that the holder of a KAA-KZZ call is not entitled to any additional privileges than he enjoyed with a Novice and a Limited call and that the two are not interchangeable.

NEW LEGISLATION

News has been received from the Department of Communications that preliminary work has commenced on the drafting of a Bill for introduction in the Parliament to replace the Wireless Telegraphy Act of 1905 and Institute comments have been sought by DOC.

LONG TERM PLANNING

Both VK1RH and VK4DT have submitted papers on the future of amateur radio in Australia and the long-range planning deemed desirable for its well-being through this decade. This question was raised at the 1980 Federal Convention and both these Councillors were charged with this preliminary work. Arrangements are being made for both these papers to be printed in AR to enable members to send comments to their Division (Federal Councillor) in good time before the 1981 Federal Convention early in May.

MISSING AR's

Last August it became evident from individual complaints that a substantial quantity of July Amateur Radio was not received in the general post code areas 4200 to 4400. Every month, almost without exception, a number of missing AR's have to be replaced somewhere in Australia. The letters of complaint about these were sent to the respective Divisions for their information after replacement copies were mailed out to members either direct at considerable extra expense or sent with the following month's issue of AR at the Category B rates of postage.

When it became clear that there was a "flood" of missing July issues, an investigation was initiated with Australia Post. All the address labels were in order. The mailing service confirmed that all copies of the July issue had been properly bagged and despatched. Nothing unusual could be found at the Melbourne end. The quantity of AR "overs" was normal. Nevertheless about 100 copies of the July issue were replaced. The Queensland Division was told about these matters and kept informed.

Section 5 of the Postal Guide sets out the procedure to be adopted for undelivered postal articles and therefore the mailing service was requested to advise the post office of receipt that an indeterminate number of July AR's in the general post code areas 4200-4400 appeared to have gone astray.

In dealing with the largely mechanical processes of labelling and processing magazines and their inserts for despatch by post, it is impossible to state that the despatch of the journal to any one particular individual is correct. When 100 or more disappear or when inserts are missing from 100 or more copies, something unusual has occurred. The Executive Office goes out of its way to minimise the scope for unusual happenings, taking into account the numbers of the different organisations involved with getting AR to you.

ANARTS AND RAOTC

In a letter from the Secretary of Australian National Amateur Radio Teleprinter Society, the President is notified as VK2ABH, the Secretary is VK2AHB and committee members are VK2AOE and VK2BVJ.

The annual dinner of the Radio Amateurs' Old Timers' Club (RAOTC) of Australia will be held on 5th March. The President, VK3ZS, advises that the guest speaker will be Mr. A. F. Guster or nominee) of the Satellite Policy and Co-ordination Division of DOC, Canberra. ■

Jamboree on the Air

Commissioner Noel Lynch VK4KNL
National Organiser, Jamboree on the Air

Australian amateur operators take a bow! Your contribution to the success of the 23rd Jamboree on the Air, held on 18th/19th October, 1980 was, as ever, magnificent and, on this occasion, it attained an Australian Jamboree on the Air record!

837 Amateur Radio operators in this country (606 in 1979) operated 397 amateur radio stations (280 in 1979) to achieve two new Australian records in this department. Your efforts combined with the tremendous enthusiasm of the Branch Organisers of Jamboree on the Air in each Australian State, to set an all-time record in participations — **20,190** Scouts, Guides and their supporters enjoyed the results of your contribution. Our previous best ever participation was during 1979, when 16,654 Scouts and Guides enjoyed the 22nd Jamboree on the Air.

As one who has been associated with every Jamboree on the Air since its inception 23 years ago, I have been continually amazed not only by the growth of this activity over those years but by the interest it continues to arouse each year. Certainly, not all the operators who commenced participation in JOTA in the first year of its inception, continue to take part, although many of these people still do, but it continues to attract new amateurs to this activity. The contribution of you all, whether old time participants or new amateurs enjoying JOTA for the first time, have ensured its success, for without you all, there never would have been any Jamboree on the Air either in this country or elsewhere in the World. So your contribution to international friendships both in scouting and amateur radio through JOTA could never be measured, but it must be enormous!

In 1982, Scouting celebrates its 75 years of Scouting throughout the world, and its 25th Jamboree on the Air. It is our hope that as many of you as have ever participated in JOTA over those 25 years will join with us again to make the 25th Jamboree on the Air really worthwhile, but most important, give us the opportunity to meet you all again and say thank you for a job well done.

As in previous years, the theme for this year's JOTA was set at the National Opening Ceremony at Government House, Canberra at 0400 GMT on Saturday, 18th October, when the Governor General and Chief Scout, Sir Zelman Cowen, formally declared open the 23rd Jamboree on the Air through VK1BP, the official amateur radio station of the National Headquarters of the Socut Association of Australia. Jim Jennison VK1JN and fellow members of the Royal Naval Amateur Radio Society again provided the technical expertise to get the function off to a good start, and despite adverse propagation conditions, all States reported in within the next hour to advise that Jamboree on the Air was well and truly under way in all the other States. Reports indicate that no fewer than **7368** amateur contacts between Scouts and Guides in all the Australian States and most overseas countries were logged during that weekend.

A new participant this year was a Scout station VK0KC on Mawson Base in the Antarctic where three Scouting leaders joined in the activities and logged many interesting contacts. Naturally, this station was much in demand from Australian Scout and Guide stations as well.

It may be of interest also to record that this year the participation by Australian Scout Groups was confirmed at better than 26 per cent of all Australian Scout Groups. Unfortunately figures for the Guide Companies were not available in this respect.

Queensland Scouts who had previously assisted in recovery of personal effects of the ill-fated crew at the crash of a wartime DC3 Douglas Dakota spent the weekend erecting a memorial on the site at Camp Carnarvon (in Central Queensland) and participating in JOTA.

There were legions of interesting contacts with overseas countries, but Scouts and Guides were disappointed that Scouts in many of these countries were not permitted to speak "on air".

The Novice licensees increase in numbers each year and more and more are joining with other grade licensees to make worthwhile contributions.

A **West Australian** Group received a May-Day call in the middle of their participation and were able to play an important part in alerting the responsible authorities and standing by until the rescue of a boat in distress off the coast was completed.

North Queensland Scouts and Cubs at 23rd JOTA.

Some interesting JOTA activities — in **Victoria,** many participants in JOTA joined in a constructional project to construct a light flasher unit — technically an astable multi-vibrator with two LED displays and approximately 1000 of these units were constructed successfully and proved very popular. Fox hunts (radio variety) were also included and proved very popular. A number of sea scouts spent the two days and one night sailing or rowing between their hall and the "Castlemaine", the World War II Bathurst Class Corvette, where they joined ex-Navy operators in making JOTA an enjoyable and memorable weekend.

A large carpet snake visited one Group of Girl Guides participating with a Western Australian amateur. It was not included in the official list of visitors to the shack reported by the Guides.

Space, unfortunately, does not permit a full account, but obviously Australian Scouts and Guides enjoyed themselves immensely, and their sense of indebtedness to the Amateur Movement is a profound one. I hope our very happy association in the past will continue on for many more years. Meantime the report of the Australian participation in JOTA continues to arouse considerable Interest in World

Scouting circles, and in the World Report on JOTA the report of the Australian participation, and the contribution made by Australian amateur operators, continues to occupy a very sizeable portion of that report.

In Scouting we have a quaint but very sincere way of saying thank you to our friends, or those who have helped us in any of our activities. It is a very loud **BRAVO!** to all Australian amateurs who helped us in the 23rd Jamboree on the Air, and made this such a successful year this time, we say an extra special and very loud **BRAVO!!!** ■

JOTA In Victoria

THE GATHERING ON THE MOUNT

The migration began Friday evening as the pilgrims settled in the village of tents on the slopes of hills of Maccelsfield. The leaders of this fine body of people were Kevin VK3BOE and Allan VK3VHS, who argued long and loud about the erection of a SCALAR SC33DX 3 element beam and the choice of which three bands to employ it on. Finally the beam was settled at 20 metres in the land of VK3SDU.

By the time the sun set the local generator was alive and the beam was tried on 15 metres, just in time for the VK-Europe net and immediately confirmed the wise choice of site for the weekend and the faith of Scalar in their beam on loan for the JOTA.

By the time the net closed the station had worked some 16 countries and the Venturer Scouts in attendance were suitably delighted. During the night the operators in attendance had a great time on 20 metres, working several JAs, Ws and mary Europeans until they fell asleep at 5 in the morning.

At 7 the cook had breakfast on the plate and several long faces surfaced for the day. By 10 a.m. the antenna was in full bloom with a Slim Jim/IC211 going flat chat with LINDSAY VK3BRV in command and KEVIN VK3ASM on a 4 element endfire on 10/15 and a FT101Z giving the first group of Girl Guides a fine chat around the countryside.

Meanwhile the terrible two (Allan and Kevin) were attempting to erect a monster rhombic, something around 585 metres long, which was finally completed around late afternoon.

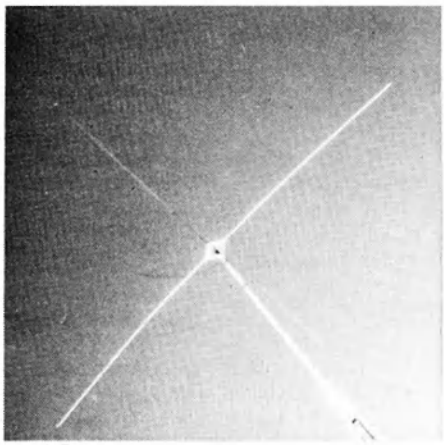
By the 8 o'clock whistle we let the last of the 120 visitors depart and turned our thoughts to the rhombic. Would it WORK? The answer was provided by OH2BBR, who thought 5 and 9 plus 20 was OK. We think it marvellous!

On Sunday BARRY VK3NXX and 120 Scouts and Guides arrived and all had a most enjoyable day, the last group leaving at 5 p.m. By the time the strategic withdrawal was complete the clock had reached 9 p.m. and many tired but happy operators crept home.

On the Mount — Alan VK3VHS and Kevin VK3BOE with Guides Vicki Fisher and Ruth Starkey.

The weekend was an outstanding success because of many factors; firstly, each operator had time for every person in the tent as the visitors were split into three operating sites with 10 to 12 in each tent, thus allowing each person to have a chat with the contacted station. Secondly, the site was one which was in the spirit of Scouting, that is a portable station in a tent on top of a mountain. And lastly the Scouts were involved in the settng up, antenna building, accommodation and paper work of operating an amateur station. ■

And in S.A., Salisbury District with 1st Manor Farm Troop.



And Flashback to 1979 at Kalgoorlie, W.A.: The VK2ABQ beam used for JOTA.

Bill VK6NDZ with Scout Trevor Spence.

An Automatic CQ Caller

H. Denver VK3AHQ
36 Deanswood Rd., Forest Hill 3131

If you are a CW operator and dislike the drudgery of frequent CQ calls then here is a gadget that will do the task for you. This article describes the theory behind the design of the instrument, its programming and operation. Annexes at the end of the article give further details for both beginner and expert. Although the system was devised in 1977 it is still a useful design.

There are many ways by which automatic transmission of CW signals can be achieved, ranging from rotating discs, with notches representing the CW characters, to complex and very expensive solid state keyers. The circuit described here can be built for about $12. It is a particularly valuable instrument for contest operators as 500 QSOs represent some 1000 CQ calls.

The heart of the system is a Programmable Read Only Memory (PROM) integrated circuit. The block diagram is shown in Fig. 1. A PROM is a device that can store a large number of bits of information and is described in more detail in Annex 1. Beginners should read this before reading further.

The message for transmission is stored in the PROM and once placed there cannot be altered so be sure that you are decided on what you need. A Harris 7611 1024 bit PROM was selected because of ease of programming, price and availability. Other types now available may be just as suitable.

The CW speed is variable. It is set by the frequency of an astable multivibrator using a 555 which produces a square output. This is shown in Fig. 2. The output pulses are called clock pulses.

A clock frequency of 25 Hz yields CW at about 18 w.p.m.

These clock pulses drive two binary counters which provide sequential scanning of the PROM address rows. A four-line-to-one-line multiplexer sequentially selects one of four columns and provides a serial output to operate the transmitter keyer. The multiplexer advances one column every time the cascaded 7493 modulo 16 counters reach their maximum count. These counters are advanced on each negative-going clock transition. A third 7493 is used to drive the multiplexer.

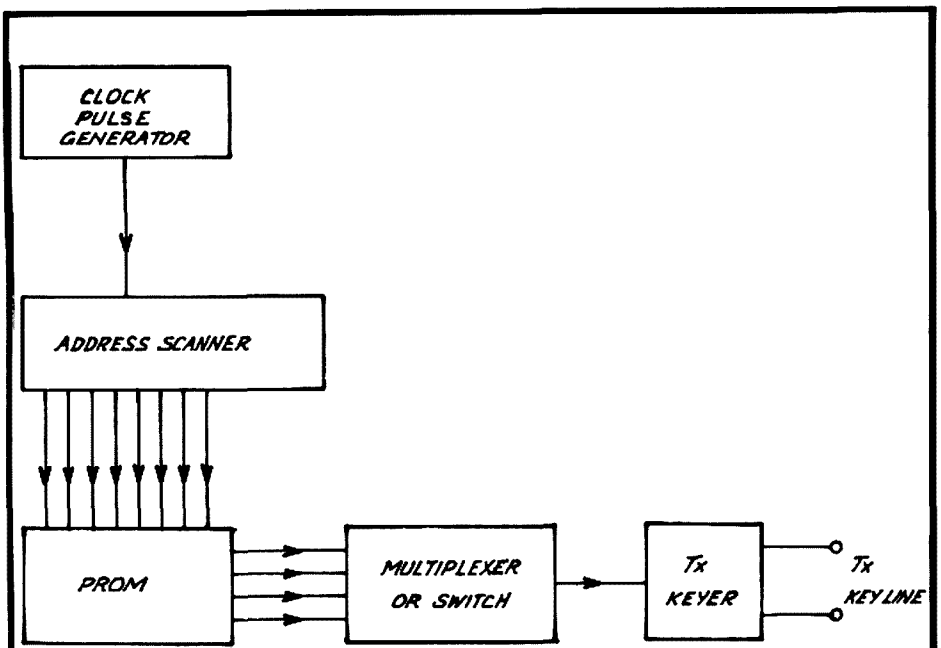


FIGURE 1: Block diagram of automatic CQ caller.

The counters start at 0 and count up. As their outputs are connected to the PROM's address lines it is read in order of ascending addresses. The serial data has the form of a continuous stream of "0" or "1" levels, these being the data stored in the PROM addresses being scanned.

Ten LEDS are used to display the address being interrogated. Although not necessary for normal use they are essential for programming.

The prototype was programmed with "CO CQ CQ DE VK3AHQ" in column 1 or output one and "CQ TEST TEST DE VK3AHQ K" for output 2. The multiplexer was not used and a rotary switch used instead to select one of the four available columns. That part of the circuit to the left of the dotted line was omitted. (See Fig. 2(b).)

In any case you may prefer manual rather than sequential message selection.

For details of programming refer to annex 2.

A separate sidetone oscillator using a second 555 oscillator may be added. Rv is reduced to 10k ohm but the circuit and components remain the same as for the clock oscillator.

Layout is not critical and the entire unit can be fitted on a four inch square piece of Veroboard.

The author will be pleased to answer any correspondence relating to this unit.

ANNEX 1

THE PROM AS A CW MEMORY

A PROM is an electronic memory device constructed on a single chip of silicon. Its operation is analogous to that of the "pigeon-hole" filing system. These are shelves with vertical dividers to form an array of boxes in rows and columns. These can be numbered so that any box or cell can be located by a knowledge of its row and column number. The combined number becomes the cell's address by which the cell may be found and its contents read. For example the address 120 could refer to the cell in column 1, row 20.

The PROM used in this article has 256 rows and 4 columns. The information that can be stored in each memory cell is rather meagre compared to the pigeon-holes. Instead of a sheaf of papers the PROM stores either a high voltage state or a low voltage state. A high state is equivalent to a voltage between 2.5 and 5V, a low state is equivalent to a voltage between 0 and 0.8V. Once a memory location in a PROM has been filled or written in by the process called programming it cannot be changed. The high and low states are usually represented by a figure 1 and a figure 0 respectively.

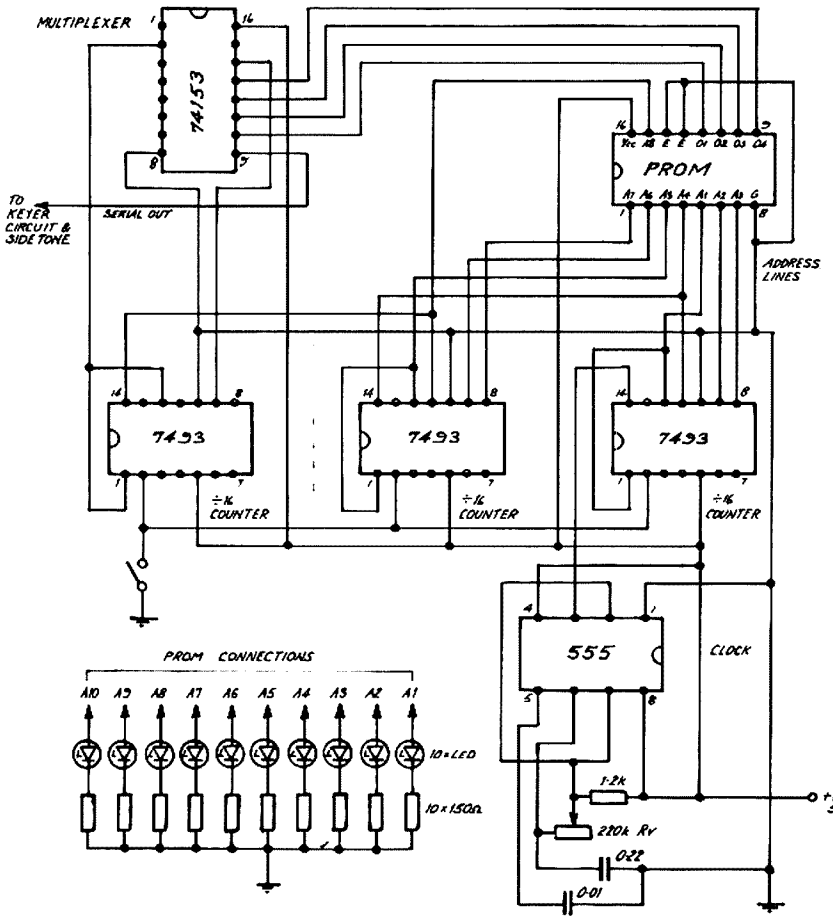


FIG. 2(a): Circuit diagram of automatic CQ caller with automatic sequential election of 4 messages. See text re components to left of dotted line.

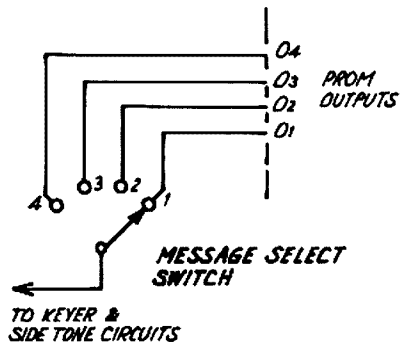


FIG. 2(b): Modified circuit for manual selection of 4 messages.

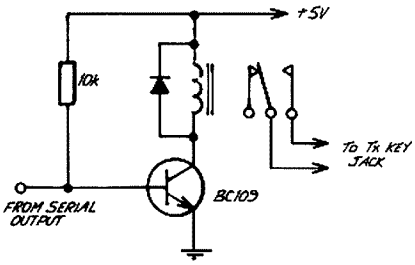


FIG. 3: Suggested keyer circuit.

Once programmed a PROM address location's contents can be read by presenting the address to the PROM in appropriate digital form. The contents of the address appear at the output terminal and the memory can be read again and again without affecting the contents or stored programme.

The matter of translating the 0 or 1 output from the PROM is simple. The 1 output can be used to key the transmitter on and the 0 to open the key. A dot can thus be represented by a 1 and three sequential 1's make a dash. Spaces are made up of 0's. If the memory locations are scanned at a fixed rate then perfect CW is produced, assuming perfect programming of the PROM.

For the PROM used, programming is achieved by burning out tiny fuseable links inside the PROM to provide 0's at selected locations. Refer to annex 2.

The PROM has input connections to accept memory address information. All the necessary decoding and other operations such as signal buffering are built into the integrated circuit. There are four output lines, one for each row.

The preceding descriptions of memory location and reading were simplified to allow the essence of operation to be grasped. In practice for this PROM the stored data is present on the four terminals representing the four rows and only eight input lines are used to select the 256 columns. A binary number code is used to select the columns. The first column requires all 8 lines to have 0 applied. This is represented by the binary number 00000000. The second column requires a 1 represented by 00000001. That is a 1 in the least significant line and 0's on the others. The first five columns are selected by the following binary numbers or codes applied to the 8 lines.

Column	Code
1	00000000
2	00000001
3	00000010
4	00000011
5	00000100

If we were to rename the first column the "zero" column and the next the "one" column, etc., then the column number becomes the decimal equivalent of the binary code required to address it. This can be seen as a simple procedure using binary notation for decimal numbers from 0 to 255. Thus a pulse generator feeding a binary counter with a capacity of 255 counts could be used to produce the signals to automatically and sequentially scan all columns. It should be noted that the data for each of the 4 rows is simultaneously present at four outputs and a switch or similar device is required to select the appropriate message or part of a message in the desired sequence. A 4 line to 1 line decoder or 4 line multiplexer is a suitable IC to scan all 4 rows.

ANNEX 2

PROGRAMMING THE PROM

The programme

The programme to be used must be decided upon and a plan made of where the 1's and 0's are to be stored. This plan when drawn on paper is called a Truth Table. It shows both memory locations and data. The memory locations will later be selected and a link blown out if a 0 is required there. As the PROM is initially filled with 1's nothing is done unless a 0 is required. A long roll of paper or 10 sheets of A4 paper glued end to end is obtained; it is marked out so as to have 256 lines and 11 columns as shown in Fig. 4. The first column shows the memory address in decimal notation. Number these from 0 to 255, the next 8 columns repeat

this number in binary form. If you are not very familiar with the binary system proceed as follows. The first column has 128 0's followed by 128 1's. The second column has 64 0's followed by 64 1's followed by 64 0's followed by 64 1's. The third column has the same pattern but it repeats after 32. The fourth column has a 16 pattern and the fifth an 8 pattern and the sixth a 4 pattern and the seventh a 2 pattern, while the eighth alternates starting at 0, as do all these columns.

The paper can now be turned sideways and the CW message marked in column 10. A blank indicates a space or key up and an X a dot and XXX a dash. The spaces represent 0's to be burnt in later. A dot is one space duration so leave 1 space between elements of a CW character, 3 spaces between characters and 7 spaces between the words. For clarity the message can be spelt out in the last column. When this step is finished the next step is to programme the PROM.

Programming

Mistakes cannot be corrected after programming. A new PROM will be required so check your programme and proceed carefully. The manufacturers of most PROMs. specify an elaborate procedure and the author cannot guarantee that his simple method will work with other ICs.

Dec. Add.	Binary				Address				Program	Message
0	0	0	0	0	0	0	0	0		
1	0	0	0	0	0	0	0	1		
2	0	0	0	0	0	0	1	0	X	
3	0	0	0	0	0	0	1	1	X	
4	0	0	0	0	0	1	0	0	X	
5	0	0	0	0	0	1	0	1		
6	0	0	0	0	0	1	1	0	X	C
7	0	0	0	0	0	1	1	1		
8	0	0	0	0	1	0	0	0	X	
9	0	0	0	0	1	0	0	1	X	
10	0	0	0	0	1	0	1	0	X	
11	0	0	0	0	1	0	1	1		
12	0	0	0	0	1	1	0	0	X	
13	0	0	0	0	1	1	0	1		
14	0	0	0	0	1	1	1	0		
15	0	0	0	0	1	1	1	1		
16	0	0	0	1	0	0	0	0	X	
17	0	0	0	1	0	0	0	1	X	
18	0	0	0	1	0	0	1	0	X	
19	0	0	0	1	0	0	1	1		
20	0	0	0	1	0	1	0	0	X	
21	0	0	0	1	0	1	0	1	X	Q
22	0	0	0	1	0	1	1	0	X	
23	0	0	0	1	0	1	1	1		
253	1	1	1	1	1	1	0	1		
254	1	1	1	1	1	1	1	0		
255	1	1	1	1	1	1	1	1		

FIG. 4: Programme Truth Table. Memory locations without X in have links burnt out.

The circuit diagram in Fig. 2 shows the PROM in the read configuration. For programming it must be in the write configuration. Disconnect the PROM's Vcc terminal from the +5V rail and attach a lead. It will need connection to +11V for programming. Disconnect the two E terminals from 0V and connect them to +5V. Select the output line to be programmed as an 11V pulse must be applied to these as well.

The counter must now be stepped to the first address where a 0 is required. The LEDs will display the binary address, as shown in the Truth Table. A low leakage 10 uF capacitor across the 0.22 uF timing capacitor wil slow the clock, it will advance about 1 address per second. A switch in the 5V line will be required to disable the clock during the next phase. Check that the right address has been located as indicated by the LEDs.

Switch the PROM's Vcc lead to +11V and flick on +11V to the selected output and switch off the 11V to Vcc as quickly as possible. The selected location now has a 0 indelibly programmed into it. Advance the count to the next location where a 0 is needed and continue the burning in. Once completed restore the circuit to the read state and it will be ready to go. ■

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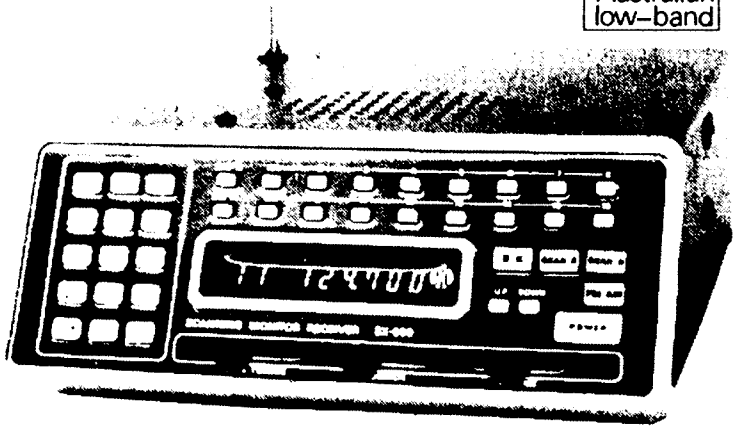

SPECIFICATIONS

Type:	FM & AM
Frequency Range:	a) 26-57.995 MHz Space...5 kHz b) 58-88 MHz Space...12.5 kHz c) 108-180 MHz Space...5 kHz d) 380-514 MHz Space...12.5 kHz
Sensitivity:	FM....a) 26-180 MHz 0.4uV S/N 12 dB b) 380-514 MHz 1.0uV S/N 12 dB AM ...a) 26-180 MHZ 1.0uV S/N 12 dB b) 380-514 MHz 2.0uV S/N 12 dB
Selectivity:	FM.....More than 60 dB at —25 kHz AM.....More than 60 dB at —25 kHz
Audio Output:	2 Watts
Ant Impedance:	50-75 ohms Whip or External Antenna with LO/DX Control (20 dB ATT.)
Freq. Stability:	26-180 MHz ... Within 300 Hz 380-514 MHz ... Within 1 KHz
Dimensions:	210 (W) x 75 (H) x 235 (D) mm 8-1/4 (W) x 3-1/4 (H) x 9-1/8 (D) in.
Weight:	2.8 Kgs.
Clock Error:	Within 10 sec./month
Memory Channel:	16 Channels
Scan Rate:	Fast .....8 Channels/sec. Slow .....4 Channels/sec.
Seek Rate:	Fast .....10 Channels/sec. Slow ..... 5 Channels/sec.
Scan Delay Time:	0 or 4 sec.

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PART THREE

POWER SOURCES FOR HAND-HELD/ BACK PACK GEAR

Having described the way in which the Palomar PTR130K or the Yaesu FT7 or 7B can be used as a "hand-held" system providing world-wide coverage, the newcomer can easily adapt an inexpensive modified CB transceiver in much the same way for good effect on 10 metres.

Continuing this series we will look at two power sources so that experimenters can take to the streets and outside countryside with whichever unit has been adapted.

(1) GEL-TYPE RECHARGEABLE BATTERIES

By connecting two 4.5 or 5 amphour 12 volt gel type batteries in parallel a capacity of 9 or 10 amphours is obtainable. This would power a medium or high frequency hand-held/back pack unit for the duration of an active on air two-day holiday.

Cement the two gel type batteries together with Araldite and place them into a small over-the-shoulder carry-case (available from disposal stores). For hand-held or over-the-shoulder units the battery pack can be slung over the shoulder. For back pack use the small battery pack can be strung across the H-pack frame and a strap (available from disposal stores) can secure the pack to the transceiver to prevent movement while in motion.

Gel type batteries, unlike acid types, can be used in any position and no spillage will occur. Their cost is $38 each and mine have recharged and performed over the last year without mishap. They are lightweight and compact. Available from David Reid Electronics, York Street, Sydney.

The circuit in Fig. 1 protects your investment and continued operation.

DIODES ALL IN5408 OR SIMILAR

Three levels of protection —

1. Excess current blows the fuse in the battery line.
2. Diodes in parallel isolate one battery from the other. In case one should malfunction, they prevent one battery discharging into the other.
3. Two diodes in series to each battery isolate it from the other during the charging process. They also prevent the batteries from discharging via the charger.

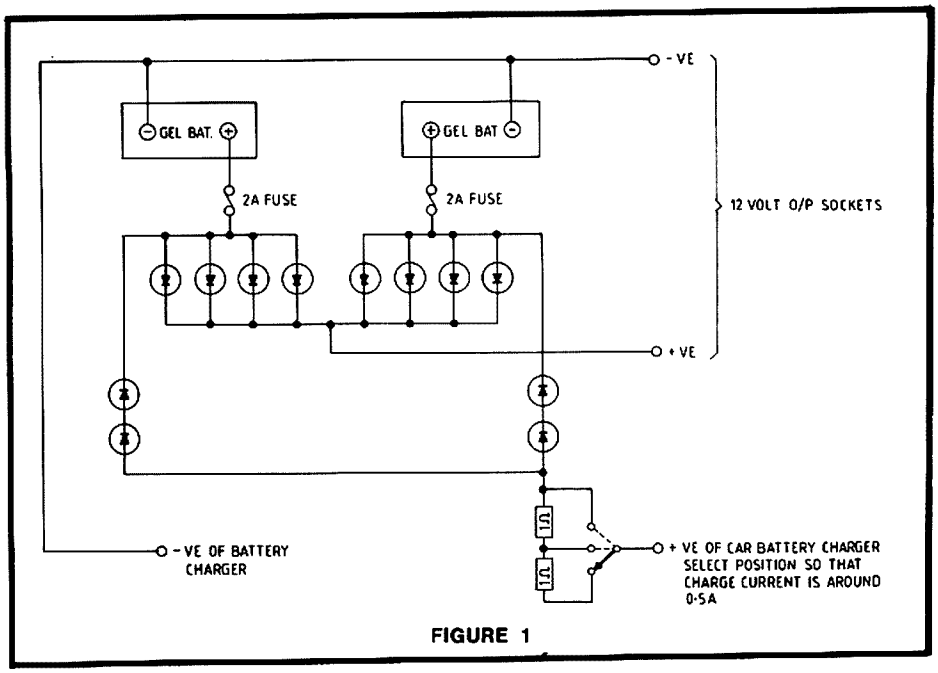

FIGURE 1

Battery charge rate is 250 mA so for two gel types in parallel we require a charging current of 500 mA.

After 20 hours the batteries should be fully recharged.

OPERATION

HF operation time could be greatly increased except that on the HF units used key down with no output draws around 1 ampere or more. The result is eventually that the battery will supply the HF 250 mA receive current OK but will cause frequency shift on transmit. Now will be the time when you get the 2 metre hand-held and announce you are listening on 28.5 MHz or 1.825 MHz for crossband contacts with your hand-held MF, HF, VHF combination.

(2) THE HONDA ED300 PORTABLE 12V DC PETROL GENERATOR

For field base camp operation as well as battery charging which may be required when weeks of outdoor field operation is being considered the Honda ED300 generator has been found easy to carry, has low audio noise output reliable starting and performance and is physically compact.

Two 12 volt models are available. The one including 240 volts only provides 11 amps at its 12 volt output.

The one I chose provided 6 volts at 11 amps (66 watts), 12 volts at 17.5 amps (230 watts) and 24 volts at 11 amps (300 watts).

Length x width x height: 355 mm (14 in.) x 250 mm (9 in.) x 325 mm (12 in).

Weight: 18 kg (39 lb.).

Engine type: 4 cycle, side valve, one cylinder, forced air cooled.

CDI Ignition.

Oil capacity: 0.3 litres.

Fuel tank capacity (standard): 2 litres.

Spark plug: BPMR-6A (NGK).

Cost of the unit was around $460 from Highway Motorcycles, 817 Pacific Highway, Gordon, NSW 2072.

The following regulator was used to power the Palomar PTR130K to its full 100 watt power level during a week long holiday on top of Mount Coot-tha overlooking Brisbane.

12V 15A REGULATOR

To minimize no huge drop and achieve separation between the generator and the station use 12 lengths (6 for the negative lead and 6 for the positive lead) of 24

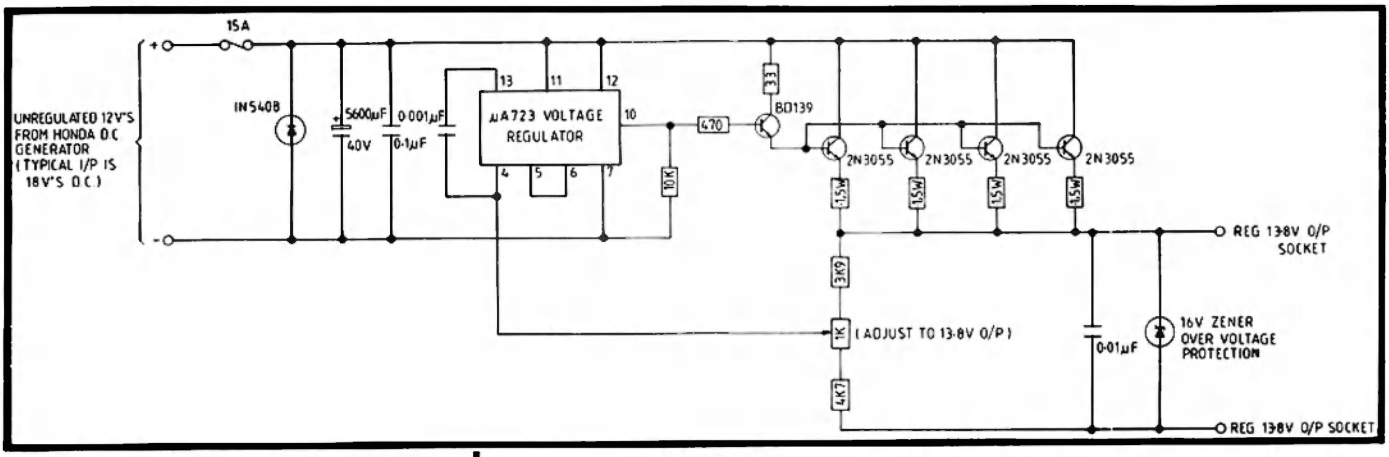

FIGURE 2

strand plastic covered wire 26 feet long separating the generator from the regulator.

Construction can be centred on a die-cast box 190 mm wide, 55 mm high and 110 deep, with suitable heatsinks for mounting the four power transistors on to the box.

Adjust the 1K preset pot for 13.8V output.

OPERATION

After the regulator and generator were subjected to sand, rain and salt water, covers were removed (the generator comes complete with a tool kit mounted on the unit), all sections washed and cleaned dry, including rectifiers and spark plug. Soon the system was back in action producing the moving electrons our gear required. ■

Author Sam Voron adds some photographic evidence of his Amateur and Citizens Radio Club's public relations in Sydney during 1980.

ANZAC Day march, Sydney. 2m set and HF Palomar PTR 130K operating during the Club's radio patrol.

Display at Lindfield, N.S.W., with the ⅝ wave 10 metre ground plane as centrepiece.

Display at Chatswood, N.S.W., Council Chambers during a local Festival week.

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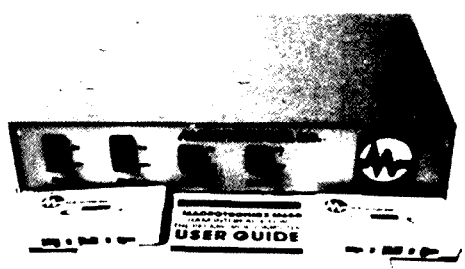

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Transmitter: *Modes–CW(A1)/ RTTY (F1)/SSB/USB/LSB/AM Output Power–SSB10w-100w PEP continuous operation. AM 40 w. CW,RTTY 10w-100w*

Receiver: *System–Quad. conversion superhet. with continuous bandwidth control. Sensitivity–less than 0.25 microvolts for 10 dB S + N/N. Audio output–more than 2w.*

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AR AWARDS

The Publications Committee has pleasure in advising the names of the recipients of awards for 1980.

☆

HIGGINBOTHAM AWARD

To be announced later.

☆

TECHNICAL AWARD

Mr. Ian Glanville VK3AQU, for his article entitled "The DJ4LB ATV Transmitter as the Basis for a 70 cm SSB Transverter", in April AR. Worth $50.

☆

ASJA
(Al Shawsmith Journalistic Award)

Mr. Eddie Rooms VK4AER, for his articles entitled "Amateur Radio for the Cruising Yachtsman", in July and August issues of AR. Engraved plaque plus $15. ■

Amateurs in the News

From Yorke Peninsula Times

TV INTERFERENCE TRACKED DOWN

KADINA — For several months many Channel 10 viewers have been annoyed by reception problems, caused by a faulty antenna in the town.

Last week the source of the trouble was tracked down and rectified by a technician from O'Connel's Electronic Services, Jim Baker.

Jim, who is an amateur radio operator, has been suspected by neighbours of causing the nuisance and says he is tired of people knocking on his door at all hours of the night to complain.

O'Connel's had also had numerous complaints from people who thought the fault was in their own television sets.

The store allowed Jim time to track down the offending antenna. This he did by attenuating antennae input to a portable TV set in his van, and driving round Kadina streets and lanes in a diminishing circle to find where the interference was strongest.

After approximately two hours Jim located the trouble at a home in Ewing Street, where the TV antenna wasn't connected correctly to the booster. It took him only a matter of minutes to adjust the antenna, free, as a service by O'Connell's to the community. ■

FIRST FOR AUSTRALIA

Mid-north amateur television enthusiasts have recently installed the first wind powered amateur television repeater in Australia.

The repeater, the result of 11 months of designing and construction, under the supervision of project co-ordinator, Jim Baker of Kadina, is situated in the Hummocks in grazing country without roads, power or running water. With the aid of air navigation charts and the assistance of Snowtown farmer, Sid Carter, a suitable site was located 1250 feet above sea level, approximately four kilometres south of Illawarra Hill and eight kilometres west of Snowtown. Property owners, Bill and Judy Whiting, have signed a 10 year lease allowing use of the site in exchange for a receiver converter so that they could view the television.

With mains power unavailable, the problem of a power supply was overcome by the use of a freelite generator, donated by Mr. Fred Paulson. It has been installed in such a way that the blades clear the ground by two feet. In order to prevent accidents occurring to bushwalkers or stray animals, it has been surrounded by a barbwire fence.

Assisting in the project were Kadina amateurs Ian Bull and Ian Philbey; short wave listeners Larry Youngberry, Kadina, and Sid Carter, Snowtown; as well as other amateurs from Port Pirie, Clare, Cowell and Whyalla.

The repeater housing was originally a four foot square water tank, donated by Bill and Judy Whiting. It had to be fitted with a locking access hatch, an additional galvanised roof and a three inch thick concrete floor. The housing was insulated and fitted with a six inch flue, capped by a six inch wind driven exhaust fan.

A regular viewer of the group's broadmast is Mr. Ian Kirk, of Merriton, who receives a transmission on his standard UHF television set. ■

WIA

FEDERAL EMC CO-ORDINATION

- **Tony Tregale VK3QQ,** is the Co-ordinator
- Do you have any interference problems? (power-line, TVI, AFI, etc.)
- If so, send details to:

VK3QQ — QTHR
or via
WIA Executive Office, Box 150, Toorak 3142

FORWARD BIAS

VK2 MINI BULLETIN

COUNCIL REPORT

In February last year, a NSW member applied, at a cost of $3, to Campbelltown City Council (CCC) for permission to erect a commercial 17m guyed steel tower for amateur use. The member, Mai Martyn VK2VWG, was advised that it was necessary "to obtain development consent from Council's Town Planning Department". Mr. Martyn then submitted a Development Application, at a further cost of $20. In April, CCC replied that the application had been refused on the grounds that the tower would be "out of character" with the residential area, an "intrusion on the streetscape", "contrary to public interest in that it would create a precedent . . . for high elevation two-way radio masts within a residential area" and "a nuisance to the surrounding neighbourhood by way of transmission".

In June, Mr. Martyn wrote at length to CCC and asked that his application be reconsidered. CCC resolved at its July meeting "to adhere to its previous decision". Mr. Martyn then wrote to the NSW Divisional Council asking for assistance. In July, Divisional Council wrote to CCC querying the requirement for Town Planning approval as the hobby of amateur radio is recognised in law as a domestic pursuit. Divisional Council quoted two Victorian Appeals Tribunal decisions of 1975 and 1978. CCC replied in August that they would reconsider the application after Council's solicitor had given legal opinion. In September, CCC resolved to defer the application in order to (1) advertise it, (2) to write to neighbours, and (3) to allow time for the applicant to demonstrate that the tower would not "adversely affect radio and television reception in the neighbourhood". Divisional Council wrote again in September, pointing out that the operations of licensed amateurs are subject to international and federal laws, quoting relevant sections from the "Amateur Operator's Handbook".

In November, CCC informed Divisional Council that they had received nine written submissions objecting to and one in favour of the proposed tower, and a petition containing 68 signatures also objecting to the development. CCC resolved that development consent was required, and again rejected the application on the same grounds quoted in the April letter. Mr. Martyn informed Divisional Council that he would appeal to the Land and Environment Court. This court has only been in existence since 1st September, 1980, and prior to that date, appeals would have been made to the Local Government Appeals Tribunal.

The Land and Environment Court is different from the Appeals Tribunal in that it handles more matters (e.g. those of the former Land and Valuation Court and some District and Supreme Court matters, as well as Local Government Appeals), witnesses must be sworn in and a judge presides. (Appeals Tribunals were presided over by a Chairman and Town Planners.)

At its November meeting, Divisional Council decided to launch an appeal fund to assist Mr. Martyn. Council regards the appeal as a "test case", there being no precedent, to Council's knowledge, in NSW in either the Land and Environment Court nor the former Local Government Appeals Tribunal. Council donated $100 to the appeal, and to date (6/1/81) donations have been received from G. Campbell $20, C. Sloane $15 and Liverpool ADARC $25. The results of this appeal, whichever way it goes, may affect all future amateur tower applications in NSW. Any member who would like to support Mr. Martyn financially is invited to send donations to the NSW Division with cheques written out to the WIA.

Council has approved applications for three VHF and two UHF repeaters: Coffs Harbour 6650, South West 7100, Shoalhaven 7200, St. George 8175 and Gladesville 8475 (test system). These approvals were given subject to provisos of the Repeater Sub-committee.

Council has declared over $500 worth of AOCP course materials missing presumed stolen. The three boxes of missing books were stored in the basement at Atchison Street last May. If any member knows of anyone selling or using NSW WIA OACP books which have not been purchased from either the personal lecture classes or the correspondence course, please notofy either North Sydney Police Station or the Divisional President. Subsequent to the theft, the lock to the basement area has been changed.

Council appointed **W. Watkins VK2DEW** as Alternate Federal Councillor for 1981, and confirmed the appointment of **T. Mills VK2ZTM** as Federal Councillor for the NSW Division.

Any group or club which would like postcode printouts of amateurs living in specific areas for a genuine reason is Invited to send a request to the Divisional Secretary enclosing a $5 processing fee.

Council has resolved to name the classroom at 14 Atchison Street, Crows Nest, the "**Cec Bardwell Classroom**" in recognition of the 20 continuous years of lecturing provided by Cec for the Institute.

Divisional Council will give recognition to the highest NSW club scorers in the 6 and 24 hour sections of the John Moyle Memorial Field Day. A trophy, enscribed with the names of the winning clubs, will be on permanent display at the Wireless Institute Centre.

Council decided that the Fouth Conference of Clubs will be held on Sunday, 24th May, at Goulburn. Goulburn Amateur Radio Club will be hosting the Conference.

The Division Auction held last November realised $237.

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DURAL REPORT

From Acting OIC **Jeff Pages VK2BYY.**

Work is continuing on the audio/control system. The wiring between the transmitter hall and the engineering is complete and in use. The engineering console should be operational by the end of February. A new tape deck has been bought for use in the broadcasts and for social events. The new duplexer for the 70 cm repeater is now in use. Thanks to **Ross VK2ZRU** for donating the duplexer. The repeater, on a frequency of 438.525 out, has a time-out period of 3½ minutes and feeds 10W into a 6 dB colinear at 33m. The repeater now operates from the 2m repeater's batteries and thus will continue to operate in the event of a mains failure.

The 10m beacon is now operational in the low end of 10m and feeds 25W into a ringo at 20m. The beacon idents with VK2WI sent using FSK. By the time you read this, the permanent frequency for the beacon may have been allocated. 6 and 2m SSB solid state transceivers for the broadcast are being built. Work is expected to commence shortly on a 160m AM transmitter. A spare AM transmitter donated to the Institute in December last may be used for this service.

Full time broadcasts from Dural should be possible once the new studio is completed some time in March. The response to the request for operators has been good. If you'd like to volunteer as either an engineer or announcer, please notify the Divisional Secretary either by phone or letter.

Details of three clubs affiliated with the NSW Division.

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COFFS HARBOUR AND DISTRICT AMATEUR RADIO CLUB

Box 655, Coffs Harbour 2450.

Nets: Mondays 8 p.m. on 3610 kHz using VK2BMK.

Meetings and classes: 7 p.m. Wednesdays at Orara High School.

President: **M. Francis VK2BMK;** Vice-President: **B. Telfer VK2DDU;** Secretary: **D. Harding VK2YWI;** Other Committee: **M. Nally K2VZJ, E. Collins VK2VRC, B. Slarke VK2ZCQ,** H. **Schumacher VK2DGV.**

Repeater: VHF proposed frequency of 6650, test site at Bellingen.

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WESTLAKES AMATEUR RADIO CLUB

Box 1, Teralba 2284.

Nets: Thursdays 8.30 p.m. on 3565 and 28475 kHz using VK2ATZ. Sundays following relay of Divisional Broadcast on 1812.5 kHz AM, using VK2DCW.

Meetings: Directors' meetings usually last Saturday at 4 p.m., at club rooms, York Street, Teralba.

Classes: Tuesdays 6.45 p.m. NAOCP, 8.45 p.m. CW. Wednesdays 7 p.m. AOCP or other, 8 p.m. Prac. Saturdays 2 p.m. NAOCP. All at club rooms.

Chairman of Directors: K. Howard **VK2AKX;** Secretary: **E. Brockbank VK2ZOP/VLX;** Other Directors: **J. McLachlan, M. Hall VK2DCW, D. Pearson VK2NLM, G. Taylor.**

Repeaters: VHF VK2RTZ channel 7100 approx. 5W, in Wattigan Ranges, about 50 km SW of Newcastle. UHF under construction. Proposed site New Lambton.

Newsletter: WARC Newsletter published monthly.

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HORNSBY AND DISTRICTS AMATEUR RADIO CLUB

Box 362, Hornsby 2077.

Meetings: 1st and 3rd Wednesdays, 8 p.m., at Normanhurst West Progress Association Hall, cnr. Sefton Road and Lockerbie Street, Normanhurst.

President: **D. Ramsay VK2YLX/NOB;** Vice-President: **N. Eichhorn VK2AOH;** Secretary: **D. Scott VK2YME;** Other Committee: **G. McCulloch VK2BMZ, C. Williams VK2YMW, D. Campbell VK2DAC.**

Repeater: VHF VK2RNS channel 72750, approx. 20W, at Hornsby, 25 km NSW of Sydney.

Morse Beacon: VK2RCW channel 7400. 24 hour operation, sending various speed morse generated by a 2650 microprocessor. Located at Normanhurst, 25 km NW of Sydney.

FIELD DAYS

Central Coast Amateur Radio Club extends an invitation to all interested in amateur radio to attend the club's 24th Annual Field Day on Sunday, 22nd February, at the Showground, Showground Road, Gosford. Events include HF and VHF scrambles (8 a.m. to 8.30 a.m.), 2 mobile foxhunts on 28.45 and 146 MHz, children's events, junior and open pedestrian foxhunts (144.4-144.7 MHz AM), 2 quizzes, disposals from 10 a.m., raffles a ladies' stall and many excellent trade displays. Free tea and coffee will be available all days to those who register. There will also be outings to the Reptile Park and a bus tour. Lunch may be bought at the food bar. Prize presentations will be at 4.15 p.m.

Liverpool and Districts Amateur Radio Club are pleased to announce their 2nd Annual Field Day, to be held on Sunday, 22nd March, at Catherine Fields Community Hall, Catherine Fields Road, Catherine Fields. Turn right off the old Hume Highway, 16 km W of Liverpool. Map reference UBD 106 E3, Gregory's 143 D6. The first two events will be an all-band HF scramble from 8.45 to 9 a.m. and a DF mobile foxhunt on 28.3 and 146 MHz from 9.30 to 10 a.m. Other events include 2 junior, 2 senior and 1 open pedestrian foxhunts on 144.47 AM, a 2 Tx mobile DX foxhunt on 28.3 and 146 MHz, a 10, 2 and 70 cm talk in foxhunt (439 MHz), an observation trial, children's audible beeper hunts, colouring and crossword competitions, 2 quizzes (technical and general), a VHF scramble (repeaters allowed) and a "Meet the People Contest". Disposals will operate all days, as well as trade displays. Free coffe and tea all day. Lunch, drinks, lollies, etc., can be purchased at the site. Barbecue facilities also available. The prize giving and drawing of raffles will be at 4.20 p.m. All are welcome to enjoy a pleasant family day in country surroundings. Contact the Secretary at 105 Willan Drive, Cartwright 2168, or phone (02) 607 0730 for further details.

COMING EVENTS

22nd February (Sunday): Gosford FD.

26th February (Thursday): Close of agenda for AGM.

7th March (Saturday 10 a.m.): Close of nominations for 1981 Council NSW WIA.

22nd March (Sunday): Liverpool FD.

28th March (Saturday 10 a.m.): AGM of NSW Division.

24th May (Sunday): Fourth Conference of Clubs at Goulburn.

News for inclusion in the VK2 Mini Bulletin must reach Box 123, St. Leonards 2065, by the 1st of the month prior to publication. ■

QRK5

A monthly transmission from the Victorian Division WIA.

Written and co-ordinated by VK3WW, QTHR.

A TRANSMISSION FROM VICTORIA

WILLY WILLY'S WORDS

This column originally started as the Divisional news section from VK3 when your scribe was appointed by the VK3 Council. Since then I have repeatedly appealed in this column for news to be sent to me for inclusion. News cannot be fabricated from thin air and unfortunately I have not received the support I expected from members, including the majority of the Councillors. Also on several occasions VK3 news has been published in AR under the separate heading of Divisinoal Notes. See page 51 of the December issue for the latest example.

This will be my last column as I am resigning from the position of QRK5 editor. I wish to thank those of you that did help with news and I wish my successor luck. Until advised of alternative arrangements please send your news to the Secretary WIA, Victoria Division, 412 Brunswick Street, Fitzroy.

WHAT ABOUT THE 80s

There has been a lot of discussion on and off the air re the direction the WIA should take in the eighties. Here follow suggestions I have heard; reported verbatim as far as possible.

"Adopt a constitution for the 80s not the 20s."

"Drop state divisions and run strictly as a federal body."

"Get out and market membership."

"Reduce fees for war pensioners, superanuatees and others on semi-fixed incomes."

"Brighten up meetings."

"Control facilities over which the WIA has control."

"Drop federal and state divisions and let local radio clubs run things."

"Charge more fees."

"Improve and increase benefits for members."

"It's OK, leave it alone."

"Reduce fees for members with over 20 years continuous membership." (I like this one.)

The above are but a few. I deliberately put constitutional change first because I believe it is vital to our survival. The others are at random and I don't agree with them all, but believe everyone's ideas should be considered.

CHIEF THUG STANDS DOWN!

It has been leaked that the founding father and benevolent dictator known as the CHIEF THUG has, in the tradition of all great leaders of men, decided to stand down and allow new blood a chance to lead. Honours and awards have been heaped on his head, including honorary life membership and the most noble order of the helical whip with diamond cluster.

Naturally as Chief Thug he approved these awards before standing down. A power struggle will follow (THUGS don't have elections) and the fittest and most able will assume command some time in mid-February 1981.

NEW COUNCILLORS?

I received the following note from VK3JN: "I suggest that you appeal through the column to amateurs who **might** make good councillors for 1981/82. We are *not* looking for expertise — just willingness to give time and effort. There are few council positions which have expertise as a prerequisite — for the most part the various responsibilities are assigned and we rely on the individual's initiative and honesty to do that job to his best ability."

Thank you, Peter, for your contribution. To keep the record straight, I must say that I disagree on one point. I think that expertise is necessary — giving time and effort to interminable waffle at meetings is, in my opinion, of little value to the WIA.

Readers can make their own decision. Two points of view have been expressed and are open for discussion.

LIBRARY HELP NEEDED

Your library, established over three years ago, is now well stocked and running smoothly. I would like someone with a genuine interest to take over its management so that I can devote some time to a new project. A period of about two months is available for hand-over/take-over and mutual assistance. It is quite a pleasant job and it would be a pity to let it degenerate now it is established. Interested amateurs should contact VK3WW QTHR.

ASPIRANTS

Good luck to all who are sitting for the various examinations this month. The amateurs in VK3 wish you all a successful result.

FINALE

I would like to thank all readers for their comments and encouragement during the period I have been writing this column and wish my successor all the best.

73 ES VA Mike VK3WW. ■

EDITOR'S NOTE

We regret that Mike has been embarrassed by the separate publication of VK3 news. Sometimes the only practical alternative to this is to not publish.

Photographs for AR

DON'T KEEP THEM TO YOURSELF

Send them in – NOW

QSP

RADIATION

An extract from an article in September 1980 QST is reproduced for information (the data derives from US Federal sources):—

"Ionizing Radition: Ionization occurs when radiation displaces an electron from an atom. These electrons may, in turn, ionize other atoms; approximately 30 electron volts (eV) of energy (depending on the particular element) are required to ionize one atom. Radiation with short wavelengths and high energy, such as X-rays and gamma rays, contain sufficient energy to cause ionization.

Non-ionizing Radiation: Radiation with longer wavelengths and less energy, such as ultraviolet, infrared and radio frequencies, do not possess enough energy to produce ionization.

The term non-ionizing radiation, while accurate, is confusing to the public because most people do not know the definitions for the two types of radiation.

It is suggested that, in the future, whenever radio amateurs come in contact with the public in any media, or at meetings, that the words non-ionizing radiation be replaced with either electromagnetic energy or radio frequency energy. These more-descriptive terms will help the public understand the significant difference in energy levels between the two types of radiation." ■

LICENCES

According to P. and T. Department statistics for 30th June, 1980, the number of amateur licences issued in Australia totalled 13,910 compared with 12,062 on the same date the previous year — an increase of 15 per cent. Of these, 6,521 (5,978) were full calls, 3,483 (3,109) restricted and 3,906 (2,975) were Novice. For the States and Territories the totals were ACT 312 (263), NSW 4,514 (4,043), Vic. 3,986 (3,425), Qld. 1,960 (1,532), SA 1,558 (1,324), WA 980 (849), Tas. 406 (376) and NT 157 (226). Antarctica and other territories accounted for 37 (24). The figures in brackets were at 31/6/1979. It will be noted that the Novice total for the year increased by 31 per cent, the restricted by 10 per cent and full calls by 9 per cent. The largest percentages increases were in the Novice licences — NT more than doubled, Qld. reflected a 51 per cent increase, WA 43 per cent., Vic. 29 per cent, SA 30 per cent, NSW 19 per cent and ACT 55 per cent. In Qld. restricted licences increased by 25 per cent and in Vic. by 15 per cent. Qld.'s full calls increased by 14 per cent. Percentage increases in the State totals were headed by Qld. with 28 per cent, followed by ACT with 19 per cent, SA with 18 per cent and Vic. by 16 per cent, whilst NT fell by 31 per cent. CB licences dropped from 173,507 to 78,093. ■

BROADCASTERS AGAIN

"Operation by Canadian amateurs on 75 metres between 3950 and 4000 kHz is likely to be eliminated as a result of the CBC's plan to use two frequencies in that range for internal shortwave broadcasts. The CBC hopes to have 250 kilowatt transmitters operating on 75 by mid-1981."— Ham Radio, April 1980. This was reported in QST February 1980 in the WARC report. This was one of the footnotes, and there are now many of them, affecting amateur bands which, in this case, was strongly opposed but got through subject to there being no harmful interference to other services, including amateur. Fortunately this does not affect us in Region 3 anyway, but we will hear a lot more about the outcome from WARC 79, some of which will come as a surprise to those who did not study the reports in detail. ■

DUKE OF EDINBURGH AWARD

A special exhibition station — GB2DEA — will operate all bands from HMS Belfast on the river Thames on 5th, 6th and 7th February and 7th, 8th and 9th March to commemorate the 25th anniversary of the Duke of Edinburgh Award. The Duke has been invited to be in attendance if possible on 6th February, the actual anniversary date. Hopefully contact can be made with as many amateurs as possible (special QSL being designed) particularly those who have previously won an Award under the Scheme. ■

YOU and DX

G. (Nick) Nichols VK6XI
6 Briar Place, Ferndale, WA 6155.

Looking at the mail this month I just can't wait for the onset of winter, there again with plenty of barbecue days left before the cold breezes finally force us back to the warmth of a linear I'm quite sure I'll get to use all the firelighters the postie was good enough to deliver. Hello you say, this bloke's at it again, too much hot sun and cold beer, it's a pity but that isn't the case at all, the firelighters to which I refer are of course QSLs. Or rather, lumps of cardboard purporting to be.

Did you know it's possible to have a QSO — CW, FSK, AM, LSB, USB — one way of course, (couldn't possibly have been 2X I don't have AM facilities) on a certain undecipherable date at a time crossed, corrected, scrubbed and coffee cup ringed, on a blank band; and being from such an exotic, utopian area of the world the station feels it his absolute duty to protect it from all-comers (particularly amateurs), so he avoids making any notation whatsoever as to his location during the operating stint? Oh well, the cards come in handy for stopping the rig, linear, shack chair or whatever (you know ,the one with one leg shorter than the other three) from wobbling around.

Probably several readers will be jumping to defend the rare station and his ignorance of the requirements QSL-wise for award chasing. The problem is that the great majority were from QSL Managers Ws, Gs and others, those unsung heroes who for the love of amateur radio undertake to do the QSLing chores for the rare one. However, with a few notable exceptions, about the only thing they seem interested in is the coloured contents of the incoming mail (and I'm not referring to your QSL) and how much profit they can make out of it. Like several who received direct airmail QSLs with IRCs or the like and SAE and then (not wishing to entrust your precious QSL to the postal pixies) send it gack via the bureau — they don't trust them either, so they pocket the IRCs, green stamps or whatever. What is really odd is that cards sent to them via the bureau seem for the most part to go "astray" (astray is the new name for a receptacle more commonly known as the Manager's waste paper bin).

This is in no way to be *read* as a total condemnation of QSL managers for I'm glad to say there are exceptions. However, without doubt they are fast becoming an endangered species.

FACT AND FICTION

South Sandwich Island activity heavily tipped but by the time this goes to print may well have been and gone, rumoured call sign VP8SII with several *operators at* the helm. Rumours of activity from Walawi by 7Q7AE and LW — doubtful as present indications are that licences have not been re-issued but as both calls relate to members of the constabulary there is still a good possibility that they are legit. Activity from Turkey still a no-no; hopefully the problems there will be resolved soon.

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ON THE BANDS

10 METRES

Hopefully this month will show a rapid improvement of this band (well, it can't get any worse) occasionally (very) for the few 10 metre DX fanatics remaining; there were a few new ones to add to their bag. One Phone FP0FSZ, TF3YH, 9G1RT, A51PN, 4U1ITU, A7XD, OH1MA/CT3, whilst on CW C21NI, HZ1HZ, 5Z4MM, VK3DCV/Lord Howe, KP4KK/DU2, OY6FRA and RG6G were of interest.

15 METRES

Also patchy and subject to quite unusual propagation at times. On Phone 3D2GM, VP5SDA/HK1, FO0KU, H18GGL and CW A4XIH, CO7FM, EA8QJ, H44BP, T3AF, VP2KAC, VP9DR and ZP5PX should have certainly kept the keyers warm and dusted off.

20 METRES

As usual plenty to be had for all, CW in particular was worthy of lots of attention; A35VU, A4XIR, EA9EU, HC2XA, KX6SS, KA5 BPE/VP2A, VP2KAA, VP2AZG, PJ2CZ, TU4JJ, EL2CA and CE0COJ were all generating small pile-ups.

40 METRES

Stick to CW on this band also; Phone a virtual wipeout due to heavy commercial; QRM available on CW were CR9B, T2AAF, VS6JR, 4S7MX, A35VU, C21NI, LZ7A, A9XCE, NP4A and 9Y4VT — quite a nice haul by anyone's standards.

80 METRES

Excellent, if intermittent, propagation available, again CW the mode most worthy of a good listen, EA4NN, TA4XT, 4N3P, VS6DO (well over S9, ZSs, C21NI, HS4AMI, 5T5CJ, 8QZBD and many others.

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OSL INFORMATION

C31MK — via EA3WZ.
C5ACO — via W2TK.
C6ANU — via Box 703, Nassau.
D68AM — Box 501, Moroni.
FB8XY — via F6CIU.
FC0FRV — via DJZAA.
F80DZ — via DK9KD.
FK8CP — via Box 945, Noumea.
FK8DD — via WB3JUK.
FK8DO — via N4TN.
FM7AV — via F6BFH.
FO8NFU — Box 426, Papeete.
F08NFU — Box 426, Papeete.
FR7BP — via W0AX.
HI3JR — Box 945, *Santiago.*
HI8LC — Box 88, Santo Domingo, or via W2KF.
HP2XSG — via WB2DCP.
HZ1AB — via K8PYD.
H5AA — via ZS4MG.
LU3ZY — via LU2CN.
P29KM — via Box 248, Lae.
SV0AT — via AF4B.
TI2AV — Box 4511, San Jose.
T3AT — via G3XZE.
VK0KH — via VK5WV.
VP1KI — via Box 546, Belize.
VP2MGV — via K3VMG.
VP2MM — via W1CDC.
VQ9JW — via KA3EDN.
VK9TT — via KB5MZ.
VS5DD — via G4EFE.
YJ8IND — Box 39, Vila.
YJ8IR — via VK3BIR.
ZK1CF — via ZL2AQF.
ZK2TW — via ZL1AZV.
ZS1XR — via N7RO.
3B6CD — via 3B8CF.
3D6AX — via WA5IEV.
3D6BS — via N7RO.
457MX — via SM3CXS.
4U1UN — via W2MZV.
5Z4PS — via Box 14425, Nairobi.
5Z4YV — via JA2AJA.
6O0DX — via I2YAE.
9J2BO — via W6ORD.
9K2GR — via DK1OW.
9M6MH — via Box 678, Kota Kinabalu.
9M8PW — via G4DXC, or Box 347, Kuching
9U5AV — via K5VT.
9VIVV — via Box 214, Jalan-Kayu, Singapore 9180.
9Y4NP — via W3HNK.
A4XIZ — via Box 981, Muscat.
VK9NC — via VK4VA.
KV4AA — via K6PBT.
VQ9MM — via N0MM.
YJ8SS — via JA7SGV.
3DZFJ — via JA7SGV.
KC6YC — via W7EJ.
72AAD — via W9GW.
6D7LCH — via WD8NKT.
PJ2CC — via AA4M.
4S7KK — via 42FV.
A35FB — via JA7SGV.
9GIDY — via PO Box 2949, Accra.
VS6JR — via WA4QMQ.
7P8BJ — via Box 39, Maseru.
3D2GM — via PA0GMM.
VP8PK — via JA0BFZ.
EA6BH — via DL7FT.
T2AAF — via JA7SGV.
VK3DCU/2 — via K2UO.
FP0FSZ — via VO1FB.
KP4KK/DU2 — via WA3HUP.
A4XIZ — Box 981, Muscat.
HP1XOX — Box 632, APO Miami, Florida, USA 34004.
A4XIH — via G4GIR.
A35VU, ZK2VU — via DL2RM.
VK3DCU/2LH — via K2UO.
C21NI — via JA7SGV.
6Y5YL — via N2MM.
VP2KAC — via N4RJ.
4S7VV — via JA5BJC.
5Z4MM — via K1MM.
WH2AVP — via JA1NVG. ■

AMATEUR SATELLITES

R. C. Arnold VK3ZBB

During December both our satellites continued to operate satisfactorily although some unexpected mode switching was apparent on Oscar 7 from time to time.

Activity has been at quite a high level, with stations from all States being heard.

We were pleased to see the return of VK0GW and also 9M2CR. Some contacts from the northern parts of Australia have been made with Japan and from JR6 to VK3.

As the orbit parameters of Oscar 8 appear to have settled down for the time being, I am risking the publication of forward predictions for February and hope these will turn out to be reasonably correct.

FEBRUARY 1981

	OSCAR 7			OSCAR 8		
Date	Orb. No.	Eqx Z	Eqx °W	Orb. No.	Eqx Z	Eqx °W
1	28430	0050	88	14834	0006	58
8	28518	0125	97	14932	0040	67
15	28605	0005	77	15030	0113	75
22	28693	0039	86	15127	0003	58

The most exciting news we have received for some time is that Oscar Phase 3B satellite is scheduled to be launched on the 24th February, 1982. The satellite will be mounted on a Firewheel satellite which is being produced at the Max Plank Institute in Germany, together with "ECS-1" by the Iriane L7 vehicle. The original Phase 3A satellite was mounted at the side of the Firewheel, but in the case of Phase 3B it will be mounted on top of the primary satellite.

The Ariane rocket is similar to the one that failed earlier this year, but there will be several additional trials, LO3 to LO6, prior to 1982 to give the manufacturers an opportunity to iron out any possible further troubles.

It has now been ascertained that the failure of the Ariane launch vehicle in May which resulted in the loss of Phase 3A satellite was the result of imperfect manufacturing tolerances in the engine injection nozzles. The engine manufacturers have been able to duplicate this malfunction by telemetry data recorded during recent ground tests. The identification of this problem will enable further launches to proceed without delay.

Harry JA1ANG tells me that he has had a good AO7 Mode B QSO with **VK4TL** and, having worked VK5 some time ago, he is concentrating on VK3 contacts. Harry is invariably on CW but can always change over to SSB. His downlink frequency will be around 144.93 or 145.95. I hope one of the VK3 stations can make a "first" with Harry.

A reminder that the AMSAT nets are as follows:—

JAMSAT — Sunday at 1100Z on 14.275 JA1ANG.

SW Pacific — Saturday at 2200Z on 28.880 W6CG (this is Sunday morning in VK).

Australia — Sunday at 1000Z on 7065 VK3ACR.

UOSAT is still on schedule for launch on September 15, 1981, and its beacon frequencies will be as follows:—

450 MW general beacon (telemetry) 145.825 MHz.

400 MW engineering beacon (telemetry) 435.025 MHz.

100 MW HF beacon experiments 7.0025, 14.005, 21.0075 and 28.010.

"S" and "X" beacons also planned.

"Orbit" magazine records the following life members of AMSAT from Australia:— **W. L. Robb VK3YR, P. Sgarlata VK2YRO, R. K. Robbins VK3ARR, C. J. Robinson VK3ACR.**

These members have contributed $200 or more to AMSAT and we are grateful for their assistance towards the future satellite programme.

Thank you to all who help to make these notes possible and, in particular, **VK3ACR** and **VK3PJ.** ■

A Helping Hand

Mr. John Clarke VK2DBZ, a Newcastle radio amateur, aged 81, was having extreme difficulty in obtaining finance for the purchase of a new transceiver. Apparently finance companies are reluctant to lend money to people of this age.

It appears that John Clarke's ageing FT75B would not outlast him, he himself having served in two world wars.

Dick Smith, Managing Director of the Dick Smith Electronics Group, heard about his efforts to stay on air, and decided to do something about it. Consequently, he presented him with a new Yaesu FT101Z transceiver, at no charge.

Photo shows Mr. Dick Smith presenting Mr. John Clarke (left) with the Yaesu FT101Z transceiver, with Jon Hennell VK2ZHF, Amateur Radio Manager, looking on. ■

Close-up

Neil Town VK3ANK

CQ . . . CQ . . . CQ . . . This is VK3BH . . . Victor . . . KILO . . . Three . . . Bravo . . . Hotel.

Surely one for the record books — a budgee whose squeaky voice can be heard on the other side of the world.

Bert Horan VK3BH is training his pet budgee to make his CQ calls.

Some operators have built automatic gear for making the CQ call. Bert has gone one better, he gets his budgee to do the heavy work.

When Bert's voice is not using the clipped phrases of an ANA Captain in VHF contact with flight control as he zooms around Australia in ANA jets, he may be heard on the amateur radio frequencies chatting away with his friends in all parts of the world, with budgee causing a little local QRN in the background.

At the moment Bert is giving budgee a little dual instruction to complete the full CQ call.

So if you happen to be browsing around the bands and a hear a scratchy effeminate voice finishing off a QSO with "73 old man, this is Victor . . . Kilo . . . Three . . . Bravo . . . Hotel", then you'll know that Bert's budgee has got his ticket. ■

QSP

HF BAND SUB-ALLOCATIONS USA

"Phone-band expansion has been a recurring topic for the past decade. Back in 1971 the League and the FCC both proposed substantial expansion of the HF phone bands, but the following year the Commission drew in its horns and adopted a much more modest plan. Now that we are in the post-WARC era, the pressures are stronger and the arguments more compelling than ever for some adjustments to the phone sub-bands. But what if, in response to these pressures, the Commission were to eliminate all mode restrictions in the HF bands? Are we ready for that?

Unfortunately, we think not. There is no national mechanism, not even ARRL, for "voluntarily developing sharing arrangements and band plans" which has such universal acceptance that it could replace the FCC Rules in the HF bands. It's not that we need FCC Monitoring Stations policing the bands to keep us in our place; it's simply that more amateurs will abide by an FCC regulation than will follow a voluntary 'band plan'. And, in the case of the HF bands, it would only take a handful of troublemakers to cause nation-wide and world-wide problems.—From Editorial in QST, August 1980. ■

VHF-UHF

An expanding world

Eric Jamieson, VK5LP
Forreston, S.A. 5233

FEBRUARY 1981

VHF/UHF BEACONS

Freq.	Call Sign	Location
28.335	VK2WI	Sydney *
50.005	H44HIR	Honiara
50.055	ZL1UHF	Auckland
50.100	KH6EQI	Pearl Harbour
50.105	KC4AAD	McMurdo, Antarctica
50.110	KH0AB	Saipan
50.144	KC6IN	Caroline Is.
51.022	ZL1UHF	Auckland †
51.999	YJ8PV	Vanuata §
52.013	P29SIX	New Guinea *
52.150	VK5KK	Arthurton
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.320	VK6RTT	Carnarvon *
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart *
52.400	VK7RNT	Launceston
52.425	VK2RAB	Gunnedah *
52.435	VK3OT	Hamilton §
52.440	VK4RTL	Townsville
52.450	VK2WI	Sydney
52.500	JA2IGY	Mie
52.500	ZL2VHM	Palmerston North
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
53.000	VK5VF	Mt. Lofty
144.010	VK2WI	Sydney
144.162	VK3RGI	Gippsland
144.400	VK4RTT	Mt. Mowbullah
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.800	VK5VF	Mt. Lofty
144.900	VK7RTX	Launceston
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.400	VK4RBB	Brisbane
432.450	VK3RMB	Mt. Bunningyong
10.3 GHz	VK6RVF	Perth

The following changes are noted to the beacon list this month:

* Denotes a new listing, and VK2WI on 28.335 MHz has been included; although not really VHF the 28 MHz band is often a pointer towards possible 6 metre openings. The beacon has been observed in VK5 several times recently during 6 metre openings. The P29SIX beacon on 52.013 is included for the first time. It is understood to have been allocated 52.029 but recent reports indicate it is still being heard on 52.013. VK7RST in Hobart appears on 52.370 for the first time, and I have been advised VK2RAB in Gunnedah is due to operate on 52.425 about this time as its licence was expected early in the New Year.

† Indicates a change of frequency and ZL1UHF was observed on 51.022 recently. It also seems VK6RTT at Carnarvon has come down the band and is now to be found on 52.320 MHz.

§ Draws your attention to the fact that a report has been received of a YJ8 beacon on 52.040, whether this is YJ8PV with a frequency change or another beacon has not been established at this time.

The beacon originated by Steve Gregory at Hamilton has reverted to the call sign of VK3OT from VK3RWV, and operates on 52.435 MHz.

I received several reports that during the massive 6 metre openings at the end of December/early January, it was possible to hear all the Australian 6 metre beacons at the one time, plus several ZL beacons. Plenty of co-channel interference was also noted on the various channel 0 stations, and in particular the new Sydney channel 0 causing plenty of problems.

SIX METRES

Since the last information to be published had a cut-off date of 16/11/80 so much has happened on six metres that it is difficult to know where to start and stop. The early part of what is generally considered the "Es season" was fairly normal, with openings from one place or another. One early plum was the working of **KH6IAA** by Adelaide stations and **VK5LP** who actually arrived home from work in time for once! Al was worked from 0740Z up to S7. About the same time **VK7AE** worked **ZL4LV.** The KH6EQI beacon on 50.100 was S9.

18/11: ZLs in for most of day, also into VK3. W stations were copying ZL TV during the morning, while JA worked as far as Arizona, USA. **XE1GE** copied **KH6EQI** beacon, subsequently worked **ZL4LY** at 2130Z. **W6TYX** to **KG6DX.** Things were just starting to warm up!

22/11: **VK5ZWZ** worked **YJ8PD.** 26/11: Great day for Australia — **VK6OX** 52.005 worked into **UK** split frequency to 10 metres — see special box for details. 29/11: **Dick VK5ARZ** reported hearing VK2 working N6CT on 52 MHz. **VK5ZBU** heard by **VE1ASJ** at 0530Z. **VK4RO** to VE1, etc. (more on this later). Report of **Andy VE1ASJ** and **VK5RO** being heard by **G4BPY.** Report received 3D2JT returning to W6.

30/11: 0300Z N6CT heard, same time strong TV signals from ZL. **Wayne VK6WD** hearing KH6. Good Es between VK5 and VK6. **HB9QQ** Switzerland reported on 28.885 hearing **VK5ARZ** on 52.005, but signals hard to copy due to aurora.

VK6ZKO worked **KH6IAA** 0558Z 4 x 1 both ways. At 0601Z **VK6WD** to **KH6IAA** 419 both ways. **Don 6HK** unable to copy KH6 due to power line noise! JAs 0930Z. **W6HTH**/KH6 heard at 0530Z. Looked as if things were rolling.

Spasmodic openings around Australia for next few days which is about normal for time of year. **ZL** available much more often than usual, being worked up and down eastern coast of VK as well as VK5. 12/12: Good Es day, very strong from VK2, ZL again. 14/12: VK2 and VK4 most of day, very good opening to ZL from VK5 from 0600Z with ZL1, 2, 3 and 4 worked to S9. 0002 to 0018Z JA1, JA2, JH2 and JA7 to VK5 for a very early opening.

Mixture of signals again for the next week or so leading through to Christmas, with 24/12 and 25/12 rather quiet in VK5. 26/12, usually a prime 6 metre day, also a bit quiet, VK5 had to be content with a VK6 opening plus good 2 metre signs to Mt. Gambier. Same on 27/12 plus a few ZLs.

Then it happened. All hell was let loose on 28/12 starting around 0000Z to VK2, then to VK4, VK8, H44PT at 0659Z, ZL2, ZL1, ZL3, **ZL4**, VK3, VK7, VK5, VK1, then back to ZL all districts again 0900Z, most VK areas again, back to **ZL** 1000Z, VK3 short skip, more ZL, VK2, more ZL! VK2 worked JA 0030Z, also heard in VK4. H44PT worked VK9ZD, VK2, 3, 4 and 5. Report of JA to VK3AMK during the morning. Gee, what a tiring day. Nearly 80 contacts at VK5LP.

But the party wasn't finished! It started all over again next day on 29/12. **VK6** worked ZL, and that's a long haul. All VK and ZL districts worked again, most areas working everything available. VK2 and VK3 worked JA, reported heard in VK5 also. **Bob VK6BE** said it was the best Es for 25 years, he worked VK1, 2, 3, 4, 5, 6 (Carnarvon), ZL1 and ZL2. **VK5AN** worked VK2, VK4 and VK5 on **6** metres RTTY. Band was still wide open when I returned from work and got on the air at 0822Z to work VK1ZEJ, then followed 40 more contacts with the last one at 1327 to **VK3ATN** on 6 metres, with VK1, 2, 3, 4, 5, 6 being worked.

Those home from work on 30/12 and 31/12 continued to have a ball, with signals appearing from everywhere. On New Year's Day, 1/1/81, the band opened early at 0003Z to **VK3AOS,** then went a bit quiet until 0300Z when VK6 appeared and then followed one of the best openings on 6 metres for a long time between VK5 and VK6 in Albany. VK4 worked 0400 onwards, then back to VK6 at 0600Z. A massive dog-pile occurred on 52.050 at 0707Z when **VK5LP** latched on to H44PT and alerted the waiting multitudes that H44 was again available. After I worked him he disappeared from the VK5 scene for a while when **Steve VK3OT** grabbed him. In the meantime I worked H44DX but don't think many others did. In the meantime

H44PT arrived on the scene again, and boy, was it on then, with stations from everywhere struggling to work Peter! There were quite a few ruffled feathers as a result of that encounter, but peace did eventually reign once more when H44PT disappeared about half an hour later. All that was left were a few VK4 signals. **Bob VK6BE** worked 70 stations that day including three ZLs. **VK4ZYA** mobile worked **VK8GB** for one of the few VK8 encounters. P29 was worked by VK3 and probably by other eastern States.

FK8 APPEARS

Most operators by now would have been reasonably content with the Es conditions of the past week, but there was still more to come. 2/1/81 proved to be a further outstanding day. All VK call areas 1 to 8 and ZL1 to 4, plus H44, P29, YJ8, and to cap it all FK8, three stations from there in fact! Seems the first to be worked in VK5 anyway was **FK8AB**, who was 5 x 6 at 0412Z, and being heard for up to ¾ hour. Many problems existed for those lucky enough to work them or unlucky enough not to work them, in that there was an extensive VK3 backscatter opening at the same time, and many operators had their tempers tested to the limit it seems. But this situation is bound to happen when rare stations can be heard over such a vast area at the same time, with the distinct possibility of VK stations from different areas both calling together but unable to hear one another whilst both or all are able to hear the DX station simultaneously. I was at work but it could have been interesting to have been sitting back listening!

P29DJ finally faded out at 0820Z. As far as I can recall the 2nd January will be long remembered for a day when the whole of Australia was covered with a Es cloud, extending right out into the Pacific to allow contacts to be made with at least five overseas countries, and possibly six if any JAs were worked, and that would be a pretty fair record for Australia. The pity of it all was that we received word that 3D2 has not been active for the past two months on 6 metres otherwise 3D2 might well have been worked too.

And so on to 3/1/81. The Es was so tired it hardly showed up at all except to provide several contacts between VK5 and VK6 in Albany, but little else. 4/1, the cut-off point for these notes, recovered from all the activity to allow a few VK5 to VK4 contacts around 0030Z, then nothing. Whether periods of high solar activity also tend to increase the amount of backscatter — but this Es "season" has been of increased interest due to the very extensive backscatter contacts, extending as far away as New Zealand at times. Truly a very interesting year, and one which has confounded all the predictions so far made!

TWO METRES VERY ACTIVE

Six metres has not had all the activity to itself by any means this year. There has been a very large amount of 144 MHz activity and whilst it does not have the glamour of the far ranging contacts of six metres, many operators have been very satisfied with the results obtained.

11/12 saw the start of general 2 metre activity from VK5 to VK3 with the working of **Roy VK3AOS, Andrew VK3YUZ** and **John VK3TN.** VK5LP also worked VK3AOS on 70 cm 5 x 5 both ways. 23/12 saw good signals from Adelaide to Pt. Pirie and points beyond to **Jim VK5ZMJ** (144 and 432 MHz) and **Garry VK5AS.** 24/12 **David VK5CK** started off at 2055Z by working through channel 5 and 8 repeaters to **VK3AUG** and **VK3ACM,** then on 144 SSB to **VK3BFY, VK3HV, VK3BMU, VK3YII, VK3ATN,** and the conditions continued through to 25/12 to **VK3ALZ/P, VK3YII, VK3BKF, VK3ATN, VK3HV, VK3DET, VK3ZVN, VK3ZBJ, VK3XQ,** and **VK7DA** was amongst the last to be worked at 0100Z which is 11.30 a.m. local! There was not the slightest sign of a signal from any of these stations at the VK5LP establishment indicating a very selective pattern of reception.

26/12 provided good contacts to the SE of SA with **VK5NC, VK5MC,** and two new stations we were pleased to see on 2 metres, namely Trevor **VK5ATD** at Rendlesham and **Ray VK5ADR** at Naracoorte.

SPORADIC E TO PERTH

At 2240Z on 28/12 (actually 0910 local on 29/12) 2 metres opened to Perth for a short period to provide contacts to **VK6SM, VK6HK and VK6KZ** from **VK5ZDR and VK5RO,** and heard by **VK5LP** and others but due to the short opening not enough time for everyone to work them. **VK6HK** was the strongest at S9 and it seems very likely the contacts were made by Es. If this is so it will be the first recorded such contacts for over 20 years.

The scene now shifs to 31/12 with news of another Es 144 MHz opening, this time between **Roy VK3AOS** and **Steven VK4ZSH** at 0536Z 5 x 9 + 20 dB, and being available for half an hour. Typical VK2 to VK3 backscatter contacts were being made at the time.

As six metres does have its incredible days, so too it seems does two metres, and now I refer to 3/1/81, when the band was open all day to VK6, and in the evening to VK3 as well. First real contacts started out around 0400Z, but previous to that I just missed out on a frantic phone call from **Wal VK6KK** who wanted to tell us the VK5 two metre beacon was S9+ in Perth on Es. That's what I get for going out to purchase groceries on a Saturday morning! Anyway, first contact to **VK6ZGY** at 0400 on 52.061 MHz, followed a few minutes later by a two metre contact to the same station — in other words, the band was open on both 6 and 2 metres simultaneously to Albany, 5 x 4 on six, 5 x 2 on two! Then as the afternoon wore on signals began increasing in signal strength to spend a lot of time around S9. Stations worked were **VK6XY, VK6WG, VK6ZSP, VK6KJ, VK6ZEL/P, VK6BE, VK6QA/P,** a total of eight stations. Last contact was with **VK6XY** at 1400Z with signals still 5 x 9. VK5 managed to muster up quite a few 2 metre stations to share in the good times, including VK5s, ZRO, ZPS, RO, ZDR, LP, ZPE, ALW, AKM, AMK, ZMP, CI, AGM. **Gerry VK5AGM** in fact completed building his 2 metre gear especially for the occasion, made up a dipole antenna from a piece of fencing wire, ran 3W from his handbag and worked **VK6BE, VK6ZSP,** and naturally was more than satisfied! **VK5CK,** who has for months led the field working 2 metres into Victoria, met his match this time when he found the blocking power of Mt. Lofty on his western front more than sufficient to prevent any contacts to VK6. Bad lack, David, now you know how VK5LP feels when he has to sit back and listen to you work so many VK3 stations!

Throughout the December period, particularly the Ross Hull Contest period, early morning contacts have been taking place on a regular basis from 2030Z between **VK3ATN** and **VK5ZDR, VK5RO, VK5AKM** and **VK5LP** on 144 MHz and between **VK3ATN** and **VK5LP** on 432 MHz. The party was joined by **VK3AOS** and **VK3TN** at times.

During the big opening to VK6 on 3/1 **Bob VK5ZRO** had three 432 MHz contacts, to **VK6WG** at 0735Z and 1220Z, **VK6KJ** at 0735Z and **VK6XY** at 1345Z. Good work, Bob. Also heard rumours **Reg VK5QR** and **VK6WG** were trying 1296 MHz and higher bands during that period.

Also on the 432 MHz scene **David VK5CK** is constructing a new antenna system, using four 16 element yagis in an H frame, which should give him an edge on anyone else around this country at present.

TIT-BITS FROM THE OPENINGS

A few little items heard during the recent good openings on 6 and 2 metres: H44PT uses a 4CX250R on 6 metres to give 400 watts PEP to a 5 element beam . . . Melbourne FM stations heard in Queensland on 2/1/81 . . . **Denis VK4ACE** is leaving Mt. Isa soon, leaving **Eddie VK4LX** as only **6** metre op. there . . . **VK5ZPW** hearing VK1 repeater on 29/12 . . . VK2 working into ZL on 144 and FM on 4/12/80 . . . **Wally VK6YS** operating from Mt. Newman in north of WA.

QUEENSLAND 432 RECORD

News has finally come to hand about a contact between **Rick VK4RR** and **Wayne P29ZWW** on 3/11/80 at 0815Z on 432 MHz over a distance of 979 km. This represents a Queensland record and also a new country for a 432 MHz contact. Rick is south of Cairns. **Ian VK4AFC,** north of Cairns, also worked P29ZWW. Contact had been maintained over a period on 2 metres which eventually culminated in the 432 MHz contact being made. Congratulations to you both. May this only be the start of an era.

VK6OX WORKS G4BPY

Carnarvon beacon VK6RTT granted permission to operate 52.320 MHz on 25/11/80. On 26/11/80, **Gordon G4BPY** in Staffordshire, UK, copied **VK6RTT** from 0959 to 1010Z, peaking S8! **VK6OX** contacted Gordon on 28.885 at 1028Z to confirm he had heard the right signals. Arrangements made to monitor 28.885 next day.

At 0930Z 27/11/80 **VK6OX** called **G4BPY** on 10 metres to see if anything was happening, and advised beacon was being received at S5. **Andy VK6OX** fired up on 52.005 on CW at 0936Z, and Gordon relayed his signals back on 10 metres, delay and all! He reported VK6OX at 599 and Andy returned 5 x 3 for his signals on 28.885. On switching to phone Gordon reported Andy 5 x 9.

At 0946Z Andy worked **Brian G3COJ,** sent 5 x 3, received 5 x 5. At 0953Z worked G5KW, sent 4 x 3 received 5 x 5. **Ken G5KW** was operating portable from the Scilly Isles, which are off the south-west tip of UK. Distance about 14,200 km Great Circle Bearing. No other stations worked. Gordon continued to hear Andy calling CQ until 1004Z.

QSLs have been received for all three contacts, and **Gordon G4BPY** sent a tape recording which included Andy's 6 metre signals, the VK6RTT beacon, and VK6RTV beacon he heard in 1979.

Our congratulations to Andy and the boys in G-land for their efforts in making these contacts, and there seems little doubt had those in the UK been able to transmit on 52 MHz then two-way contacts would have been establishred on that band.

NEWS FROM THE WEST

Two letters to hand this month, one from **Tony VK6BV** in Northam and the other from **Andy VK6OX,** in which it is possible to compare the 2 metre operations of Andy on the coastline and able to look up and down the coast, and that of Tony at Northam, about 100 km inland. It is quite certain the coastal regions have many advantages as evidenced by the amount of coastal ducting from Carnarvon. 8/11: VK6OX: 0124 to 0229Z ducting to VK6WD, VK6HK and VK6ZKO. Nothing at VK6**BV**. Later from 1102 to 1253Z a path opened between Carnarvon and Northam with signals 5 x 9, also to Perth area. 19/11: VK6OX to VK6ZEL, VK6WD, VK6KZ, VK6HQ, VK6ZGG, VK6FM, VK6ZKO, VK6QA between 1110 and 1400Z. Nothing at Northam. 20/11: VK6OX to VK6ZFY, VK6HK, VK6ZKO, VK6QA, VK6WD and this time to VK6BV in Northam. Similar conditions existed between 0917 and 1330Z on 21/11 when VK6OX worked 12 two metre stations but not VK6BV. So there is plenty of mounting evidence to show coastal ducting is really coastal and often doesn't move very far inland, and this seems to apply to those north-south paths the same as on the east-west paths between Albany and Adelaide. **Tony VK6BV** also reports reception of VK3RGG beacon on 144.700 from 0300 to 0311Z on 16/11 at 529. No response to CQ calls! That's a long way for a 2 metre signal of any sort.

It is noted also that **Andy VK6OX** will shortly be transferring to Kyogle in NSW, where he hopes to sample the DX from the other side of the Continent. I am sure we are all grateful to Andy for keeping us informed of northern VK6 activity and wish him well in his new location.

NEWS FROM QUEENSLAND

Ross VK4RO has written in response to my request for information on what happened on VHF from Ayr and other parts of North Queensland. JAs were worked during each and every month of 1980. He now has 22 countries confirmed on 6 metres, with 5 new ones this year, VK9 Willis Island, T3, FK8, VE and KHO Saipan.

Ross enclosed a letter from George KB9DW/VE4, who was portable in Winnipeg when he worked him. He reported "Many thanks for my first Australian contact. Only just recently got on 6 metres, and you were my third contact on six, the first two were in Texas, USA. Furthermore, even though I am fairly active on 80 through 10 metres you were my first Australian contact on any band!"

Now follows a run-down of what **Ross VK4RO** worked in 1980, and as it is first-hand unpublished material I make no apologies for setting it out in detail as it gives those operators, particularly in the southern regions, some idea of what goes on in the north, out of their hearing!

31/1/80: First JA for year. 12/3: VS6EZ, VS6EG, KG6DX, VK8GB (backscatter). 15/3: VK9XT (Christmas Is.) backscatter. 17/3: VK6OX backscatter, K9PNT/DU2, VS6EG, VS6FX, YC1BMI. 22/3: KX6QC. 25/3: Heard K6HCP 539 on 50 MHz, same again on 28/3. 29/3: KG6JIQ/KHO Saipan Is.

9/4: VK2s. 14/4: FO8DR beacon 2250Z 519 heard only. During April worked JA with beam peaking north-east. JA also hearing KH6 same way. 21/4: KX6QC. 11/5 and 16/5: Time signal, like WWV on 50.000 MHz signing "BPM" in CW at 1000Z. 23/6, 24/6 and 26/6: KH6FQ, W6HTH/KH6, KX6QC. 27/6: VK3.

20/8: KH6IAA. 24/8: JE3CYV/JDI Ogasawara Is. 2/9: W6HTH/KH6. 12/9: KH6IAA. 13/9: P29ZEV on 2m, VK9ZG Willis Is. on 6m. 17/9 and 18/9: T3AZ West Kirileate. 19/9: P29ZEV 2m FM. 21/9: W6HTH/KH6. 27/9: KG6JDX. 28/9: W6HTH/KH6. Received report of being heard by 5W1AU (kept trying for this one for next few weeks but no contact). 30/9: KH6IAA.

1/10: KH6, again on 3/10. 4/10: 2100 to 2200Z MUF to 43 MHz to North America. 4/10: KH6. 11/10: Spanish R/T 43.4 MHz 2100Z. 15/10: KH6IAA. 17/10: W6HTH/KH6 0930Z. "BPY" heard again on 50.000 at 0839Z. 24/10: KH6IAA. 26/10: W6HTH/KH6. 27/10: P29ZEV 2m FM. W6HTH/KH6 0928Z.

1/11: VK9ZG 2m FM and 6m SSB. 3/11: VK9ZG 6/2 crossband. 11/11: K5CM 2215Z Oklahoma. KOGUV 2223Z Minnesota. VE4AS 2227Z Winnipeg. WAOCSL 2230Z North Dakota. KB9DN/VE4 2233Z (as per letter above). Also heard by W7WKR, K8EFS, N8AKY and WB2MAI (this one still to be confirmed). 17/11: ZL3, VK2, 3. 20/11: VK8GB. 21/11, 22/11: VK3, VK5. 29/11: KH6JSI CW/CW 50 to 52. Heard H44HIR beacon 50.006 2200Z 539. 30/11: H44PT 0246Z, 5 x 9 with H44HIR 419 in noise. FK8BG 0353Z CW/CW 539.

9/12: VK1 and 2, H44PT. 10/12: VK2. 13/12: VK1. 14/12: VK3. 22/12: VK2, 3, 5, 8. 24/12: VK5. 25/12: VK2, 3. 27/12: VK1, 2, 3, ZL1, 2. 28/12: ZL2, ZL4, VK2, 3, 8, H44, P29SIX (beacon). 20/12: VK2, 3, 5.

And that's the VK4RO story. Makes good reading doesn't it, and very mouth-watering too. But it also helps the operators further south to have someone in a good position like Russ because it keeps up the interest of the DX stations — if they never worked anyone whenever they looked this way, there would be very little hope for the less well situated stations because the overseas stations would soon tire at having so few contacts overall.

A LETTER FROM VK2

Noel **VK2ZNS** has written with some information on the good days of 28/12 and 29/12. He says that at 0900Z he tuned 6 metres looking at the various beacons and got the following results: **VK2WI S9+, VK3RGG S9, VK3OT S9+, VK4RTL S2-3, VK5KK S9, VK6RTW S1-2, VK7 — both beacons S9, ZL2VHM (52250) S3-4.** Tuning time approximately 2 minutes. Worked or heard VK1, 2, 3, 4, 5, 6, 7, heard VK9, ZL1, 2, 3, 4. JA4 and JA7 very weak.

Part of Noel's log for 29/12 included 0121Z VK5AVQ 5 x 9, /157Z VK8GF 5 x 3, 0241Z VK6BV 5 x 9, 0408Z VK6BE 5 x 9, 0433Z VK6AKT 5 x 5, VK6KZ 5 x 8, VK6HK 5 x 8, VK6ZZ 5 x 9, VK5 ZMP 5 x 9, VK8GB at 0645Z 5 x 3, and at 0947Z VK6ZDY 5 x 3. Many other VK3, 5, 7 worked. Notable contacts observed: VK6 to ZL1, 2. VK5 to ZL. VK8 to ZL. Many VK2 to ZL and all other States. Thanks, Noel.

CONDITIONS TOUGH FOR VK6

Tony VK6BV, in a letter received as I write this ,outlines the frustrations of being able to hear beacons from the eastern states so often during the period up to Christmas 1980 yet not able to make any contacts with amateur stations. It wasn't for the want of trying, there didn't seem to be anyone around! He says it would appear people have stopped listening on the 6m band in preference to 28.885, and this is bad news for the Z call who cannot call on this frequency.

To indicate the generally poor situation for VK6 have a look at the following:

3/12: 0250Z VK3OT beacon, 0309Z VK5KK beacon. 13/12: VK6ZH at Newman by Es. 0400Z VK5KK keyer. 0530Z VK6ZCC Carnarvon by Es. 19/12: VK5KK, VK5VF and VK3OT beacons. 0650Z VK5KK beacon. 0715Z VKVF. 21/12: VK5KK beacon. 0715Z VK5VF. Worked only three stations VK5NW, VK5LP and VK5ZMP. 22/12: 0830Z: Noted the following at this time but not necessarily when they came through: VK5VF, VK5KK, VK3OT, 46.250 TV video, 49.750 video and 51.750 TV audio. Worked five VK5 stations. 25/12: 0200Z Es to Newman, worked VK6YS. 0225Z VK8GF. 26/12: 0730Z VK5KK beacon, worked VK5ZRO. 27/12: VK5KK beacon, 0245Z VK3OT and VK3RGG beacons. 28/12: 0830Z worked JA1, 2, 9 and 0. 0940Z end! 29/12: 0200Z worked VK2 and 5. 0225Z ZL2VHM beacon. 0231Z ZL2CD. 0317Z ZL1TF, ZL2KT then VK1 and 3. 0447Z ZL1TF. 0700Z 49.750 video. 0850Z: Can still hear VK6ZDY working VK2, but not here. 31/12: VK3OT and VK3RGG beacons at 0330Z.

From the above most operators would consider conditions had been rather depressing to say the least. Apart from 28/12, there was practically nothing to work. The above information may indicate to eastern stations just how fortunate they are, particularly those in VK3 who can have relatively easy contacts on 144, 432 and 1296 MHz when the going gets tough on 52 MHz!

R NEWS

Ron **VK3AFW** writes to advise **Gary VK3ZHP** was declared the winner of the 1980 two metre scramble series, narrowly defeating **Mavis VK3BIR.** Over 70 different SSB stations took part in the series with over 20 stations being present in any one scramble. Only 144.150 to 144.180 is used by metropolitan stations within 100 km of GPO, and 144.180 to 144.200 being reserved for country stations. **Graeme VK3ZSQ** at Shepparton was probably the most consistent country operator.

Ron also reports what can be done with a 2 metre handbang if you care to get up on a high spot. Using 2 watts to the whip antenna on 23/11 whilst at Mt. Buller Alpine Village, he was able to copy channel 7 repeater at Launceston, Geelong and Wangaratta simultaneously. Channel 3 Wagga was worked and channel 7 Mt. Ginini copied. A quick trip in the car to an area clear of trees enabled QSOs with **Reg VK3CCE/1** and **Theo VK1KV** through R7. Under average conditions from there repeaters 4 (Gippsland and Bendigo), 5 (Mt. Macedon), 8 (Geelong and Wangaratta) can be worked hand-held.

VS FROM G-LAND

Ted VK4YG has just arrived back from a holiday in "G"-land and advises that in the UK there are some 38 VHF two metre repeaters, 76 UHF (70 cm) repeaters with plans for some on 1.2 GHz. All require 1750 Kz tone access.

Australian amateurs intending to visit the UK or the continent should make reciprocal licensing arrangements at least **SIX MONTHS** in advance. Those wishing to take hand-held or other amateur transceivers overseas should apply to their nearest Customs Office where a special stamp will be fixed to the equipment — this stamp enables the owner to bring the gear back without paying duty.

Actually the lack of tone burst on hand-held gear is not serious as you can wait until someone else "opens up" for you or perhaps you could carry a small 1750 Hz oscillator. French, Dutch, German and Spanish amateurs could be heard working into "G" repeaters, and there was plenty of mobile activity.

The RSGB "RAYNET" organisation (same as our WICEN) relies on these repeaters since distances are small compared to ours, and the country is very well covered.

Amateur transceivers and gear (Japanese, etc.) over there are 5 per cent to 15 per cent more expensive (due to VAT) than in Australia, so you can forget about "shopping" whilst there. Thanks for writing, Ted.

CALLING FREQUENCIES

I am grateful to **John VK5ZBU** for the following extract from "The West Coast VHFer" from the USA, dated December 1980, which is worthy of consideration by Australian amateurs.

"Discussions held during the VUAC meeting at Colorado Springs determined that the National Calling Frequency should be 50.200 MHz. The International Calling Frequency remains at 50.110 MHz.

"We recommend that if you are working Sporadic Es across the country, call on 50.200 and move up or down. Do NOT use 50.110 for U.S. Es work. Leave it open for serious foreign DXing and calling. Local ragchews should be held above 50.150 or higher, during band openings. Above all, if you have worked a particular state/country, don't move 5 kHz above him and talk locally or across country, thereby clobbering the rest of the guys who have never heard that station before, let alone worked him. They won't either until you move up the band. Do so, and help your friends around you to get that station also. If you don't move, they will remember you for what you are. Don't make it tough on the other guy, by your unthinkingly bad operating habits."

It would seem the above is information to come at a very appropriate time, in view of the operating habits apparently observed on the 6 metre band on Friday, 2nd January, 1981, when the FK8s and other DX were coming through. Thankfully I was at work and was possibly saved from becoming embroiled in the far from satisfactory operating habits of some people, who waded in over the top of existing QSOs in an effort to make a contact. I am only able to comment at the moment on what happened in VK5 with VK5 operators, and I thank those people who have been in touch with me to outline the position as it apparently existed. I know also that unsatisfactory goings-on occurred in other States too, but I lack first hand knowledge of this. **Perhaps the best comment I can make is that we could all learn much from the operating habits of the Japanese 6 metre stations who always have to work us from dog-pile situations, but when a contact is in progress they are thorough gentlemen, and give those in contact the privilege of silence whilst awaiting their turn.**

MIDWAY ISLAND OPERATION

John VK5ZBU also advises that N2KC/KH4, Tom, is in the US Navy on Midway Island and is planning a 6 metre operation in the near future. His equipment is a Swan 250C and 5 element beam. Listen on the 6m liaison frequency of 28.885 MHz for more information as to date and time.

CLOSURE

For most operators it seems 1980 ended and 1981 started very satisfactorily, with many more contacts on the three main bands of 52, 144 and 432 MHz than was probably thought likely. Possibly the greatest surprise has been the amount of Es around on 144 MHz, with VK3 to VK2 and VK4, VK5 to VK6. Latest report to come in is that **Col VK3YII** has worked VK4 on 2 metres. So we have had a good start for 1981, may it continue.

Thought for the month: "He who watches the clock will always be one of the hands."

73. The Voice in the Hills.

LATE ITEM

As this goes to press an excellent set of conditions has been prevailing between VK6 at Albany and VK5 and VK3, on 144 and 432 MHz, starting on 6/1/81 around 1100Z and still going strong at 1400Z. 144 MHz has been worked between **VK6XY, VK6KJ, VK6WG, VK6AGT, VK6ZEL, VK6ZSP,** possibly others to VK5NY, **VK5CK, VK5NC, VK5LP, VK5ZDR, VK5RO, VK5TH, VK3ZBJ, VK3OT, VK3ZHP, VK3BHS, VK3AMH, VK3YII, VK3ATN, VK3TN, VK3YNB.** Most of these worked the VK6s as well as the VK5s. In addition VK6XY, VK6WG and VK6KJ had been on 432 MHz and worked **VK3ZBJ, VK3OT, VK3ATN** at least, possibly others. At the VK5LP establishment **Aub VK6XY** was workable on 432 MHz but he couldn't hear me. Such is life! The above is a somewhat incomplete report but the best that can be mustered in the short time available. ■

AMATEUR RADIO IS A RESPONSIBLE SERVICE

LET'S KEEP IT THAT WAY

TRY THIS

WITH THE
TECHNICAL EDITORS

THE SLY BEAM (Suspended Long Yagi) Design frequency 144.2 MHz, 32 elements, gain 21 dB, bandwidth 500 kHz. At 200 miles half power lobe is 35 miles wide. Construction materials: 1/8 in. aluminium rod or wire, 120 lb. plus breaking strain rope or cord, wood or plastic for spreaders.

The elements in my version were made from scraps of high tension overhead power line cable consisting of 7 strands of 1/8 in. diameter wire which I untwisted and straightened. Aluminium welding rod can also be used. The 120 lb. breaking strain cord was prestretched before the elements were attached. The elements can be tied on using rotproof twine, or by using small rings cut from neoprene tubing. See Fig. 1.

The use of rings allows the element spacing to be adjusted more easily.

The matching method used was a delta match, and universal stub fed with coax and a half wavelength coax balun. See Fig. 2.

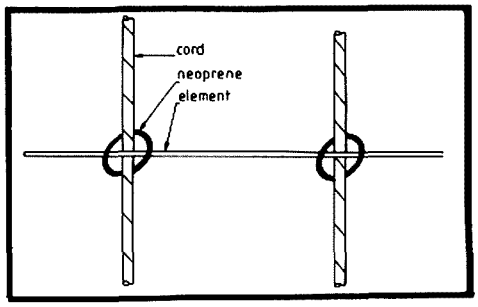


FIG. 1.

Not having an open wire feeder, I made mine using 16 gauge copper wire spaced 5/8 in. apart. Spacers were made from large plastic knitting needles, sawn to length and drilled.

Construction is easy. The biggest problem I encountered was in unravelling the cord. The beam can be rolled up for transport to a Field Day site. At present I use mine as a fixed beam pending the completion of a rotatable job.

Due to conditions I haven't yet tested the beam fully, but from reports of a test using the beam on Mt. Archer, near Rockhampton, I gather that a few eardrums were reverberating in Central Queensland.

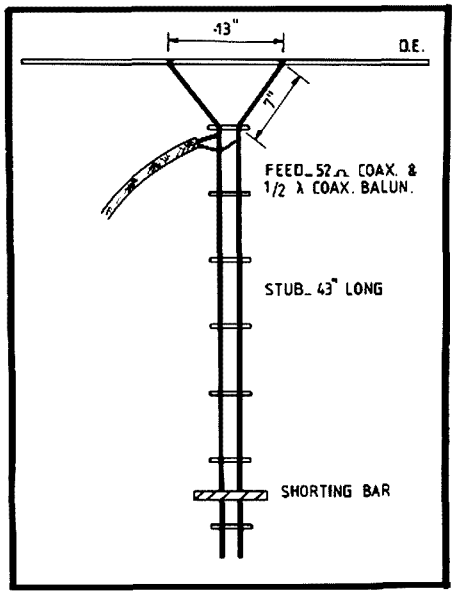
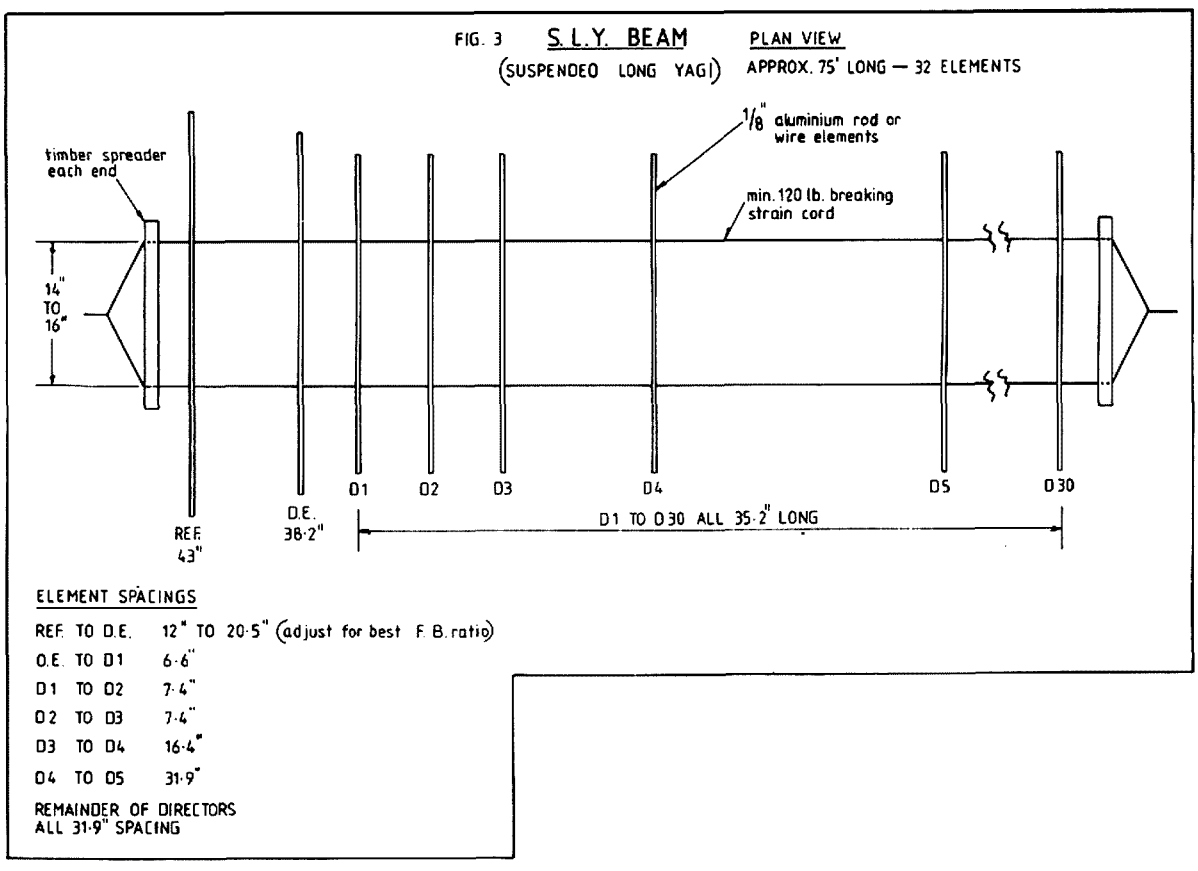


FIG. 2. Matching Method.

I tried my beam using 20, 25 and 30 elements, so constructors can make the antenna shorter if they wish.

Keith Lee VK4ALE (now Silent Key) ■



LISTENING AROUND

With Joe VK2NIM

Well, here it is — the face that accompanies the voice that you might hear nattering away on 80 metres any night usually after midnight in cahoots with VK5LG Leo of Mount Gambier, VK5HM Gordon of Cowandilla, or scores of others including those who come up on VK3BSBs (Des, of Planesville, Vic.), Cocktail Net or the Southern Peninsula Radio Club Net, or with Rupert VK3BC of Sorrento.

Now, before I go on, thanks to all those who took the trouble to come on air and congratulate me on getting the full call at my third attempt (remember — if at first you don't succeed "try, try, try again" and you'll find the effort to be well worthwhile, as I have). It wasn't the CW that had me bogged down — the JAs and the Germans partially taught me that when I used to monitor the German DUB and the Japanese Domeii newsagency during World War Two), but is was the theory that I had a mental block on. Anyway, I've got it now and I'm happy, even though I had a bit of strife negotiating with Melbourne and Sydney beaurocrats to get it.

Have you ever noticed the very strange place names they have for some rivers and lakes in South Australia. Take for example Lake Poolyeruninna, and — this one takes the cake — Lake Cadibarrawirracanna, a relatively small lake a bit west of Coober Pedy. And while up that way, I might mention the old rail line (thats just been discontinued) between Port Augusta and The Alice which runs in part via Coward Springs to the south of Lake Eyre. (The new line runs from Tarcoola to the Alice.)

Those watching ABC television between 7.15 and 7.30 on Sunday night 7 December may have seen the documentary on the last trip of the old Ghan on the Port Augusta-Alice Springs section of that line. A Kalgoorlie amteur (Bill VK6ZX) had sought permission to operate rail mobile from that historic last passenger journey, but was refused. However, in the early hours of the same day that the TV documentary on the old Ghan was shown, VK5HM Gordon (of Cowandilla) and myself made contact with Bevan VK5TV who was northbound rail mobile aboard a goods train near Coward Springs. Bevan was using an FT7 with a vertical whip and we contacted him on 3585 kHz. A short time earlier VK5NNZ Ian of Prospect had told us to be on the lookout for Bevan who had been expected to come up on 3590.

Speaking with Bevan recalled some of my wartime experiences when I travelled on this same line to and from the Northern Territory, and when we stopped near what may very well have been Coward Springs — for I remember a place with a lot of rock pools — around which I photographed my army mates as they sipped mug-fulls of black coffee. The Ghan on which we travelled at that time was not even the civvy version that I saw on television, but a string of cattle trucks which were supposed to be good enough to serve as a troop train. I can't possibly imagine real live civilians travelling under the atrocious conditions that we — 600 of us — were forced to travel in then.

As Bevan's goods train ventured further north, his 3 by 3 signals at Burong dropped down into the noise, and neither Gordon nor I could copy him any more. This rail mobile trip was from the last goods train that would use this section of the line, so our contact with Bevan VK5TZ could have made amateur radio history. Bevan told us that the purpose of the trip was to bring back all the "stray" items of rolling stock that may have remained along that line, because once the line was torn up, they would have been there forever. Isn't it a pity that Bill Main VK6ZX of Kalgoorlie was not permitted to work rail mobile from the last passenger Ghan to use that old line? Aren't we fortunate to make amateur radio history by working the last goods train to use that line?

Now a few notes about the people I speak with. VK3DCF Kirk is a Kiwi from Dunedin (ZL4PX) who saw the light and has come to the Great South Land to find a job that he likes. VK6GD Bob of Merredin often pops up on 80 to have a word with us and it's always nice to hear him. VK6NPF Bart of Perth is another regular on 80. I met Bart first on 27 MHz a few years ago and was pleased to meet him again on an amateur band. VK3VRV Reg at Morwell was one of the many who congratulated me on attaining the full call. VK3VLE Joe at Rockbank has helped me building my two element quad (April AR) by sending me up marine plywood which I could not obtain locally. VK3VXJ Graeme from Sealake is a newcomer to the bands who Isn't so far from me (so he naturally gets a good signal into Buronga). VK3VIR Lindsay from Doncaster is often heard, as is also VK3VTE Bill from Altona and VK3VLE another Joe from Murrumbeena. VK55GJ Leo at Mt. Gambier last night told us all about his wallpaper hanging problems (hope you got it up OK, Leo). VK3VEP Bob from Mildura had problems with a newly acquired oscilloscope which he has now got operation with valves and I was able to help out. And VK4KAG Angus is the first VK4K call that I have worked. Angus says the "K" bit is a new type of call sign, in which Queensland leads tha rest, and which combines a Z call with a Novice call. VK3NOB David at Noble Park is heard regularly on 80. Other regulars include VK3VEJ Charlie of Tatyoon, Vic., VK3NDL Laurie, VK2PCL Helen, VK3VRO Harry at Rochester, VK3VXW Rowley at Mt. Eliza, K3VSD Ian at Noble Park, and of course my old sparring partner of the airwaves, VK3NTR of Ararat. These are but a few of the regulars to be heard on 80, that great rag chewing band. And I mustn't forget VK2NVI Alex at Lightning Ridge (where they live below ground) VK2VXH tractor mobile at Moree, VK2VXD Arthur of Balmain, and oh, so many more too numerous to mention this time.

A recent visitor to Mildura (where I worked him at Apex Park, about 3 air miles from here) was K3VPF Brian from Moe. Brian has toured all around Australia, and gave me much news of the Northern Territory where I was stationed in World War Two. We spoke about Mrs. Anaeas Gunn's book "We of The Never Never". Brian told me that the Elsee homestead at Mataranka mentioned in the book no longer exists but many of those characters of the book who lived at Elsee are buried in the homestead cemetery. I spoke of seeing TV shots of Pine Creek (where I was Army switchboard operator), and where the pub mentioned in "We of The Never Never" is located. When I saw that pub it was all barricaded up, but the recent TV shots of Pine Creek were made in the pub where Douglas Lockwood, recently deceased NT journalist, was interviewed by ABC-TV. And there on my screen also was the old railway station which we knew only in wartime as "the RTO's" office. Brian had seen much of the NT as it is today. I wonder if I shall ever have the chance to see it again?

I think that every ex-serviceman who served in the Northern Territory, one day would like to return there, for that is the way the place gets you. How nice it would be if I could take such a trip right now!

Well, you lot who might see my picture (if they print it) at the top of this column, might get a shock if you could see me here right now for its 8 January at Buronga and as the temperature is 39 Celsius, I'm a-sittin' here in nuddy with an air cooler blowing on me to keep the temperature down. Anyway, if you liked reading this, please let me know — and if you don't, also please let me know — for it would be nice to get some efedback either way from my efforts. A Happy New Year to you all. ■

NOVICE NOTES

Edited by Ron Cook VK3AFW

RF POWER CONTROL FOR THE FT7 WITHOUT REMOVING THE COVERS

The circuit to be described has been successfully used by the author for some time and was developed to allow output power reduction from a maximum of 25W to zero for QRP operation, driving linears, and antenna testing at low power to reduce risk of damage to the RF PA transistors. It also allows the RF-derived ALC to be set to just operate on normal speech peaks instead of being used as a power output control.

The FT7 utilises a directional wattmeter circuit to sample RF output, which is then rectified by forward and reverse power diodes D1502, 1503 and 1504. The anodes of the diodes form an OR gate from which a negative voltage is derived, and fed back as ALC to Q304 in the transmitter IF chain to control its gain and hence RF output. The diode OR gate lends itself to the addition of another diode, and this is what is done.

An attraction of this modification is that the ALC is connected to pin 3 of the DC power socket on the rear apron of the FT7, and therefore it can be incorporated without removing the covers.

Before commencing, connect a 50 ohm RF wattmeter to the FT7 antenna socket and transmit on 3.5 MHz; the output will probably be 15W. Adjust ALC potentiometer RV1501 through the rear apron to just secure maximum RF output; this should be 25W for a meter current of 3.8 to 4A at 13.5V. This is within the output transistor's ratings, but should not be sustained for more than 20s.

Switch to receive and prepare the circuit as shown in Fig. 1. The negative supply may be derived from a mains unit, but a 1.5 to 15V dry battery will work just as well, as current drain is only about 1 mA. As the battery voltage begins to fall, the only effect will be that zero RF output will be unobtainable without readjusting RV2.

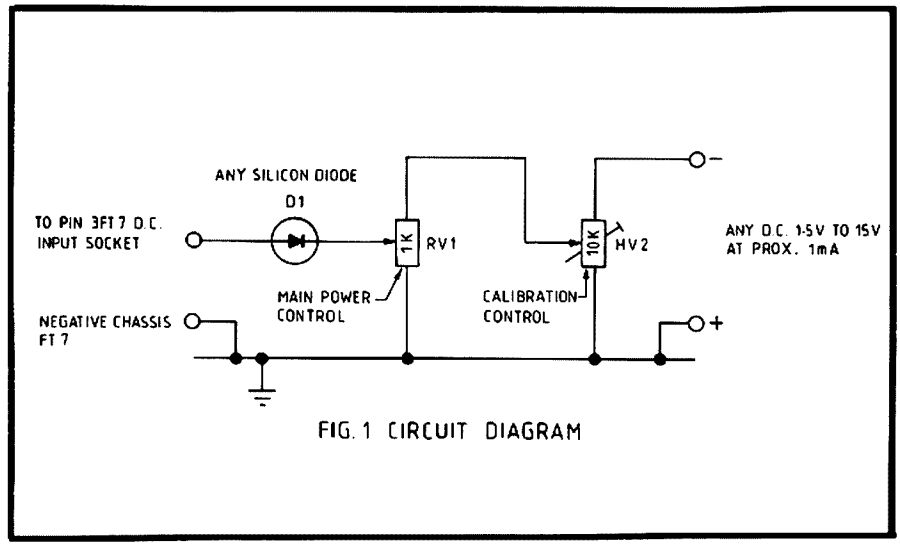


FIG. 1 CIRCUIT DIAGRAM

Use an Avometer (high tension voltmeter — Ed.) on the 10V scale to adjust RV2 to obtain —1V across RV1. Connect D1 to to obtaint 1V across RV1. Connect D1 to the FT7 pin 3 and the positive battery line to the chassis.

Switch on the FT7 and transmit Into the dummy load. RV1 should vary power output from maximum to zero watts. If zero is not achieved, adjust RV2 until cut-off is reached. RV2 can be a small preset, as it is seldom readjusted once set.

Note that RF efficiency drops with reduced power output, e.g. for a 2A meter current, 5W are produced; for 3A, 12-15W and for 4A, 25W, corresponding to efficiencies of 20, 45 and 50 per cent respectively.

— From Radio Communication, No. 3, 1980. ■

A NOTE ON VSWR

I have heard suggestions that the VSWR of a coaxial line feeding an antenna can be reduced by adjusting the transmitter matching or by using an antenna tuning unit (ATU). This is quite wrong.

If the transmitter has an adjustable pi network and the VSWR is less than 2 or 3 to 1, then it is usually possible to make adjustments so that the PA sees its correct load and delivers its rated power without distortion. The feedline's VSWR remains exactly as it was before.

Similarly with an ATU the VSWR of the line to the antenna will be unaffected although the line to the transceiver from the ATU will be affected. This is what an ATU is for — to present a true 50 ohm load to the transceiver regardless of the VSWR on the antenna feedline.

I have also heard it said that an ATU is an evil box used to counteract an evil condition — high VSWR. It certainly Is more convenient if the antenna can be resonated and then matched to the feedline. Sometimes we can only resonate the antenna and sometimes we cannot even do that. In either case the ATU will save our bacon and let us put out a good signal instead of no signal at all.

I have received an interesting article from David VK3NOB, in which he describes a triband wire antenna. It will appear shortly.

73. VK3AFW. ■

RADIO AMATEURS OLD TIMERS' CLUB ANNUAL DINNER

The annual dinner of the RAOTC will be held on Thursday evening, 5th March, 1981, in the Clunies Ross Science Centre, 191 Royal Parade, Parkville, Melbourne, commencing with pre-dinner drinks at 6.30 p.m. Members will receive a "Dinner Application" form in due course advising the cost per head, together with a Newsletter.

Membership is open to any licensed amateur who has held his licence for 25 years or more. The initial cost of $5 (which includes a certificate and badge) is the only cost for life membership unless when attending the annual dinner, when an overhead cost applies.

At the 1981 dinner the First Assistant Secretary (or one of his officers) of the Satellite Policy and Co-ordination Division, Department of Communications, Canberra, will be delivering an Illuminated address on the proposed national satellite system. This should be of great interest to amateurs and interstate members in particular will be most welcome.

Any amateur who qualifies for membership may obtain full details from Harry Cliff VK3HC, UO Box 50, Point Lonsdale, Vic. 3225. ■

REMINDER

28.200 to 28.300 MHz is the International Beacon segment. Please avoid operating in this segment, otherwise observers may be unable to hear and identify overseas and other beacons on frequency.

Five-Year Index of Technical Articles

1979

1980

■

SCALAR — FOR THE DISCERNING AMATEUR

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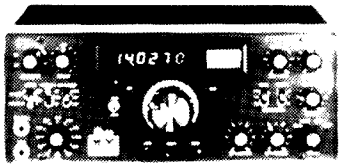

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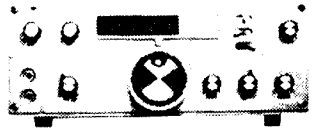

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VOX.

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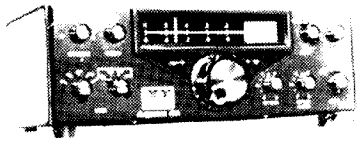

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COMING FIELD DAYS

Central Coast Amateur Radio Club .... 22nd February 1981. Details from P.O. BOX 238, Gosford, NSW 2250.

Liverpool and District Amateur Radio Club .... 22nd March 1981. Details from 105 Willan Drive, Cartwright. NSW 2168

SCALAR Communication Products

NSW: 328 Kingsgrove Rd., Kingsgrove 2208. Tel. 502 2888 Telex AA27067
VIC: 20 Shelley Ave, Kilsyth 3137 Tel. 725 9677 Telex AA34341
QLD: 8 Ferry Rd., West End, Qld. 4101 Tel. 44 8024 Telex AA43007
W.A.: 5/319 Pearson St., Osborne Park 6017 Tel. 446 4657 Telex AA94825

bankcard welcome here

CONTESTS

Wally Watkins VK2DEW
Box 1065, Orange 2800

February

7/8	John Moyle Memorial	AR 1/81
7/8	RSGB 7 MHz Phone	CQ 2/81
14/15	Dutch "PACC"	CQ 2/81
21/22	ARRL CW DX	CQ 2/81
27/1 Mar.	CQ WW 160m Phone	CQ 1/81
28/1 Mar.	RSGB 7 MHz CW	CQ 2/81
28/1 Mar.	G-QRP CW Activity	CQ 2/81

March

7/8	ARRL Phone DX	CQ 2/81
14/15	Commonwealth CW	FCM
21/22	Commonwealth Phone	FCM
21/22	BARTG RTTY	VK2SG
28/29	CQ WW WPX SSB	

April

4/5	Polish CW	FCM
18/19	Polish Phone	FCM
25/26	King of Spain Contest	FCM
25/26	Helvetia Contest CW/Phone	FCM

EXCHANGES

RSGB 7 MHz, RS(T) plus QSO No. starting at))+ 001.

Dutch PACC, RS(T) plus QSO No. starting at 001.

ARRL DX, RS(T) and power (3 digit number).

G-QRP, RST.

COMMONWEALTH CONTESTS

Logs to —

For CW Section: D. J. Andrews G3MXJ, 18 Downsview Cr., Uckfield, East Sussex, TN22 1UB, England.

For Phone Section: CARF Contests and Awards Committee, Box 2172, Station D, Ottawa, Ontario, KIP 5W4, Canada.

The references after the listed contests give the magazine in which the full rules can be found. FCM — send a SASE for copy.

Exchanges will be listed each month so that if you get caught up in a contest you will know what is going on. ■

COMMONWEALTH CONTEST 1981 — "BERU" RULES

TIME

1200 GMT Saturday, 14th March to 1200 GMT Sunday, 15th March.

MODE

CW only, 3.5 to 28 MHz. Call is CQ BERU.

Eligible entrants are radio amateurs licensed to operate in British Commonwealth call areas as listed below.

SCORING

5 points per contact exchange (RST 001 etc.), 20 points for 1st, 2nd and 3rd contact with each call area other than one's own, on each band.

G, GW, GD etc. are counted as one area. Contacts with one's own area do not count at all. Penalties are imposed for unmarked duplicate contacts, incorrect calls and reports.

LOGS

Separate logs are required for each band showing columns:—

1. Date and time GMT.
2. Station worked.
3. NR sent.
4. NR received.
5. Band.
6. Leave blank (for checking).
7. Contact points claimed.
8. Bonus points claimed.

Each band log should be separately totalled and should include at the end a check list showing areas worked and number of contacts per area. Separate band totals should be added together and the total claimed score entered on a cover sheet giving particulars of station, QTH, equipment, power, antenna, and a declaration that the rules and spirit of the contest have been observed.

Entries may be single or multiple band. Single band entries should claim contacts on one band only, but submit details of contacts on other bands for checking only.

Entries should be addressed by AIR MAIL to:

D. J. Andrews G3MXJ,
18 Downsview Crescent, Uckfield,
East Sussex, England, TN22 1UB.
Closing date: 12th May, 1981.

COMMONWEALTH CALL AREAS

The following call areas are recognised for the purposes of scoring in the 1980 Commonwealth Contest:

A2 Botswana, A3 Tonga Is., A5 Bhutan.
C2 Nauru, C5 Gambia, C6 Bahamas.
G/GB/GD/GI/GJ/GM/GU/GW.
H4 Solomon Is.
J3 Grenada, J6 St. Lucia, J7 Dominica.
P2 Papua New Guinea.
S2 Bangladesh, S7 Seychelles.
T2 Tuvalu, T3 Kiribati.

VE1, VE2, VE3, VE4, VE5, VE6, VE7, VE8, VK1, VK2, VK2 Lord Howe Is., VK3, VK4, VK5, VK6, VK7, VK8, VK9 Christmas Is., VK9 Cocos Is., VK9 Norfolk Is., VK9 Willis Is., VK0 Heard Is., VK0 Macquarie Is., VK0/VP8 Antarctic, V0, VP1, VP2A, Antigua Barbuda, VP2E Anguilla, VP2K St. Kittis Nevis, VP2M, Montserrat, VP2S St. Vincent, VP2V British Virgin Is., VP5 Turks & Caicos, VP8 Falkland Is., VP8 S. Georgia, VP8 S. Orkney Is., VP8 S. Sandwich Is., VP8 S. Shetland Is., VP9, VQ9 Chagos, VR1 British Phoenix Is., VR6, VS5, VS6, VX9 Sable Is., VY1 Yukon, VYO St. Paul Is., VU India, VU Laccadive Is., VU Andaman & Nicobar Is.

YJ.

ZB2, ZC4/5B4, ZD7, ZD8, ZD9, ZE, ZF, ZK1 Cook Is., ZK1 Manihiki, ZK2 Nuie, ZL1, ZL2, ZL3, ZL4, ZL Auckland and Campbell Is., ZL Chatham Is., ZL Kermadec Is., ZM7.

3B6/3B7 Agalega and St. Brandon, 3B8 Mauritius, 3B9 Rodriguez Is., 3D2 Fiji, 3D6 Swaziland.

4S7.

5H3, 5N2, 5W Samoa, 5X5, 5Z4.

6Y5.

7P8, 7Q7.

8P, 8R.

9G1, 9H Maltese Is., 9J2, 9L1, 9M2 W. Malaysia, 9M6/9M8 E. Malaysia, 9V1, 9Y4.

*All calls operated from Commonwealth controlled areas of the Antarctic (VK0, VP8, ZL5 etc.) count as one call area.

AUSTRALIAN AWARDS

For some years, two medallions have been awarded, a silver one for the top scoring VK, and a bronze one for that station filling the middle placing among the total VK entries.

As an experiment aimed at getting a wider spread of entrants from the various Australian call areas so that last year's entry of 43 can be improved upon, this year there will be:

1. An individual award to the highest VK scorer — a gold medallion.
2. A state team award — 4 silver medallions to the state team of 4 which achieves the highest aggregate score. If the "individual" winner is a member of this team, he will receive the gold medallion instead of the silver one.
3. An award, as before, to the middle placing among VK entrants, i.e. to say, the 22nd placing among 43 or 44 entrants.

Results of the 1980 contest appeared in Amateur Radio of November 1980. ■

QSL CARDS FOR VK9/0

This is a note directed to operators who work a VK9 or VK0 lor the lirst time and inted sending a QSL card through the Federal QSL Bureau. Due to some difficulyt in keeping up with these areas If, when you make out the card, could you give the VK9/0 location. It will assist my sorting and also help to pin down illegal operations. I would point out here that there appears to be quite a lot of this activity. I fail to believe that all the cards I receive for VK9 and VK0 (that I cannot find an operator for) have call signs on the cards that the operator d:d not hear.

I will try and have a list published of call signs for the VK9 and VK0 area for which I cannot find a legal owner.

Neil Penfold VK6NE,
VK9/0 Federal QSL Manager. ■

SPOTLIGHT ON SWLing

Robin Hawood VK7RH
5 Helen St., Launceston, Tasmania 7250

You will probably have heard of a new magazine simply entitled "Voices". This publication on short-wave broadcasting comes from Finland and is devoted exclusively to programming. It aims to present details of programmes to be broadcast by the various international stations during the month of issue, in short, a programme guide. It is not geared for DXers but for the ordinary short-wave listener. Unfortunately, it has had teething troubles since it first appeared in July 1980, and they still seem to be having problems, judging by their January 1981 issue. The airmail subscription rate is

approximately $A20.00 or 70 Finnish marks. Their address is PO Box 226, Helsinki 17 Finland.

Yet another DX programme is being modified; this time it is Radio Nederland's popular "DX Jukebox". From July, it will be changed into an Electronic Media Review type magazine. The DX portions will be gradually phased out over the next few months leading up to the change-over. After the BBC World Radio Club was concluded late last year, the BBC was deluged with protests on the closure of this popular programme. One result of the protests has been that they have included a weekly five minute segment called "Waveguide" as an aid to BBC World Service listeners with reception problems. The best time to listen to it here in Australia would be at the 2155 GMT release on the W/S outlet, at this hour.

One way to keep up with the news of HF propagation as well as the latest amateur DX happenings is to listen daily on 14090 kHz C/W at 2200 GMT for W1AW. This station is at the ARRL headquarters in Newington, Conn., and also operates on 7090, 21090 and 28090 kHz transmitting bulletins of information for amateurs several times a day. The C/W sked at 2200 is sent at approximately 19 w.p.m. but they also send at other speeds at other times. They transmit a RTTY copy of these bulletins on these channels at times also.

There is also a weekly net for amateurs and SWL DXers to exchange tips and news of loggings. It is scheduled for 0900 Wednesdays on 3565 kHz and is conducted by members of the Australian Radio DX Club. Net control is either VK3BVW or VK1DN.

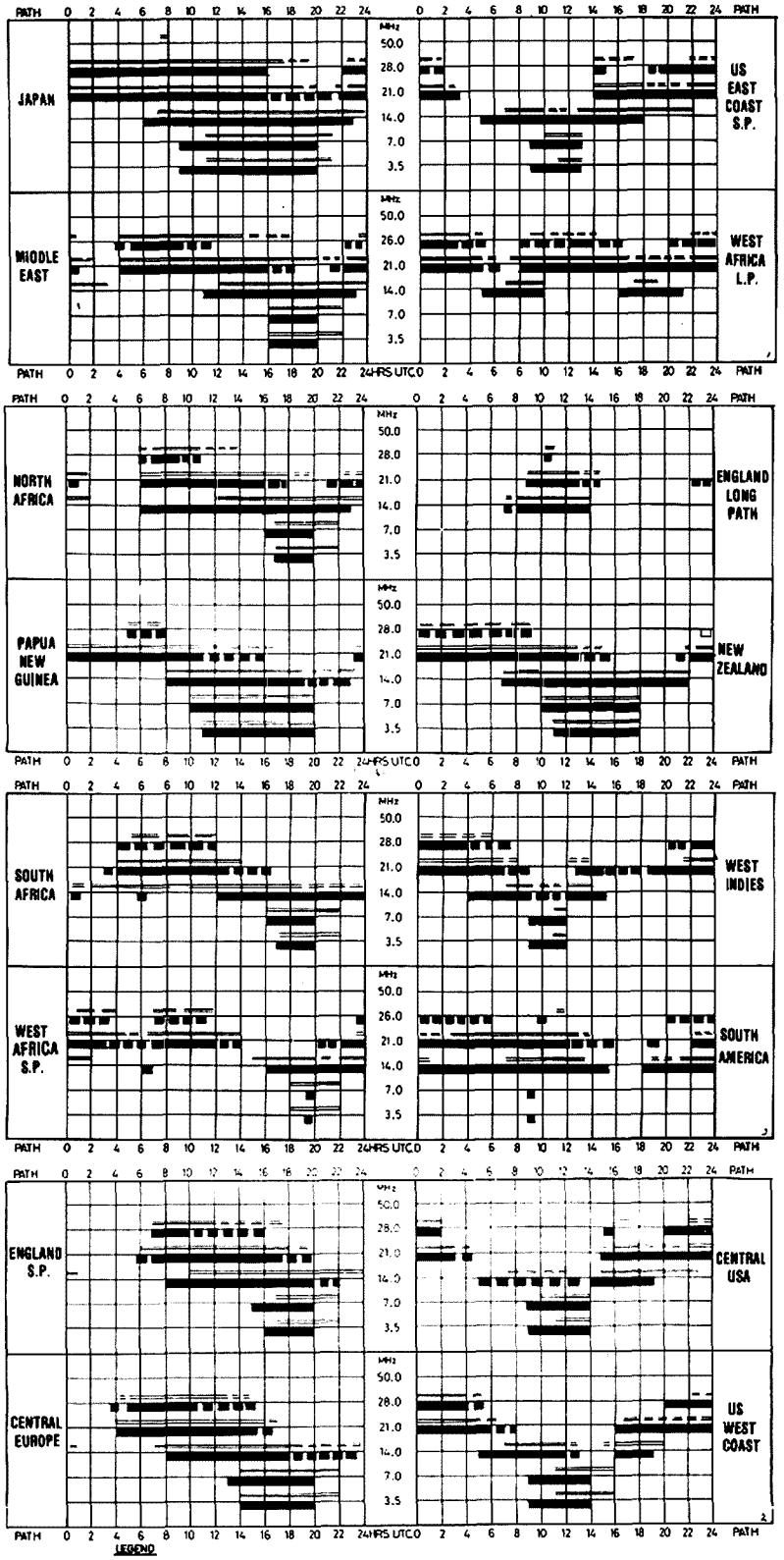
It is pleasing to hear that, under the new frequency plan proposed by the Department of Communications, the 40 metre amateur allocation is to be increased to 7.3 MHz in line with the American allocations. This is to be on the basis of non-interference. Now the only clarification is what the criteria will be in judging whether a station on a particular frequency is aiming its signal for Australian audiences or to another region. I suspect somehow that it will not make much difference, due to the crowded nature of the 42 metre broadcasting band in the evening hours, although I am still at a loss as to why they did not increase the 80 metre allocation to 3.8 MHz. That allocation would have made more sense than the extra 200 kHz on 40 metres, in my opinion.

Unfortunately, due to time commitments, I am unable to present the information on collating band charts. Hopefully, it will be in next month's column. Until then, the best of DXing and 73. ■

HEARD ANY GOOD "RUMOURS" LATELY?
TELL A.R. ABOUT THEM

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

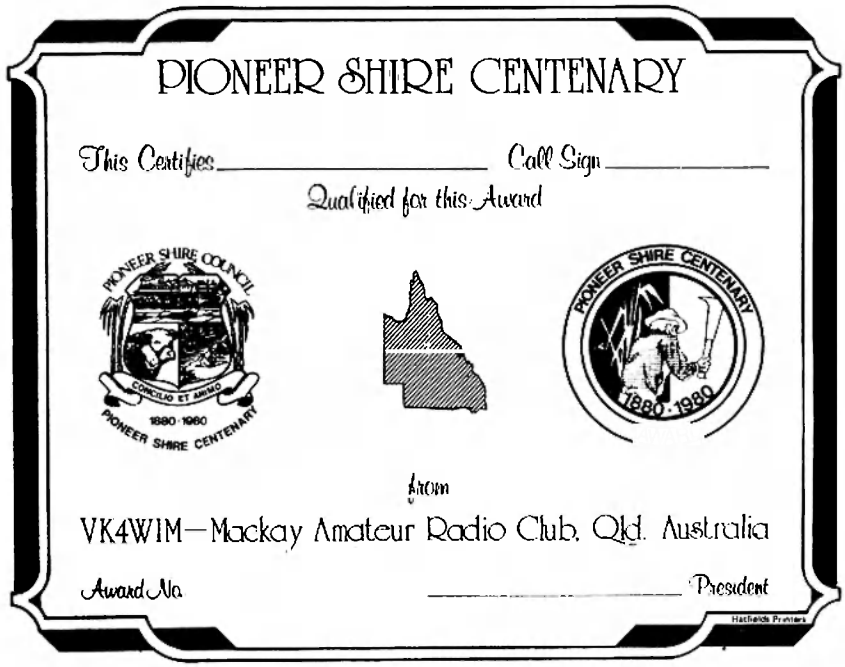
AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

PIONEER SHIRE CENTENARY AWARD
The Mackay Amateur Radio Club, Queensland, offers this award to all amateurs and SWLs for working/hearing Club members. This award is available during the Pioneer Shire Centenary year, which commenced on 1st July, 1980.

RULES
1. Work the Club station VK4WIM plus four separate Club members; or
2. Work eight separate Club members stations; or
3. Work four separate Club member stations on CW.
4. Contacts may be made on any authorised mode, any band, but CW QSOs count double as in 3.
5. Claims for the award shall be in the form of a full log extract signed by two other licensed amateurs or a JP, showing the stations worked. QSL cards are not required.
6. SWLs may claim for the award as in 5.
7. The cost is $2.00 or equivalent in IRCs.
8. Applications should be forwarded to the Awards Manager, Mackay Amateur Radio Club, PO Box 1069, Mackay, Qld. 4740.

DESCRIPTION
The award is a multi-coloured print measuring 280 mm x 200 mm.



BRISBANE AMATEUR RADIO CLUB AWARD
The Brisbane Amateur Radio Club will issue this award to all amateurs and SWLs for working/hearing Club members in accordance with the following rules:

1. Work the Club station VK4BA plus four other Club members and obtain their Club number; or
2. Work any seven members of the Club and obtain their Club number.
3. Contacts may be made on any band, any authorised mode.
4. Claims shall be in the form of a full log extract showing the stations worked and Club members.
5. SWLs may claim for the award as in 4.
6. The cost is $1.00 or equivalent in IRCs.
7. Applications should be forwarded to the Awards Manager, Brisbane Amateur Radio Club, PO Box 310, Mt. Gravatt, Qld. 4076.
8. The Club holds a net each Monday at 0930Z on 28.450 MHz. Members may be found also on 21.175 MHz following the WIA news broadcast at 2300Z on Saturdays (Sunday local time).

DESCRIPTION
This award features an overhead photograph of Brisbane in green with the river in the foreground and all printing in black. The award measures 240 mm x 185 mm.

Good hunting.

QSP

NEW 10 MHz BAND
According to IARU R1 News October 1980 the ARRL Board directed the filing of a petition to FCC requesting that the new 10 MHz band be made available to General, Advanced and Extra Class licensee for CW and RTTY operation only, with an input power limit of 250W. Two Canadian amateurs, VK3OQ and VE3DFB, are stated as awaiting special one year VE9 licences in the experimental service to operate low bit rate digital communications anywhere in the 10.1 to 10.15 MHz future amateur band with an output power limit of 5W. The Philippines Administration is stated to have agreed to release the 10.1-10.15 MHz band to Filipino amateurs on 1-1-1982.

50 YEARS AGO
"Experiments conducted in Holland and Norway seem to indicate that wireless signals may go up into space for 1,000,000 or 2,000,000 miles, and be reflected back by a phenomenon similar to that which causes the aurora lights," said Mr. D. F. Martyn in an address on the "Possibility of wireless communication with Mars". To send signals to Mars it would be necessary to use a wave length of considerably less than 100 metres, for longer waves would be reflected back to earth. It could be assumed that the wave length used for commercial wireless on Mars was not less than 1000 metres. The chance of messages from earth being received by casual listeners on Mars was therefore very remote.

From the Ballarat Courier May 17, 1980.

VICTORIAN DIVISION EASTERN ZONE CONVENTION

14th AND 15th MARCH 1981

PLACE
Gippsland Educational Tours Hostel at Moondarah Reservoir, 20 kms north of Moe.

PROGRAMME
Amateur radio activities, competitions, displays, lectures. Bush strolling and swimming.

REGISTRATION AND INFORMATION
Sue McDonald VK3NW, Grande Ridge Road, Carrajung 3844. Ph. (051) 94 2284.

Pre-school children are free. Overnighters need supply sheets and pillows slips only.

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.

PO Box 110,
Blackburn, Victoria 3130
22nd November, 1980

The Editor,
Dear Sir,

In recent months readers of the "Letters . . ." colum of **AR** have witnessed many expressions and exchanges of opinion. We may thank the Editor for providing this forum. I should like to add my own views.

Lest I be drawn into a fray, may I state that I am not a WIA member, although I am an ARRL member and my wife and I exchange our respective WIA and ARRL publications. I am not a trained engineer, by qualification, nor am I a professional communicator. I received my first amateur licence in 1962 (WV2RRV) and have followed articles in the amateur publications with varying degrees of comprehension since approximately that time. I was largely inactive until 1977 when the call "VK0AC" was issued to me and subsequently my present licence. My undergraduate and post-graduate degrees are not in engineering but are in teaching-related fields.

Many amateurs probably share my distress at a most recent exchange between Messrs. Bles and Yates (**AR**, all 1960: June, page 35; September, pp. 36-37, and November, page 32) and between other individuals, as well, because these exchanges have highlighted a basic tenet of amateur radio. That is that we are primarily hobbyist communicators and experimenters (priorities may be reversed?) who are licensed because of the potential we have for creating chaos in the RF spectrum if we operate with insufficient knowledge. We are fortunate to have amongst our "hobbyist" ranks some extremely proficient technical people, chartered and professional engineers, and world renowned scholars.

Our "journals" are not professional journals nor would my ARRL or my wife's WIA memberships count either of us as members of a "learned society". In spite of this, our journals provide us with a great deal of technically accurate information to enrich our hobby. In the past 15-20 years of reading (with varying degrees of comprehension) **QST** and, *more* recently, **AR**, I have sometimes come across information which appeared to be more "folklore" than accurate. I hasten to add that the editorial standards of **AR** and **QST** appear to be considerably higher than some of the "competing" commercial publications. (I am thinking as much of overseas publications as I am of domestic ones.)

Whereas a little bit of "folklore" may be seen in our journals, one often witnesses the exchanges of "folklore" on the amateur bands. (I refer not solely to the "5 x 9+" reports I received while VK0AC!) One need not be knowledgeable in spread-spectrum communications to express one's views on the "woodpecker" nor does one have to perform a great deal of mathematical manipulation to "experience" the woodpecker. I don't understand a great deal about this phenomenon of the past 3-4 years although I hope that my past Intruder Watch reports were not wasted effort. I doubt if most 2m proponents would consult a table of Bessel functions before the operation of the "push to talk" on their favourite equipment.

The above is to say that we may experience a great deal of the wonders of wireless communications without having to delve deeply into the theory of what makes it work.

Those in our midst with academic backgrounds and the patience to help raise the standard of the hobby which we enjoy have a strong contribution to make. Those with a technical or non-academic background can often make equally great contributions. Each should recognize the other's competence and, perhaps more importantly, his own areas of inexperience.

Perhaps a minor criticism of our journals could be made that the inclusion of references is an all-too-rare practice. When I read an article in a professional journal and see a controversial statement or questionable citation, the reference or footnote encourages me to do further reading before dismissing or accepting the statement.

The information of C. Yates in the June **AR** appears to this reader to be accurate. I am sure that any other individual with Mr. Yates' experience would be able to provide similar information without recourse to a pile of textbooks, but perhaps the inclusion of pertinent references should be a more common practice in **AR**'s articles and letters. It would be a valuable service and, in this instance, had Mr. Yates substantiated some of his information with pertinent references, both Mr. Bles and I would have derived even greater educational value from the June **AR** letter. Pertinent references in the letter of Mr. Bles would also have been useful. The apparent accuracy of the suggestions in the June letter, made more difficult to substantiate by the lack of references, could have been more effectively rebutted if Mr. Bles had cited his own reference sources in concluding "the man is completely wrong" (1). If unable to substantiate his statement with a supporting reference, a more measured reply might have been prefaced with "In my albeit limited knowledge, I hold the view that . . ." Where heated discussion may be a likely consequence of a publication, it might be a service if the Editor could request that writers supply their sources used.

Mr. Yates says that he has cancelled his amateur licence. I hope that he has preserved his AOCP and will rejoin our ranks for it would appear that he may have much to offer to myself and other hobbyists. I am sura that others share my own desire to learn more about our hobby and share my own belief that both Messrs. Bles and Yates have talents to offer. I have much to learn about this one of my hobbies and I sometimes hear what seems to my thinking to be more folklore than fact.

If writers in **AR** could follow a couple of guidelines it could raise the standard of the publication and improve the educational value of their work. We need to recall what the "A" of AOCP stands for and be careful to assist readers in separating fact and opinion. In the latter regard, references to the established literature are most useful and have great educational value.

I have a great deal to learn about my hobby and I hope that the Editor and the writers whose work appears in **AR** will continue to contribute to my education.

Respectfully yours,
Art Coolidge VK3AOK, AOCP.

REFERENCES

(1) A. Bles, "Letters to the Editor", **Amateur Radio**, Vol. 48, No. 9, p. 36, September 1980. ■

73 Gray Street, Kogarah, NSW 2217
12th November, 1980

The Editor,
Dear Sir,

I would like to comment on a letter signed by Mr. Colin Yates in the November issue of AR.

Mr. Yates, in his attack on Mr. A. Bles, implied that if an amateur performs some useful task to the Institute then he should be given special dispensation in regard to the need to operate his equipment in accordance with the terms of his licence. He also implies that, because of such "service", he should be immune from criticism if he does break the rules.

I do not believe that such views are acceptable to the majority of the amateur population. Certainly they are not acceptable to me.

Whilst people who do useful work on behalf of the Institute are to be applauded if their work is useful and not misguided, they must not expect favoured treatment in regard to the rules which are designed to protect the amateir population in general.

Yours faithfully,
C. E. Fredrickson VK2EC. ■

Both sides have now had a go, no further correspondence will be published on this subject. —Ed.

The Editor,
Dear Sir,

I thought 3NT was a bit unfair in his AR letter (November Issue) on the review of the IC2A. I think that the reviewer does a good job and 3NT should remember that when food reviewers comment on a restaurant they tell it the way they see it and the reader makes up his mind.

I don't see why Vicom should be allowed to edit a review prior to publication, but I think it fair to publish *any communication from the* equipment manufacturer (or Aust. rep.) if the review is incorrect in any part.

R. N. Torington VK3TZ.
4 Thistle Street, Pascoe Vale South.
12/11/80. ■

PO Box 868, Albany 6330, Western Australia

The Editor,
Dear Sir,

I have an old mantle model G64ME Hotpoint Bandmaster 00012506, 19510 radio. Would you be able to find me a schematic on the circuit? Who should I write to?

Yours sincerely,
A. A. Paton.

Can any reader help?—Ed. ■

HELP WITH INTRUDER WATCHING

22 Risely Avenue, Royal Park, SA 5014
16th December, 1980

The Editor,
Dear Sir,

Firstly, I would like to express my appreciation to the Federal Awards Manager, Bill Verrall VK5WV, for his efforts in the Awards Column of Amateur Radio. Each month when the latest issue of the magazine arrives, it is the awards column which gets my first attention.

In the December 1980 Issue the Awards Manager mentions some of the WIA awards, and his disappointment in the number of applications he receives. He then goes on to make some comments on QSL cards. Here, I think, he has hit the nail right on the head. One of the biggest problems with WIA awards is the requirement for QSL cards. Since I am *interested in* the VHFCC, I have sent out over three hundred cards for six metres contacts during my nine years on that band. So far I have not received enough back to apply for the award.

I realise that many people with limited or novice licences do not wish to go to the expense of having cards printed, which may not be all used by the time they graduate to a higher licence. But there are alternatives. For instance, cards could be obtained without call signs and a stencil used until the new call sign is obtained, any left being then printed with the new call sign, or a new stencil made.

Alternatively, a card could be typed out, tedious but better than nothing, or a simple photostat copy, even if only on paper. If all else fails, why not at least write a letter of confirmation? As long as it contains all the right information it should be acceptable.

The only other way to increase applications would be to drop the requirement for QSL cards, and accept a certified log extract, as do many other award committees. Even if this easing of rules could only be applied to WIA members it would be a help. There seems to be an inconsistency in that for Federal awards QSLs are required, yet for Divisional awards (e.g. VK7, Devil Award; VK6, Zone 29 Award, etc.) they are not.

Anyway, as soon as I get enough cards together my application will be forthcoming, so at least there is one interested person out there.

Yours faithfully,
R. W. Pitcher VK5AN (ex VK5ZGZ). ■

98 Canterbury Road, Canterbury, Vic 3126
Phone: 836 0707
8th December, 1980

The Editor,
Dear Sir,
I wish to register a "mild" complaint regarding the QSP article on the construction of a morse code key in the November issue of Amateur Radio, page 6.

This company has been advertising a British pattern morse code key for two years or so in Amateur Radio magazine and has now sold over 800 of them, sufficient proof that the key is of a high standard.

The article by Mr. Nick Rozakeas is obviously well meant but its context infers that **ALL** keys on the market combine identical design and none of them are any good for one reason or another.

The illustration in my issue is not overly clear but what can be observed seems far removed from the results of a good engineer insofar as it appears to include bits and pieces which seemingly might have come from hose fittings to headphone plugs! Its basic concept (the arm and fulcrum) is nothing more than a copy of the American principle which would be hard-pressed to compete with the British system in the matter of "balance" — a point your engineering scribe omits to consider.

I say again that my complaint is a "mild" one because I have some doubts that Mr. Rozakeas will compete too heavily with the advertisers in your magazine; but what I do think is that the editors should perhaps be a little more circumspect in publishing comments by article writers which, in a manner of speaking, gives readers the wrong impression and infers that the goods are inferior.

Only "heavy fisted" operators require a heavy key base (designed originally I suggest for use aboard ship) but, in any case, all keys are provided with holes for screwing the key down to an operating table if required.

Yours faithfully,
G. Maxwell Hull, Manager. ■

211 Hopetoun Avenue, Vaucluse 2030,
NSW, Australia
337 6325
24/11/1980

The Editor,
Dear Sir,
A VK-ZL Chapter of the Royal Signals Amateur Radio Society has now been formed and we would like to hear from eligible people of either sex who wish to join.

Conditions for acceptance as members are that you must be one of the following:—

1. A serving member of the Royal Corps of Signals.
2. Associate membership may be granted to any member of the British Army, any member serving or retired members of a Commonwealth Signal Corps. A member of any branch of the Commonwealth Army in a Signals Section.

Nets are held as under:—
Daily: 21.170 at 12.00 GMT. For overseas and local members.
Every Wednesday: 3.605 at 10.00 GMT. For VK/ZL members.
Every Saturday: 28.450 at 23.00 GMT. For VK/ZL/VE members.

Senior Citizens and others in receipt of a disability pension will be entitled to reduced rates.

As and from December 1st, 1980, the VK-ZL Chapter of the RSARS will be issuing awards which can only be claimed by members of the RSARS. It is also envisaged that early in 1981 we shall have a Club Station.

If prospective members have any queries as to their eligibility or wish to join, then please contact the writer enclosing a 30 cent stamp to cover the cost of posting a magazine. The postal address is Box 402, Double Bay, Sydney 2028. I can be contacted on the telephone at (02) 337 6325 at all times.

Yours faithfully,
Les Simons VK2NLE,
Secretary, Royal Signals Amateur Radio Society (VK-ZL) Chapter. ■

181 Punchbowl Road, Launceston, Tas. 7250
November 28th, 1980

The Editor,
Dear Sir,
Congratulations to the VK5 Division for another RD Contest win, but how did they do it? It wasn't the participation or the support as stated. VK7 didn't rate a mention but the result table shows us with the highest full call participation and a higher average score than VK5.

Some years ago I pointed out in this column that by a previous method of calculating, the Trophy score was in error in that the final result was in proportion to the number of licences. The previous Contest Manager changed the formulae and we saw the smallest Division (VK1) break the VK5 stranglehold and win in 1978.

The new Contest Manager saw fit to make quite a number of changes to the rules, including the Trophy points calculation. His apparent aim was to have as a bonus the points scored by other than full calls, and only calculate participation of full calls. This change brought us back to the final result being proportional to the population of the Division. To prove the point divide the relevant figures of the VK5 results by three and re-calculate the Trophy score. You will end up with a figure of about half of VK7's score.

While I'll agree that the smaller states have proved they can muster the numbers the present bias against us is just too much. Would I suggest the basis of new formulae could be total score divided by the number of full calls.

I see that Wally's term is due to expire in June. It seems a pity now that he obviously has his system tuned to a fine pitch. The quick result this year was proof of that. I also suggest that with the changeover to a new Contest Manager the rules of Contests be left to a committee appointed by Federal Council. Federal Council has declared that it is unable to deal with contest rules at Federal Convention time but passing the buck to one man is just asking too much of him.

I repeat. VK5 won the 1980 RD Contest not due to participation, not due to support from members, but just by the higher number of logs possible from a higher population than VK7.

Yours faithfully,
Peter Frith VK7PF. ■

9 McRae Place, Burnie, Tasmania 7320
19/11/80

The Editor,
Dear Sir,
Through your magazine I wish to reach two groups in Perth (WA). Last year I applied to the Perth Radio League for their WAY 79 Award. Despite follow-up letters, on-air contacts and phone calls I have received no award or acknowledgment. Also last year I applied to the organisers of the West Australia 150th Year Celebration Contest. More letters and on-air contacts have produced no results.

Could someone from these organisations please contact me?

Yours faithfully,
Fred Reid VK7NFR. ■

40 Virginia Road, Tankerton, Whistable, Kent
27th November, 1980

The Editor,
Dear Sir,
Simon Langton Grammar School in Canterbury, England, are celebrating the centenary of the founding of the School in 1881. To this end we shall be operating a special events station, active on all HF bands under the call GB4SLS, to run from 22nd to 28th February, 1981. During this time we are anxious to contact as many past pupils of the school as possible, especially those who are licensed amateurs and residing in Australia.

I would be most grateful, therefore, if a small message could be put to this effect in your magazine, stating also that anyone interested in making a sked with us should contact either myself, G4BBW, address as above, or G3LCK, c/o G30SL, Simon Langton Grammar School for Boys, Nackington Road, Canterbury, Kent, England.

Andrew P. Smith G4BBW. ■

27 Chauvel Street, Melton South, Vic 3338
11/11/1980

The Editor,
Dear Sir,
It is with great dismay and disbelief that I have just read November AR letters to the editor. I reached for the cover to see if I had accidentally picked up an early copy of CB Action.

What rubbish we read! A Novice, Victorian branch member, slamming the NSW WIA broadcasts(page 5 of the call book lists time plus frequency of broadcasts); it is silly!

Then we have three Novices hoeing into VK3AMG, who apparently believes that if you are not as clever as he, you should not have a call.

What a waste of time and effort, could the members of WIA put their letter writing to a more constructive end, instead of the drivel put out now. We should be lobbying our MPs to get rid of channel 0 and 5A. Write letters to the WIA and try to shift them into pressing for a better deal for hams, third party phone patches, etc.

Try to be constructive. On a recent ABC programme (radio) which was discussing channel 0, calls were taken from interested parties, and I rang in. The comment was made when I referred to the ham band, and I quote, "Hams are an insignificant minority compared to the needs of the ethnics".

So how about it, let's all pull in the same direction to make the hobby better. United we may get a look in, divided our allocations will get less and less as big business finds more uses for them.

Yours,
Dave Toms VK3NSM. ■

PO Box 71,
Kooringal, via Wagga, NSW 2650
2/12/80

The Editor,
Dear Sir,
SOUTH-WEST AMATEUR RADIO SOCIETY
This Society, centred generally on the Riverina/Murrumbidgee Irrigation Areas in southern NSW, does hold quarterly meetings, and invites all licensed amateurs in the southern NSW and northern Victorian areas to attend.

Regular weekly net takes place around 3610 kHz Wednesdays at 2030 hrs. daylight saving time (2000 hrs. EST). Society call sign VK2DEI.

For further information concerning the activities of SWARS, interested parties are invited to contact the Hon. Secretary VK2SW, C/o PO Box 71, Kooringal, NSW 2650.

Many thanks.

Yours faithfully,
South-West Amateur Radio Society.
Sid Ward VK2SW, Hon. Secretary. ■

The accompanying letter is reproduced with permission:

5/17 Coolangatta Road Camberwell, Vic 3124
4/10/80

Mr. Alan R. Noble VK3BBM,
The President,
WIA (Vic. Division),
Dear Allan,
Somewhat belatedly (for which I offer apologies) I desire to acknowledge receipt of your very kind remarks relating to my 20 years of voluntary service to the Vic. Division as Inwards QSL Manager. To Council, I say "thank you very much for sending me such a kindly worded letter" — indeed I am most sincerely grateful for all

In particular, I would like Council members to be made aware that it has been my long established policy to have been loyal to the WIA (50 years); to have been conscientious in all voluntary jobs I've undertaken, and even if I say so myself, to have been a hard worker in carrying out the jobs concerned!

In conclusion, let me say how proud I am to be the holder of the badge of Honorary Life Membership, and the Meritorious Service Award (Vic.) — the Wireless Institute of Australia has been most kind to me — it really has!

73. Yours sincerely,
Eric W. Trebilcock (BEM) L30042. ■

TECHNICAL CORRESPONDENCE

PO Box 57, Bexley North, NSW 2207
14/11/1980

The Editor,
Dear Sir,

I was interested to read in the November issue of Don VK3BKU's QSO with W6NEY/CCW.

From the small amount of information given this would seem to be COHERENT CARRIER WAVE, a technique new to the Amateur Service, and pretty rare elsewhere.

Many of us probably know that a laser produces light that is monochromatic (of a single frequency), coherent (each photon is perfectly in phase with each other), of a single polarisation and emitted at a very low beamwidth, and that these characteristics make it such a powerful source of radiation for communication, etc. Imagine how useful it would be to produce Radio Frequency radiation with those characteristics!

CCW attempts to do just that. Due to the differences between a radiator for light and one for RF there is no substantial improvement in output power, but there are potentially great gains at the receiver end.

In theory, a receiver fitted to receive CCW from a transmitter of known characteristics would be able to:

(i) reject almost all QRN, except that, that was perfectly in phase with the received signal. In practice receiver noise would be the limiting factor.

(ii) reject almost all QRM, except for stronger signals exactly in phase with the received signal. In practice phase jitter and sidebands would let strong signals of ± 45° be received, weakly.

(iii) fit ten times more pulse-modulated channels in the spectrum space.

Imagine no QRN or QRM! It seems too good to be true, and it probably is. But synchronous detection techniques (such as for DSBSC) promise a great improvement in reception in the future. The trouble is that these techniques mean that a lot of data has to be handled quickly, but the advent of microprocessors solves that problem. In fact we will see a lot more of them in the future for multi-carrier transmission, diversity and error-correcting codes.

If the prospect of keeping abreast of the "state-of-the-art" in the future seems a bit daunting, we can at least take heart from the fact that the much-put-upon "appliance operators", with a good ear and experience, can still pull a signal out of the murk better than theory predicts. Radio is as much an art as a science and can be handled on a large number of levels, which is why I find it so fascinating.

I believe that some past issues of "Ham Radio" mentioned the use of CCW for E-M-E work, and I shall be interested to read November QST.

73. John A. Faulkner VK2PCS/YWA ■

40 St. Peters Terrace, Willunga, SA 5172
10th September, 1980

The Editor,
Dear Sir,

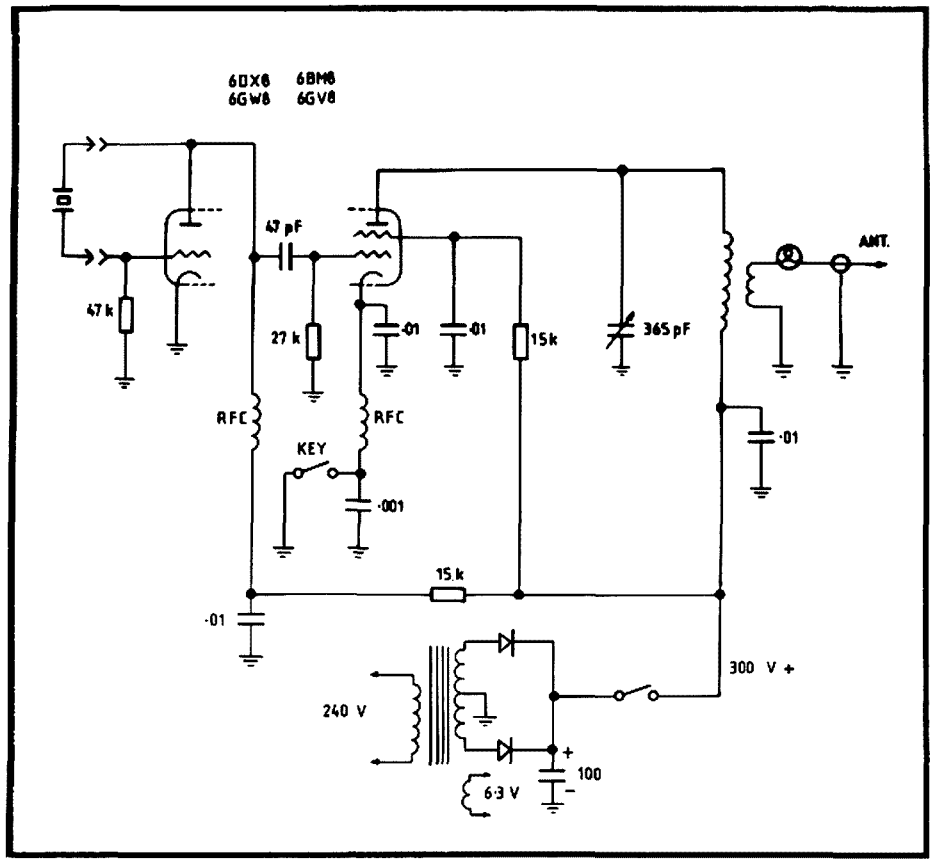
If we are trying to overcome the "black box" syndrome by inducing people to build their own equipment, then we will maximise our chances of success by presenting simple, cheap projects.

Good applied engineering is concerned primarily with securing a stipulated design objective in the simplest and cheapest manner.

Your 5 watt CW transmitter (September 1980) falls dismally in this regard, and is a stunning example of solid state technology gone berserk.

I present an alternative circuit which will do substantially the same job (below). Your circuit has about 100 components, mine has less than 20. Most of your components would be purchased new, most of mine can be salvaged from an old B & W TV set (save the crystal and plate capacitor). I could build mine from scratch and have it working in one hour of I set my mind to it, or I would take two or three hours if I wanted a pretty appearance. Yours could hardly be built in less than four or five nights. You price yours at $50 (including crystal), I price mine at nil cost (excluding crystal and assuming a modest junk box).

Your rig has a VXO, and the capability for battery operation which mine does not, but mine will readily work into any standing wave ratio.

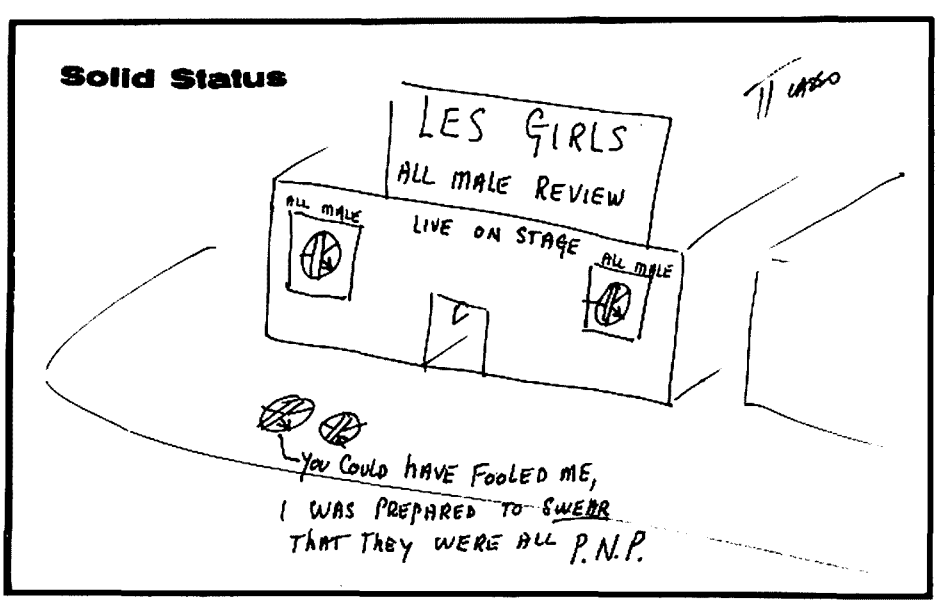


5 Watt CW Transmitter using Plasma Technology.

Solid state technology affords commercial manufacturers cheap, large-scale production and it is ideally suited to logic and non-linear applications. But for transmitters, transverters, receivers and converters of practical simplicity, valves remain incomparably superior for one-off, home built projects.

No criticism is intended of Mr. Diamond. He has completed a worthwhile project and I am gratified that he has taken the time and trouble to publish it in our magazine.

Yours faithfully,
Al Rechner VK5EK ■



AROUND THE TRADE

NEW UPDATED WIDE BAND SCANNING RECEIVER RELEASED

GFS Electronic Imports of Mitcham, Victoria, Australian distributors for JIL, recently announced the release in January of an updated version of the JIL SX-200 HF/VHF/UHF programmable scanning receiver.

The new SX-200 still maintains the features of its predecessor, including wide band coverage (26-28, 108-180 and 380-514 MHz), encompassing the 27 MHz and UHF CB Bands, the 10 metre, 6 metre, 2 metre and 70 centimetre Amateur Band, the Australian Low and High VHF commercial two-way bands, VHF satellite and the UHF commercial two-way band, as well as the aircraft band. Front panel mounted line tuning control to ensure that all Australian allocated VHF/UHF two-way radio frequencies are covered. AM and FM detection on all bands. Three mode squelch control that can be used to stop the set locking on spurious or carrier only signals. Digital clock and squelch output for use in triggering a tape recorder or some other auxiliary equipment. Memory back-up that lasts up to two years and capability of operating directly from 12 volts DC or 240 volts AC.

To improve the receiver, JIL have redesigned its RF, IF and audio board to make specification improvements in areas such as sensitivity, image rejection ratio and adjacent channel rejection. They believe this will put the new SX-200 even further ahead of some of the other receivers on the market. The expected selling price is $489, including sales tax. ■

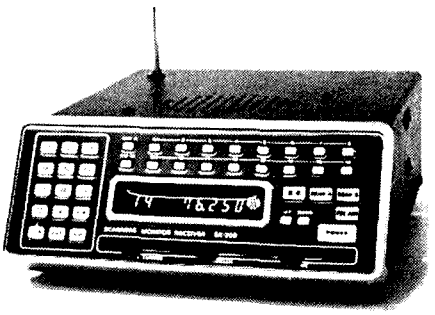
HITACHI RELEASE NEW 1000V OSCILLOSCOPE PROBES

Hitachi Denshi Ltd. have released a new Probe as an accessory for their range of oscilloscopes.

The new Probe, AT 100 AG 1.5, is a 100 to 1 and 10 to 1 switchable type usable up to 35 MHz.

The input impedance of the Probe is 100M ohm on 100 to 1 and 10M ohm on 10 to 1 setting. The Probe is rated at 1000V DC plus AC peak is fitted with a 1.5m cable and a BNC connector.

This new Hitachi Probe, usable with most brands of oscilloscopes, will be particularly useful to Field Technicians, Laboratory Engineers and TV Servicemen. The AT 100 AG 1.5 is available from Hitachi oscilloscope stockist, Standard Components Pty. Ltd., Leichhardt, for $67.00, plus tax. ■



VICOM APPOINTMENT

Vicom International Pty. Limited have announced the appointment of Mr. Philip Fitzherbert VK3FF as Regional Sales Manager, NSW, ACT and Northern Territory, the position being effective from 1st February, 1981.

Mr. Fitzherbert will be based at the Sydney office, 339 Pacific Highway, Crows Nest. Vicom sees the creation of this senior sales engineering position as indicative of the importance it attaches to the NSW market. ■

MAGAZINE REVIEW

Roy Hartkopf VK3AOH

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice.

HAM RADIA September 1980
Gunn Oscillator Design (TP). L Matching Networks (T). Pi Network Design (T). Half Wave Baluns (T).

CQ TV June 1980
Vision Mixer (various circuits).

BREAK IN August 1980
Special RTTY Issue.

QST September 1980
Collapsible Two Metre Quad (C). Synthesised Two Metre Transmiter (P).

RADIO COMMUNICATION October 1980
Antartica — Prefix Areas and Zones (G). G4BWE speech processor (P). Capacitor color coding systems (G).

RADIO COMMUNICATION November 1980
Pi Tuned Antenna Coupler (PT). Proportional Temperature Controlled Oven (PT).

HAM RADIO October 1980
Long Four Wire Transmission Lines (TC). Installing Radials (P). Voice Band Equaliser (C).

RADIO COMMUNICATION December 1980
Gaslet Preamp for 432 (C). G30QD Light Pen (C). HF Oscilloscope Probe (C). The Secret Listeners (G).

QST October 1980
Long Delay Echoes (G). SWR Bridge for Twin Lead (C).

QST November 1980
SSTV in Colour (G). Spread Spectrum (G). Ladder Crystal Filter Design (TP). Ionospheric Hole Experiment (G).

CQ October 1980
Multi Band Long Pericdic Antenna (PC).

BREAK IN November 1980
Home Brew Transceiver (CN). Discone Antenna (C). CMOS Oscillators (G).

ZERO BEAT October 1980
New SWL Magazine from Finland (G). Rules for Writers (G). ■

QSP

SYDNEY-RIO YACHT RACE 1982
A letter from the Race Director of the Cruising Yacht Club of Australia enquires if there would be amateur radio interest in monitoring reports from the fleet both for safety and daily position purposes and relaying these to operations control during the race. Additionally there might be the possibility of one or two amateurs being required on some of the larger vessels. The race is scheduled to start on 25th January, 1982, from Sydney Harbour and to end *in* Rio da *Janeiro after* sailing through dangerous waters, particularly around Cape Horn. All who might be interested please write to the Executive Office, Box 150, Toorak, Victoria 3142, as soon as possible. ■

FOR WELSHMEN
Or should we say Cumru? A circular from the organisers advises that Special Event Station GB2SDD (St. David's Day) will be active on 20m and other HF bands SSB all day 1st March to provide a focus for Welsh exiles abroad and anyone else likely to want a special QSL card. Work this station and 5 GW stations in March to qualify special award certificate. ■

ANTENNAS AND POWER LINES
An SEC of Victoria news release of 24th December reporting on the death of two CB operators on Mt. Tassie whilst engaged in erecting a CB aerial, urged such operators to look up and observe the position of power lines before erecting an antenna. Also, if an antenna is mounted on a vehicle take care when the combined height of vehicle and antenna is more than four metres. This is equally useful as a warning to amateur operators. ■

The Intruder Watch

Alf Chandler VK3LC,
Region 3 Intruder Watch Co-ordinator.

The following Resolution was passed at WARC 79 and reads:—

RESOLUTION CR.
Relating to the use of the frequency band 7000-7100 kHz. The World Administrative Radio Conference, Geneva, 1979.
considering —

(a) that the sharing of frequency bands by amateur and broadcasting services is undesirable and should be avoided;

(b) that it is desirable to have world-wide exclusive allocations for these services in Band 7;

(c) that the band 7000-7100 kHz is allocated on a world-wide basis exclusively to the amateur service.

resolves —

That the broadcasting service shall be prohibited from the band 7000-7100 kHz and that the broadcasting stations operating on frequencies in this band shall cease such operation.

1. This Resolution replaces Resolution No. 10 of the Administrative Radio Conference 1959.

— unquote —

It is a moot point whether the Peoples Republic of China will honour this Resolution and take their Radio Peking, etc., off this band. What do you think?

I believe that Radio Peking is very sensitive to complaints sent direct to the station management, so wouldn't it be an excellent idea if amateurs in Australia (and the world for that matter) wrote personal letters to Radio Peking complaining of the interference caused by their broadcast stations in our exclusive Amateur Band? The above Resolution could be quoted and emphasized. What about it, Boys? ■

SILENT KEYS

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

Mr. G. BRUGMAN	L60052
Mr. D. CHAMBERS	VK5NCG
Mr. R. HOARE	VK9RH
Mr. S. J. WILCOX	VK3KC
Mr. D. TAYLOR	L40879
Mr. J. RUSSELL	L40526
Mr. R. RUSSELL	VK3VER
Mr. E. R. DOLMAN	VK3AIN/G2DCG
Mr. J. A. BOELL	VK3AIF
Mr. D. D. PAINE	VK3FH
Mr. E. J. CRUISE	VK7EJ
Mr. K. E. FROST	L40709
Mr. D. C. HARDISTY	VK6DH

OBITUARIES

RAY HOARE VK9RH

Ray passed away on Thursday, 11th December, at his home on Norfolk Island, at the age of 68 years.

Ray was a well known amateur, and had resided on the Island for many years. Prior to his retirement, he worked on the staff of D.C.A.

Regrettably, he suffered indifferent health during the last five years of his life.

His passing will be mourned by many of the amateur fraternity.

Bill Hayes VK2AJL ■

GUS BRUGMAN L60052

Many VK6 amateurs were recently saddened to learn of the death of SWL L60052 Gus Brugman. Gus made many friends on the Perth amateur scene, especially among the Novices. Gus was also a keen flyer until poor health robbed him of that Interest. He leaves a widow and grown son.

Paul Weare VK6NPW ■

JOE BOELL VK3AIF

The many friends of Joe Boell VK3AIF were saddened to hear of his passing on 6th December.

I first met Joe when he joined the WIA (VK3 Div.) AOCP class in 1965 when I was the theory instructor. Joe had reached retiring age and was determined to pass the exam. His enthusiasm to do this was evident by the number of times he drove from his holiday home on Philip Island to attend the Monday night class. Joe passed after starting with a very limited knowledge of the subject and in doing so set a shining example to others who might consider the course beyond them. Joe was a gentleman, ever grateful for the assistance he received in obtaining his licence, never claiming credit for the outstanding effort he made himself.

The call sign VK3 AUSTRALIA IS FRIENOLY (phonetics used by Joe) will be sadly missed by many 20 metre amateurs.

On behalf of all amateurs who knew Joe, may I express deepest sympathy to his wife, Greta, and family. ■

ERNEST DOLMAN G2DCG/VK3AIN

With the deepest regret we announce the death of Ernest Dolman G2DCG/VK3AIN.

Resident in the U K, he and his wife Joan had visited Australia every second year since 1970, staying with relatives in Mentone. During his stays here he was a regular visitor to the Moorabbin and District Radio Club, and was also a keen participant in their field days whenever possible, operating under his Australian call of VK3AIN. He was a keen golfer and an active member of Margate (U.K) Rotary.

He was proud of the fact that he had worked more than 300 VKs, and right up to the day of his death he maintained regular weekly skeds with several. A number of VKs and their wives visiting the U.K. were his house guests, sometimes for several days, and he really enjoyed taking them for a tour of the county of Kent.

He had almost completed renovating and extending his Margate home, and was planning on retiring about the middle of 1981, and on visiting this time both Australia and New Zealand for an extended period. It was not to be.

He was a popular member of the Radio Amateur Old Timers' Club, and had been able to attend two or three of their annual dinners. On his several visits to this country he made many worthwhile amateur friendships. He had a most engaging personality, with a genuine interest in Australia and Australians. We are the richer for having known him.

He leaves a wife Joan, a daughter Carol, and two small grand-daughters, to whom we express our deepest sympathy.

Vale! Ernest Dolman.

Ron Whitaker VK3JS, Ron Jardine VK3PR, Harry Cliff VK3HC ■

Mr. E. J. CRUISE VK7EJ

On October 7th at Dodges Ferry Ted Cruise VK7EJ passed away.

Ted had made a commendable contribution to Amateur Radio and the WIA in Tasmania over a period of years.

He initially came to Tasmania with the Permanent Army with the rank of Captain acting as Recruiting Officer. Subsequently he joined Homecrafts and EIL as Service Manager and was later involved in medical electronic sales.

His initial WIA activity was in Devonport, where he occupied a number of positions in the North-West Branch, including President. During his term he was instrumental in equipping tha local Fire Brigade with radio equipment and was involved in a publicity operation from Mount Olympus in conjunction with the 1952 Olympic Games.

After moving to Hobart Ted continued his interest in helping newcomers, particularly with CW instruction and organisation of Youth Radio Schema classes. He also became even more involved in WIA affairs, occupying the position of VK7 Federal councillor from 1959 to 1973 inclusive, and also a term as Divisional President.

Ted was the initiator of the WIA's "Hamfest" at Campbell Town and these became a regular event during this period.

After retiring Ted lived at Bicheno, then Dodges Ferry, near Hobart, and continued his on-air activity (particularly CW), golf and assistance with community activities.

The Tasmanian Division wishes to record their appreciation of Ted's efforts and extend their condolences to his family.

Reg Emmatt VK7KK,
Tas. Div. President ■

QSP

10m REPEATER

According to November 1980 QST a W. German 10m FM repeater is operational from Mainz, near Frankfurt, call sign DB0QK, 06.00h to 20.00h (local) daily. Input frequency 29.57 MHz with 1750 Hz tone burst, output on 29.67 MHz. ■

DIVERSITY

Reading "Happenings" in QST for November 1980 provides an interesting insight into Amateur Radio in the USA. Here is a selection of items. The FCC dismissed two petitions requesting amateur examinations in Spanish and dismissed another petition for assigning sub-bands for third-party phone-patch. Individual amateurs are recorded as petitioning the FCC to grant extensions of US amateur phone sub-bands down to 3.75, 7.05, 14.1, 21.2 and 28.4 MHz on the grounds that the segments between the frequencies they request and the existing lower frequencies for telephony are under-utilized, foreigners can now compete more readily in the equipment and antenna spheres and FCC discrimination against US amateurs vis-a-vis foreign governments. Another amateur petitioner for similar extensions on 20 and 40m argued that the telephony mode has more users per "space" available than the CW mode. Another petitioner wanted the station ident time extended from 10 to 15 minutes plus removal of announcing the station identity with which contact has been established. An amateur radio club petitioned the FCC that the proposed new 10 MHz band be licensed in two segments — 10.1 to 10.12 MHz CW only and 10.12 to 10.15 MHz for CW and SSB subject to a licence class variation for the latter. ■

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

Yaesu FT221R 2m all-mode Tcvr, $575, AR22L rotator, $80. ATV convertor for 426 MHz, ZIM type, $25. Hanimex AC/DC Rx for ATV use, $75. 50W dummy load and Mid:and SWR/Power meter, $30. 20 amp. DC ammeter in case, $12. DX-150B comms. Rx., $100. Coax 20m low-loss "Superflex" helical outer cable with type-N connect., $90. 15m of RG-8 with UHF connect., $30. Antennae with balun/harness, 2m—4-el., $10; 2m—8-el., $35; 70 cm—13-el., $25; 50 cm—13-el. with 10m of coax., $35; FM—4-el., $20. Complete set ARA, $15, AR '76-'80, almost all issues, $25. Box of bits incl. coax connectors, 25m RG-58, valves, etc., $35. Xtals for ch. 40, 50 and Rpt. 2 for MR3, $20. Vendor going overseas, near offers considered. John VK3ZVZ. Ph. (03) 509 3793 AH or 509 7105.

FRG7 Rx in A1 cond. with manual, $250. Werner. Ph. (085) 32 3104.

Yaesu FT101Z, as new, $670 ONO. John VK3VUW. Ph. (03) 309 3737.

Kenwood TS-520 with SP-520 speaker, 80-10m, AC/DC, perfect cond., $550 ONO, can deliver in area Orange, Sydney, Newcastle. Philip Nicholson VK2BNI. Ph. (063) 52 1651 AH, Feb. only. PO Box 740, Bathurst 2795.

Converted Cybernet CB, 28 to 28.790 MHz cont., suitable Oscar xtal change, maximum 50W PEP, AM/SSB with CW fitted, $150. 13.8V, 12A power supply, $45. Rotator for yagi, $40. 40 ft. winch-up tower. VK4NZB/ZKY. Ph. (074) 62 1177. 80A Pralten St., Darby. Consider offers.

FT-7, exc. cond., mounting bracket, extra 10m xtal, manual and original packing, $400. SE-502 10m Txcvr also exc. cond., with manual and packing, $100. Ross VK4ZBS, QTHR. Ph. (075) 65 1445 weekends only.

FT101E with book, cables, mic., in good cond., front end AGC, modified per ARA No. 5, will deliver metropolitan Sydney, $600 ONO, credit can be arranged. VK2BQN, QTHR. Ph. (02) 451 7540.

Icom IC551 M/Mode 6m Txcvr, digital dual VFOs etc., with optional FM module, AC 240, DC 13.8V, showroom cond., bargain priced. VK2AAM. Ph. (049) 43 8910 AH.

Multi 7 2m FM Txcvr, fitted with reptr. 1 to 8 reverse 2, 4, 6, 8 plus 40, 50, 51, $165. Telmax heterodyne freq. meter, type T75, 85-1000 MHz with AC power supply, looks and operates like a BC221, $65. FTDX100 HF Txcvr, 80-10m, all transistor with valve driver and finals, 120W, AC/OC power supply, $300 ONO. VK3CCM, QTHR. Ph. (051) 44 3465.

Galaxy V, Mk. 2 Txcvr., 10-80m, 300W PEP, in good order, complete with handbook, value for money for new (or not so new) amateur at $310 ONO. P. Carter VK3AUO, QTHR. Ph. (03) 707 2098.

Heathkit SB200, $450. Moseley TA33 Jnr., $95. 14 MC valve SSB transceiver, $70 (home-brew). Transformers 1930V, 500 mA; 900V, 500 mA; 240/110 at 4.5 amps; 50 lt. 1" — 72 ohm dual coax., Command Tx and Rx, no despatch, buyer to collect. VK2TG, QTHR. Ph. (02) 533 2895.

SSB Txcvr, Philips, SC/08 8 chan. 100W out., ops. in 2 to 12 MHz band, two 6HF5 in FIN, CIR and align notes, $125; Partrige C core TFR 240/36V CT 12.5A and iron cored choke .02H, new computer spares, $40. Wanted: Valves 6BJ6, 6BN8, 6EW6, 6GK6, 6JB6, 6JH8, 12BE6, 12BZ6. VK4EF QTHR. Ph. (07) 38 1803.

Uniden 2020 Txcvr., perfect cond., used mostly for listening, 240 AC/12V DC, 80-10m coverage, mic., h'book, mobile power lead, $535; Hy-Gain 18 AVT, 80-10m trapped vert. antenna, $85. VK2NCJ, Glenbrook. Ph. (047) 39 1144.

SHUTE HARBOUR

MOTEL & Licensed Dining Room

SHUTE HARBOUR, Q. 4800

PHONE (079) 46 9131

DAVID McINERNEY

Yaesu FRG-7 Rx, as new, fine tune, $250. F. E. Leaver VK2SU, 50 Henry Street, Yenda 2681.

Yaesu FT101E, c/w cooling fan, mic., AC-DC, instruction manual, also spare finals and driver (new), $650; ATU home-brew, c/w built-in 5 position antenna switch, same height and depth as FT101E, $50; 18AVT/WB-A, 5 band vertical, 10-80m, c/w manual, exc. cond., $75; Tech. TE-20D signal generator, new, c/w leads, $50; GDO EICO, model 710, exc. cond., $50; National Panasonic solid state stereo tape recorder, four track, c/w five 7 in. (1800 ft.) tapes and operating manual, $200. VK2VDC, QTHR. Ph. (063) 42 2873 AH.

FT200 Txvr., mike, power supply, $300. Swan MB40A solid state 40 Mx Txcvr, mike, $150. DC-DC converter, 120W, 600V + 300V + neg. bias volts, $50. VK2ASI, QTHR. Ph. (067) 66 1033, AH (067) 65 7447.

Drake Txcvr TR4C in ex. cond., noise blanker fitted, 240V AC and 12V DC power supplies, three spare 6JB6A and one 12BY7A tubes, speaker, mike and instruction manual, a bargain at $475 the lot. Drake Rx RC4, mint cond., with noise blanker fitted and instruction manual, all normal xtals 3.5 to 29 MHz plus 13 extra covering 1.5 to 26 MHz, suitable stand-by Rx or for SWL, $450. VK3LC, QTHR. Ph. (03) 99 5344.

Swan Cygnet 300B HF AC-DC portable/mobile Txcvr, 300W PEP with mic., manual etc., good cond. and orig. carton, no mods., must sell, $390 or best offer. K. Blume VK2BJK, QTHR. Ph. (02) 449 1598.

FT7, new cond., modified with two 10 Mx band sections, 28.0-28.5/28.5-29.0 MHz, $360. HF linear amp., broadband 3-30 MHz, 150W CW O/P with 30W drive, compact, ideal for mobile use with FT7 etc., $160. Galaxy 5 Txcvr, good cond., reliable unit, c/w power supply, $200. HF phasing rig, consists of modified Heathkit DX100U Tx and Heathkit SB10 phasing adaptor, pick-up only, $80. 2 Mx FM Txcvr TCA1674, 20W, fitted with 3 channels, 40, 50, ch. 8, $40. Guitar amplifier "Goldentone", 20W, 2 channels with variable reverberation and vibrato, ideal small group, $80. S. G. Leatheam VK2BGL, QTHR. Ph. (047) 54 1096.

FT7 Txcvr, proven performer, with VK Powermate PSU, $400. Duo-band Chirnside 4-el. yagi for 15/10m, brand new with BN86 balun, $145. VK2DET, QTHR. Ph. (042) 84 3400.

TS120S, PS30, mint, VFO120, SP20, MC35S, MB100, never used, in orig. packing, workshop manual, the lot $900 ONO, would prefer buyer collects, but will pack for transport. John VK3VNQ, QTHR. Ph. (055) 23 1025.

Icam IC22S, 2m FM Txcvr, exc. order, complete with mobile bracket, two sets power leads, inst. manual, spare diodes, $200 ONO. VK3DEC. Ph. (03) 544 9328 AH.

MR6A 2m FM, ch. 2, 4, 8, 40, 50 fitted, 1 position spare, mic., converted to 240V AC, handy base rig for stations south of the Great Divide, what offers? All letters answered. Len VK3LP, QTHR.

Yaesu FLZ100Z linear amplifier, mint cond., matches FT101Z and FT901 series Txcvrs, $500. Bill VK3SB, QTHR. Ph. (03) 550 3521.

IC22A, exc. cond. with mobile mounting bracket, $165. VK3CB. Ph. (03) 241 4154.

Hygain TH3 Mk. 3, 3 el. tri-band yagi, 6 months old, good cond. VK3VOS, QTHR. Ph. (03) 439 9632.

ALBANY

LOCKYER LAUNDRETTE

32 SOUTH COAST HIGHWAY

(Off the Roundabout)

7 WASHERS and 4 DRYERS

Support a Local Amateur

VK6NQ

FOR SALE

Icom IC22S 2m Txcvr., brand new, in original carton, still under warranty, $280. Contact Mark VK3ACX. Phone (03) 836 7007.

Vertical Antenna, Hy Gain, 18 AVT/WB-A, good cond., instruction book, $60. VK2IC, QTHR.

TV506 6m Transverter, suits 520(S) and 820 series, etc., as new, in original carton, worked 10 countries on 6m, $175; DC-DC conv., suit 520(S), etc., brand new, in unopened carton, $59. VK2VSI, PO Box 16 Hawks Nest 2324. Ph. (049) 97 0164 AH, (049) 97 0383, 9 a.m.-1 p.m., Bus.

Shack Cleanout: All must go as I am returning overseas, all gear as new and in exc. cond. Heathkit SB102 Txcvr, w/mic., processor, CW and RTTY filter; AC-DC power supply, spare tubes, $495; Kenwood TS900 SSB/CW Txcvr., w/speaker, CW, RTTY filters, with mic., $525; Heath SB610 monitorscope, $125; Heath HM-102 power meter/SWR bridge,, $45; dummy load, 1 kW DC, $25; J and R SSTV monitor, camera, converter, tape deck and spares, $725; Ken 202 2m handie talkies, with all rpts. and spare batteries, $125 ea.; multi battery charger, $15; many accs. items, call for list. Jimmy VK2CK, QTHR. Ph. (02) 78 2545 AH.

FT101B, little used, spare valves, CW filter, $550; pair pony CB-36A 2 channel 28 MHz hand-held Txcvrs, in orig. cartons, $90 pair; Mosley A-203-C 20m 3 element beam, $50; commercial 20m helical mobile whip, $10. Malcolm VK5BA. Ph. (08) 380 7192.

Yaesu FT200/FP200 Txcvr plus PSU, some spare valves, good cond., in use at this station, $310. Richard VK2AIU, QTHR. Ph. (02) 36 2095.

Kenwood Trxvr TV502S, 2m SSB/CW, 12V DC, near new, 144-146 MHz, 10W output, suit 520, 520S, 820, 820S, $130, post free; "Amateur Radio" magazine, bound copies from 1946 to 1977 incl., complete set, offers please. VK6RO, QTHR 1980 Call Book.

Atlas 215X 5-band Txcvr, with NB aer. match, trans., mike, SWR meter, 2 cradles, 3 whips, handbook, coax and cables, ideal mobile, 200W PEP input, size 9½ in. x 9½ in. x 3½ in., exc. cond., $500 the lot. VK2BEB, QTHR. Ph. Batemans Bay (044) 72 4285.

Oskerblock, SWR-200B, 3-200 MHz, 52 or 75 ohm, $48; Asahi Mk. IIK SWR, dual meters, 1.8-150 MHz, 52 ohms, $25; Turner 254C desk mic., ceramic, 4 pin Kenwood type plug, $15. VK3UJ. QTHR. Ph. (03) 874 5632.

Yaesu FT101 In very good order, manual, mike and two new valves for final, $400. Keith Scott VK3SS, QTHR. Ph. (051) 47 2265.

FT7 Txcvr, very good cond., addit. xtal for 10m, proven performer, with VK powermate PSU, $400; Katsumi electronic keyer, EK 105A, $35. John VK2DET, QTHR. Ph. (042) 84 3400.

Sanyo RP8880 Rcvr., 0-30 MHz, SSB/AM, plus 88-108 MHz FM, 1 MHz and 10 kHz xtal marker, battery/240V, $240; SE502 10m Ixcvr, $90. Ray VK3ULZ. Ph. (03) 61 2463 Bus., (03) 857 7463 AH.

TS520S with MC50 mic and DC-DC converter, $650; with DG5 digital readout, $800. John Caine VK2VZX. Ph. (0684412) Binnaway 24.

Magazines: Approx. 50 Radio and Hobbies, from 1945 to 1948, also other mags., construction guides, etc., up to 1963. All offers to Gary VK3VNX. Ph. (03) 859 1205.

Kenwood TR7600, AR240 2m 800 ch. hand-held SX200 scanning Rx, microwave module 1296 MHz transverter, microwave module 432 MHz transverter, Icom IC502, Lunar 6m 25W linear amp., Icom IC202, Icom IC20L 10W 2m amp., 10m Swiss quad, 15 element 2m beam, 14 AVQ 40-10m trapped vertical, ZBJ 432 MHz beam, ATN 580 MHz ATV beam, Hitachi stereo tape recorder, LW, MW, SW, FM, c/w speakers, Discone Rx aerial 80-500 MHz, 2m Ringo and army 6m class C amp and ammeter, SWR meter, sniffer and sniffer beam, plus odds and ends, $80, ONO; AR22L rotator, VLF convertor, 10 kHz-500 kHz, IF out 3.5 MHz, 2 transistor radios, fast to slow scan PCB with IC sockets, cost $100, offers; IC701 HF rig, damaged KP202, EM300 multimeter, antenna dummy load, TV pattern generator, liner AM SSB 12W CB converted for 10m; other items, please enquire. Must sell, QSYing to VK4 early 1981. Lionel VK3NM, QTHR. Ph. (03) 88 3710 home, (03) 568 2733 work.

FOR SALE

Palomar HF Linear Amplifier, 200W PEP, new, $190; Ken KR400 rotator, little use, $100; SL56 active audio filter, 12 pole, 60 dB notch, $65; 18 AVT HF trap vertical, $85; Yaesu 8 pole, 9 MHz, 2.4 kHz xtal, tiller, new, $45; Hills 30 ft. telescopic mast, complete set guys and hardware, 2 extra sections, $50; HD de luxe 20m helical whips, new, $18 each. Bill Roper VK3ARZ. Ph. (03) 90 7409.

Multi-Palm II hand held 2m Txcvr, rptr. 2, 3, 5 and 8, simplex 40 and 50, as new. Also nicads, charger, leather case, $200 ONO. VK3BNJ. Ph. (03) 743 6708.

Ham Band only valve type Rx, covers 10-80m, professionally built, size 15" x 5½" x 11" deep, PSU on chassis, speaker supplied, operates satisfactorily, needs alignment, $85. Model 15 TTY machine, no keyboard, VGC, governed motor, $50. Creed 7B TTY machine, c/w keyboard, VGC, $50. VK3AQB, QTHR. Ph. (03) 337 4902.

Prop pitch motor, ideal heavy duty antenna rotator, good cond., CW 24V DC PSU. What offers? VK4PO, Brisbane. Ph. (07) 399 8660.

Yaesu FT200 and FP200, VGC, full 10m, $350. Pair 81IAs, $40 ONO. VK4WR, QTHR. Ph. (071) 41 1315.

Yaesu FT-101B, little used, complete with mic., CW filter, spare set of valves, manual, plugs and jacks etc., $550. VK5CY, QTHR. Ph. (088) 62 1018.

Rx C6500 Wadlay Loop System, 0.5-30 MHz, AC240V DC12V, with manual, good cond., $180. Les L31187, QTHR. Ph. (03) 277 1874.

Transformer 10kVA 415/0-120-240V, paper tape punch NCR572, toroid memory banks NCR500. Type 15 RTTY machine. Offers to Noel VK2AHH, QTHR.

Yaesu FRG-7 Rx, 05-29.9 MHz, ex Dick Smith, 12 months old, little use (logged 201 countries), original packing, $225 ONO. P. D. Mutton, 85 Finlay Street, Bridgewater, Tasmania, 7401.

FRG7 Yaesu Rx, bought 1979, little use, $200. VK2BQQ, QTHR. Ph. (02) 328 7892.

Shack Gear: TS520S HF Txcvr, $600; transverters to suit, TV502M; TV506 6M — $190 each; accessories for TS520S, VFO520 remote VFO, $100; MC50 desk mic., $10; SP520 external speaker, $20. IC502 6M SSB portable, $190; NAG50XL 6M linear, 80W integral 12V PSU, can be used as base supply for IC502, $150; FDK Multi-Quartz 16 2M 23 chan., repeaters 1-8 fitted, $80; antennas (4) 2M 14-el., $40 each; oscilloscope TRIO CO-1303D 75mm 5 MHz, $100. Reasonable offers, deals for two or more items. Contact Steve VK2ZTO, bus. hrs. (02) 427 6619, after hrs. (045) 73 2138.

FRC7 Rx, .5 MHz to 30 MHz, late model, clean, exc. cond., $225. VK2KR. Ph. (02) 449 4524.

WANTED

"Antenna Handbook" (K. Glanzer), Vol. 2 only. VK2KR, QTHR. Ph. (02) 449 4524.

Small CW or AM/CW Tx or VFO, covering 10-80m or 10/15/20m, solid state or valve type. VK6KV, QTHR. Ph. (09) 450 5192.

FT7 or similar **HF** Trx., cond. not important, prefer part exchange FT227R memoriser UHF unit, top cond., cash difference. Bill VK2BDW, QTHR. Ph. (02) 674 1184.

For rack mounted Collins R391 Comm. Rx.— top and bottom cover plates (R390 are identical), crystal oscillator sub-chassis cover plate and RF sub-chassis cover plate, 3TF7 ballast, modules and valves. VK3BFB, QTHR. Ph. (03) 93 1638.

ADVERTISERS' INDEX

WANTED

RF Spectrum Analyzer, 3.5 MHz to 500 MHz, also circuit or information on agent for Airmev Instruments, England, modulation meter 409-6917-1000. VK2ZQC, QTHR. Ph. (02) 81 2143 AH.

Swap "Ekco" colour TV for HF receiver, English models, works Brisbane area, push-button tuning, ideal experimenter. VK4NSG, Eidsvold 4627. Ph. 17.

Invalid Pensioner requires circuit boards for Philips TCA1675-77 Txcvr, base, mobile, or partly demolished, converter front ends, 2nd oscillator boards, 16.755 IF coils, 455 KC IF strips, mute, audio preamp, crystal switch boxes, etc. VK5ZNN, QTHR.

RM-3 Control Unit to suit Icom IC 701 Txcvr. Particulars to VK4OV, QTHR. Ph. (077) 44 2161 Bus., (077) 43 2808 AH.

Swan Txcvr, consider out of order equipment. VK2TG, QTHR. Ph. (02) 533 2895.

FRDX400 Rx, with manual, in working order. Werner. Ph. (085) 32 3104.

Rx R392/URR, R390 or **R390A/URR, SP600 JX**, any condition, also good quality commercially built short wave CW transmitter covering roughly 1 MHz to 25 MHz. VK5QQ, QTHR.

Hallicrafters HT55B or HT41 linear amplifier. John Wallace VK3VV, QTHR. Ph. (054) 43 2803.

Secondhand Hy-Gain TH5DX Beam, will swap FRG-7 g.c. VK3VSM. 19A Mason St, Regent 3073. Ph. 470 1253, ask for Max Martin.

Circuit diagram for 11m Trx Johnson Viking 325D, photo copy or original, also information on Slider for same. M. A. Martin VK3VSM. 19A Mason St., Regent 3073 (will reimburse).

Eddystone 770R or equal VHF Rx. Slade, 38 Barker Rd, Strathfield 2135. Ph. (02) 76 8070.

Help in getting old model 14 (FRXD) working. Machine reads tapes but does not punch correctly, need manuals, etc., or will pay for photocopying of same. Terry Robinson L31105, Lot 92 Russell Ave., Wocdend, Vic. 3442. Ph. (054) 27 1574.

Yaesu FT101E, in good working order. VK2UJ, QTHR.

Source of Tuning Capacitors, all sizes and values, also reduction drives, non-melting plug-in coil formers, slug tuneable, bandpass filters for AM SSB CW, xtal ceramic, etc. G. L. Dun VK2DMA. PO Wattamondara, NSW 2794.

Rotator or Tiller, Kenwood AT-200 antenna tuner and Uniden CB (Ferris, President). Danny. Ph. (03) 588 4414.

Teleprinter Model 15 reperforator and tap distributor for museum demonstrations. Colin Gracie L30060, PO Cavendish.

IC RM2 Digital Scanner Adapter for IC211 2m Txcvr. VK4AKU, QTHR. Ph. (071) 45 1714. Also VK3BAV. Ph. 598 8665.

STOLEN EQUIPMENT

FTDX401 Txcvr, serial No. 316293; Swan 240 Txcvr., No. unknown. Hurtle Watson VK5HW.

Kenwood hand-held TR2400, serial 61826, homebrew linear in diecast box, 2m 5/8 antenna — from VK2YGS. Ph. (02) 99 4993.

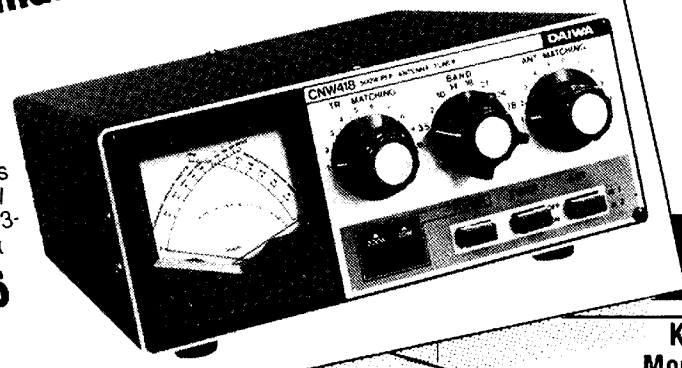
Yaesu FT221, serial SK302188, VHF linear KLM elec. serial 277; SWR meter, Oskerblock 47695 — from VK2BBJ. Ph. Hornsby Police.

Kenwood TS600, serial 610380; Icom IC251A, serial 1091C578; Yaesu FT707, serial 08040015; FT707 PSU, serial OH030451; Kenwood TL120, serial 800009; Kenwood R100 Rx, 1001024; UHF hand-held scanner, 50 ohm dummy load, several FLUKE multimeters; Kenwood GDO, BSR turntable P157; IC2A hand-held, 2 Emotator rotators 502 and 103, etc.— from Willis Trading in Perth.

On 7th December the Sydney showroom of VICOM in North Sydney was broken into and the following equipment was stolen: **Icom 2m all mode base unit IC251A**, No. 10901151; **Icom 6m all mode 80W base IC551D**, No. 10101408; **Icom HF transceiver IC701**, No. 8004944; **Icom desk mic. ICSM2**, No. 50020255; **Daiwa VHF/UHF SWR/power meter CN630.** Anyone with information on the stolen equipment should pass it on to either VICOM's Sydney or Melbourne office or to North Sydney Detectives.

DAIWA antenna tuners set new performance standards

For the first time there's an automatic tuner which reduces SWR to less than 1.5 to 1. The CNW 418 tuner circuitry covers 8 bands (3.5-28MHz). The SWR/Power meter covers 1.3-30MHz and is rated at 500w PEP. **$185**



Antennas

Discone
GDX 1
65MHz-520MHz $89
SCANX
65MHz-520MHz $39

Ringo
VAR/2
6dB gain.
Omni-directional with 3 half waves in phase and 1/8 wave stub. Gives extremely low angle of radiation for better signal coverage. $58

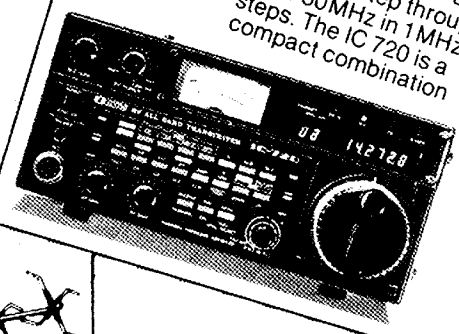
Jaybeam
MBM48/70 70 cm, 48 element.
14.9dB gain
$89

PBM18/70
70 cm, 18 element
14.9dB gain
$98

	Vicom 2 metre whips	
VAW/2/4F	¼ wave fibreglass	$5
VAW/2/4S	¼ wave stainless steel	$5
VAW/2/5	5/8 wave fibreglass	$12
VAW/2B	Base for whips	$4
	Vicom 2 metre Beams	
VAB/2/10	10 element 12dB gain	$79
VAB/2/5	10 element 8dB gain 500W	$37
VAB/2/X	Crossed Yagi 10 element 12dB gain	$99
	Vicom HF whips	
VAH/10	Mobile whip 10 m	$30
VAH/15	Mobile whip 15 m	$30
VAH/20	Mobile whip 20 m	$31
VAH/40	Mobile whip 40 m	$30
VAH/80	Mobile whip 80 m	$31

Get the world in one neat package with the ICOM 720

Fingertip control of all functions. Step through 0.1 to 30MHz in 1MHz steps. The IC 720 is a compact combination of all band transceiver and general coverage receiver, weighing just 7.5 kg. Dual VFO's, Pushbutton operation throughout.



Katsumi Morse Keyers

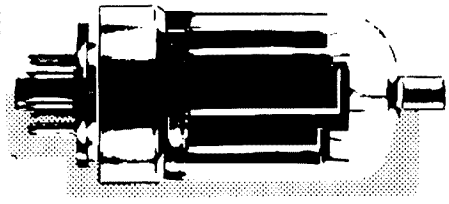
MK 1024 Programmable, electronic keyer $219
EK 121 Keyer with dot memory $69
EK 150 Electronic keyer $131

Bits and Pieces

BL50A 50ohm 4KW Balun $25
BL70A 70ohm 4KW Balun $25
PD30LS DAIWA low pass filter 32MHz $23
AD103X DAIWA masthead divider 70 m/2 m/HF $67
RD300 Kenwood 300W dummy load $82
VM1 Noise cancelling mic. $15

Check right here for the best valves in town–and the cheapest prices!

6KD6	Finals for Yaesu Linears	11.00
6JS6C	Finals for Yaesu Transceivers	11.00
12BY7A	Drivers	5.50
6146B	Finals	14.00



Check the range of Icom Transceivers

IC2A	2 m FM synthesized handheld	$312
IC22S	2 m FM synthesized transceiver 10W	$299
IC255A	2 m FM synthesized mobile 25W	$436
IC251A	2 m all mode transceiver 10W	$877
IC260A	2 m FM/SSB/CW synthesized mobile 10W	$665
IC280A	2 m FM synthesized remotable 10W	$450
IC502A	6 m SSB portable	$289
IC551	6 m All mode (not FM/VOX/PBT)	$599
IC720	HF all band solid state 100W	$1379
ICPS20	240V AC power supply	$239

VICOM

Vicom International Pty. Ltd.
68 Eastern Road,
South Melbourne, Vic. 3205
Phone (03)6996700

339 Pacific Highway,
Crows Nest, NSW 2065
Phone (02)4362766

Brisbane 352522, 3415377
Townsville 7722633

Wollongong 291455
Cairns 541035

N.Z. 287946
Adelaide 437981

Wagga 212125
Melbourne 8368635

URGENT URGENT URGENT

THIS CONCERNS YOU!

In this issue the QSP by Michael Owen VK3KI sets out the background to the recently issued Draft Table of Australian Frequency allocations.

In this QSP it is stressed that each individual amateur comment on the provisions of the table — both generally and specifically as they affect the Amateur Service.

This is one time when it is important that your individual voice be heard.

It is not enough to think that the Institute submission absolves you from action.

You are urged to sign the pro-forma and send it to the address indicated — or better still — copy it out in your own handwriting.

If you have other viewpoints you are urged to put them down on paper and send them to the address given in the pro-forma.

Time is short and responses must be in by February 16 or as shortly thereafter as possible.

P. WOLFENDEN VK3ZPA, Federal President
On behalf of the Executive

DO IT NOW!

ADDRESS:.....

.....

DATE:.....

The Chairman,
The Australian Tableof Frequency
Allocation Committee,
G.P.O. Box 5412CC,
MELBOURNE, 3001.

Dear Sir,

The public has been invited to comment through you on the draft Australian Table of Frequency Allocations.

I am aware of the position taken by the Wireless Institute of Australia in respect to the draft and I wish to express my support of that position.

I generally agree to the provisions of the draft as a whole but make the following points in respect to the Amateur Service, which I feel are important to all amateurs.

1. The new bands at 10, 18 and 24 MHz should be made available to amateurs in Australia at the earliest possible date — that is January 1, 1982.
2. WARC allocated the new band at 10 MHz to the Amateur Service on a secondary basis. I believe that Australia should remove any other existing services from this band because it is so narrow. I note that Australia's position at WARC was for an exclusively Amateur band at 10 MHz and I assume that, as no difficulty was then envisaged, there would be none now.
3. I strongly support the proposal to allocate 50-52 MHz to the Amateur service on a secondary basis but also firmly believe that Channel 0 should be relocated as soon as practicable.
4. I also support the allocation of a small segment around 3.8 MHz to facilitate international communication.

Yours sincerely,

SIGNED:.....

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

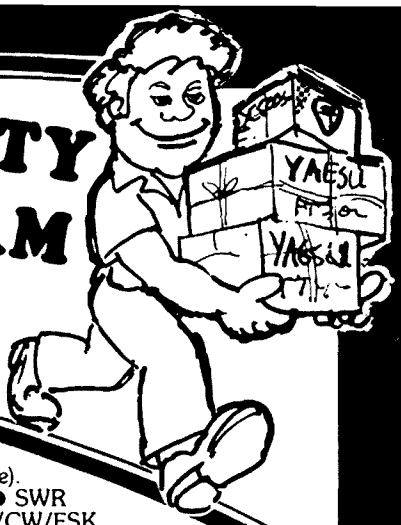
VOL. 49, No. 3 MARCH 1981

FEATURED IN THIS ISSUE:

- ★ *A REVIEW OF ANTENNA NOISE BRIDGES*
- ★ *AMATEUR RADIO — WHERE TO IN THE 1980s?*
- ★ *WORLD-WIDE COMMUNICATIONS FROM HAND-HELD AND MAN-PACK TRANSCEIVERS*
- ★ *AMATEUR RADIO ALONG THE CANNING STOCK ROUTE*

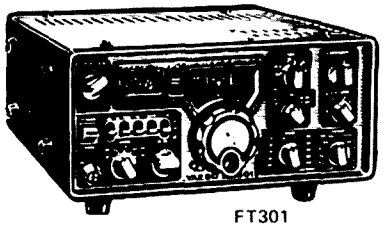
Registered for posting as a Publication — Category B

SAVE $$$ ON QUALITY YAESU HAM GEAR!



ALL STOCKS MUST GO!

YAESU FT301 NEAR COST!



FT301

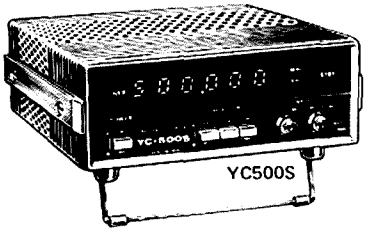
Yes, we only have 2 of these amazing rigs left (one at our York St Sydney store & the other at Adelaide). Features 200W PEP on 160-10M ● wideband tuning ● SWR protection circuitry ● requires only 12V DC ● AM/FM/CW/FSK modes ● speech processor ● VOX ● VFO/Fixed channel selector ● drive control PLUS MUCH MORE! Yes, the FT301 is still the rig for today's active amateur. Cat. D-2870

HURRY - THIS MAY BE YOUR LAST CHANCE!!!

~~$695.00~~

$635

SAVE $134 ON THIS YAESU YC500S DIGITAL FREQUENCY COUNTER



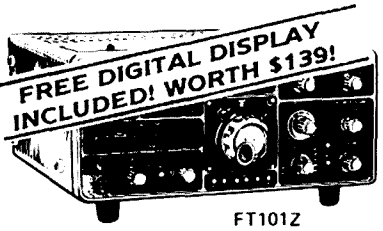
YC500S

Count your savings on this one! Covers 10Hz-500MHz with an accuracy of 1 P.P.M! has a large easy to read six digit readout. The built in AC & DC 12V supply enables complete portability. FANTASTIC VALUE. Cat. D-2892

~~$499.00~~

$365

101Z BARGAIN!!! 12 LEFT!



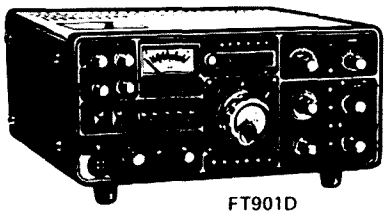
FT101Z

If you want a good reliable base station rig – at an incredible saving – then the Yaesu FT101Z is for you! Features SSB and CW modes plus a clarifier on either or both transmit and receive. It also has a VOX control. The FT101Z is fully compatible with the FT901 series of accessories – that's versatility!!! Today's technology at an old fashioned price. Cat. D-2862

NOTE: Does not include the new WARC bands.

$775

SAVE $124 – THE RADIO OF TOMORROW AT YESTERDAYS PRICE!



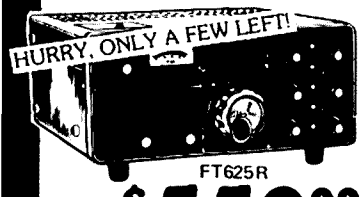
FT901D

This may be your last chance to get a truly magnificent base station rig at this price! Superlative performance on AM/FM/CW & SSB. Fully adjustable VOX, digital readout, RF speech processor, 180W DC input, interference rejection control and much more make this the best investment for today's amateur. And with a saving on top – why go past the FT901D? Cat. D-2854

~~$1199.00~~

$1075

LAST FEW FT625R 6M ALL MODE TRANSCEIVER



FT625R

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ARTICLES

DEPARTMENTS

Cover Photo

No, it's not a Kenwood Ad. She's Terryl, XYL of Will VK6UU, at the summit of Mt. Toolbrunup near Albany, W.A., during a repeater exercise. See story on page 24.

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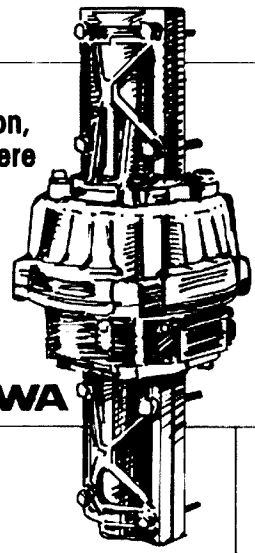

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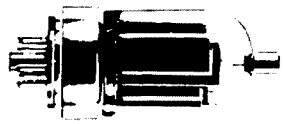

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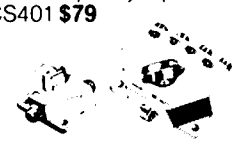

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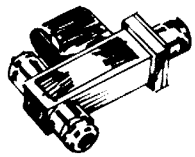

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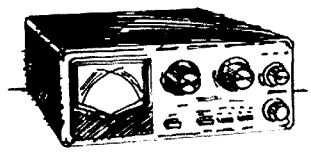

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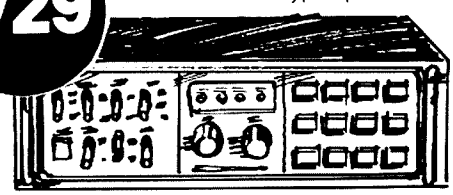

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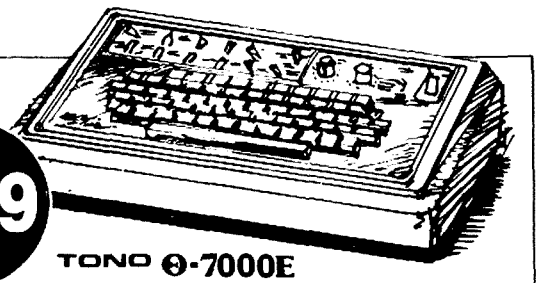

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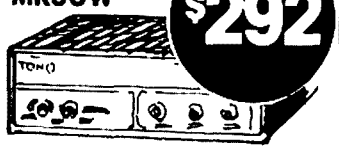

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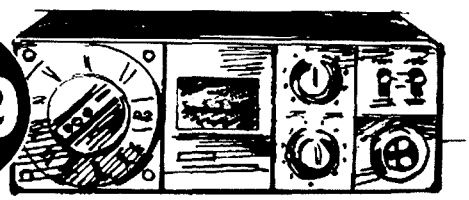

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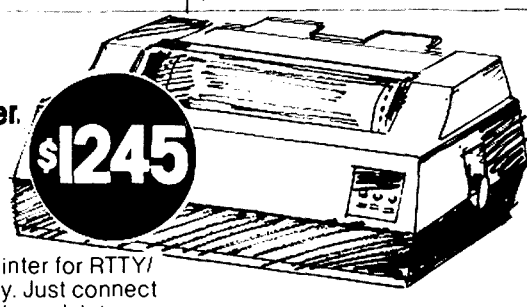

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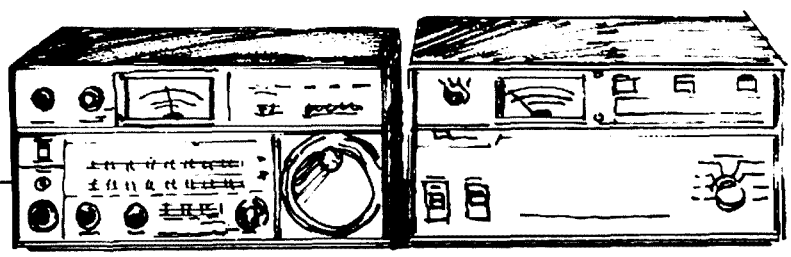

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THE UNKNOWN

Even before most of us obtained our licenses we realised that the "lifeblood" of our hobby — our frequency bands — are sandwiched between neighbours who are envious and sometimes greedy, and this, coupled with a plethora of regulations, generally causes amateurs (and potential amateurs) to seek assurance through joining with others in the interests of self-preservation.

Unity provides strength and the WIA is that strength and has been so for some 70 years.

It was primarily for these reasons (bands and regulations) that our Institute, and for thai matter most of the overseas sister societies, were established.

The WIA however, has many other facets and responsibilities — QSL bureaux, AR, call-book, repeaters, beacons, educational facilities, meeting places, et al.

The overall policies essential for these facilities are established at Federal Conventions; perhaps this term is a misnomer because it is actually the annual general meeting of the WIA. This event is where the seven members of the Federal organisation, namely the seven Divisions of the WIA, meet wilh the Executive — this year early in May.

The Executive is the means by which policy is preserved between Conventions. It is also the facility through which communications are maintained with local authorities and international bodies.

In summary, the WIA exists to serve YOU, the member. Our QSL bureaux exist for no other reason than to provide a service to members. Our journal, AR, is not merely a vehicle for commercial operations but is also the voice of organised amateur radio in Australia. Our frequency bands do not assist the Institute in a commercial sense although without them, there would be no WIA or radio amateurs either!

Therefore if you, your Club, your specialist group or your Division, considers that a policy needs to be changed or a new one established, the correct way to achieve this is have the matter discussed at a Federal Convention on initiation by your Division. The Divisional Federal Councillor cannot operate in a vacuum; he needs your thoughts and views — without them they are unknown to everyone except yourself.

P. WOLFENDEN VK3ZPA
Federal President ■

WIRELESS INSTITUTE OF AUSTRALIA

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Divisional Information (all broadcasts are on Sundays unless otherwise stated).

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Mondays 1930 local. Newcastle. 3.595 MHz, 10m, Rptr. Ch. 6750 Gosford, 6900 Newcastle.

VIC.:
President — Mr. A. R. Noble VK3BBM
Secretary — Mr. J. D. M. Dowie VK3BVE
Broadcasts— 1840, 3600, 7135 kHz — 53.032 AM, 144.2 USB and 2m Ch. 2 (5) repeater: 10.30 local time.
Gen. Mtg. — 2nd Wed., 20.00

QLD.:
President — Mr. A. J. Aarsse VK4QA
Secretary — Mr. W. L. Glells VK4ABG
Broadcasts— 1825, 3580, 7146, 14342, 21175, 28400, kHz; 2m (Ch. 42, 48): 09.00 EST.
Gen. Mtg. — 3rd Friday.

SA:
President — Mr. I. J. Hunt VK5QX
Secretary — Mr. W. M. Wardrop VK5AWM
Broadcasts— 1820, 3550, 7095, 14175 kHz; 21.160 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.
Gen. Mtg. — 4th Tuesday, 19.30.

WA:
President — Mr. B. Hedland Thomas VK6OO
Secretary — Mr. Peter Savage VK6NCP.
Broadcasts— 3560, 7075, 14100, 14175 kHz. 28.47, 53.1 MHz. 2 metres Ch. 2 Perth, Ch. 6 Wagin. Time 0130Z.
Gen. Mtg. — 3rd Tuesday.

TAS.:
President — Mr. R. Emmelt VK7KK
Secretary — Mr. B. J. Morgan VK7RR
Broadcasts— 7130 (SSB) kHz with relays on 6 and 2m Ch. 2 (S), Ch. 8 (N), Ch. 3 (NW), 09.30 EST.

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VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton.
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.

Slow morse transmissions — most week-day evenings 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.

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VK3 — Inwards QSL Bureau, Mrs. B. Gray VK3BYK, 1 Amery Street, Ashburton, Vic. 3147.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse VK3XY, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001
VK5 — QSL Bureau, Mr. Ray Dobson VK5DI, 16 Howden Road, Fulham, S.A. 5024.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 1418, Darwin, N.T. 5794.
VK9, 0 — Federal QSL Bureau, Mr. N. R. Penfold VK6NE, 388 Huntrias Rd., Woodlands, W.A. 6018.

WIANEWS

DRAFT AUSTRALIAN TABLE OF FREQUENCY ALLOCATIONS

Elsewhere in this issue the Institute's submission to the Committee handling the table is published. Hopelully a large number of amateurs have also individually completed and posted a submission to DOC as suggested by the special insert into February AR.

NEW LEGISLATION

It now seems likely that the Federal Government will introduce legislation to replace the present Wireless Telegraphy Act, 1905-1980 later this year.

The Department of Communications has developed a draft set of principles as a basis, it suggests, for such a new Act. The Institute has been asked to comment both in the context of these principles, and generally as to the new legislation. A very short time, some three weeks, was allowed for these comments. The Executive has agreed to a general position, and this has been put to the Department in a submission prepared by Michael Owen VK3KI.

Most Bills for an Act of Parliament are passed by the House of Representatives and the Senate fairly quickly and become law soon after their passage through Parliament. However in this case the Department has indicated that after the Bill has been introduced, it is likely that time will be allowed for public comment before the Bill is debated by Parliament.

The present Wireless Telegraphy Act has certain very broad and general provisions but really leaves most matters to be covered by Regulations made under the Act. it can be expected that a new Act will deal with many more matters affecting radio communications than the present Act though, of course, detailed matters will still be dealt with by Regulation made under the new Act.

As the primary law to govern radio communications, other than broadcasting and television, will be set out in this Act, it will be of considerable importance to amateurs. It is particularly Important that restrictions that may be seen as appropriate for some users of the frequency spectrum but are not appropriate for other users such as amateurs, are not indiscriminately applied to all users.

6 METRE BAND

Members will have noted comments about the proposals for the 6 metre band in the draft Australian table. However, a letter was received from the Department of Communications during December refusing to grant amateurs the use of the 50-50.15 MHz segment of the present ITU R3 allocation.

The decisions of the WARC take effect from 1.1.1982 and presumably the objective of the Department of Communications will be to finalise, at least as far as practicable, the Australian Table of Frequency Allocations by that date.

The Institute has pressed for the immediate availability on a non-interference basis of the band segment 50-52 MHz or at least the window 50-50.15 MHz pending implementation of the new Australian Table. The use of 50-50.15 MHz Is proving an extremely difficult nut to crack.

PORTABLE REPEATERS

In letter RB4/4/29 the DOC informed the Institute that it is prepared to authorise portable repeater stations to be operated by the WICEN network in the 2m and 70 cm bands subject to the following conditions —

"1. Prior approval is not required where an approved portable repeater is to be put into operation as part of a declared Civil Emergency which is under control of the controlling authority for the emergency at the time. Notifications of the use of the portable repeater and its location should be given to the Department at the earliest opportunity.

2. The portable repeater shall operate on a nominated pair of frequencies selected by the WIA and acceptable to the Department.

3. The portable repeater shall not, unless special circumstances exist, be used to provide fixed linking to other established repeater stations. If it is used for this purpose, the Department should be informed of the circumstances at the earliest opportunity.

4. Prior approval is required where the portable repeater Is to be used in WICEN exercises in accordance with the general provisions of the Amateur Operators Handbook (Dec. 78), Paragraphs 6.28 to 6.33 inclusive. Advice of preferred repeater sites should be given to the Department to enable preliminary calculations of interference to be made and their suitability to be assessed in association with the proposed frequency of operation.

5. The WIA State Division accept full responsibility for the proper operation of the portable repeater.

It is appreciated that it would be difficult to fully comply with the technical provisions of the Handbook in respect to a portable repeater. It would be expected however, that the technical provisions of Paragraph 5.11 (a) (b) (c) (e) (i) and (M) be complied with."

The Institute has replied that the conditions are acceptable in principle subject to later comment, it any, from individual Divisions.

WIA 75th ANNIVERSARY

The Federal President has asked Divisional Presidents to say what, it anything, should be done to mark the Institute's 75th anniversary in 1985. It anything is to be done, preparations should begin soon. Let your Divisional Council have your views; there is no shortage of good ideas, however. Probably one fundamental to be followed will be the desire to bring amateur radio to the attention of the general public so as to counter ignorance and even ill-will.

Application has been made to Australia Post for the issue of a commemorative pre-stamped envelope tor the occasion. In reply Australia Post advised that amateur radio has now been added to the list of potential subjects. The strict criteria which apply have at this time excluded the issue of a special postage stamp according to Australia Post rules.

GENERAL

At the January meeting the Executive agreed to Peter Mill VK3ZPP, acting as Chairman of the Federal Repeater Sub-Committee during the absence overseas of Ken Seddon VK3ACS.

Discussions were held about a proposed National Convention and the assistance which the Institute could provide to any Club or Group organising or involved in such a future event.

It was reported that the DOC intended to revise the conditions under which "C" calls are granted and retained.

Bill Rice VK3ABP has agreed to take over the chairmanship of the Federal VHF/UHF Advisory Committee.

FEDERAL CONVENTION

An Agenda Item for the 1981 Federal Convention proposes a discussion about "phone-patch". Another Agenda Item may propose discussions about future planning for the amateur service in Australia. Another will seek discussions on the eligibility of a worthy cause (e.g. WICEN) as a reason to apply for a Federal Government Grant-in-Aid. It is known that others are in the pipe-line and hopefully will be received in time for inclusion in April AR. One of these could be the re-activation of discussions on affiliation by Australia-wide specialist amateur organisations.

If you consider this issue of AR is short on technical articles, it is because there is a sudden surge of important news and policy items which you, as a member, should know about in detail. ■

Wireless Institute of Australia

Draft Australian Table of Frequency Allocations

Comment submitted on behalf of the Amateur Service

1. **INTRODUCTION**

These comments are in response to the draft lor public comment released by the Department of Communications of the proposed Australian Table of Frequency Allocations.

In making these comments the Institute is conscious of the competing claims for radio spectrum by different Services. It also bears in mind the absence of policy decisions relating, in particular, to broadcasting. In certain parts of the spectrum the Institute supports or makes proposals designed to allow a long term flexibility, at least pending these policy decisions.

The Institute has given wide publicity to the draft Table, through broadcasts originating in each State and through the circulation of written material and publication of information in its magazne. In adopting the position that it does, it believes that it has the support of amateurs generally.

In general the draft Table is supported by the Amateur Service. Accordingly, where no particular issue is perceived, a number of bands and footnotes are not specifically adverted to. It is to be understood that in these cases the draft proposals are supported.

2. **1800-1825 AND 1825-1876 kHz**

These proposals are strongly supported.

3. **3500-3700 kHz**

In Australia the band 3500-3700 kHz has been allocated exclusively to the Amateur Service and the band 3700-3900 kHz to the Fixed and Mobile Service, though the Region 3 allocation is to all three Services on a shared basis. It is recognised that Australia asserts a particular requirement for Fixed and Mobile operation in this part of the spectrum, particularly having regard to propagation characteristics in tropical areas. No doubt the continuation of the present position is advantageous in terms of frequency management. However, one consequence of the present position is that Australian Amateurs are restricted in their ability to communicate internationally on this band. For example, US Amateurs are not permitted to use telephony below 3775 kHz. Accordingly, the Institute proposes a small window of say 10 kHz at around 3800 kHz to meet this need.

4. **7000-7150 AND 7150-7300 kHz**

The draft Table proposes the new allocation of the band 7150-7300 on a secondary basis to the Amateur Service subject to AUS 115. The Institute strongly supports this proposal. Quite apart from the obligation imposed by No. 342 of the Radio Regulations on the Amateur Service in this band, the relative power of broadcasting stations is such that the possibility of harmful interference is almost negligible. New Zealand Amateurs currently enjoy the same privilege in this part of the spectrum and the New Zealand experience indicates no difficulty with the Amateur Service sharing on a secondary basis with broadcasting. The expansion of the band will be of particular value during daylight hours when, in general terms, propagation characteristics effectively restrict communication to the Australian area.

5. **THE NEW BANDS 10100-10150, 18068-18168 AND 24890-24990 kHz**

The Amateur Service welcomes the inclusion of these new bands in the proposed Australian Table, reflecting the decisions of the World Administrative Radio Conference 1979. However, it is concerned as to the timing proposed in the draft as to the availability of these bands for the Amateur Service. It is convenient to deal with the considerations affecting all three bands together, although the considerations are not necessarily identical.

The band 10100-10150 kHz is a secondary allocation and is not subject to any transitional procedure. Accordingly, so far as the decisions of the WARC are concerned, that band will be made available from the coming into force of the Final Acts of the Conference. The Institute is concerned that because of the narrowness of this band (in fact half the width proposed by Australia in its proposals to the WARC), considerable congestion will occur. This can be ameliorated by the making available of all three bands simultaneously. This is clearly permitted, subject to No. 342 of the Radio Regulations, and would appear to be quite practicable as the Institute observes that little use is apparently made of the two higher bands in Australia.

It is also noted that the proposed footnote AUS 112 is almost meaningless. It provides that the use by the Fixed Service of this band "will be limited". Limited by whom? And in what respect? The Amateur Service believes that in respect of the band 10100-10150 kHz assignments to the Fixed Service should be withdrawn as soon as practicable and no new assignments should be made in that band. This is consistent with the Australian proposal to the WARC (which was to propose an exclusive band for the Amateur Service In this part of the spectrum) and has the considerable advantage of avoiding the possibility of harmful interference to stations in the Fixed Service in Australia. Of course, so far as other Administrations are concerned, Australian Amateur stations will retain secondary status.

Accordingly, the Institute proposes the recasting of the footnoes AUS 112 and AUS 113 as follows:—

"AUS 112

No new assignments to the Fixed Service other than to meet urgent operational requirements shall be made in this band, though in any event all assignments shall be withdrawn by the 1st July, 1984. Use of this band by the Amateur Service shall be permitted from 1st January, 1982."

"AUS 113

No new assignments shall be made to the Fixed Service in the band 18068-18168 kHz or to the Fixed and Land Mobile Services in the band 24890-24990 kHz other than to meet urgent operational requirements, though in any event all assignments shall be withdrawn in these bands by 1st July, 1984. Use of these bands by the Amateur Service shall be permitted from 1st January, 1982, however, such use shall be subject to the condition of No. 342 of the Radio Regulations until 1st July, 1984."

6. **50-52 MHz**

The draft Table proposes the allocation of this band to the Amateur Service on a secondary basis to broadcasting. The Institute strongly supports this proposal. In Region 3 the band 50-54 MHz is allocated to the Amateur Service, as is the case in Region 2. There are many parts of Australia where operation is possible on this vital international band without any possibility of the amateur station causing harmful interference to television reception. Again, because of the relative power of television broadcasting stations, an amateur station operating in this part of the spectrum will be aware of propagation conditions that at any particular time could

give rise to the possibility of harmful interference and given the secondary status of the Amateur Service, that possibility can be avoided. It is also noted that even in areas served by television stations operating in this part of the spectrum, there are times of the day when these stations are not operating and the possibility of amateur communication should not be excluded.

7. 576-585 MHz

At present the Australian footnote 59 provides that this band is allocated to the Amateur Service "until required by the Broadcasting Service". At present the band is extensively used, particularly for Amateur television repeaters. It is not clear whether the omission of this footnote from the proposed Table was intentional or an oversight. However, given the extensive use of the band at present, and having regard to the wording of the existing foonote, the Institute can see no reason why that footnote should not be retained.

8. 2300-2450 MHz

The proposed Australian Table allocates this band on a primary basis to Fixed Mobile and Radiolocation and to the Amateur Service on a secondary basis. However, the sub-band 240--2450 MHz is subject to footnote 664 which permits operation in that band by the Amateur Satellite Service subject to that Service not causing harmful interference to other services operating in accordance with the Table. That footnote is of world-wide effect. In the circumstances the Institute would propose that at least in the band 2400-2450 MHz the Fixed, Mobile and Radiolocation Services should be excluded.

9. CONCLUSION

In response to the draft the Institute:—

1. Strongly supports the changes proposed in the band 1800-1875 kHz.
2. Proposes a small sub-band of say 10 kHz at about 3800 kHz.
3. Strongly supports the changes proposed in the band 7150-7300 kHz.
4. Urges the relocation of any Fixed Service assignments in the band 10100-10150 kHz, proposes the availability of that band and the bands 18068-18168 and 24890-24990 kHz to the Amateur Service from the 1st January, 1982, and to these ends proposes new footnotes AUS 112 and AUS 113.
5. Strongly supports the changes proposed in the band 50-52 MHz.
6. Proposes retention of the existing Australian footnote 59 in respect of the band 576-585 MHz.
7. Proposes that in the sub-band 2400-2450 MHz in the band 2300-2450 MHz that Fixed, Mobile and Radiolocation be deleted.
8. Otherwise supports the proposed Australian Table of Frequency Allocations. ■

10 Commandments of a Repeater

1. Thou shalt give way to stations with emergencies and assist in all ways that station.
2. Thou shalt listen before thou transmitteth to be sure that ye have not smitten another's signal.
3. Thou shalt partake of the conversations at hand and thou shalt not disrupt the orderly flow thereof.
4. Thou shalt desist thy transmission when the voice of thy signal is weaketh and thou shalt refresh thy batteries before renewing.
5. Thou shalt not commit doubling and shalt insureth that ye truly have It by lifting thy PTT button and listeningeth.
6. Thou shalt not smitten another's signal intentionally lest he smitten you on the nose in return.
7. Thou shalt not killeth the repeater by allowing the wind of thy signal to exceedeth the great timer on the hill.
8. Thou shalt cleanseth thy signal of impurities and keepeth thy signal on the frequency and bandpass lest thou spilleth over onto adjacent repeaters.
9. Thou shalt await the duration of the beep for the breaker to deserveth his chance.
10. Thou shalt honor the wishes of the Great Pumpkin for his Is the presence that maketh the big machine go.

From Sine of the Times Newsletter ICARC ■

A Review of Antenna Noise Bridges Part 1

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It is the intention of this article to highlight the main variation in design of the noise bridges that have been described in the literature or in sales data, to point out features that have a bearing on accuracy and reliability, and to discuss some of the limitations of noise bridges. Of more importance, it is hoped that this article might stimulate a wider interest in antenna impedance measurements, and perhaps encourage radio amateurs to look more deeply into the mathematics of impedance and the various ways that it can be expressed.

INTRODUCTION

The noise bridge is an Amateur Radio device. It was invented by a radio amateur, was further developed by radio amateurs; and like the grid dip oscillator, is almost exclusively used by radio amateurs.

Many variations on the original by W5QJR have appeared in amateur radio journals; and the article by W6BXI and W6NKU in the February 1977 edition of Ham Radio shows that a noise bridge capable of measuring both R and X to an accuracy approaching that from expensive professional instruments is within the reach of any of us who are interested in serious impedance measurements. That article triggered off quite a reaction amongst a few enthusiasts, and started off a search for noise bridges with higher reliability and accuracy, and that would reach up into the higher frequency bands. The search is still continuing.

BACKGROUND

RF bridges are used for the measurement of impedance of networks, antenna systems and components. Because the impedance of anything is likely to be different at different frequencies, it is necessary to include in a statement of the impedance of a device, the exact frequency at which it applies. Before the advent of noise bridges, RF bridges were energised by a signal generator, the calibrations of which defined the frequency of measurement. Balance was indicated by a null detector, such as an RF millivoltmeter with perhaps a single tuned circuit for added sensitivity. In some professional bridges the signal generator and null detector are part of the instrument, whilst others rely on the use of separate external source and detector; it is not uncommon practice in laboratories for a communications receiver to be used as a sensitive null detector for an RF bridge. In hindsight, it is surprising that it took so long for someone like W5QJR to come up with the idea of energising an RF bridge with a broad-band signal, and utilising the frequency calibration and selectivity of a communications receiver to control the frequency of measurement. That is the secret of the noise bridge. A broad-band noise source energises the bridge circuit, whilst a receiver is the frequency selecting null detector. A zener noise generator, broad-band amplifier and battery occupy so little space that they can be encased with the bridge circuitry to make a compact and handy instrument. Designed for coax. fed antenna systems, noise bridges are fitted with a coax. connector for the antenna to be measured and one for feeding the receiver.

NOISE BRIDGE TYPES

1. R Bridges

W5QJR (R. T. Hart) demonstrated his ingenuity and also his wisdom when he described in QST, December 1967, the Omega-T model TE7-01 noise bridge which he had invented. He could have made a bridge which would measure both resistance and reactance, as was mentioned in his article, but he realised that the majority of radio amateurs would aim at tuning their antenna systems to resonance and would prefer an R bridge which is simpler to operate and understand — a bridge which measures resistance only, and clearly indicates resonance. This seemed to set the pattern, and quite a succession of R type noise bridges followed before R-X bridges began to appear. Circuit details of the TE7-01 are shown in Fig. 1a.

WB2EGZ (Don Nelson) described an R type noise bridge for home construction

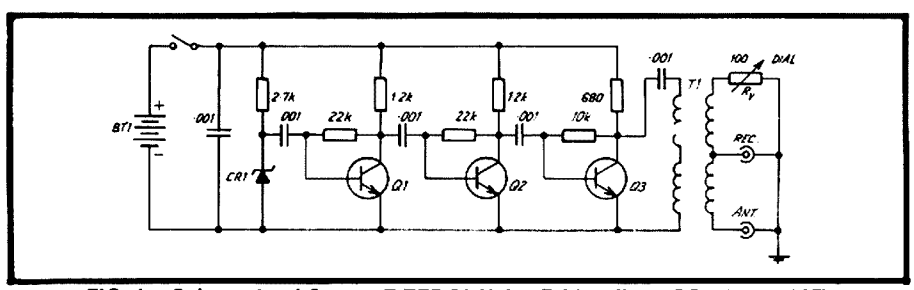

FIG. 1a: Schematic of Omega-T TE7-01 Noise Bridge (from QST, Dec. 1967).

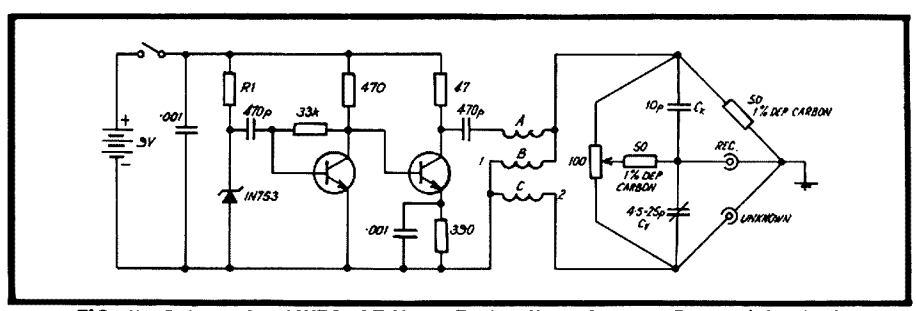

FIG. 1b: Schematic of WB2EGZ Noise Bridge (from Amateur Radio, July 1971).

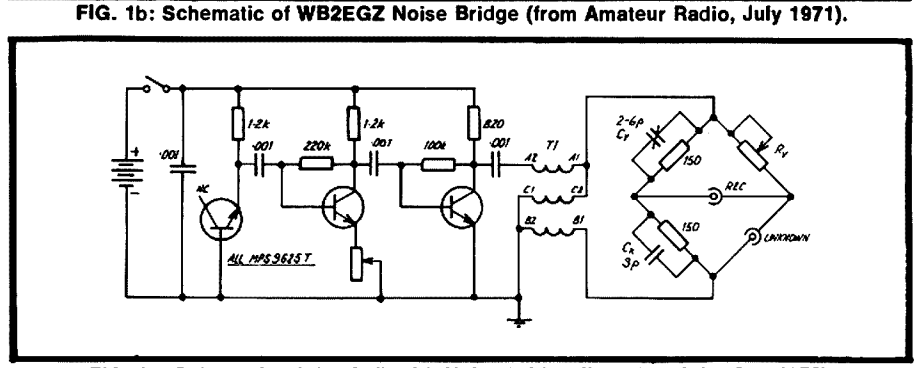

FIG. 1c: Schematic of the Galbraith Noise Bridge (from Break-In, Oct. 1972).

in Ham Radio, December 1970. His article was reprinted in Amateur Radio, July 1971, and in Amateur Radio, October 1971. VK5NN (Phil Williams) wrote some construction tips and suggested modifications. Then ZL2AMJ (Fred Johnson) described the updated version in Break-In, May 1972, of course giving credit to Don and Phil. Reference was made to this bridge In Radio Communications, and it was later written up in Pat Hawker's Amateur Radio Techniques and called the ZL2AMJ noise bridge. So WB2EGZ's bridge certainly received a lot of attention. Fig. 1b shows the circuit details. The Omega-T Model TE7-02 (extended range bridge) has a similar bridge circuit, but details of its balun are not available to me.

"The Galbraith Bridge" was the name given to a noise bridge which was developed by the Projects Group of the NZART, Christchurch Branch, for production as a kit set. In Break-In, October 1972, ZL3AAY(Tony Bowie) described it and gave the circuit details shown in Fig. 1c.

2. R-X Bridges

Add one fixed and one variable capacitor to an R bridge and you have an R-X bridge which can measure the complex impedance of an antenna at frequencies other than resonance. The Editors and Engineers Radio Handbook describes series and parallel R-X bridges, but other examples will be covered here.

(a) Series R-X Bridges: The commercially available Palomar and the MFJ 202 are series R-X bridges not far different from the one in the handbook. The Palomar circuit with a notation indicating the main differences in the MFJ 202 is shown in Fig. 1d.

(b) Parallel R-X Bridges: YA1GJM (G. Pappot) in Ham Radio, January 1973, described a parallel R-X bridge on which W6BXI (Bob Hubbs) and W6NKU (Frank Doting) based their famous Ham Radio, February 1977, article on an improved noise bridge, describing important measures to improve the accuracy and extend the range. Circuit details are shown in Fig. 1e.

Any R-X bridge may be used as an R bridge if the X dial has been properly set at zero and left at that setting. The discussions that follow on R bridges may be applied, therefore, to R-X bridges set in this fashion.

NOTES:

1. R1 — Choose suitable value for best noise output (approx. 2200 ohms).
2. Transistors — 2N918, 2N553, or HEP 56.
3. 0.375 OD toroid form, Indiana general of 102, core material 03.

ACCURACY AND RELATED CONSIDERATIONS

The Basics of Accuracy

These bridges are adaptations of the Wheatstone bridge, renowned for accuracy and reliability. Fig. 2 shows the general circuit of a Wheatstone DC bridge. (I call R_1 and R_2 the "ratio resistors" and R_4 the "reference resistor". R_3 is the unknown.) In one form, the ratio resistors are an accurately matched pair, and the reference is a calibrated resistance box. I call this type "an equal ratio bridge". In another form, the ratio resistors comprise the two arms of a potentiometer, and the reference is a resistor of known accurate value. I call this type "a variable ratio bridge"

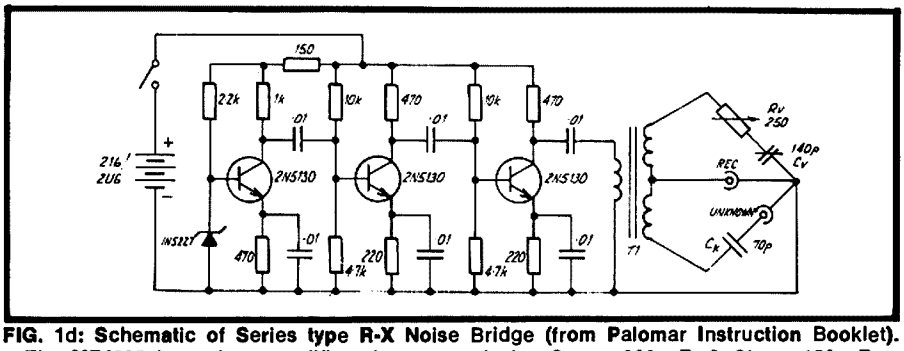

FIG. 1d: Schematic of Series type R-X Noise Bridge (from Palomar Instruction Booklet). The MFJ202 has minor amplifier changes and also Cw = 300 pF, & Ck = 150 pF.

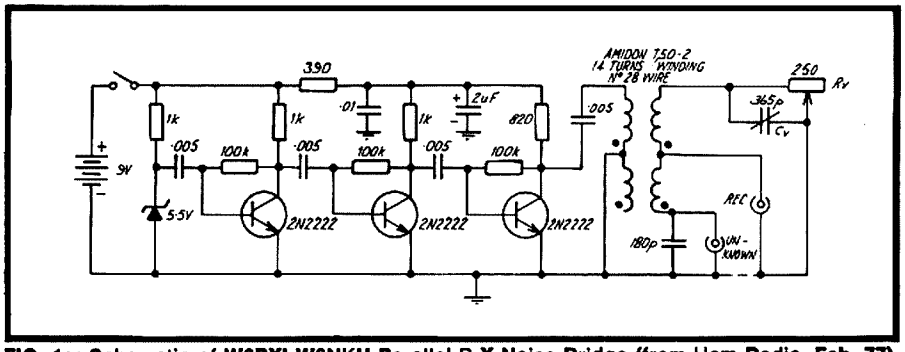

FIG. 1e: Schematic of W6BXI W6NKU Parallel R-X Noise Bridge (from Ham Radio, Feb. 77).

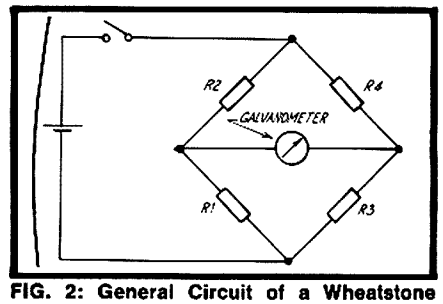

FIG. 2: General Circuit of a Wheatstone Bridge. R1 and R2 are the ratio resistors; R3 is the unknown resistor; R4 is the reference resistor.

A measurement is made on either type by adjusting the variable until the galvanometer indicates a null, at which stage the bridge is said to be balanced. The value of the unknown is then determined from the equation:

$$R_1/R_2 = R_3/R_4$$

In the equal ratio bridge, the value of the unknown is read from the dials of the reference; whilst in the variable ratio bridge, it is the known value of the reference, multiplied by the ratio.

For these bridges to be accurate:

1. The component parts must be accurate and stable, and the instrument accurately calibrated;
2. The condition of balance must be established accurately; and
3. The dial or dials of the bridge must be read accurately.

Inaccuracies may occur as a result of inaccuracies or errors in these three areas. To demonstrate this, let us look at an experimental bridge that might be made up in any amateur radio shack.

This imaginary bridge is the same as the circuit in Fig. 2. Suppose R_1 and R_2 are 100 ohm 5 per cent composition resistors, R_3 Is the unknown, R_4 is a 250 ohm linear composition potentiometer, and for the galvanometer, the station multimeter is used. The potentiometer is mounted on a small panel on which a scale has been marked into ten equal divisions of the potentiometer's angular range, to cover 25 ohms per division, and a small instrument knob is attached. The station key (not a bug or electronic type) and any old battery are connected up to complete the bridge, which can now be used for the measurement of resistance in the range of 0 to 250 ohms.

The accuracy of this bridge would be poor because:—

(a) The ratio resistors could Introduce an error of ± 10 per cent.
(b) The graduation of the potentiometer could be another 10 per cent out.
(c) Parallax errors could be in the order of 10 ohms.
(d) It may be difficult to establish the balance to closer than 2 per cent accuracy.

We could greatly Improve this bridge by taking steps to accurately match the ratio resistors, using a proper dial with low

parallax, and by calibrating the potentiometer. It would be even better to calibrate the completed bridge directly on to the new dial, against an accurate resistance box. This would take care of the errors in the ratio resistors and the potentiometer in one shot.

This was not a frivolous example. It shows how errors in the order of 25 per cent could occur in a *DC bridge* as a result of the components and techniques that are used in some noise bridges, and how these can be reduced substantially. Noise bridges, as will now be explained, have their own special problems, which if not properly dealt with can *add* to the measurement errors just discussed.

BALANCING THE NOISE BRIDGE AND ERRORS IN BALANCE

The operation of balancing the noise bridge is a little more complicated than that of balancing a DC bridge. The R type bridge is balanced by simultaneously varying the variable component of the bridge and the receiver tuning until a sharp null is produced in the receiver's noise output. If the unknown is a pure resistance, the receiver tuning will have no effect on the balance, but if it is an antenna system, balance will occur when the receiver is tuned to the resonant frequency of the antenna system (meaning the antenna plus its feed-line), and the bridge Is set to the impedance at resonance. The same procedure applies to an R-X bridge when the X control is set and left to its zero position, as it is then effectively an R bridge. (The R-X bridge is intended for the measurement of the complex impedance of antenna systems at any frequency. The receiver may therefore be set to the desired frequency, and balance obtained by simultaneously varying the R and X controls. The R and X values may then be obtained from the formula that would apply to the particular bridge. This will be discussed later.)

The R bridge can measure the impedance at resonance of an antenna system, only if the resonant frequency falls within the range of the receiver, and if the impedance is within the range of the bridge. (Similarly, an R-X bridge can measure complex impedances only if both R and X values are within the range of the bridge.)

To see more clearly what happens when a noise bridge is being balanced, and where errors in balance can occur consider the following example.

Assume a perfect, equal ratio, R type noise bridge, perfectly balanced when measuring a 50 ohm dummy load. The operator would have set the receiver to any frequency, and then adjusted the variable reference until a sharp deep null appeared in the noise output of the receiver, and would have then checked that any slightest movement of the dial on the bridge would have cause a re-appearance of the noise. Fig. 3a shows a typical graph of the receiver noise output variation with changes In potentiometer setting.

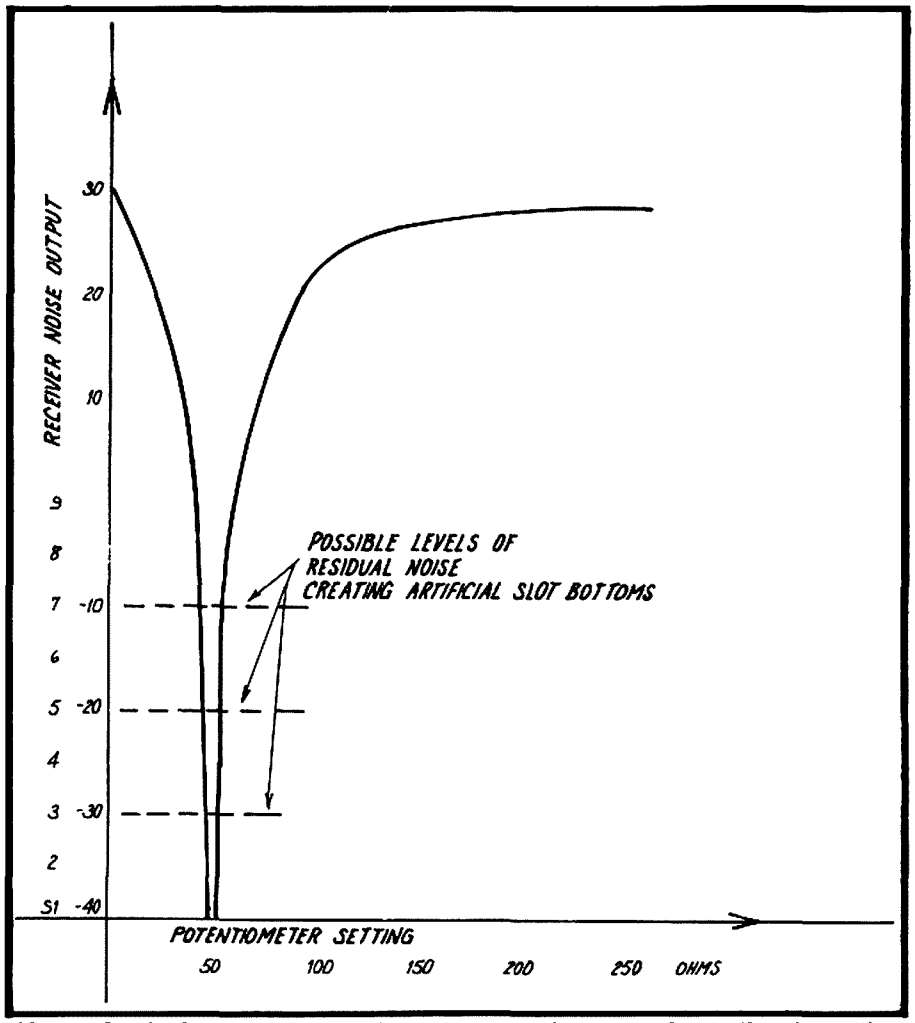

FIG. 3a: Graph showing receiver noise output over the range of potentiometer settings in a noise bridge measuring a 50 ohm resistance.

As a second example, assume the bridge has been again perfectly balanced when measuring the impedance of an antenna resonant at 14.2 MHz with an impedance of 50 ohms (the antenna is assumed to be entirely free from noise or signal pick-up). This time the operator would have adjusted the reference potentiometer and the receiver dial simultaneously to obtain that sharp deep null; and then he would have checked that any movement of either dial would cause a re-appearance of the noise. With the receiver tuning constant at that resonant setting, the graph in Fig. 3a would still be valid for the noise output vs. potentiometer setting. The graph in Fig. 3b shows the variation of noise output from the bridge (when balanced in this manner) over the HF spectrum.

In both graphs the depth of the slot is infinite, where its width is absolute zero, this being a theoretically perfect case.

The practical situation will not be perfect. Apart from other possible imperfections, residual noise will tend to fill the slot. In the graphs of Fig. 3, it can be seen that if the slot were to become partly filled with noise, an artificial slot bottom of finite width would be created, and this width would increase as the level of residual noise Increased. Of course, as the slot bottom widens, the setting for balance becomes more uncertain, increasing the likelihood of balance error.

The possible causes of residual noise are discussed briefly in the appendix. They are:

Noise (or signals) from the antenna under test,
Basic receiver noise,
Receiver intermodulation,
Receiver spurious response,
Leakage around the bridge.

Consequently, the receiver's performance is important if accurate measurements are required. Antenna noise might be the most difficult residual problem to handle, and if too severe, the bridge could be unusable at times in some locations. A noise bridge with a strong healthy noise source (such as the TE7-01 with its S9 + 30 noise over the whole HF spectrum) can handle most noisy situations, but can overload some receivers unless an attenuator is used.

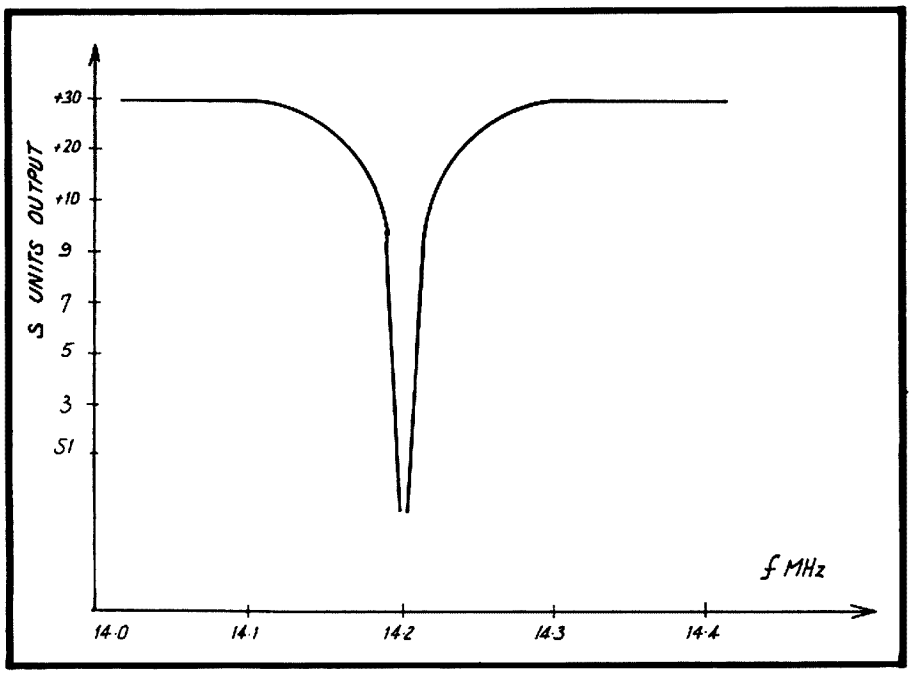

FIG. 3b: Output from noise bridge balanced against an antenna resonant at 14.2 MHz.

ERRORS FROM BRIDGE COMPONENTS

For RF bridges, the equation for balance becomes:

$$Z_1/Z_2 = Z_3/Z_4$$

and each Z may contain resistance and reactance, so the equation, in its general form is:

$$\frac{R_1 + jX_1}{R_2 + jX_2} = \frac{R_3 + jX_3}{R_4 + jX_4}$$

The equal ratio bridge must therefore have $(R_1 + jX_1)$ and $(R_2 + jX_2)$ equal; and this must hold over the frequency range of the bridge. Two exactly equal impedances, such as these, connected in series across an RF source will have voltage drops which are equal and in phase. Any circuit which can produce this voltage and phase relationship, therefore, will be the equivalent of an equal ratio circuit. Most noise bridges employ a centre-tapped transformer to provide this equal ratio circuit.

In the TE7-01, the transformer is quadrifilar wound on a ferrite torroidal core connected to form centre-taps in both primary and secondary, as shown in Fig. 4a. W5QJR claims that "This technique assures a high accuracy centre-tap on the secondary winding, and assures good capacity balance". The Palomar and MFJ bridges use a trifilar wound torroid as shown in Fig. 4b, and which would not appear to be significantly different in regard to capacitive balance; but it took W6BXI and W6NKU to suggest that the capacity between the "files" could introduce unbalance between primary and secondary, and their circuit in Fig. 4c would be likely to produce better ratios over a wider spectrum. They also introduced electrostatic shielding between amplifier and transformer, a sensible precaution considering the frequencies involved; and they devised a simple but ingenious method of fine reactance adjustment by varying the length of leads to the secondary. All this is covered in their article, Ham Radio, February 1977, in which they showed that just a few mm change in lead length is all that is needed to equalise the bridge for a 3-30 MHz band. This is an enlightening and spectacular little experiment recommended to all noise bridge enthusiasts. (The possible stray capacitances in the transformer circuits are indicated in Fig. 4 by broken lines.)

The balun arrangement used in the other two bridges, and shown in Fig. 4d, is of the type that was described by W2IMU in QST, April 1969 (and by the same author in an earlier addition, and by others to whom he referred). This balun is claimed to have a bandwidth of at least 10 : 1 over a large impedance range. Although I have not studied the balun in depth, I think it should be better than the transformer because it should provide a floating output which is well isolated from the input and from earth. If the two resistors in the Galbraith bridge are carefully matched, and due care taken in the layout, then, I feel, an accurate 1 : 1 ratio over an even wider spectrum should be the result. In fact, the two balancing capacitors might be unnecessary, unless their real purpose is to balance out reactance in other parts of the bridge.

In the equal ratio bridges, the reference resistors are composition potentiometers. In previous paragraphs, examples were given of a potentiometer used in a DC bridge, to indicate the effects of graduation, resetting and reading errors that might occur in such an arrangement. Of course these errors would also apply when

FIG. 4: Output arrangements of 4 various noise bridges showing winding method. (Inter-winding capacity shown with broken lines).

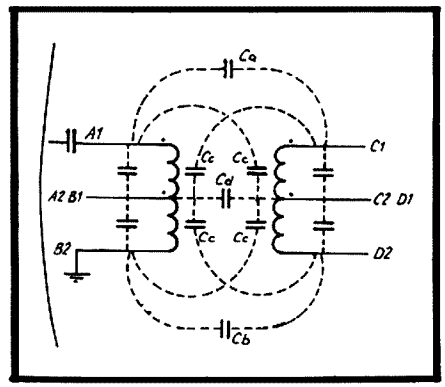

FIG. 4a: Omega-T TE70.

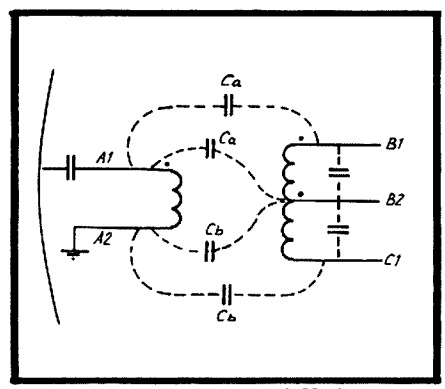

FIG. 4b: Palomar & MFJ.

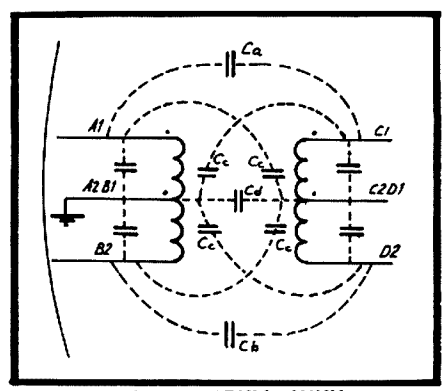

FIG. 4c: W6BXI/W6NKU.

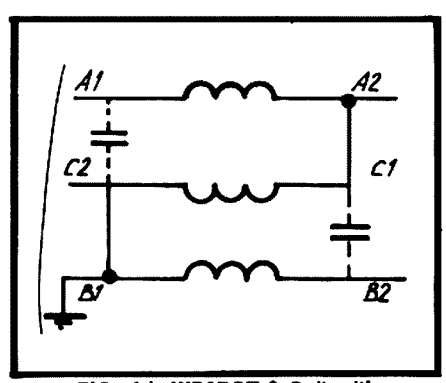

FIG. 4d: WB2EGZ & Galbraith.

a potentiometer is similarly used in a noise bridge; but in addition, the effects of reactance will need to be considered. In the Appendix, the performance of composition potentiometers at RF is discussed. It is shown that they appear to be inductively reactive at settings below 130 ohms (approximately), capacitively reactive at settings above that value, and are non-reactive over a wide band of frequencies at one magical setting close to 130 ohms. A theoretical explanation for this phenomenon is also given in the Appendix.

Variable ratio bridges (such as the WB2EGZ and TE7-02) use a composition potentiometer across the balun to form the ratio resistors. The effects of strays in a potentiometer used in this manner have not been measured; but the other measurements which were made would suggest that the strays would balance out when the potentiometer is in the central position, where each arm would be expected to contain approximately equal resistance, inductance and capacitance. As a consequence, these bridges would be expected to be excellent when measuring non-reactive unknowns equal to the reference resistor, which is in this case 50 ohms.

There can be little doubt that at other potentiometer settings, unbalanced reactance would occur; and the resistance-capacitance compensating network between the potentiometers and the receiver should be effective for one only potentiometer setting, whether the potentiometer is 100 ohms as originally described, or of a higher value as in the later circuits.

Thus, in the equal ratio bridges, the ratio might be slightly unbalanced at the higher frequencies, but unwanted reactance is bound to occur for most settings of the variable reference. In the variable ratio bridges, although the reference resistor is most likely to be non-reactive, there can be unwanted reactance in the bridge circuit due to the ratio potentiometer. Irrespective of which arms of the bridge contain unwanted reactance, the effect is the same. If we attempt to balance a bridge when measuring a pure resistance, unwanted reactance will tend to prevent a complete null; of course large measurement errors can occur if the reactance value is great. If we attempt to balance the bridge when measuring a resonant device, such as an antenna system, *the reactance will not prevent a complete null*, but will cause an error in the measurement of both frequency and impedance, because the *null will occur at slightly different settings of both dials.* The magnitude of these errors will again depend upon the magnitude of the unwanted reactance, but it will also be a function of the Q of the unknown.

IMPROVING PERFORMANCE

Resistance Calibration

Apart from what has already been said about the potentiometer, there might be a problem in calibrating its resistance values at RF. Most opinions are that the resistance of a composition track would remain substantially constant from DC up to above 30 MHz and if this is correct, there is no reason why the potentiometer should not be calibrated at DC for use in a noise bridge. A good quality ohmmeter has been suggested by some as sufficient for the purpose, and perhaps an R-C bridge might be better (depending upon how it had been calibrated). My choice is to calibrate the bridge at RF against a set of dummy loads, as will be discussed shortly.

Minimising R Measurement Errors

Errors in balancing can be minimised by ensuring that the noise source has sufficient output to cope with the noise from the particular antenna under test, and that the receiver is good enough for the job, i.e. one that is well shielded, sensitive, and with good spurious rejection and overload characteristics.

Minimising component-caused errors is perhaps more difficult. However, we can compensate for them over the desired measurement range. If, for example, all that is required is a "go, no-go" indication of resonant 50 ohms, we can calibrate the bridge against a good non-reactive 50 ohm dummy load, adjusting for reactive unbalance by means of compensating capacitors as are used in the Galbraith or WB2EGZ bridges (or if it is an R-X bridge, by fine adjustment of the X dial). If it is found that the compensation does not hold over the HF spectrum, it will be necessary to repeat the compensation each time the frequency band is changed. Many users would not have the need to recompensate, and would be quite satisfied with this arrangement.

If greater accuracy is needed over a range of R values, then a range of dummy loads could be used — say values of 25, 50 and 100 ohms. Perhaps one at 150 ohms and some in-between values would be needed by some enthusiasts. The ARRL Handbook describes how these can be made and some useful information for home-brewers of dummy loads is given in the Appendix. Equipped with a range of dummy loads, we can calibrate a noise bridge at the frequencies and resistance values we need. The compensation would be more likely to require readjustment over a wider range of both **R** and f values than in the simpler cases, so that the need for the compensation control to be accessible to the outside of the instrument becomes greater in this example.

Direct calibration of the **R** dial in this manner will help to reduce errors likely from several causes; but repeating an earlier theme: If accurate measurements are needed, *a tiny knob cannot do the job of a proper dial.*

An R type noise bridge, with a good dial, an external compensation control, and carefully calibrated against a set of dummy loads can give reasonably reliable and accurate measurements. If to achieve this, extensive modifications are needed to your existing noise bridge, perhaps you should consider converting it into an R-X bridge.

Accurate R and X Measurements

Naturally the above comments would apply also to the R measurements made on **R-X** bridges, but the measurement of reactance presents other problems which will be explained. An R-X noise bridge is balanced with the receiver set to a predetermined frequency, and then the **R** and X dials are simultaneously adjusted for that sharp deep null in the receiver noise output. The dial readings must then be converted into the R + jX form (or to some other parameters if preferred) by use of the appropriate formula for the particular bridge. There are also graphs which can be used In the case of the series bridge for a quick estimate of the X value.

Impedance Range

The accuracy and the range of measurement are interdependent to an extent, because too large a range can cramp the scale to the detriment of accuracy. Too small a range, on the other hand, can reduce the usefulness of the bridge. Because noise bridges are primarily intended for impedance measurements on coaxial lines of 50 to 75 ohm natural impedance with SWRs of up to 2 : 1, this fact might be used to define a desired practical impedance range for noise bridges. From the Smith chart it can be seen that this range would include R values between 25 and 150 ohms, and series X values between 0 and ±56.25 ohms, the parallel equivalent to this being 6.7 to 40 mmhos conductance and 0 to ± 40 mmhos susceptance or 25 to 150 ohms Rp and ± ∞ to ± 67 ohms Xp. A noise bridge which can measure this range of impedances accurately and reliably from 3.5 to 30 MHz would be a handy instrument for antenna experimenters. This will be the target in the discussion to follow.

THE ACCURACY OF REACTANCE MEASUREMENTS

The Appendix gives mathematical analyses of the series and parallel type R-X noise bridges with other theoretical matters, including equations for balance, conversion formulae and graphs. The effects of strays and other factors which can contribute to reactance measurement errors are also discussed. Briefly, the series bridge has the advantage of being able to be compensated for strays, very simply and effectively for the whole target impedance range. However, the series bridge's X dial has a very steep and cramped scale when converted into terms of reactance, which can introduce serious errors of measurement. This can tend to magnify small parallax errors to such an extent that at low frequencies even readings of resonance would be suspect. The dial is misleading, because the graduations are symmetrical either side of zero; but the whole capacitive reactance range from zero to infinity is tightly cramped Into a small angular rotation, and the target range is only a part of this. Then on the inductive reactive side, the target reactance range cannot be accommodated at the higher frequencies. For these reasons the series **R-X** bridge would probably be avoided by radio amateurs interested in making meaningful impedance measure-

ments. The Parallel R-X Noise Bridge has a different set of problems. Compensation for stray inductance is more difficult In this bridge, and the target range cannot be accommodated at the lower frequencies without the use of a range extender or add-on capacitors. To offset these disadvantages, the parallel bridge gives reactance readings which are symmetrical about the point of resonance; if it has a dial that can be reset and read accurately it can be calibrated to give accurate and reliable reactance measurements, and a positive indication of resonance.

MINIMISING R-X MEASUREMENT ERRORS

If accuracy is needed, I would not choose a series type R-X bdidge; or if I had one, I would convert it to a parallel type, even though a large variable capacitor might be needed, and the bridge would need to be recalibrated. The bridge described by W6BXI and W6NKU in Ham Radio, February 1977, would undoubtedly provide readings of adequate reliability and accuracy for any impedance measurements on HF antenna systems (provided It has been carefully constructed, adjusted and calibrated); but of course it could not provide better accuracy than the standards against which it has been calibrated.

This bridge could be improved on to enable closer readings to be made, by the use of better dials for Rv and Cv of the planetary drive type, and a few other refinements could be Included. This might be gilding the lily a bit, and the extra cost might be considered by many to be out of proportion with the benefits that might result. Nevertheless, I built up two models of refined noise bridges, each with planetary dials on the opposite side panels of larger type instrument cases, and have described them in a second article to be published shortly. Because of the attitude which the operator must take up when balancing these brides I called them "The VK3SK Squeeze Boxes".

CONCLUSION

The most common variations of the noise bridge have been described and analysed, with particular emphasis on features which have a bearing on accuracy and reliability. It is clear that those radio amateurs interested in only checking the resonant frequency and impedance at resonance of their antennas, could achieve all they want with any of the noise bridges described, so long as due care is taken, and the pecularities of the particular noise bridge used are understood and allowed for. It is also clear that those seeking the highest accuracy and reliability in the measurement of complex impedance would favour the parallel type R-X bridge. The excellent paper by W6BXI and W6NKU in Ham Radio is again recommended to those individuals, because it does contain matters which have not been fully covered in this paper. My squeeze box is an Improvement on their bridges, but is principally their bridge with only a few refinements. The discussions did not include details for VHF measurements. It is hoped that those experimenting with noise bridge measurements above 30 MHz will continue to experiment, and that they may have picked up some ideas In this paper to help in their endeavours. The editor and myself personally would be pleased to hear of your experiments, successes and failures with noise bridges.

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EDITOR'S NOTE:
Part 2 contains the Appendix. The overall size of the article necessitated splitting it in two. Part 2 should appear next month.

(To be continued) ■

Amateur Radio — Where to in the 1980s?

INTRODUCTION

At the 1980 Federal Convention the VK1 and VK4 Councillors (Ron VK1RH and David VK4DT) undertook to produce a paper on the future of Amateur Radio to provoke discussion ,forward thinking and forward planning by the WIA.

Some months have elapsed since that Convention and I have put pen to paper to initiate discussion. Rather than produce a joint paper at this stage, I propose to make my correspondence with David an "open letter" to the membership of the WIA through the columns of AR.

I acknowledge the existence of the ARRL's Long Range Planning Committee; an extract from their progress report, printed in QST for June 1980 Is attached as Appendix A. This shows areas identified in the U.S. as needing attention, and many are common to Australian conditions.

In this paper I intend to enumerate a number of areas of interest and applications for forward planning by the Australian amateur and the WIA. I will consider these under two headings: Administration and Technical Considerations.

ADMINISTRATION

Key administrative areas of concern in the 1980s in our forward planning are internal management, national representation and international representation.

INTERNAL MANAGEMENT

The WIA must satisfy a two-way communications route, input (e.g. proposals originating from individual members) go up to the National body and agreed actions or decisions and information must flow back again to the individual members.

MEMBERSHIP REPRESENTATION

With a country the size of Australia membership will remain a problem but not an insurmountable one. Divisions are evolving better representattion systems, e.g. conferences of clubs and state networks, and the next decade may see the subjugation or demise of large state-wide divisions in favour of smaller more representative groups, e.g. the clubs of today. The existing basis of one state — one division — one vote may be replaced by a regional or zone or branch scheme as exists in the UK or New Zealand. Increased representation of the amateur population, that is a greater percentage of amateurs as members of the WIA must be aimed for. An advantage of this Is the greater amateur population base to carry out the voluntary work of the Institute.

POLICY DEVELOPMENT

The current procedures for policy development have evolved and changed over the years. Of particular note is the resolution of parochial issues at divisional level with only significant matters being referred to Federal Convention In recent years. This trend of vetting and pre-examination must continue, enhanced by the Federal policy index. The management process based upon annual Federal Conventions, with the right to postal voting throughout the year, with a Federal Executive and paid officers of the Institute for continuity is apparently effective. Some obvious workload unbalances may be remedied by locating some Federal sub-committees elsewhere than in Melbourne. Half-yearly conventions of shorter duration may be a means of spreading annual reporting around the year and responding In a more timely manner to current issues.

DISSEMINATION OF INFORMATION

Without labouring the point of what poor communicators we are, use Is made of amateur broadcasts, meetings and AR to disseminate information. The first-named also serves the non-WIA member. In the future this aspect of dissemination must be reinforced, possible avenues are multicultural radio and TV, commercial radio, stored data bank memories on beacons and repeaters, e.g. RTTY, FAX and TV.

NATIONAL REPRESENTATION

National representation of the radio amateur has many facets but can be grouped as representation to the authorities, i.e. the government, and to the people, i.e. the general populace.

REPRESENTATION TO THE AUTHORITIES

First and foremost Is representation to the Commonwealth Department of Communications on matters pertaining to the WT Act. This can only be achieved by a combination of regllar liaison, e.g. the current joint meetings, and by lobbying or pressure action for specific key Issues. It is useful if these actions are replicated (along party lines) at state level. The future trend will almost certainly be to do more lobbying at the ministerial/senior departmental level, if only to maintain the status quo with other interested pressure groups. Apart from the Department of Communications, representation of the radio amateur will continue to be made to Business and Consumer Affairs (custom matters), Defence (NDO — emergency operations), Transport (use of facilities and tower approvals), Administrative Services (auctions and land use), State Governments (SES) and Local Governments (SES).

REPRESENTATION TO THE COMMUNITY

Recent events centred upon TV and also the Multi-Cultural Broadcasting Authority have demonstrated the need for amateur radio to be represented to the community. Historically newsworthy community relations have generally not been good, often relating to interference or antenna siting problems. In the future amateur radio will need to be considerably more vocal on community matters impinging upon the hobby. This is particularly so in the fields of pollution control, environmental impacts and RFI to both audio (including electronic music) and TV. Not enough PR effort has gone into promoting the community value of amateur radio as a hobby for all age groups. Attention to both ends of the age spectrum, senior citizens and youth clubs would be beneficial.

INTERNATIONAL REPRESENTATION

IARU. The key to international representation is through the IARU. Our continued active involvement in this area is essential. Indeed Region 3 nations should be assessed and graded according to their acceptance of amateur radio to permit the direction of information campaigns. In addition support must be given to amateur radio representative societies in emerging nations to achieve a cohesive Region 3 body.

ITU. The second area of international representation is to the ITU and occurs by way of the IARU but has national implications also. The next WARC may possibly be late In this century with several meetings of international importance on a selective scale in the interval. The amateur must have input, probably through the national authority Department of Communications, but also through the IARU, to these deliberations. When Is it time to form a WIA WARC watching/steering committee? And what about funds for delegates?

TECHNICAL CONSIDERATIONS

STANDARDS

Amateur operating standards and technical requirements have evolved over the years; the last major change was the introduction of the novice licence, and no major changes are foreseen. There Is no support for lowering of technical standards and the present licence series permits Incentives by upgrading to AOCP. The only change seen to the CW requirement is international acceptance of qualifications.

NOVICE LICENCES

There is ivedence that the novice band segments are crowded, but there is also indication of tapering off in numbers of new licences. The major Issue facing novices Is not increased privileges but assistance to pass the AOCP and upgrade.

LIMITED LICENCES

The limited licence has been available for about 25 years and has reached a stable state of existence. Minor areas worthy of consideration are joint novice/limited licences with CW privileges on all

authorised bands and possibly increased VHF/UHF privileges in the way of modulation modes.

REGULATIONS

Development of changes to regulations whilst a national representation matter must be first initiated by the practitioners and not the administrators of amateur radio. Better policing of regulations and operating procedure must be achieved by joint Department of Communications and radio amateur action. To this end the existing advisory committee practice must continue and be extended on a mutual trust basis. In summary the development of amateur strength must be balanced, progressive and in quality rather than quantity.

FREQUENCY BAND UTILIZATION

Throughout the next sunspot cycle low period there will be a need to select the best frequency band for the task to minimise mutual interference. The existence of multi-band HF transceivers, ATUs and multi-band antenna together with multi-mode VHF/UHF equipment makes this an easier task than in the past.

Band plans will need refining, or even defining for the three new HF bands, to permit co-existance of the many modulation modes and power levels. Little used bands must be populated by means of incentives or other attractions some of which are discussed later in the VHF/UHF considerations.

MODES & TECHNIQUES

Modulation modes and associated techniques must be developed to best utilize the existing frequency allocations. On HF this will call for optimisation of intelligence versus bandwidth and the improved rejection of harmonics and spurii, both in the frequency generation/transmission and reception equipments.

At VHF/UHF emphasis must still be given to simple, easily operated systems, particularly where available bandwidth is large.

With increased interest In digital data transmission, ultra low power CW operation, meteor scatter, moon bounce, RTTY, FAX, fast and slow scan TV, all possibly supported by the microprocessor, considerable heed will need to be paid to electromagnetic compatability (EMC).

LIKELY AREAS FOR DEVELOPMENT

Whilst likely areas for development are only limited by the amateur's imagination and possibly the existing or future regulations, the following are worthy of consideration.

LOW S/N DETECTION

the development at reasonable cost of The advent of microprocessors permits signal processing systems for the reception of low signal to noise ratio signals.

MESSAGE STORES

By utilizing digital data storage in IC memories it is possible to construct "store and forward" translators, news service message stores and training or testing signal sources, e.g. CW or "quick brown fox boxes". This approach is applicable to HF for RTTY and SSTV storage and VHF/UHF for higher data rates, e.g. video. Yet another application Is for warning messages for weather, propagation and satellite predictions.

VHF/UHF BAND DEVELOPMENT

In order to populate the VHF and UHF bands a progressive system of constraints and incentives is proposed. For example it is proposed that development of existing popularly used bands be limited to new and innovative applications only. This would mean no more new FM repeaters on 2 metres in high density areas (country development would continue lagging populated areas by, say, five years). Progressively higher frequency UHF bands would be opened up by the establishing of firstly beacons (a known signal source and frequency check), then wide band (FM) translators followed by narrow band applications.

As the available bandwidths are generally quite large all three steps could co-exist with again a cut-off date for lower level systems. The aim is always to populate using easily designed less sophisticated equipment and develop upwards in technical quality. Successive developments might include signal processing, specialist modulations and associated translators.

Satellites would be treated In exactly the same way as earth bound stations, advancing in step to greater utilize the newly developed equipments yet not forgetting the rag chewing section of the amateur community.

R. Henderson VK1RH.

ANNEX A — Areas that need Attention

Extracts from "ARRL's Long Range Planning Committee — A Progress Report", QST June 1980.

"A few of the critical items that are widely perceived include:

1. The urgency of finding ways to better control the use of amateur frequencies and to discipline offenders, and the need to improve our capability for locating and identifying sources of improper transmissions.
2. The need for a stronger and more effective relationship with government.
3. The importance of expanding and strengthening international co-operative relationships.
4. The desirability of emphasizing quality rather than quantity in the development of the ranks of future newcomers to amateur radio and retention of the code requirement as a vital communication skill.
5. The importance of stimulating greater interest and participation in both the public service and experimental dimensions of amateur radio.
6. The considerable interest expressed . . . the subject of increased membership involvement in League affairs.
7. The need for stabilization of the ARRL headquarters staff and the re-assurance concerning the League's financial stability."

Proposed Long Term Objectives for the WIA

By David VK4DT

1.0 SCOPE

This report defines specific long term objectives for the WIA and examines their application to WIA activities at both Federal and Divisional levels. It recommends acceptance of these objectives by the Federal Council followed by a review of current activities.

2.0 INTRODUCTION

The 1980 Federal Convention recognized the need to establish a plan for the guidance of the future activities of the WIA. The success of the Amateur Radio Service at the recent WARC was perceived to be the result of early and extensive preparations. The momentum of these achievements could be easily dissipated unless adequate planning was made for the future.

The first step In the process was seen to be the identification and acceptance of long term objectives for the WIA. Once these objectives had been established, short term plans could be formulated and then tested for conformance with them. These reviews could also provide the stimulus for movement into different areas of activity.

3.0 LONG TERM OBJECTIVES

The aim of the WIA is to generally promote the interests of the Amateur Radio Service. This aim can be quantified Into the following long term objectives. These are not necessarily in order of importance.

.1 REGULATORY

To actively promote responsible self-regulation and good operating practices within the Service.

To negotiate with the appropriate authorities for continued deregulation and for extension of privileges.

.2 TECHNICAL

To promote and support technical research and activity within the Service.

To promote effective and efficient use of the frequency resources allocated to the Service.

.3 PUBLIC RELATIONS

To establish and maintain an adequate level of public awareness and understanding of the nature of the Service.

.4 EDUCATIONAL

To conduct and promote education programmes to assist intending licensees and to maintain and raise the technical standard of existing licensees.

To establish and maintain a requirement for an adequate tech-

nical standard for intending licensees.

.5 **INTERNATIONAL**
To establish and maintain adequate working relationships with international amateur radio organizations.

.6 **MEMBER SERVICE**
To establish and maintain an adequate level of general services to members of the WIA.

4.0 **APPLICATION OF THE OBJECTIVES**
Adequate development of the above long term objectives will provide strong support during future investigations into the need for an Amateur Radio Service or into its frequency allocations and privileges. Such development must be balanced, i.e. no area should be over or under developed.

Current WIA activities at both Federal and Divisional levels should be examined and compared with the objectives. This exercise will undoubtedly reveal areas requiring attention and perhaps lead to restructuring in various areas.

Certain activities can only be properly managed at a Federal level whilst others are best handled on a Divisional basis. It is proposed to examine each area in some detail and make recommendations.

REGULATORY. This area involves liaison with the Department of Communications and standards-making bodies as well as other Government departments. It is also responsible for the internal self-regulatory processes, e.g. Amateur Advisory Committees, band planning, gentlemen's agreements, Intruder Watch, etc.

It is considered essential that these activities be co-ordinated at a Federal level even though significant Divisional involvement is necessary for some aspects.

TECHNICAL. This area should promote such activities as satellite operation, Project Asert, specialist modes, VHF, UHF, microwave activity. It should encourage amateurs to follow the "state of the art" in such areas as reduced bandwidths, spurious emissions, etc. It should use magazine articles, seminars, workshops, etc., to achieve these aims.

Existing groups such as VHF/UHF Advisory and Repeater Committees should be given responsibility in this area. Divisions have a strong role In this area and should support and encourage affiliated clubs to conduct workshops, establish Asert stations, generate magazine technical articles, etc. Federal oversight of progress would be required.

PUBLIC RELATIONS. This area is predominantly a Divisional responsibility as the most effective publicity is generated at this level. Public service activities such as WICEN, JOTA and third party traffic work are also most successful at this level. Federal oversight and co-ordination is still required as well as attempts to achieve nationwide publicity.

EDUCATIONAL. This area is mostly a Divisional responsibility as licence and higher level classes and seminars are most effective at club levels. The production of magazine articles, training notes and books does require Federal co-ordination. The scope of all Education Officers should be widened to encompass higher level training aspects.

INTERNATIONAL. This area is a definite Federal responsibility and covers such aspects as IARU, WARC representation as well as liaison with the national bodies of other countries.

MEMBER SERVICE. This area should be shared responsibility. It would cover such activities as QSL Bureaux, bookshops, contests, awards, disposals, etc.

5.0 **ORGANIZATION**
The structure of both the Federal Executive and Divisional Councils should reflect the objectives of the WIA. Members of each should be delegated the responsibility for oversight or management of one or more objective area. The various Presidents can then evaluate progress and performance in each area and take the necessary corrective actions.

The Federal Executive should have members allocated to Regulatory, Technical, Public Relations, Educational, International and Member Service areas. Divisional Councils should have members allocated to Technical, Public Relations, Educational and Member Services.

6.0 **SUMMARY**
The six long term objective areas should be debated by the membership and by the Federal Council. Existing and future activities should be examined for variance. The various councils should examine their structures in the light of the established objectives.

7.0 **RECOMMENDATIONS**
It is recommended that —

1. The six long term objective areas be debated at the 1981 Federal Convention with a view to their adoption as WIA Long Term Objectives.
2. Following the adoption of WIA Long Term Objectives a review be carried out of existing activities at Federal and Divisional levels for their conformance and possible expansion.

D. T. Laurie VK4DT. ■

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PART FOUR

MODERN DAY MILITARY HF MAN PACK TRANSCEIVERS, POWER SOURCES AND ANTENNA SYSTEMS

Using an FT901 here to an MLA2500 2 kW linear at 400 watts up a 60 ft. tower to a 6 element TH6DXX with VHF/UHF array and 150W transmitters. Sounds like the ultimate amateur station? Yes, that's my shack; it was fun getting going and operating but there are still horizons left which have been barely explored and I'd like to get into them now.

Thanks to the Palomar PTR130K I have been introduced to modern day military technology.

Even when I've sold my Palomar and my complete station it will still take me two years to save up the $18,000 price tag on a modern day military back pack unit. It will be QRP, no excess current consumption, complete HF coverage. Much of what I am paying for, e.g. the military specifications I don't really need but the only way to make that next step from the Palomar is into military equipment. There does not appear at present to be any comparable hand-held HF units in the middle price bracket.

These modern day military units are available to anyone — military and civilian users alike. Of course the high price tag has stopped these units reaching all but the most serious users and experimenters. They are the ultimate in man pack transceivers.

Produced by government and private industry in various countries, let's look at those from Britain, Israel and Canada.

THE BRITISH PRM4031 RACAL HF/SSB MAN PACK TRANSCEIVER

Claimed to be "the smallest of its type in the world".

Covering 1.6 to 30 MHz continuous in 100 Hz steps selected from six mechanical click switches showing the numerical frequency.

USB, LSB, AM (but unfortunately a BFO running on the receive mode) and CW modes are available.

Frequencies are synthesiser controlled.

10 watts power output with low power switch.

Narrow band filter used for CW.

A single control is used to tune an inbuilt antenna tuning unit across the entire 1.6 to 30 MHz range. A special LED display built into the current meter indicates the required direction for rotation of the tuning control.

Fully protected against open and short circuit antenna conditions.

POWER SUPPLY

Is a 12 volt 4 amphour nickel cadmium rechargeable battery fitted inside the unit.

WEIGHT

Man pack with headset, whip antenna, nickel cadmium battery and haversack — 7 kg.

DIMENSIONS

Width, 230 mm (9 in.); height, 75 mm (3 in.); depth, 335 mm (13 in.).

OPERATIONAL TEMPERATURE RANGE

—10°C to +70°C.

TRANSMITTER CURRENT

1.8A (SSB), 3A (CW).

RECEIVER CURRENT

160 mA (max.). Compare with the FT7B modified to give us 250 mA (typical).

Provision for 3 foot combat antenna or 8 foot whip or dipoles.

THE ISRAELI PRC174 TADIRAN HF/SSB MAN PACK TRANSCEIVER

Described as "the advanced radio set answering the challenge of modern military communications". "Designed to compete for living space in the notoriously crowded HF spectrum."

Covering 2 to 30 MHz continuous by using a digital synthesiser. 100 Hz steps are selected by six thumb-wheel switches.

USB, LSB, CW (narrow and wide band) and double sideband AM.

BATTERY ECONOMY

During prolonged listening periods, the portable transceiver may be switched to the SAVE mode to reduce battery drainage. In this mode, most of the receiver circuits are quiescent during 9 out of 10 time units. Full reactivation occurs only when an input signal is sensed during the tenth time unit.

Modular construction and provision for automatic overall testing by means of a special test set, without removing the transceiver from its case.

200 WATTS POWER OUTPUT

Three types of battery are available — lithium, silver zinc (which will provide more than 16 hours operation) or nickel cadmium (more than 11 hours operation). Operation is based on 1 : 9 transmit/receive ratio.

SUPPLY VOLTAGE

is 22-32V DC which seems typical of the high power 20 watt back pack units as compared to the 10 watt 12 volt British unit.

OPERATING TEMPERATURE

—45°C to +65°C.

DIMENSIONS

Height, 68 mm (2 in.); width, 262 mm (10 in.); diameter 297 mm (11 in.).

WEIGHT

5.7 kg (less battery).

A hand driven generator is available to charge the battery in the field.

A completely automatic antenna matching unit is built into the man pack transceiver. Tuning is controlled by a processor consisting of chip-and-wire modules and ROM/LSI circuits which store the tuning programme. Tuning time is 2 seconds typical, 5 seconds maximum.

A solar cell battery charger is also available for field charging.

THE CANADIAN AN/PRC515 COLLINS HF/SSB PACK SET

"A 20 watt lightweight HF man pack transceiver built to meet a full range of tactical communications requirements."

Using a synthesiser in 100 Hz steps to cover 2 to 30 MHz. Can be ordered to cover 1.8 MHz.

USB, LSB, AM, CW and line audio input for data transmissions.

An 8 foot (2.4m) whip antenna is usually used in the man pack configuration. The automatic antenna coupler provides full power with automatic control of antenna tuning. The antenna coupler is returned automatically when necessary without interrupting transmissions. This provides optimum tuning in changing terrain and ensures maximum efficiency under the rapidly changing antenna conditions encountered in man pack use. The whip antenna is quickly attached or detached and can be folded and stored in the pack when not in use.

TEMPERATURE RANGE

—54°C to +65°C.

Total immersion of the unit in 1 metre of water.

Operation up to 3000 metres (10,000 feet).

Size: Width, 320 mm (12 in.); diameter, 70 mm (3 in.); height, 220 mm (9 in.).

Weight (no battery): 5.7 kg.

Total weight with battery, transceiver and pack frame: 10 kg.

A 1.8 amphour 25 volt battery is sufficient power for a 12 hour pack set mission. A spare battery, higher capacity battery or hand generator can also be carried as part of the set. During extremely cold weather the battery may be kept under the operator's clothing.

A control unit can be connected to the transceiver via an extended cable. In this way a person carrying the pack set can also fully operate the set. The hand set, 600m microphone headset, CW key or data modem connect to the control unit.

The basic man pack requires no change to turn it into a vehicle or fixed station unit. It can be deployed for short range communications or sky wave (long range) working. The pack set can be slipped into the mounting tray in a jeep or other vehicle in seconds.

Using add-on units the pack set can be turned into a 100 watt or 400 watt vehicular transportable station powered by battery, line or petrol-driven generator.

AUTOMATIC ANTENNA TUNING TIME
3 seconds nominal, 7 seconds maximum.

EASE OF MAINTENANCE
Using internal audible indicators the faulty main unit is identified.

Test set ST2 isolates the fault to a module in the main unit.

Test set ST3 isloates the faulty component.

This completes my survey. As can be seen the possibilities are limited only by the funds available! ■

Start. The weir at Yarrawonga.

Finish. New Year's Eve at Swan Hill.

WICEN Murray River Canoe Marathon Xmas 1980

Middle. "Mobile" Stationary at Barnham.

QSP

SATELLITES

Amongst other items in the new AMSAT magazine "Orbit", volume 1, number 1, is an article by ZS1BI who combs the satellite frequencies for their own style of rare DX. "Orbit" magazine has evolved out of the AMSAT Newsletter. ZS1BI comments that satellite activity on HF is now rather limited to Oscars and USSR satellites, particularly 5 kHz either side of 20 MHz. The move nowadays is to microwaves to provide greater bandwidths for high-speed data transmissions not possible on VHF, although many signals can be heard between 136 and 138 MHz and between 149.85 to 150.05 MHz. ■

ABC-TV now has its programmes going out over the first National Broadcasting Service UHF translator — Channel 44, Adelaide Foothills.

Viewers who can't get a decent reception from ABS-2 (and who have a UHF band on their TV set) can put up a UHF aerial, call in the serviceman and join the elite few receiving Channel 44.— From "SCAN", June 23 1980. ■

THREE-CONTINENT TELEPHONE HOOK-UP

An $80 million contract has been awarded to Standard Telephones and Cables (STC) to manufacture and lay 3400 kilometres of submarine cable which will form part of the first telephone cable network to link three continents — Europe, Africa and South America.

STC will be responsible for the southern link, from Senegal to Brazil. This will consist of a 14 megahertz cable with a capacity for 1380 simultaneous telephone calls.

The network, called Atlantis, should be in service by mid-1982 and will increase capacity for calls and cut delays.

The northern link, from Portgual to Senegal with a length of 2900 kilometres and capacity for 2580 simultaneous telephone calls, will be handled by the French company, Submarcon. ■

Amateur Radio along the Canning Stock Route

August-September 1980

Keith Scott VK3SS

After nearly twelve months planning such an undertaking, and making a trial run across the Simpson Desert in 1979, a few members of the Victorian Range Rover Club decided the idea was feasible.

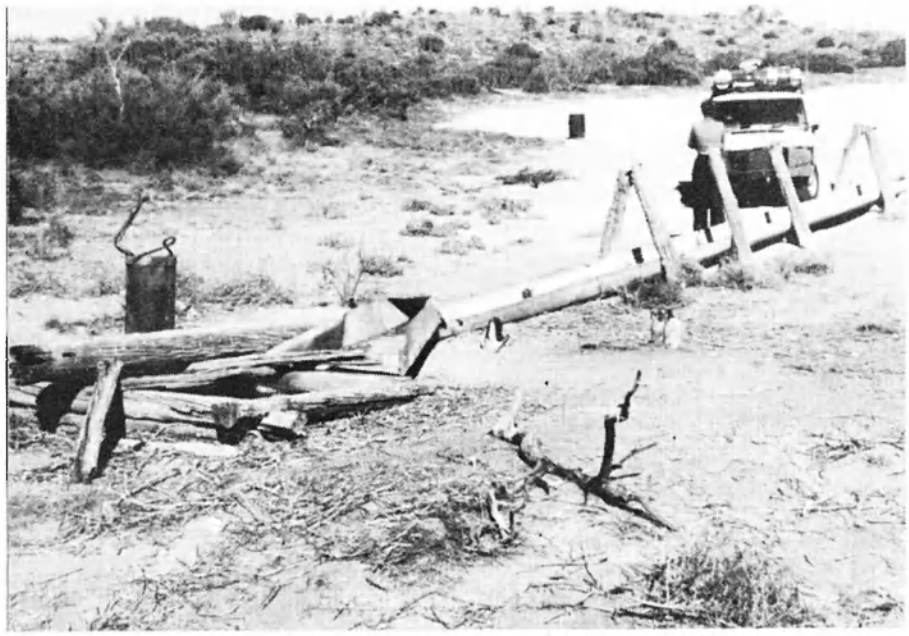
So in August 1980, seven Range Rovers, one Ford F100 4WD and a motor cycle travelled via Alice Springs north-west up the track over Tanami Desert to the north of West Australia. VK3SS guaranteed to keep the party in touch with the rest of Australia.

We called in and camped one night some two-thirds up the track near the WA border, at Rabbit Flat, where Bruce Farrands, his wife and twin five-year-old boys somehow eke out a living in a corrugated iron abode from which they serve drinks (cold assorted), some food stores, and petrol. This enterprise depends on a lovely fresh-water lagoon fed from springs, and a small camping site, complete with prefab toilet facilities, caters for groups like ours, assorted outback tourists and camping tour buses. They made history in 1975 when Mrs. Farrands suddenly decided to produce the twins. Not having previously contacted medical assistance on account of their remoteness, Bruce, assisted by the Flying Doctor Radio, quickly and successfully learned how to perform midwife duties.

The Tanami track is now upgraded into a fairly good sandy road, quiet suitable for any vehicle in good condition, provided it has not rained heavily. Anyone travelling that way is recommended to be sure of a stop-over at Rabbit Flat.

We emerged at Balgo Aboriginal Community in WA where previous arrangements had been made to take on our fuel. That meant 75 gallons of petrol per vehicle, plus 25 gallons of water. Added to enough food for several weeks, and heaps of spares, the vehicles squatted very low to the ground, making us advance very slowly and with fingers crossed for at least the first day. Since they were never likely to be so overloaded again, and weight could only go down, our confidence built up as the petrol went down at nine miles per gallon. One day later we left any resemblance to a road, knowing the next 1000 miles were on tracks made by a few vehicles over the past ten years or so. Well at least we were now on the path of Canning Stock Route, all intact and full of optimism.

Readers, please don't pin me down to exact dates, etc., regarding this historic route. Several books record the journeys of intrepid explorers some 80 years ago and, after many probes and expeditions by explorers and surveyors, in 1907 and 1908 a party led by the man after whom it is named, A. W. Canning, established this long cattle route. With horses and camels paked and pulling wagons of supplies, they found and dug sites for wells about 20 miles apart, mostly 6 ft. by 3 ft., ranging from six to sixty feet deep. The object was to enable cattle to be moved over the Great Sandy Desert and Gibson Desert, from the Kimberley area to the growing populations in the WA goldfields. At this point Amateur Radio should fit Into the story.



Remains ol old well on edge of dry salt lake, Lake Tobin.

Many West Australians helped in the organisation and safety of our journey, and the Travellers' Net should be introduced right now. For many years, starting at 0300Z or 1300 EST, it opens on 14.105 MHz. **Keith Williams VK6KC,** who is radio operator at Kuri Bay cultured pearl headquarters, high up on the north-west coast, leads the net, with assistance from many others, mainly in WA. Some of the regulars are **Doug VK3YK, Harry VK6ZZ, Tom VK6TB, Jack VK6EJ.**

On this net, mobiling amateurs all over Australia call in, and the safety factor alone for all in remote areas is just fabulous. Nearly every day I contacted my son **David VK3DY** in the home town of Maffra. **George VK3XD** and **Doug VK3YK** were daily contacts on 20 metres on the Travellers' Net, and at 2100 hrs. same frequency. 20 metres really works mobile with a helical! **Stewart VK3BSM** was with another party from the same club travelling across the Victoria Desert from Rawlinna, WA, to the Gunbarrel Highway and on to Ayers Rock. We kept the two parties aware of our progress and problems daily. Every day operators from all over Australia joined the net, and the home stations would know where everyone was almost exactly at any time. **VK6KC and VK3YK** could produce this knowledge any time, and they arranged all sorts of skeds to

The author's Range Rover on the stock route.

keep everyone in touch with everyone. If you are travelling in remote areas, or even travelling anywhere, give this net consideration to increase your enjoyment of travelling, plus a safety blanket. Any difficulties that arise can most always be solved or assisted by someone in the net.

To all those valued contacts I made and to all concerned, please accept my grateful thanks.

Back to the Great Sandy Desert. We drove for 10 to 12 hours daily for three weeks and 1100 miles from Balgo to Wiluna. Add about another 100 miles jolting vertically. Crossed over 1000 sand dunes, *about 30* with problems solved by towing and winching. The greatest hazard was long dry seed stalks growing up from the spinifex which grew for hundreds of miles in thick clumps, between and on each side of the wheel tracks. These packed under the vehicles and overheated exhaust pipes caused nine very alarming fires throughout the group. We all carried up to three fire extinguishers and used nearly all of them. The only way to minimise this risk was to stop every 15 to 20 minutes, get under the sides and hook out the dry stalks with wire. Fortunately spinifex did not cover all the deserts, otherwise it would take twice as long to make the crossings — fire permitting.

Michael Wilson, a fit young man, rode his motor cycle ahead all the way to pick out the right track as best he could and to locate wells which often are off the track — sometimes nearly vanished, filled with sand, rubble or subsided. Between us we located all but two wells. Most have caved in and were dry, several held undrinkable water, about five of the 62 still had their original steel covers on them and contained drinkable water. We ascertained this fact before deciding to do the journey. Two-thirds of the way down we had arranged a dump of ten 44 gallon drums of petrol, which was carted out via a connecting track of sorts from Newman. We used nearly all this to complete the route over the Gibson Desert to Wiluna.

Many large and small dry salt lakes are in this area — not recommended to drive over, although they look very firm. We knew from previous roprts and personal frights how risky that would be, for below the salty crust lurks unknown depths of smelly black ooze.

Soon we were to deviate to Durba Hills, which run for several miles. They consist of rugged hills of broken up red rocks, but between them exists almost a paradise in the form of a flat area with real grass, plus most wonderful still clear rock pools which are fed from springs. Lovely trees and flowering plants enhanced the scene, some pools could be swum in even. I must point out we took every care not to stir up the water or use soap in it. It was realised this water really belonged to the birds and animals.

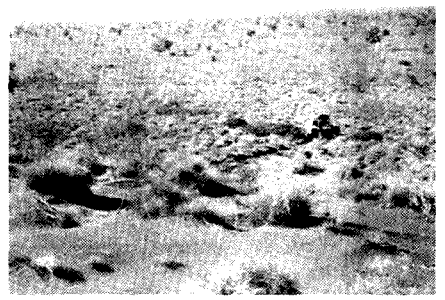
On the subject of life on these deserts, Aborigines have vacated the areas many years ago. There is no human habitation

Along the Canning Stock Route, Great Sandy Desert.

at all (a few mineral searchers are probably about, but we saw no signs of them). The wildlife is mainly lizards, goannas, snakes and insects. Not a lot of birds and then only where some water existed. Several herds of camels were sighted, some donkeys, one snake, a few kangaroos, foxes and dingoes. Very limited accessibility of water governs all life on these deserts. Nevertheless it does rain sometimes, and they are anything but barren wastes. Spinifex predominates, great varieties of lovely wildflowers and shrubs were growing everywhere we travelled. It would be *correct to* describe these vast lonely areas as beautiful.

The very rough going provided an extreme test for our vehicles. The days were very hot, numerous tyres staked by sharp wood and stones, broken springs and fires were the main worries. Before leaving home we ensured the Range Rovers were in first class mechanical condition and plenty of spares were carried. So we had no serious mechanical breakdowns and no towing except at times on tops of very loose sand dunes.

At the end of three weeks from Balgo, nearly 1100 miles across the longest desert trip in Australia, averaging 10 miles per gallon fuel consumption, rarely getting above second gear, some days averaging two miles an hour, we started to find formed roads, and were soon in Wiluna feeling very elated on our successful undertaking. There we washed, looked over the wreckage of an enormous goldmine which, upon closure, reduced Wiluna from a busy thriving town to a few old interesting buildings which are now mostly owned by aborigines. It did have an excellent small caravan park, which surprised and pleased us. Their solar hot water system was very quickly emptied. After refuelling,



Gibson Desert Scene

stocking up at a good little old store, the party dispersed to return in three groups by different routes.

With the Ford and another Range Rover I returned along the old Gunbarrel Highway via Giles Meteorological Station, where six men spend six monthly periods at this very remote spot in the Rawlinson Ranges, WA. Their living conditions are quie comfortable and they enjoy the half-yearly sojourn. Their duties are to check all weather conditions which are radioed to Adelaide, I think. Hydrogen balloons with Radio-Sonde functions are released daily and tracked by radar plus information from the tiny transmitter. Finally we emerged at Mt. Olga and on to Ayers Rock, thence the tourist route home. The trip along the Gunbarrel Highway is another story.

I wonder if I could claim to be the first amateur operator to travel 1000 miles along the Canning Stock Route? ■

WIA Federal Video Cassette Library

John Ingham VK5KG
Federal Videotape Co-ordinator
37 Second Avenue, Sefton Park, SA 5083

The following tells how your radio club can take advantage of this free service offered in the interests of promoting Amateur Radio.

There are three categories of programme.

Group A are those programmes for which the WIA *does* not hold copyright and which are available for loan ONLY and are not to be copied or transmitted. These are available on loan from the WIA Federal Videotape Co-ordinator upon receipt of —

1. Stamps to cover postage of the videocassette to you, and
2. A statement signed by a responsible officer of your club to the effect that the videocassette will be returned promptly upon use and that while it is in his care it will not be copied or transmitted over the air.

Group B are programmes for which the WIA holds copyright. As it is impractical to hold sufficient numbers of each of these to cater for every request for loan, these are available *ONLY* by supplying your own videocassette on to which the programme of your choice will be copied for you to do with as you wish.

Group C are programmes which are not intended as formal, permanent programmes. They are simply videotaped lectures, mostly recorded at the VK5 WIA monthly meetings. **These will be of particular interest to country clubs which may have had until now difficulty gaining access to the same standard of technical lectures as their city cousins.** Group C videocassette masters will be held for no longer than a year, so if you see a title that may interest your club don't hesitate to send in your request.

Both Groups B and C are ordered in the same way — send your request to the Federal Videotape Co-ordinator together with —

1. A blank videocassette of acceptable format, and
2. Stamps to cover the return postage of the videocassette to you.

GENERAL POINTS

The only acceptable videocassette formats at present are the ¾ in. Umatic and the Philips ½ in. N1500. **Regrettably we cannot as yet supply programmes on the VHS or Betamax formats.** Although this service is free *all* requests must include prepayment of return postage in stamps. As a guide a 60 minute Umatic videocassette and box weighs 900g, a 30 minute 775 g, both plus wrapping. An extra 50c should be allowed for a padded post bag.

Order in plenty of time, at least one month ahead, to allow time for processing and mail delays. Urgent requests involving "air parcels post" or "priority paid" are much more expensive!

In "emergencies only" Federal Executive WIA have available for loan one copy of each Group A and B programme. However, dont rely on this as the programme you want may already be on loan or booked for Federal Executive use. ■

Group	Title	Approx. Duration	Availability: Colour/ B & W	WIA Fed. VTR Co-ord. Loan	WIA Fed. VTR Co-ord. Copy Service	Fed. Exec. Emerg. Loan
A	"G6CJ Aerial Circus"	1½ hrs	B & W	√	—	√
A	"7J1RL DXpedition"	1 hr	Colour	√	—	√
B	"Official Opening of Burley Griffin Building" (VK5 HQ)	50 m	Colour	—	√	√
B	ARRL Films — "This is Amateur Radio"	15 m	Colour	—	√	√
	"Moving up to Amateur Radio"	15 m	Colour	—	√	√
	"The Ham's Wide World"	30 m	Colour	—	√	√
	*"World of Amateur Radio"	30 m	Colour	—	√	√
B	"This Week Has 7 Days" looks at Amateur Radio	25 m	Colour	—	√	√
B	"Amateur Radio — The National Resource of Every Nation"	6 m	Colour	—	√	√
B	"The VK5 ATV History"	20 m	Colour	—	√	√
B	*Historic Radio Film	10 m	B & W	—	√	√
B	"ATV in Aust. 1978" (made for British ATV Club)	30 m	Colour	—	√	√
B	*"ATV in G 1980" (Reply by BATC)	30 m	Colour	—	√	√
C	Lecture on "Long Wire Antennas" (VK5RG)	40 m	B & W	—	√	—
C	Lecture on "RTTY" (VK5QX)	40 m	B & W	—	√	—
C	Lecture on "Tracking Oscar" (VK5HI)	40 m	B & W	—	√	—
C	Lecture on "The Signal to Noise Story" (VK3ATY)	45 m	Colour	—	√	—
C	Lecture on a "Hamshack Microcomputer" (VK3AHJ)	10 m	Colour	—	√	—
C	Lecture on the "Apollo 13 Disaster" (VK5ZJB)	1½ hrs	Colour	—	√	—
C	Lecture on "Microprocessors" (VK5PE)	1 hr	Colour	—	√	—
C	*Lecture on "Winning Foxhunts (VK5TV)	1¾ hr	Colour	—	√	—
C	*Lecture on "Mobile Auxiliary Battery Charger" (VK5NX)	25 m	Colour	—	√	—
C	*Lecture on "Two ATV Repeaters — VK5RCN and VK5RTV"	1 hr	Colour	—	√	—

* New Programme.

Atop Mt. Toolbrunup

During October 1980 the West Australian repeater group organised the temporary installation of its portable repeater VK6REE on top of Mount Toolbrunup.

Mount Toolbrunup is 3,500 feet high and is located about 50 miles NNE of Albany on the south coast of VK6.

All the equipment had to be back-packed up a difficult track to the top. It included two 45AH car batteries, 6 full size quarter-wave cavity filters, repeater, aerial, small mast, coax and several other pieces needed to put VK6REE on channel 700 (ch. 8), on air.

The climbing and installation went without a hitch, and the repeater remained on air for about 40 hours, providing trouble free mobile coverage over an 80 mile plus radius.

The repeater was hidden in a small cave just below the summit.

Many contacts took place through VK6REE, which with its very large range, was exciting to use.

Perhaps one day a permanent installation on Mount Toolbrunup will be possible, remote and inaccessible as it is. ■

John VK6ZHV atop Mount Toolbrunup.

Will VK6UU listening to a contact. Will's XYL Terryl is on the cover.

This photo, taken on day of installation of repeater, shows most of the climbers atop Mount Toolbrunup.

The Close of an Era

The death occurred on 25th January of Soly Deitch, the last of the Sydney based disposal dealers, who started in 1946 after the war in the buying of war-time surplus at auction.

The older amateurs will remember the times in the 50s and 60s when the closest one could get to commercial gear was what one could find on the disposal market. During these times all the capital cities had numerous disposal shops — those in Sydney were located round Stanmore, Marrickville, St. Peters and Oxford Street. Sol first started in Glebe in Disposals in 1930.

Sol was on one of his regular interstate train trips to an auction, this time in Brisbane, when he suffered a heart attack. Sol was the last of the electronic surplus dealers from the post-war era and on behalf of the Amateur Radio Service we would like to pass on our sympathy to the Deitch family on the passing of Soly Deitch.—de VK2ZTM. ■

SCALAR — FOR THE DISCERNING AMATEUR

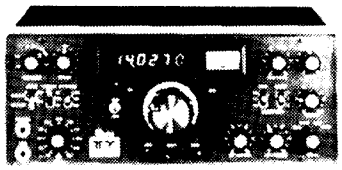
SOME RIGS OFFER PLENTY OF KNOBS AND FLASHING LIGHTS • • • •

BUT

HOW MANY BROADBAND, SOLID STATE TRANSCEIVERS WILL :-

- **Transmit close to full power into a VSWR of 3:1?**
- **Run full power key down for 20 mins. without danger to the finals?**
- **Carry 12 months' unconditional warranty on the finals?**
- **Notch out an S9+ carrier from an SSB or CW signal?**
- **Successfully filter hash and QRM on noisy bands?**
- **Offer easy availability or substitution of spares due to American origin.**

TEN-TEC DOES IT ALL !



OMNI-C

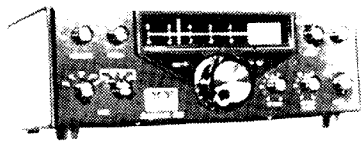
All 9 HF Bands.
200 watts input.
6 positions of selectivity.
Fast and slow QSK.
Notch filter.
3-mode, 2-range offset tuning.

$1340.00

580-DELTA

All 9 HF Bands.
200 watts input.
4 positions of selectivity.
QSK (Instant CW Break-in).
Notch filter.
VOX.

$994.00



ARGONAUT-515

QRP HF Transceiver.
Improved sensitivity.
4-Pole, 9 MHz. Crystal Filter.
WWV at 10 & 15 MHz.
No-tune finals.
QSK (Instant CW Break-in).

$502.00

- **280 Power supply for Omni and Delta . . . $165.00**
- **210 Power supply for Argonaut $46.00**

OTHER TEN-TEC ACCESSORIES IN STOCK:-

247 Antenna Tuner. 200 watts. Will tune balanced lines, long random wires and coax feeds. $78.00

208A Notch/CW filter. Outboard unit for Argonaut 515. Can be adapted for most any transceiver. $55.00

NEW

SP-300 SWR/POWER METER.

Frequency range 1.8-500 MHz. 3 inbuilt switchable sensors enable three separate transceivers and antennas to operate simultaneously. $175.00

DL-1000 DUMMY LOAD.

300 watts continuous. 1KW. for 3 mins. Oil filled. Air Cooled. $80.00

DON'T FORGET OUR OTHER LINES WHICH INCLUDE :-

- ★ SC33DX Triband Beam
- ★ 70cm. Mobile Antennas
- ★ Low Pass Filters
- ★ Antenna Quick Disconnects
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- ★ SC22DX Trapped Vertical
- ★ HF Mobile Whips
- ★ Speech Processors
- ★ Antenna Springs
- ★ Morse Keys and Keyers
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....All products fully guaranteed.

....Prices apply to Sydney only and do not include freight tor interstate or country sales.

....Full details for any product available on request.

IMPORTANT NOTICE FOR ALL CLUBS

Register with the office in your State in order to qualify your members for club discounts on most items (except Ten-Tec products).

SCALAR Communication Products

NSW: 328 Kingsgrove Rd., Kingsgrove 2208. Tel. 502 2888 Telex AA27067
VIC: 20 Shelley Ave, Kilsyth 3137 Tel. 725 9677 Telex AA34341
QLD: 8 Ferry Rd., West End, Qld. 4101 Tel. 44 8024 Telex AA43007
W.A.: 5/319 Pearson St., Osborne Park 6017 Tel. 446 4657 Telex AA94825

bankcard welcome here

FORWARD BIAS

VK1 DIVISION

(Postal Address: WIA (ACT Division) Inc., PO Box 46, Canberra, 2600 ACT)

By the time this appears the February AGM will have taken place and the new President, other officers and committee members elected. We'll have details in next month's column. However, should any member want these before April, then just drop a line to PO Box 46.

At the January meeting our guest speaker from the Department of Defence told us about the proposed Australian Defence Integrated Secure Communications Network (DISCON). The system, to be implemented over the next ten years, will provide a secure multi-purpose strategic communications network for the Defence Forces, and will replace the present single-service networks. Techniques to be introduced include low, medium and high-speed digital channels and computer-controlled digital switching.

About 60 members turned up for the meeting and we were pleased to welcome Edgar Olds VK2BY, who was visiting Canberra from Broken Hill. It's gratifying to see intending new members at these meetings — all keen to go for their licences and interested in joining the WIA.

At the March meeting, our guest speaker will be Mr. J. McKendry from the Department of Communications who will give a talk on the Australian Frequency Allocations. In April, Mike Vale VK1VW will speak on Electric-power Vehicles.

CLASSES FOR 1981

This year the Division hopes to again run classes for both Novice and full-AOCP candidates. The AOCP course will take candidates up to the August examination. There's a short one-term course for Novice candidates taking the May exam, followed by a two-term course for the November exam. Both offer basic CW, "faster" CW and theory.

VK1 AWARD

Congratulations to Rod Pritcher VK5AN, our first claimant for the certificate for 6m (SSB) operation.

Finally Fred Robertson-Mudie VK1MM has received that most elegant QSL card from HM King Hussein JY1. Fred may well be starting a new QSL collection category — he's waiting now for a Qatar card from HE the Sheikh A7XA and there's a couple more to come from Saudi Royal Princes! ■

HEARD ANY GOOD "RUMOURS" LATELY?
TELL A.R. ABOUT THEM

VK2 MINI BULLETIN

COUNCIL REPORT

Divisional Council would like to thank all those who responded to our request for photocopies of 68 per cent exam results. Ten replies have been received from three States; 5 from NSW, 3 from Victoria and 2 from Queensland. Of these, 5 were NAOCP (2 for May 1980, 3 November 1980) and 5 were AOCP (1 August 1979, 2 February 1980, 2 August 1980).

We realise, of course, that perhaps the majority of people sitting for exams may not be members of the WA (two of the réplies were non-members) and this brief survey cannot be said to be definitive. The results, however, do not contradict the figures supplied recently by the Department of Communications, indicating that between 4-6 per cent of candidates received 68 per cent in recent examinations. Sydney Radio Branch have informed us that the papers of candidates receiving between 60 and 68 per cent are automatically remarked.

To date (2/2/81) $200 has been donated to the Tower Fund (see February AR). Recent donations have been received from M. Cruden $5, B. Valentine $5, A. Rennie $10, D. Broadley $10 and Illawarra ARS $10.

NSW clubs have been asked to hold meetings of either club executives or the club itself in early April in order to discuss agenda items for the 1981 Federal Convention. Any comments or recommendations from either clubs or members will be gratefully received by our Federal Councillors, Tim Mills VK2ZTM and Wally Watkins VK2DEW. In addition to the club meetings throughout the State, Divisional Council will hold an informal meeting for members at 14 Atchison Street, Crows Nest, on Sunday, 12th April, at 10 a.m. in order to discuss and recommend on Federal Agenda Items. (See elsewhere in February and March AR for some of the Federal Agenda.)

Council has resolved that, as affiliated clubs cannot be members of the NSW Division, QSL cards of affiliated clubs resulting from club activities such as JOTA, field days and nets, and bearing the club call sign only, will not be charged the 5c per card handling fee if sent through the NSW QSL Bureau.

The Fourth Conference of Clubs will be on Sunday, 24th May, commencing at 10 a.m. at the Goulburn RSL Club, Market Street, Goulburn. Agenda items for the conference should reach Divisional Office not later than Thursday, 16th April, so that clubs will have one month in which to discuss the items and direct their delegates how to vote.

MID SOUTH COAST ARC

The Mid South Coast Amateur Radio Club held its Annual Meeting in Milton at the home of Frank VK2HQ and his wife, Jean, on Saturday, 17th January last. Frank VK2HQ and John VK2BTQ were re-elected to the positions of President and Vice-President respectively. Jim VK2YGY was elected Secretary/Treasurer.

The barbecue lunch prior to the meeting was attended by 116 adults and children, and six dogs (not a record!). The weather was perfect for the day and a good time was had by all.

(Submitted by Bill VK2AJL.)

Details of three clubs affiliated with the NSW Division:

SOUTHERN HIGHLANDS ARS

C/- Telephone Exchange, Bowral 2576.

Net: Sundays 8.30 p.m. on 3516 kHz using VK2BFI.

Meetings: 1st Fridays at 7.45 p.m. at the Mittagong Shire Supper Rooms.

President: F. Ritchie VK2VGX; Vice-President: G. Goode VK2VIG; Secretary: K. Orchard VK2BZY; Other Committee: T. Lee VK2AOS, B. Goodman VK2ZAG, G. Armitt VK2ZWQ/NHC.

Repeater: VHF VK2RHR channel 7350. Between Bowral and Mittagong, approximately 90 km SW of Sydney. 8W into ¼ wave, receive antenna also ¼ wave separated vertically and inverted. Time out 3 minutes.

Newsletter: Bi-monthly.

MID SOUTH COAST ARC

PO Box 113, Milton 2538.

Lyrebird Nets: Wednesdays 7.45 p.m. on 3617 kHz using VK2BKG and others. Wednesdays 8.30 p.m. on repeater channel 6700.

Meetings: Quarterly in January, April, July and October in Milton/Ulladulla area.

President: F. Hill VK2HQ; Vice-President: J. Telfer VK2BTQ; Secretary: J. Yalden VK2YGY.

Repeater: VHF VK2RMU channel 6700, located approximately 16 km SW of Milton.

GOULBURN ARS

40 Hume Street, Goulburn 2580.

Nets: Sundays at 9 p.m. on 3615 kHz using VK2BTZ. Monday-Friday at 4.30 p.m. on 28480 kHz using VK2VUT.

Meetings: 2nd Wednesdays at 8 p.m. in Goulburn Police Boys' Club radio room.

President: D. Thompson VK2BDT; Vice-President: H. van Bilsen VK2BUT.

Secretary: W. Scott VK2VMK; Other Committee: D. Bell VK2NAW, R. Woodman VK2EY.

COMING EVENTS

7th March, Saturday, 10 a.m.: Close of nominations for 1981 Council NSW WIA.

22nd March, Sunday: Liverpool Field Day. See February AR.

28th March, Saturday, 10 a.m.: Annual General Meeting of NSW Division.

5th April, Sunday, 8 a.m.: Club liaison net on 3575 kHz.

5th April, Sunday, 10 a.m.-4.30 p.m.: VK2WI April Fool's Day plus Four picnic at 63 Quarry Road, Dural. Listen to broadcast for details.

12th April, Sunday, 10 a.m.: Informal meeting at WIC to discuss Federal Convention agenda.

16th April, Thursday: Close of agenda for 4th C. of C.

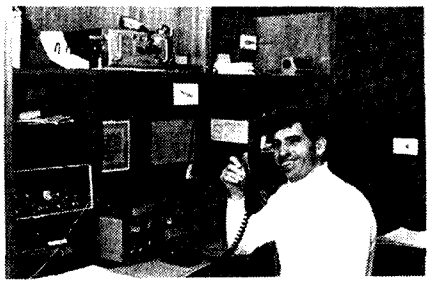
24th May, Sunday, 10 a.m.: Fourth Conference of Clubs at Goulburn.

News for inclusion in VK2 Minibulletin must reach Box 123, St. Leonards 2065, two days before the end of the month.

Susan Brown VK2BSB.

SPOTLIGHT ON SWLing

Robin Hawood VK7RH
5 Helen St., Launceston, Tasmania 7250

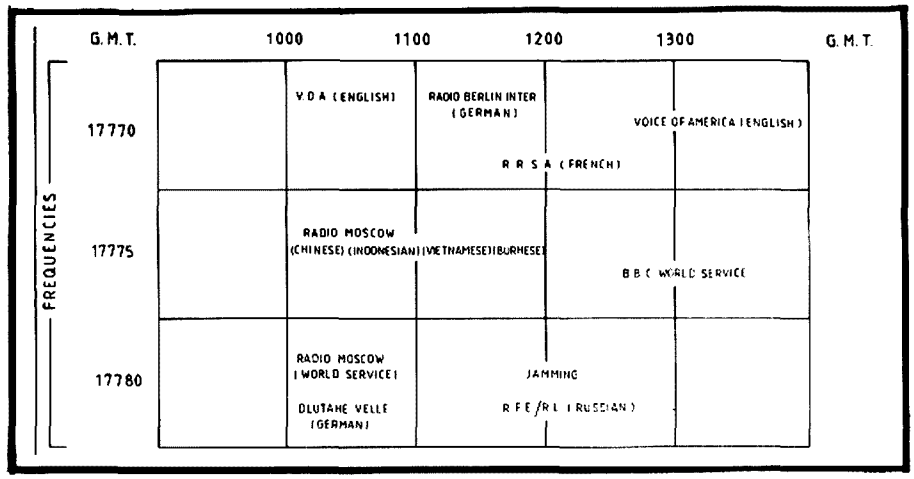


One aid to the serious DXer to keep abreast of frequency alterations, changes in tranmission times, etc., is a band chart. By means of this chart, it is possible to spot any changes, or that a particular frequency is being used by too many stations at any given time. In Fig. 1 I have set out an example of what a band chart looks like.

By reading the frequency of 17770 kHz at 1130 GMT, it can be seen that two stations are utilizing this wavelength. Normally, they would cancel each other out, however, they could be serving different regions. Radio RSA could be transmitting to West Africa, while the East German station is aimed for S-E Asia. So there would not ordinarily be any mutual interference except in non-target areas such as in Europe.

The 17780 kHz example shows two stations between 1000 and 1100 GMT. Both let us say are serving the same area — the Middle East. The Russian station will have the stronger signal as its relay transmitters are sited closer to the target area than the one in West Germany.

Normally, international broadcasting organizations submit their proposed frequencies and schedules quarterly to the International Frequency Registration Board, a division of the ITU in Geneva. There they can assess if there will be mutual interference, or that any particular broadcasting frequency is heavily loaded.



They advise the particular organizations of any potential users of that channel, so that alterations can be effected. Even so, cross-channel interference still occurs. With some administrations refusing to deal with the IFRB, such as Albania, Vietnam and North Korea, this adds further complications to the task.

Some broadcasters have entered into frequency sharing arrangements. There are sections of the stations that employ personnel exclusively in frequency planning and scheduling.

Another complication to their task is the presence of "jamming" stations. Because several countries do not wish their citizens to listen to certain broadcasts, they transmit an interference patter on the particular channel to be employed. Unfortunately, the jamming signals spill over on to adjacent channels, thereby restricting their use as well. The amount of this jamming will vary from time to time, depending on the current political situation. So the stations are forced to move about in frequency to find a clear channel.

I collate the information needed for a band chart from one-air monitoring, from DX publications, station schedules, and from some of the DX programmes put out by some stations. These charts are valid for each broadcast period. There are four periods each year to take account of changing propagation due to seasonal fluctuations. These come into effect on the first Sunday in March, May, September and November at 0000 GMT, and are known as the "M", "J",, "S" and "D" Periods respectively. For example, as from March 1st it will be known as M-81.

The World Radio TV Handbook 1981 should be available shortly. Published in the United States by Billboard, it should retail for about $A20 from leading technical bookshops. This Handbook contains details of the majority of radios and television stations with their frequencies, transmission times, antennas, locations, etc. It is invaluable for those who seriously are into short-wave monitoring.

Those wishing to keep up with the latest news of Amateur Radio DX may find that the ARRL Headquarters Station, W1AW, transmits a daily C/W bulletin at 2200 GMT on 14090 kHz. It not only contains DX news, but propagation forecasts and news of VHF "happenings". It also transmits on 21090 and 28090 at other times and also utilizes RTTY on these channels as well.

I have also heard two new programmes for the SWL from the BBC World Service. These replace their much lamented World Radio Club. The first one is simply titled "Waveguide" and is a five minute weekly slot. It is designed to aid listeners who are experiencing difficulties in reception of the BBC World Service. It is best observed on Fridays at 2155 GMT on 9.41 MHz.

The second programme is called "Listening Post". This is a programme of what the world's broadcasting stations are saying about current events. It is prepared by staff of the BBC Monitoring Service and contains the comments of foreign language broadcasts. This 15 minute programme is heard very well on 26650 or 15070 kHz at 1115 GMT, Wednesdays.

Another long-running programme is "Sweden Calling DXers". This session has a variety of accurate DX brodcasting information each week in several languages from Radio Sweden. It is heard on 21610 kHz at 1200 GMT in English.

Well, that is all for this month. If you have any suggestions for this column, feel free to write to me. Until then, the best of DX and 73s. ■

QSP

ANZAAS

A circular from the organiser advises that the 51st Congress of the Australian and New Zealand Association for the Advancement of Science will be *held in Brisbane from 11th to* 15th May, 1981, at the University of Queensland. The Congress theme will be "Energy and Equity". ■

H44 BEACONS

Through IARU R3 comes news that the beacon H44HIR on 50.005 MHz has been put into 24 hours continuous service. The beacon runs 10W to a vertically polarised dipole. Reception reports go to SIRS, Box 416, Honiara, Solomon Is. The Society hopes to set up a 10m beacon in the near future as their contribution to the IBP (International Beacon Project). ■

YOU and DX

G. (Nick) Nichols VK6XI
6 Briar Place, Ferndale, WA 6155.

Yuuuuuuk! yuk what? well how else would you summarise conditions of the last month or so. No serious DXer should have to suffer such abysmal propagation — even pre-dawn excursions on to 80 yielded very little in the way of expected European DX, the higher bands weren't too much use either.

Oh well, after such a poor month you should be in the family's good books, trips to the beach, visiting relatives, manicuring lawns, weeding that jungle (oops, sorry, I mean garden), losing some of that Christmas paunch in the process, you should be in fine shape for the upturn in conditions we all hope to occur about now (if you were silly enough to stay glued to the receiver you must be a glutton for punishment).

FACT **AND FICTION**

Well if nothing else it's sure been an interesting month for the rumour mongers, most of the information is vague but there are hints at some interesting activity over the coming months.

Early to mid-February should see some activity from Nepal by Japanese amateurs, if this one came off on schedule the call signs should be 9N1BMK and 9N1JA with QSLs to go to JA8BMK.

4W1 activity this month? It is believed a Jordanian operator has secured a licence and plans to visit the area during March (if this proves to be false a US amateur certainly will be granted a licence later this year, applications can apparently take upwards of six months, and it is hoped a month long single operator operation will eventuate).

April should see some activity from Juan Fernandez Island CE0Z, multi-operator and multi-band by several CE5 amateurs.

From the DX Bulletin comes the news that Kingman Reef and Palmyra Island should also be activated during April.

Back into the Middle Eeast — May/June has been heavily tipped for activity from 70; hopefully more solid info will be available on this one by next month.

Anyone who worked A7XE during the period 13th June to the 10th September, 1980, will be unhappy to know that it was an illegal operation, the call sign is held by Willi Rass, who was absent from Doha for that period. The QSL manager cleverly teed up the pirate — DL2MY — has been requested to stop issuing QSLs and the ARRL will not accept same for DXCC credit. QSLs for legal activity should go to Willi's home call DF4NW.

Hearty congratulations this month must surely go to the ARRL for putting an end to the ubiquitous "No greenstamp no card type expedition". They have ruled that such intimations on air will result in the cards not being accepted for DXCC credit and further that any operators involved in such practices will not be eligible for any ARRL awards. Your help in ensuring active policing of this ruling by reporting any such verbal demands is recommended.

Whilst on the subject of greenstamps and the like, how about the VK6 amateur who boasts of obtaining rare QSLs by including $10 "stamp" when sending direct — such actions will undoubtedly make the obtaining of such confirmations so much harder for everyone else. How about putting the money to a better use — I can *recommende* a great psychiatrist.

For those of you who worked Phil 5N0PSN and perhaps have wondered why QSLs have been slow, Phil was unlucky enough to collect a bullet through his jaw whilst in Lagos and returned to the UK — he will not, needless to say, be returning to Nigeria.

ON THE BANDS

10 Metres:

9V1VV, SV0BL/SV5, KC6KR, 5T5JD, W5JMM/SU and J73PP were the only bright spots in an otherwise dull month on phone. On CW things weren't exactly jumping with BV2A, 9X5AB and HG0DG somehow managing to get through the poor conditions.

15 Metres:

On phone an absolute disaster, QRM from someone's answer to the woodpecker wrote off any activity above 21.200 almost every evening, CW with good narrow filters wasn'te quite so bad with FK8DO, HP1XRR and ZK2VU coming through at good strength.

20 Metres:

Forget the QRM on phone and generally unstable conditions, CW was the mode to concentrate on C21BS, EA8QO, EA9QO, EA9EU, FM7AV, HK0BKX, JT1BH, J28CK, VP9DR and 5N0DOG, and for the RTTY fanatics 9K2KA all had solid signals.

40 Metres:

Apologies to the phone boys (and girls), but that mode really was a total waste of time, CW again showed what a valuable mode it can be, OH2BAZ/OH0, ZK2VU, 4S7MX, 9M6MO workable even with relatively poor antennas.

80 Metres:

Apart from the usual Spanish group on phone and generally poorer (than last year) conditions prevailing, European stations were quite workable on CW (not that I worked many), however the stations in greatest demand were without doubt EL2FY, FK8DD, 4X4VE, 8Q7AQ and VK2VU.

160 Metres:

Good old top band, written off by almost everyone as a waste of time, really turned up some fine DX, KP4KK/DU2, F8VJ, GD4BEG, GI3OQR, GM3IGW, KH6ND, OZ1LO, OZ7YY, VS5RP, VS6DO, plus W, VE and several G stations.

Many thanks this month for the valuable contributions from **Eric L3-0042, Merelyn L2-0118, VK6RZ, VK6HD and VK5NKO,** and also for the considerable feedbeck, particularly from SWLs to the January column; it's nice to know I'm not writing in a void.

QSL INFORMATION YOU MAY HAVE MISSED

FM7AV — via F6BFH.
HK0BKX — via WB4QFH
H44PG — Box 606, Honiara, Solomon Islands.
VS5JA — via JA1OYY.
ZK2VU — via DL2RM.
4Z4XB — KA5BBL.
9M2GZ — via Box 487, Penang, Malaysia.
VP8PU, VP8QG, VP8QJ, VP8NJ, VP8WA, VK8ZV — A. W. Deprato WA4JQS, 205 Cherokee Trail, Somerset, Kentucky 42051.
A35FB — via JA7SGV.
A4XIZ — via Box 891, Muscat, Oman.
A7XAH — via DJ9ZB.
A9XCE — via Box 5750, Bahrain.
BV2A — via K2CM.
C21BS — via Box 162, Nauru.
CR9CT — via G3KDB.
EA6BH — via DL7FT.
EL2FY — via JA1BGS.
FP0FSZ — via VO1FB.
J2OA — via K6LPL.
KC6KR — via JA8JL (CW), and JA8DNZ (SSB).
KV4AAV — via K6PBT.
PJ2CC — via AA4M.
ST0AS — via DK2OC.
T2AAD — via W9GW.
T2AAF — via JA7SGV
TL8WH — via W5RU.
VQ9AA — via AJ3N.
VK9MM — via N0MM.
VS6DO — via K4CIA.
W5JMM/SU — via KA5AZT.
3D2GM — via JA0GMM.
5N8BRC — via Private Mail Box 1263, Maiduguri, Nigeria.
6D7LCH — via WD8NKT.
6U25YP — via Box 1533, Khartoum.
8Q7AQ — via DL7EM.
9X5AB — via Box 81, Kigali, Rwanda. ■

PENSIONERS

*

If you believe you are entitled to a WIA pensioner grading —

PLEASE
clear this matter direct with

YOUR DIVISION
as early as possible.

Your subscription rate is based on your WIA grade — check your AR address label.

VHF-UHF
AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston, S.A. 5233

MARCH 1981
VHF/UHF BEACONS

Freq.	Call Sign	Location
28.335	VK2WI	Sydney
50.005	H44HIR	Honiara
50.100	KH6EQI	Pearl Harbour
51.022	ZL1UHF	Auckland
51.999	YJ8PV	Vanuata *
52.013	P29SIX	New Guinea
52.150	VK5KK	Arthurton †
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.320	VK6RTT	Carnarvon
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.400	VK7RNT	Launceston
52.425	VK2RAB	Gunnedah
52.435	VK3OT	Hamilton †
52.440	VK4RTL	Townsville
52.450	VK2WI	Sydney
52.500	JA2IGY	Mie
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
53.000	VK5VF	Mt. Lofty
144.010	VK2WI	Sydney
144.162	VK3RGI	Gippsland
144.400	VK4RTT	Mt. Mowbullan
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.800	VK5VF	Mt. Lofty
144.900	VK7RTX	Launceston
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.400	VK4RBB	Brisbane
432.450	VK3RMB	Mt. Bunningyong
10.3 GHz	VK6RVF	Perth *

* Denotes a query. I did hear the YJ8PV beacon was off the air temporarily. Can anyone advise? I also don't know the activities of the VK6RVF 10.3 GHz beacon, whether it runs all the time or only by appointment. Perhaps somebody from Perth will write to me giving details of its operation, its power, antenna, mode of operation, service area intended, etc.

† Indicates VK5KK and VK3OT beacons are very consistent in their operation but may be *off at times when the* operators are making rather important 6 metre contacts. Both these beacons are audible at this QTH, and the VK3OT beacon Is surprisingly consistent considering its greater distance. There are very few days when it is not audible.

All the other beacons listed this month are understood to be operating 24 hours a day, and in fact, with the exceptions of YJ8PV and VK2RAB, all six metre beacons have been heard by VK5LP during December and January. Two metre beacons heard have been VK3RGI, VK1RTA, VK6RTW, VK3RTG, VK5VF, VK7RTX and VK6RTV. So that doesn't leave very many in the list which have not been checked during the past two months!

BEACON RESPONSE

Following my discussion re beacons In the January issue of AR I have received several letters in response to my request for feedback. I thank the writers, and refer some of their comments to readers in the hope it may stimulate some more of you to write to me. Surely I don't have to hang bait to you again like last month when I asked "Do the Geelong boys still hear VK7RNT on 52.400 now they have a beacon on 52.330?". That was a tongue in cheek question loaded to the hilt with bait. They are 70 kHz apart, and I would imagine the only time problems would be likely to occur would be if you live close to the beacon and need to look through it to hear VK7RNT.

Mike VK3ASQ was the first to reply with a very prompt letter, but he didn't fall for the bait! He writes:

"You surely can't be serious when you ask if the Geelong boys can still hear VK7RNT on 52.400 when VK3RGG is 70 kHz away. 70 kHz? With my beam at the beacon it's a very big signal but on both my FT620B and IC551 it's barely discernible 5 kHz away, and not there 10 kHz away! I might add the beacon is FSK and I feel that is a possible advantage, it may be a different kettle of fish with CW as there may be key clicks or at least some 'popping' either side of the carrier.

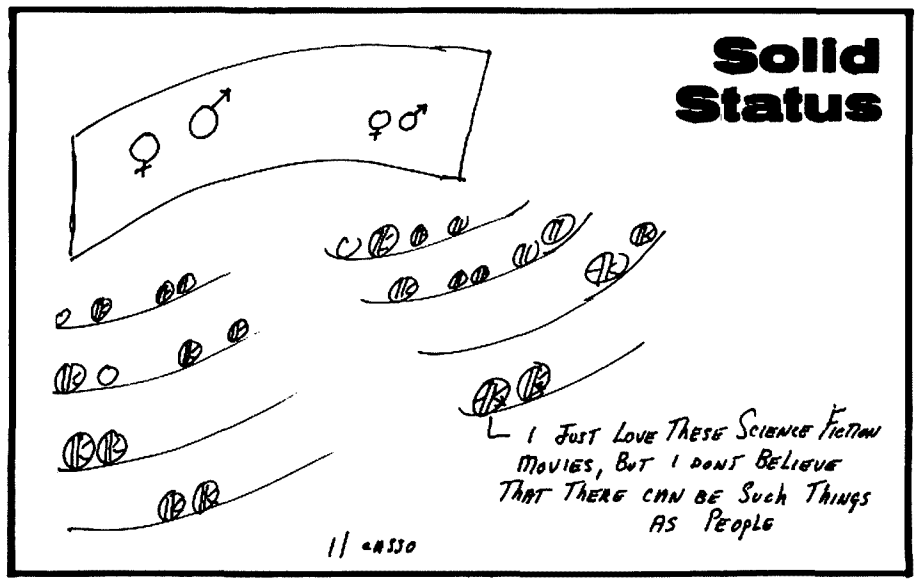
"There are some obvious problems to be sorted out, such as the example you cited In the Adelaide case. But how much of these are due to poor equipment at the receive end as you mentioned, and what of the CW mode of transmission used by the beacon, perhaps a change to FSK will improve the situation. After all, we have to put up with 10 kW ERP of wide-band FM — 250 kHz below the most used section of the 6 metre band from Ch. 0, it's been here for a long time and It doesn't bother us too much — the spurious emissions appearing in the band are a different problem.

"Individuals or groups doing their own thing with beacons certainly won't improve the situation. If the band plan doesn't suit the majority let's set about getting it changed, but for goodness sake let's have a band plan and stick to it. The VK2WI example is a good one. How stupid to site a beacon on 144.010. This Is completely contrary to the band plan and must be a real headache to anyone seriously Interested in 2m CW DX. The same comments can be levelled at VK3RGI, where did they get 144.162 from? Did someone have a spare crystal?" (Over to the builders of VK2WI and VK3RGI for satisfactory comment.—5LP.)

"Perhaps one can ask how effective from a DX point of view some beacons are. The situation has admittedly changed for the better in recent years, but how many receiving set-ups are at their best (particularly in the case of antennae) at frequencies so far removed from the normal frequency of operation as 52.9 (VK6RTT) (since shifted to 52.32 — 5LP), *53.0 VK5VF or 145.0 VK6RTV, 147.4 VK2RCW, and do the ZLs still have their beacons running on 145.1, 145.2, 145.3 and 145.4? Did any VK ever hear them?"*

John VK2ZXU from Broken Hill writes on the same subject:

"Firstly regarding the beacon listing. For those new to VHF and those not normally using beacons it can be confusing as to just what one should be listening for. I would suggest from time to time the ror-



mat and mode of transmission should be given along with the list, e.g. whether MCW, CW, FSK, ident, etc.

"Secondly, your point regarding frequency allocation is well taken. Obviously these have been made on a case by case basis in isolation as in the examples you quote where local beacons (and repeaters) are too close to remote beacons on prime pahts for comfort. The fact that MUF openings can be quite sharp in cut-off, particularly on 6 metres, posses some difficulties here. It seems to me the only rational way out of this is to base a frequency tatble on the closest spacing that can be tolerated by the cross-modulation characteristics of state-of-the-art commercial equipment bearing in mind that beacons are on the whole used mainly by serious workers who will be using such equipment or better and that standards will improve as time goes on. One can then choose frequencies for beacons so they do not interfere with remote beacons of interest in any particular area. This approach has been adopted for TV and FM, why not the Amateur Radio Service beacons?"

Gordon VK2ZAB writes a thought-provoking letter from which I am pleased to quote:

"My comments are about 2 metre beacons. There has been talk about shifting beacon frequencies and a band plan for some time. I may have forgotten but it seems to me that this band plan is a bit of a mystery. Has it been published? If so, I feel it does require a bit more publicity. I have yet to find anyone who knows what it is all about!

"There is a case for shifting the NSW 2 metre beacon but it is not one which you have mentioned. In fact, from my observations the reasons you have outlined as being sufficient to justify shifting beacon frequencies don't seem to hold much water if you like mixed mataphors. Specifically, there does not seem a case for shifting beacons because they interfere with DX listening.

"The NSW beacon on 144.010 is not close enough to the DX calling frequency of 144.1 to worry anyone, and to prove the point I conducted an hour long QSO with Ralph VK1RK over a 280 km path on 9/1/81 between 1133 and 1238Z. We made contact on 144.1 and immediately went to 144.02, stayed for about half an hour and then went to 144.015. The beacon on 144.010 didn't worry either of us. It should not have worried him anyway but I look almost straight through it to Canberra and its level here is about 25 dB above 9, which means it is about 450 uV input to 50 ohms on my scale. My receiver is a TS700A and I don't think it has any better selectivity than most others. The point Is that very few people would see their beacons at a higher level than that, and so that's that!

"However, the NSW beacon is on a prime spot as far as the international scene is concerned in that moon bouncers use that frequency or very close to it. I'm not in the moon bounce league power-wise but I might just be able to hear them if the beacon were elsewhere in frequency. Others have expressed the same view.

"Nevertheless, the beacon is used for other things too. Notably antenna tests, and for that reason it should not be tar removed from the DX part of 2 metres. Obviously it would be of no use for checking a 2 metre DX antenna if it was stuck up in the 146 to 147 MHz part of the band.

"Canberra beacon. It is not too close on 144.475 to the Albany beacon on 144.500. Anyone who can't separate those two needs a better receiver! However, why Is the Canberra beacon vertically polarised? This seems to be a bit of non-logic if ever there was one.

"The biggest menace on the beacon scene is that operator who insists on the beacon frequencies to conduct local QSOs. This happens here with the Canberra beacon and with the Auckland beacon on 145.100. These people probably don't know the beacon is there. Given that the beacons have been there for some time and people still don't know where they are, any shifts in beacon frequencies will see a new crop of people who don't know and this problem will be compounded. Therefore, if any shifting is to be done it must be done only after:

1. *Full publicity is given to the proposed changes.*
2. *Adequate time allowed for general debate.*
3. *Full consideration given to the needs of all users and non-users too.*
4. *Consideration is given to the long term benefits to amateur radio in general.*

"This last point may seem a bit obscure at the moment but given past performance it should now be a mandatory agenda item at all meetings where decisions are to be made."

There you have comments from three thinking people. One obvious point which is emerging is that it seems to be possible to work up quite close to the beacons without too much problem, and it will be of interest over the next few months when I hope others will write to me outlining what they see as problems or benefits from the beacons. I earnestly ask the VHF operators with something constructive to say to write as soon as possible please, and let us try and form a proper opinion of this matter in a rational way, without anyone going into hysterics over it. In writing bear in mind I would like to publish extracts.

On the question being asked about the WIA BHF Band Plan, it took me about an hour to find the relevant information tucked away in the July 1977 issue of AR under the 1977 Federal Convention Report. In this the beacon segment Is listed as follows: 52.300 to 52.400 — beacons only; secondary beacon segment. 52.400 to 52.500 — beacons only; primary beacon segment. 144.400 to 144.500 — beacons only; primary beacon segment. 144.500 to 144.600 — beacons only; secondary beacon segment. 432.400 to 432.600 — beacons only.

Although I cannot find the information, I understand further suggestions were made for frequencies to be allocated on a call area basis, e.g. 52.330 being VK3RGG, and made up of being located in the secondary segment starting at 52.300 with the second 3 indicating a Victorian station, hence 52.330. A Queensland station would have 52.340, but a primary beacon, i.e. a capital city beacon presumably, would be allocated 52.440. If you care now to look at the beacon frequencies you will see how far we are from achieving anything approaching order. The same applies to 2 metres.

Finally, for the moment, may I also draw your attention to page 21 of December 1972 AR, where reference is made to a P. and T. Regulation RB4/4/23, which clarifies the standard call signs to be issued to beacons. Already there has been a break away from that list, with VK2RCW, VK3RGG, VK7RST, VK2RAB, VK3RGI, VK4RBB and VK3RMB not conforming. Perhaps I am out of date and there is another list, but the whole P. and T. list either starts with RS or RT, followed by another lettering as required. Anyway, all this. discourse so far should get the pot boiling pretty well in a few places. Next month I will have a few things to say about some of the comments being made in VK5, especially since there has been talk of a frequency shift and reversion to the former power output of 30 watts.

SIX METRES

Whilst towards the end of January there was the usual fall off in Es activity, earlier there were some very good openings. VK5 worked ZL on 7/1, 8/1, 9/1, 10/1, 23/1. JAs were worked on 8/1, 11/1, 18/1, 23/1, 27/1. On 10/1 **Dave VK9ZD** came through with signals to S9 and was worked by about every VK5 available, and in a manner befitting the amateur fraternity — quite different from the braying of the FK8 opening when I felt like hiding my head in shame — a bit of sorting out with a few operators can work wonders at times! Anyway, VK9ZD came through around 0900Z and stayed for about an hour, when he was still calling CQ. I know Dave also worked **VK1VP** and several VK2 stations, not sure who else. Same day **Eddie VK4LX** at Mt. Isa was 5 x 9 and said he had worked ZL. By the way, TV stations sometimes have their uses! Dave VK9ZD said he was alerted the band was open when he noted ABS2 over the top of the stations he was viewing! Same day received a report the ZL 432 MHz beacon had been copied In VK2.

On 11/11 **Hal VK4DO** gave me a Ross Hull number of 59970 which is a pretty good score by any standards. Haven't worked him since to find out if he made

the 1000 contacts. To show the changeable nature of six metres towards the end of a Es period, on 29/1 I worked **Garry VK5AS** at Cowell on our West Coast, a distance of 230 km with signals at 1110Z. The following night at 1039Z I worked him again this time with signals peaking to S9 and very consistent.

TWO METRES KEEPS GOING

Whilst two metres might not share the long distance glory achievable by six metres at times, it is nevertheless a very consistent band for signals. During January 2 metres was open to VK6 in Albany 1/1, 2/1, 3/1, 4/1, 6/1, 7/1, 9/1, 11/1, 18/1, 23/1, 26/1, 30/. Additionally, it was open to Perth on 21/1 during the day when **Wal VK6KZ** was frantically phoning to try and get someone on from VK5, but of course all the likely operators were being loyal to their employer and working at the salt mines. The Adelaide beacon was apparently very strong in Perth which indicates an interesting set of conditions in that it isn't always a night time or early morning period which produces the strong signals. Bad luck, Wall

18/1 was quite a good night for 2 metres to VK3 with **Les VK3ZBJ** and **Noel VK3AUG**, both from Frankston, providing the main signals source. At the same time Trevor **VK5ATD**, at Rendlesham in the south-east, was 5 x 9 here.

News has just filtered through to me that **Wal VK6KZ/P** at Cape Leeuwin on the south-west tip of WA had contacts back to **Don VK6HK** in Perth on 22/1 at 1200Z on both 1296 and 2304 MHz, using 1 watt and signals to 5 x 9 over the 274 km path. Conditions were too poor to Wal for me to get much other information, but It is hoped to have a full report for next month. It looks like a very good set of contacts, congratulations to you both.

COMMENTS FROM LETTERS

Neville **VK2QF** has written from Hargraves, central west of NSW, to say that the construction of a 4CX250R final giving 200W PEP has eradicated TVI to Ch. 1 in all modes and power levels, so with a TS600 to replace the IC502 he has been having a ball on six metres.

24/10 KH6IAA 0843Z and 0924Z 5 x 3. JA 0920 to 1058Z. 25/10 KH6IAA heard 1056Z. 2/11 1013Z then JAs 1033 to 1141Z, followed by groundwave into Sydney 230 km to VK2BA. 3/11 JA 0241Z. 17/11 VK4ZZW. 23/11 VK7 at 0750Z. 6/12 VK7 and VK5 0523Z. 10/12 VK4ZJK Cairns. 14/12: VK4DO, VK7, VK3, VK5. 17/12 VK3YLV 0800Z SSB and FM 5 x 9. 18/12 ZL2BGJ, ZL TV S9+ but no beacons or other ZLs. 19/12 VK4DO 0800Z. 20/12 ZL2BGJ, ZL TV again, no beacons! 21/12 VK7, VK4 0130Z, also short skip to VK2DLR at Lismore 580 km. 5 x 9 both ways for 45 seconds! VK5 0240Z ZL2BGJ 0340Z. 22/12 VK4 VK6OX 0636Z 5 x 6 both ways, VK8GF 1122Z 5 x 9. 23/12 VK6OX 5 x 1 0200Z, VK4DO 9099Z. 24/12 VK4 0330Z. 25/12 VK4RR and VK4ZJK, Cairns, early in day. Local lightning strike caused bushfire from 0000Z onwards. Had to go! Later worked VK1VP at 0952Z on backscatter, nice Christmas present as it meant WAS on 6 metres!

26/12 bushfires again. 27/12 ZL2 0038Z 5 x 5. 28/12 2133Z ZL3AAN, followed by Sydney stations VK2BQJ and VK2BA on backscatter. Then ZL1, 2, 3 and 4 throughout day. Beacon ZL2VHM up to S9+ at times. Band open to all over Australia. Seven beacons heard in VK2, 3, 5 and 7. H44 not heard. 30/12 VK4ACE 0125Z, VK7ZIE 0300Z. 2/1/81 erected modified beam, promptly worked FK8CR 0200Z, followed by YJ8PD at 0241Z, signals S3-5. FK8AB at 0422Z plus VK1, 2, 3, 4 and 7. 4/1 FK8BG 0009Z S3. 5/1 VK4. 8/1 VK4 and VK2. JA1 and JA2 at 0018Z S3-4, 15 QSOs. P29DJ at 0154Z 5 x 1. VK6OX 0223Z, VK6KZ 0400Z, then more VK6, 7, 3, 1, 2 and ZLs around 0900Z. 9/1 JA 2346Z then VK4 and ZL. 11/1 VK4 and ZL. 12/1 VK2ZQX and VK2ZZV on backscatter at 0137Z. VK1VP. VK8GF 1046Z 5 x 9, ZL2AQR, 1056Z, VK8GF still around after long chat ending 1250Z. 15/1 ZL1, 2, at 0120Z, VK3, 4, 5 and 7. JA8RC in CW at 0530Z. 18/1 JA 0250 to 0355Z 5 x 9, 27 QSOs. Thanks for writing, Neville, your report will give those compiling propagation charts another area in which to take informtaion.

I have received a letter from **Lance Coombe** from the Adelaide suburb of Mile End, who remarked his six metre observations go back a long time, and that the weekend of 27/12 to 29/12 was one of the best he can remember. On 27/12 VK2, 4 and 5. 28/12 was a good day we all remember so well, Lance copied signals from no less than 11 VK5s, also VK1, 2, 3, ZL2, ZL3. On Monday, 29/12, a further 11 VK5s, including some fresh call signs, then on to VK1, 2, 3, 4, 6, 7. Signals to 5 x 9. 8/1 started at 0115Z with VK4, VK5, then a series of JA1, JA5 and JA6 peaking to S7 between 0120 and 0136Z. Good to hear from someone who has been keeping an eye on things for a long time.

THE NORTHERN HEMISPHERE ON SIX

I thought things had slowed down a bit even In the Northern Hemisphere, but after reading the February 1981 issue of "QST" and "The World Above 50 MHz" I have my doubts. Here are some of the better extracts.

> "Maybe it wasn't a fluke! Last month's column carried a special flash announcement of an historic VHF achievement, the Atlantic Ocean had been spanned on a frequency higher than 50 MHz without the use of moonbounce. VE1ASJ hal successfully completed a 6 to 4 metre crossband contact with **G4BPY**. But could it ever happen again? The answer was not long in coming. On the morning of 7th December, Andy was at it again, this time working G3COJ, G4ENB and G4ENA/A, the three Gs transmitting near 70.1 MHz. This time VE1ASJ reported the signals to be "quite good" as opposed to the earlier session in which G4BPY's signal was 439. It appears the 6 to 4 trans-Atlantic contacts may be possible more often than we have thought. The Summer Es season could hold the key to more such QSOs with many more stations than a single well located VE1. Remember the times last summer that the ZB2VHF beacon was heard along the East Coast of USA?

These epic 6 to 4 metre contacts were not the only excitement the ionosphere had in store. On 27/11 about 0930Z G4BPY, followed closely by G5KW/A and G3COJ completed crossband 10 to 6 metre contacts with VK6OX in Western Australia operating on 52 MHz. (Reported last month in AR — 5LP.) Thus to G4BPY and G4KW go the honours of accomplishing the first crossband WAC. G3COJ still needs South America to complete his. Then in mid-December, Western Europe was again the focal point of 6 metre DX. On the morning of both 13th and 14th, around 0900Z, Hong Kong station VS6BE was received. On 14th he was joined by VS6FX. Crossband 10 to 6 contacts were completed by a number of UK stations, including G4BPY and GW3MHW. In addition EI6AS and PA0RYS made 6 metre two-ways with the Crown Colony. G4BPY reported on the second morning VS6BE's signal peaked 40 dB over S9!

Returning to late November, I5TDJ provided a good percentage of the excitement before Thanksgiving. Of course, VE1AVX had already worked him on the 17th. Plero's 50.319 beacon was heard by a number of US East Coast stations on 25th November. On 26/11 the beacon was in again but much weaker. This was too much for N3AHL. Jim put in a phone call to Italy and Plero raced home from work and worked him as well as W3XO. Soon the skip lengthened and WA5IYX and other 5s and 4s made the grade also. I5TDJ's 50.020 MHz signal was significantly better in San Antonio than here, running 579 at WA5IYX's QTH.

Despite the noteworthy contacts reported above, November certainly was a better month than December has been to date (written on 14/12). The sheer volume of outstanding contacts made in November makes it impossible to list even a small percentage of them. Many reports of the ZS stations Into the West Coast serve as one example. Although November 1980 was probably not as good as the same month a year earlier, in terms of length and intensity of openings it was more productive from the standpoint of activity and distribution of paths open. One example is turned in by K8WKZ. In six days between 10/11 and 16/11, Dave accomplished that long-sought goal that many of us have yet to achieve — WAC. Con-

tacts with ZS6LN, JA7QVI, VY1CM, DL3ZM/YV5, ZL2KT and EI9D did the trick. Wow! In the midst of all this international DX activity, the principle game for many remains WAS, and the most needed State seems to be Hawaii. KH6IAA has been filling that void for many. In the process Al satisfied his own WAS craving by working several West Virginian stations on 29/11. He thus becomes the second KH6 to work all 50 US Statss on 50 MHz. KH6NS accomplished the feat last year.99

There are times it seems when it would be nice to live in the Northern Hemisphere. The odd rare contact we get down here like FK8 and H44 are small by comparison with what goes on in the north almost on a day to day basis.

Also from "The World Above 50 MHz" comes news of the accomplishment of Kjell SM7BAE, who, when he worked K0ALL in North Dakota on 24/11 achieved Worked All States of USA on 2 metres by a non-US amateur and which also became the first all-EME Worked All States! I am sure all in Australia will join with me in congratulating Kjell for a fine effort, one well deserved when one looks at what he has done for VHF in general.

TECHNICAL TIP

Someone phoned me recently asking for a word or two about what precautions should be taken when connecting up high power RF transistors for use on 2 metres, and adherance to some of the following points might save someone the trauma of destroying these relatively expensive transistors.

The transistors are usually manufactured in the SOE or "Stripline-Opposed-Emitter" package wherein the collector lead is designated by a chamfering of one corner, and the base lead will be opposite this, with the remaining two wings being the emitter leads. Be careful not to orientate the thing 90 degrees, this will result in the base-emitter junction being reverse biased, and they don't like that! The leads are made from springy material and the transistor can be easly damaged if you place upward pressure on the wings. Therefore observe carefully when heat-sinking the device that you thread the nut on to the mounting bolt so that it is only finger tight and observe that when tightening takes place no upward pressure will be applied to the leads. Tighten by holding the wrench flat on the end of the projecting screwed portion with pliers or wrench, and then tighten the nut one-quarter to one-third of a turn with another wrench or pliers. This should allow you to disassemble the device without damage if you have to later on.

Remember these devices have a body package made of Beryllum Oxide, so be careful not to chip or scratch the body as this substance is very poisonous. It will help the soldering in process if before you mount the transistor you tin the underside of the wings, then sweat-solder them to the UCB, excessive solder is totally unnecessary.

During the tuning up process do not exceed the rated maximum collector current or supply voltage; never apply drive without a DC return for the base or without collector voltage present, and if you are tuning up with a metal tool, watch where you put it, especially if it slips out of the slot of a trimmer! And that's all there is to it. Good DX!

Closing with the thought for the month: "You can learn many things from children — for instance, how much patience you have."

73. The Voice in the Hills. ■

AR AWARDS

The Publications Committee announced these in the February edition of AR, except for the

HIGGINBOTHAM AWARD

It now has pleasure in advising that

Mr. SAM VORON VK2BVS

has won this award, for meritorious service to Amateur Radio. Worth $100. ■

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 (0000 UT), 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. ■

UNITY IS STRENGTH

INTERNATIONAL NEWS

HONG KONG

From the IARU R3 Secretary comes news that the Hong Kong Amateur Radio Transmitting Society (HARTS) has announced VS6 "Activity Days" for 4th-5th April, 1981, when as many VS6 stations as possible will be active on as many brands and modes as possible, including 6m.

Also, ZL stations have been allowed to continue to use 7.1 to 7.3 MHz provided no interference is caused to broadcasting services.

RECIPROCAL LICENSING

Break-In for December 1980 reproduced a letter from their Director of Telecoms Ops annuoncing that licences for qualified amateur visitors to New Zealand will be issued in the ZL0 call sign series, effective 1/1/1981. Where there is a reciprocal agreement In existence between New Zealand and the visitor's own country (includes Australia) licences will be Issued valid for up to one year and renewable on aapplication as long as the visitor's home licence remains current. In this case the call sign would be ZL0"AA"/VK3. Where a visitor holds a Commonwealth qualification (other than VK) recognised as equivalent to a New Zealand certificate, two different procedures apply, namely, for a visit up to 14 days a short term licence and for a visit 14 days to one year a permanent style licence endorsed with an expiry date.

NATIONAL DISASTERS

News, via IARU, lists brief details of the value of amateur radio as a resource during the Italian earthquake disaster. Radio amateurs from Rome were reported to be the first source of information conecrning the terrible death and destruction of this earthquake. Said to be faster and more agile than military communicators, the radio amateurs were the only source of information during the long loss of commercial power. The amateur net coordinator in Rome was in fact a blind amateur. Amateurs moved in from outside the stricken area to set up emergency communications, handling such matters as desperate requests for blood, blankets, news and names of victims.

IRAN

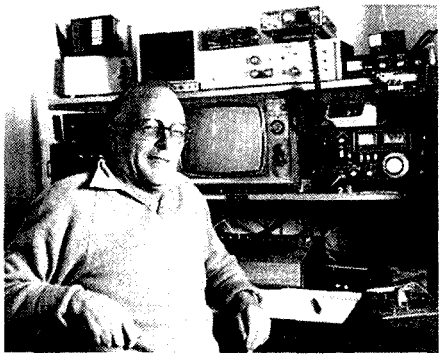
The IARU has been notified that the Iranian Radio Amateur Society has been established since 9/9/1980 under a Management Committee consisting of EP2JP, EP2ES and EP2FM. The address was given as Box 64/873 Teheran.

CCIR

An Interim Working Party 5/4 of the CCIR will meet In Geneva for a week from 2nd March to discuss the possibility of establishing a fourth ITU Region. The IARU will be represented. ■

CONTESTS

Wally Watkins VK2DEW
Box 1065, Orange 2800



March

7/8	ARRL Phone DX	CQ 2/81
14/15	Commonwealth CW	FCM
14	"Corona" 10 Metre RTTY	CQ 3/81
21/22	Commonwealth Phone	FCM
21/22	BARTG RTTY	VK2SG
28/29	CQ WW WPX SSB	CQ 2/81

April

4/5	Polish CW	FCM
18/19	Polish Phone	FCM
25/26	King of Spain Contest	FCM
25/26	Helvetia Contest CW/Phone	FCM

May

30/31	CQ WW WPX CW	CQ 2/81

EXCHANGES

ARRL DX, RS and power (3 digit number).

Commonwealth, RS(T) plus QSO No., start at 001.

CQ WW WPX, RS plus QSO No., start at 001.

BARTG RTTY, RST, QSO No. and name.

1980 AUSTRALIAN NOVICE CONTEST

RESULTS

PHONE

5NMB	837	5NCE	244
1NCV	756	4NQU	242
2NYL	727	2NXD	230
6NID	724	5NFI	193
2VPQ	602	4VCE	187
1NDA	501	4NIK	169
2NZN	421	4VHW	107
2VHP	402	8FB	1418
5NLC	357	3DAK	305
7NWR	338	2BQS	188
2VVT	290	2BVU	127
5NVW	254	6JS	94

CW

5NEP	74	3XB	90
5NLC	43		

5NEP 74, 5NLC 43, 3XB 90.

THE COMMONWEALTH CONTEST
1981 RULES

TRANSMITTING SECTION

1. The general rules for RSGB HF contests published in the January 1981 issue of "Radio Communication" will apply.
2. When: From 1200 GMT on Saturday, 14th March, 1981, to 1200 GMT on Sunday, 15th March, 1981.
3. Eligible entrants: Members of the RSGB resident in the UK and radio amateurs licensed to operate within the British Commonwealth or British mandated territories.
4. Contacts: CW (A1) only, in the 3, 5, 7, 14, 21 and 28 MHz zands. Contacts may be made with any station using a British Commonwealth call sign, except those within the entrants' own call area. UK stations may not work each other for points. In accordance with the IARU recommendations, contestants are requested to confine their operations to within the lower 30 kHz of each band.
5. Scoring: Each completed *contact* will score five points. In addition, a bonus of 20 points may be claimed for the first, second and third contacts with each Commonwealth call area (as listed in the accompanying table) on each band. All British Isles stations (G, GB, GD, GI, GJ, GM, GU and GW) count as one call area.
6. Logs: Separate logs are required for each band. Each band log should be separately totalled and should include, at the end, a check list of call areas worked on the band. Logs must include MT, call sign of station worked, RST/serial number sent, RST/serial number received and points claimed. Separate band totals should be added together and the total claimed score entered on the cover sheet.
7. Entries: Entries may be single or multi-band. Single band entries should show contacts on one band only. Details of contacts made on other bands should be enclosed separately for checking purposes. Multi-band entries will not be eligible for single band awards. Each entry will consist of the separate band logs together with a signed declaration that the rules and spirit of the contest were observed.

   Entries should be addressed to D. J. Andrews, G3MXJ, 18 Downsview Crescent, Uckfield, East Sussex, TN22 1UB, England. Adjudication of this contest will commence on Monday, 18th May, 1981. Any entry received after this date may be excluded from the contest. Overseas stations are therefore advised to forward their logs by airmail.
8. Awards: To the winner, the BERU Senior Rose Bowl; to the runner-up, the BERU Junior Rose Bowl; and to the leading UK station, the Col. Thomas Rose Bowl. Certificates of merit will be awarded to: (a) first, second and third placings in the home and overseas multi-band sections; (b) the leading home and overseas single band entries on each band; and (c) the leading station in each overseas call area. ■

COMMERCIAL KINKS

RON FISHER
VK3OM
3 Fairview Avenue, Glen Waverley 3150

MODIFICATIONS TO THE PHILIPS FM321

These modifications for the Philips FM321 were supplied by Gareth Davey VK2ANF, who supplied some interesting comments on the rig which are worth passing on.

The performance of the FM321 is very good, both on air and on bench testing. In Sydney, with its hilly terrain, mobile to mobile to mobile contacts over any reasonable distance will rely heavily on repeaters, although base to base is no problem *on* simplex.

I was very impressed with Philips' attitude to the sale of FM321s. They only sell direct from their branches, and then only to amateurs. I was advised that they would be unable to sell to me if I did not have an amateur call sign which is required for their paper work.

Now on to the modifications.

80 CHANNEL OPERATION
STANDARD OPERATION

The channel selector switch enables 40 channels, 25 kHz apart, numbered 01 to 40 as displayed. The up/down counters in the synthesiser section actually only count to 39, the next being channel 00; however, OR gate IC5 senses 00 and causes the

display and synthesiser to go to channel 40 (439.000 MHz).

MODIFIED OPERATION

To achieve 80 channel operation, an unused output from the up/down counters is connected to programmable divider IC3 and the display encoder, along with the disabling of IC5's output.

Thus the channels displayed range from 00 (438.000 MHz, a popular simplex frequency) to 79 (439.975 MHz), covering the entire 2 MHz of the 70 cm FM portion as recommended by the WIA.

COMPONENTS REQUIRED

Short length of thin hook-up wire.

MOD INSTALLATION

1. Remove the plastic case of the FM321 by undoing the four (4) self-tapping screws. Disconnect the transceiver from a DC power supply.
2. Disconnect pin 13 of IC5 from the rest of the circuit. This can be performed in several ways, e.g.:
   — Cut the IC lead (pin 13) with a pair of fine hide-cutters;
   — Cut the PC track from pin 13 as it appears from under IC5 just before it reaches a plated-through hole in the PCB.
3. Connect a short length of hook-up wire from IC11 pin 14 to IC3 pin 13.
4. Connect a DC-coupled CRO or voltmeter to IC4 pin 13.
5. Select alternatively channels 00 and 79, and note that the DC voltage out of IC4 should range from 0 volts to about +10 volts.
6. With the channel set for 0 volts from IC4, carefully adjust the slug In L9 until the voltage reading just increases above 0 volts (5¼ turns in is typical).
7. Using a UHF dummy load or matched aeial system, transmit on channel 00 and then channel 79. In both cases the red TX indicator should light indicating synthesiser lock.
8. Carefully disconnect the test equipment and re-assemble the plastic case.

MODIFICATION 2
BNC ANTENNA CONNECTOR
STANDARD OPERATION

The antenna connector fitted as standard to the FM321 is the SO239 type found on almost all amateur HF and VHF equipment. Reference to manufacturers' specification sheets on this type of connector leaves some doubt as to its suitability at any frequency (the phrase "non-constant impedance" occurs once too often for my liking), and so an RF connector designed to work correctly at UHF would be a distinct advantage.

MODIFIED OPERATION

Replacing the SO239 with a BNC type can be performed without much difficulty, maintaining good appearance with efficient operation (most BNC connectors are rated at 50 ohms up to 10 GHz).

COMPONENTS REQUIRED

1 x BNC panel receptacle, type UG-290A/U (91836).

4 x 8BA nuts and bolts (no longer than 1 cm long).

MOD INSTALLATION

1. Disconnect the transceiver from a DC power supply and aerial system.
2. Remove the plastic dress surround from the ANTENNA connector on the rear panel by undoing the four screws.
3. Remove the plastic case of the FM321 by undoing the four (4) self-tapping screws.
4. Carefully unsolder and remove the shielded section inside the FM321 which covers the connections to the ANTENNA connector.
5. Carefully remove the SO239 ANTENNA connector. Do not disturb the stripline inductors and miniature capacitors with solder splashes or scratches on the PCB.
6. Mark on the rear panel the four (4) screw holes required to mount the BNC connector, so that it will sit squarely in the centre of the existing hole.
7. Very carefully drill these holes in the rear panel to take the 8BA bolts and remove all burrs and metal flakes from inside the FM321.
8. Mount the BNC connector with the flanged base outside the set. The plastic dress surround can be screwed on over the BNC, giving a neat finish.
9. Resolder the wires to the BNC connector which were originally to the SO239 type. Carefully replace and solder the shielded section inside the FM321 covering the ANTENNA connector.
10. Test the transceiver by transmitting into a dummy load and noting normal power output.
11. Disconnect any test equipment and reassemble the plastic case. ■

Woodpecker Located

Bruce Saxon VK3BWX
77 Edithvale Rd., Edithvale 3196

This is a report of a discovery which is of vital importance to amateurs operators everywhere.

Like many such great discoveries in science, the discovery of the location of the WOODPECKER was made by chance. It was just a matter of being in the right place at the right time.

Many amateur operators are convinced that the Woodpecker eminates from the USSR, and no doubt anything written here will not alter that opinion. However, the information, times, dates and general data related here are factual, and can be substantiated by eye-witness as well as photographic evidence.

On the evening of August 4th, 1980, during the coldest summer in Japan for 100 years, Bruce VK3BWX, Pam VK3NSB and daughter Rebecca were enjoying the hospitality of a group of JA3 operators. A welcoming party had been arranged by Yoshio Nakajima JA3FEG. The venue was the Heihachitei Restaurant in Hirakata City, some 40 kilometres from Kyoto, and about 30 kilometres east of Osaka.

At the close of the party it was necessary to embark upon a leisurely stroll to the car park some distance from the restaurant. The visiting VKs were to be driven back to their hotel in Kyoto.

The summer's night was clear, there was a feeling of relaxed wellbeing while savouring the atmosphere as the now reduced group made its way to the commuters' car park.

We turned a corner and there It was, suddenly, without warning, in blatant disregard for secrecy . . . proclaiming to all and sundry In eye-catching boldness . . . WOODPECKER.

Had we discovered the lair, the very nest of the winged scourge of amateur radio? Had we stumbled on the added and alarming discovery of the unheard of proposition that the WOODPECKER had a mobile facility?

The author turned to Yoshio, his host, and said "So this is where the dreaded WOODPECKER is located . . . here in Japan . . right here in Hirakta City . . . this is your well kept secret". The Inscrutable quickly changed to scrutable, there were chuckles all round as the situation was enjoyed by all.

Murphy-San's Law was in operation, so no photographs were taken at that time.

In a recent QSO with Yoshio, some photographs of the WOODPECKER were requested. Yoshio readily agreed to supply the evidence and the photographs were promptly obtained. Yoshio took the opportunity to recall the look of amazement on the author's face when confronted with the WOODPECKER.

The "do it yourself" Woodpecker handyman centre is located In the ground floor of the Kuguha Station Building, Hirakata City, Osaka, Japan. ■

AMATEUR SATELLITES

R. C. Arnold VK3ZBB

SATELLITE OPERATIONS

Both OSCARS 7 and 8 continue to operate satisfactorily although the former is consistently superior and far more popular. The operating schedule for AO7 was altered during January and it is now commanded each Wednesday to operate as follows:—

Mode A (145.9 up, 29.45 down): Monday, Thursday and Saturday.

Mode B (432.15 up, 144.95 down): Wednesday, Friday, Sunday, Tuesday.

OSCAR 7 ILLUMINATION

As operators of OSCAR 7 will remember, the winter of 1980 produced a limitation of up to ten minutes in the "in sight" time of each orbit. This situation commenced in May 1980 and continued until late the following July.

I have mentioned on a number of occasions that it is virtually proven that the batteries of AO7 have failed open circuit and that all power requirements to operate the command facilities, the beacons and the transponder, are supplied directly from the solar cells. Hence a path in sunlight is necessary for operation of the on board facilities.

I have studied the relative positions of AO7 and the sun as they will be during the coming winter months and consider the "shadow effect" will be minimal this year; in fact, the restriction in operation may not be noticed.

I certainly hope this will be so — if you wish to check my computations refer to the article by Greg Roberts ZS1BI in "Amateur Radio", August 1980.

ORBIT PREDICTIONS

MARCH 1981

	OSCAR 7			OSCAR 8		
Date	Orb. No.	Eqx Z	Eqx °W	Orb. No.	Eqx Z	Eqx °W
1	28781	0115	95	15225	0036	67
8	28869	0150	104	15323	0109	75
15	28956	0029	84	15421	0143	84
22	29044	0104	93	15518	0033	67
29	29132	0139	102	15616	0106	75

"ARSENE"
FRENCH RADIO AMATEUR SATELLITE PROJECT

An experimental project of the Radio Amateur Club de l'Espace (RACE) provides for the launching in 1984-1985 of ARSENE (Ariane radio amateurs satellite pour l'enseignement de l'espace), a small telecommunication satellite weighing between 100 and 120 kg, as a secondary load when a geostationary satellite is launched by Ariane.

Equipped with two multiple access repeaters and a radio beacon and placed on a highly elliptical orbit (perigee 1500 km, apogee 35800 km), it will be accessible to radio amateurs throughout the world as well as to teachers who will be able to use it for demonstrations and practical work. It should have a service life of two years.

ARSENE will be built by French radio amateurs and the students of the main engineering schools with the support of the Centre National d'Etudes Spatiales (CNES), The Office National d'Etudes et de Recherches Aerospatiales (ONERA) and the Direction Techniques des Engins (DTEN) as well as several industrial firms. Students will participate in the project by means of their third year thesis. Co-odination of the project is in the hands of a committee comprising the President of RACE, the Director of the Toulouse Space Centre and the principals of the participating schools.

RACE is an association which was set up on 20 July, 1979, to promote the study, construction, placing in orbit and operation of a communication satellite for the amateur service. When it was established, RACE consisted of 22 members, all of them radio amateur.

At the beginning of February 1980 the President of the French Republic agreed to sponsor the ARSENE project.—CNES. ■

AROUND THE TRADE

TELEX/HY-GAIN HDR-300 HEAVY DUTY ROTATOR

Adapted from QST, January 1981

In a word, the HDR-300 is hefty. This unit, weighing in at 27 lb. (12.2 kg), is designed to support a vertical load of 500 lb. (227 kg) and rotate an antenna with a projected wind surface area of 25 ft.^{2} (2.3 m^2) when mounted inside the tower. The antenna in use at W1SE at the time the rotator was tested was a large, six-element tribander with a 32 ft. (9.8m) boom. This 75 lb. (34 kg) antenna hardly taxed the capability of the HDR-300, which operated as if it had no load upon it.

Telex/Hy-Gain recommends that the minimum outside tower width be 11.5 inches (292 mm). The top section of the tower at W1SE is just 11 inches (279 mm). This, and the fact that the HDR-300 mounts **beneath** the rotator mounting plate, at first made it impossible to mount the rotator and have it clear the tower bracing. The job was finally done on the fourth try by **inverting** the mounting plate, permitting the rotator housing to clear the tower bracing. If one has a tower with the recommended minimum-width face, or larger, no problem should be encountered.

Control Unit

The nicely styled, functional HDR-300 control console is provided with a convenient digital readout accurate to ±1°. The 21 lb. (9.52 kg) console supplies 24V AC for the rotator motor, 5V DC for the azimuth potentiometer, and converts the analogue voltage received from this potentiometer for input to the three 7-segment LEDs that display the digital azimuth readout. Both transformers are factory wired for 117V AC, but may be re-strapped for 235V AC operation.

The manufacture does not recommend operation of the rotator at its rated capacity in winds above 50 mi/h. (80.5 km h.). However, Telex/Hy-Gain says it is possible as long as certain precautions are taken. (1) Always allow the antenna to coast to a stop before locking the brake. (2) Always keep the brake locked when the rotator is not being turned. (3) Avoid rotating near the ends of rotation. Do not depend on the limit switches to stop rotation of a large antenna in strong winds. The manufacturer also suggests that the above precautions be followed when rotating even medium-size antennas in light winds. The life of the rotator will be prolonged.

Enquiries to Audio Telex Communications Pty. Ltd., 1 Little St., Parramatta, NSW, (02) 633 4344, and at 7 Essex Rd., Mt. Waverley, (03) 277 5311, 394 Montague Rd., West End, (07) 44 6328. ■

ICOM LINEAR AMPLIFIER — IC-2 KL

Icom Japan have released the all solid state linear amplifier with a rated input power in SSB of 500 watts PEP. The same rating applies to RTTY. The linear amplifier employs recently developed high power transistors designed for SSB use in a parallel push/pull amplifier.

The IC-2KL covers all amateur bands from 1.8 MHz to 28 MHz, including 10 MHz, 18 MHz and 24 MHz bands, comprising the WARC 79 allocations.

The IC-2KL employs "heat pipe cooling system" for the power transistors. The heat pipe system is new technology, allowing very high heat conductance which is several hundred times that of copper and giving much quicker response. The size of the linear is in keeping with the popular IC720 and is 111 millimetres high, by 241 millimetres wide, and 300 millimetres deep, with a weight of 7 kg. The linear requires the companion power supply, the IC-2KLPS, which provides an output voltage of 40 volts DC with an output current of 25 amperes. The size of the power supply is the same as that of the linear and has a weight of 14 kg.

The linear allows automatic band switching and a no-tuning up operation. This facility is only available when used with the IC720. The transceiver puts out a

band switch control signal and the appropriate bandpass filters and other circuitry follows the transceivers band positioning automatically.

With a linear amplifier of this type handling such high power, several protection circuits are incorporated to activate ALC control voltage to reduce driving power and/or shut off the amplifier to protect transistors. Protection functions against mismatching, overheating, overcurrent, over-driving, over-output power and any unbalance resulting in the PA amplifier units.

The driving power required is between 50 and 80 watts and the linear puts out a negative control voltage for ALC.

Theory of operation

Input from the transceiver goes to a power divider for each PA unit, with the output level balanced and an impedance of 50 ohms. The PA unit consists of two amplifier modules and a cooling fan, with each amplifier push/pull circuit capable of handling 250 watts output power. An input frequency correction network and RF negative are employed to give flat gain response of better than ±1.5 dB across the band.

The PA unit has two thermal sensors with the first turning the cooling fan on when the temperature of the heat sync. exceeds 50°C and the other turns it on when the temperature exceeds 80°C and also controls the protection circuit.

The output from each RF power amplifier is fed to a power combiner which provides the 500 watts of RF output power. If either of the PA modules become unbalanced a control signal is generated to the protection circuit to shut down the PA amplifier.

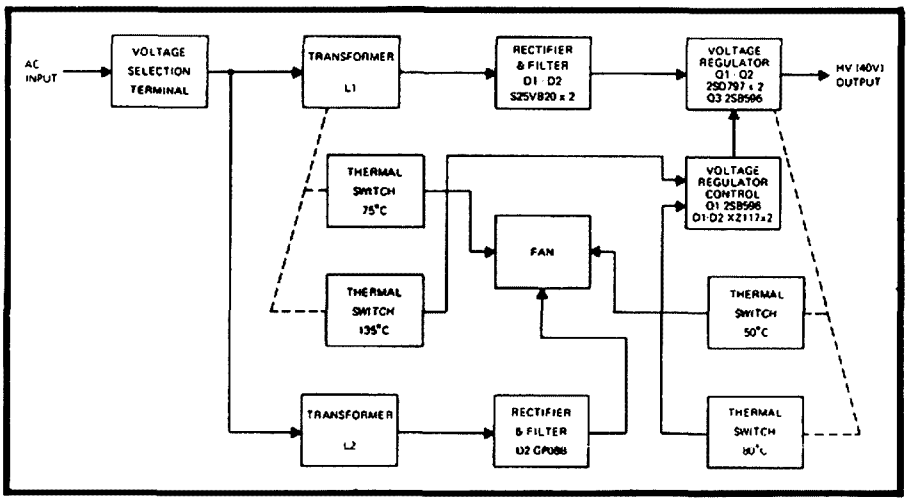
Protection circuits

The protection circuits comprise four comparators and power supply switching circuits, and detect operating conditions of the unit and control the ALC voltage according to these conditions. If operating conditions become abnormal the power supply will be shut off and the unit protected from damage.

Power supply IC-2 KL PS

The power supply provides 40 volts, ±3, with a capacity of 25 amps maximum. It is a regulated circuit and provides protection circuits with controlled cooling fans which shut off the unit, if the output voltage rises above 40. The power transformer has two thermal switches, the first closing at 75°C, turning the cooling fans on, and the other closes at 135°C and shuts off the output voltage. Reference to the block diagram for both the IC2KL and the IC2KLPS power supply will assist in understanding the function of this rather unique and state of the art amateur accessory for the 701/720 series transceivers.

Further information and pricing is available from the Australian distributors, Vicom International, Melbourne, phone 699 6700, or their Sydney office, phone 436 2766. ■



IC-2KL Power Supply.

ICOM HF TRANSCEIVER — IC-720A

The Icom Company of Japan have now released an improved version of the IC-720 transceiver designated the IC720A. Although external appearance is exactly the same as the 720 version, numerous technical improvements have been made to the circuitry to give better performance, with special emphasis on frequency synthesis and the noise blanker.

Criticisms of all units have been that they are rather selective when it comes to the type of noise than can be effectively dealt with. Of great concern in many countries of the world, including Australia, has been the intrusion of the "woodpecker" which puts undesirable pulses on both the 14 and 21 MHz band. The noise blanker in the IC-720A has been reworked to provide effective suppression of the ignition noise as well as woodpecker pulses.

Improvements have also been made In the frequency synthesis department and the already low level of spurious outputs have been reduced even further to almost acceptably professional specifications.

Unlike some competitors' transceivers, the IC-720 can transmit continuously for up to 10 minutes with full output .If continuous transmission is required for greater than 10 minutes, the output power is recommended to be reduced to approximately 70 per cent of the full power.

Provision for transverter connection is available and an output level of 150 mV across 50 ohms is available for receive from a transverter. An input signal of 1 mV can be used and by applying transverter mode control signals to pins on the accessory socket. The frequency display will also read out the receive frequency on the bands 50 MHz, 144 and 430. Input/output frequency from the transceiver is within the range of 20-30 MHz, depending on the band desired.

A memory back-up power supply is also available which will enable the same frequency to be displayed when next the transceiver is used. Further information on this transceiver can be obtained from the Australian Distributors, Vicom International, at their Melbourne office, 699 6700, or Sydney office, 436 2766. ■

INFRA-RED CORDLESS MICROPHONE FOR TWO-WAY RADIO

The Daiwa Industry Company Limited of Japan have released through their Australian agents, Vicom International, a cordless electret microphone utilizing high output infra-red diodes as a method of transmission. The microphone is Intended to hang around the operator's neck, pendant fashion, and allow the operator unencumbered use of the steering wheel while using his two-way radio.

Modulated infra-red signals emitting from the light emitting diodes on the microphone are received by one or more infra-red sensors, strategically placed inside the vehicle. The signal from the sensor is then fed Into the Daiwa demodulator, which in turn feeds a standard audio signal into the microphone socket of your two-way radio. The design allows the RM940 receptor to double as a charger for the nicads in the microphone and a holder for the pencil-like electret microphone when not in use.

Operation of the "soft touch" PTT switch on the electret microphone operates the two-way radio in the same manner as any other microphone. To alert the operator that you are transmitting, a short duration audio tone Is emitted from the receiver unit.

Easy installation and low price combine with convenience of operation for making this unit an extremely popular purchase for a mobile two-way radio operator.

Full details are available from Vicom International Pty. Limited, 339 Pacific Highway, Crows Nest (phone 436 2766), or the Melbourne office, 68 Eastern Road, South Melbourne (phone 699 6700), or any of Vicom's many reputable dealers. ■

bail

SPECIALS and LIMITED STOCK ITEMS

We have a few Yaesu transceivers which do not include WARC bands, but they do have Special Prices!

FT-901 DM $1164 — FT-107 M with DMS $1138 — FT-901 D $996 — FT-107 M $1044

OTHER SPECIALS

FRG-7000 Communications Receiver	$425
FTV-250-2m Transverter for FT-101 E	$249
SRC-146A-2m Hand-held, 5 channel, 2w (including leather case and base charger)	$175
18-AVT/WB-10.80m Trapped vertical antenna	$119
TD2 Western trapped dipole 80-15m (will operate on 10m with ATU)	$79

HI-MOUND HAND KEYS
from BAIL ELECTRONIC SERVICES

Model HK-808: Heavy duty commercial hand key with full ball race pivots, heavy marble base and dust cover. The ultimate hand key. Price: $79

Model HK-701: 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: $40

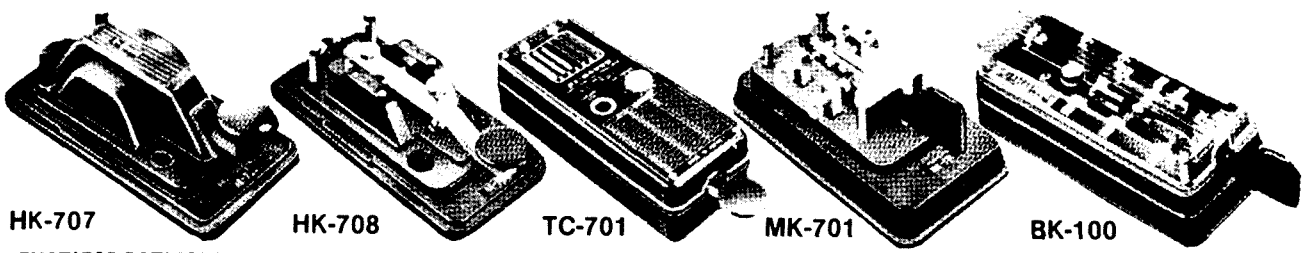
Model HK-707: Economy hand key in all black ABS resin, metal parts protected by moulded AVS resin cover. Price: $20

Model HK-708: Similar to HK-707 but without cover and with smart chromium plated keying mechanism and flat American style knob. $16.50

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

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. Price: $40

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 75mm. Price: $49



HK-707 HK-708 TC-701 MK-701 BK-100

EMOTATOR ROTATORS

103SAX Medium Duty, disc brake, circular dial	$189.00
502SAX Heavy Duty, disc brake, circular dial	$265.00
502CXX Heavy Duty, disc brake as illustrated	$259.00
1102MXX Heavy Duty, mechanical brake	$389.00
1103MXX Extra Heavy Duty, high turning torque	$403.00
1211 Mast clamp for 103LBX	$23.00
1213 Mast clamp for 502CXX	$30.00
1215 Mast clamp for 1102/3	$49.00
300 Mast Stay bearing	$33.00
301 Tower top bearing	$33.00
High quality tough PVC insulated cable especially for external use with rotators	
VCTF-7, 7 core cable (for 1100 series)	$1.45 per metre
VCTF-6, 6 core (for 103 and 502)	$1.30 per metre
Flexible coupler 451 (for 1102/3 and 502)	$34.00
Flexible coupler 450 (for 103)	$18.00

bail

ELECTRONIC SERVICES
STAN ROBERTS VK3BSR
38 Faithful Street,
WANGARATTA 3677
Telephone: (057) 21 6260
Telex: Teletra AA56880

AUTHORISED DISTRIBUTORS

VICTORIA

CHIRNSIDE ELECTRONICS	(03) 726 7353
CODLIN COMMUNICATIONS (Moe)	(051) 27 4516
G.F.S. ELECTRONICS	(03) 873 3939
IMARK	(03) 329 5433

N.S.W.

EMTRONICS	(02) 398 6378
INVERELL	(067) 22 1300
WAGGA WAGGA	(069) 21 2125

QUEENSLAND

C.W. ELECTRONICS	(07) 48 6601

S.A.

COMPUCOM PTY. LTD.	(08) 43 7981
FARMERS RADIO	(08) 293 2155

W.A.

PATCOM COMMUNICATIONS	(095) 35 4592

TASMANIA

HOBBY ELECTRONICS	(002) 43 6337
V. K. ELECTRONICS	(004) 31 1708

And other regional centres.

AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

Here is a list of WIA Awards issued during the period 1st July, 1980, to 31st December, 1980, and the top DXCC tallies, new members and amendments as at 31st December, 1980.

WAVKCA AWARD

Cert. No.	Callsign	Cert. No.	Callsign
865	DJ2MN	894	UA9PP
866	JA6IP	895	RA3AKX
867	JH7MSQ	896	UA0JAW
868	HB9AIJ	897	GM4CNF
869	JF1KKV	898	JA1SXH
870	JH7JGG	899	F5RS
871	JA1AJK	900	AG5X
872	JA1NLX	901	ZS5CO
873	JA4LAZ	902	VS5MM
874	JA5JGY	903	WA6PJR
875	JA3ANW	904	PA0WRS
876	JA6JNF	905	GM3GJB
877	JA5BSQ	906	ZS5FV
878	JK1NLS	907	4X4FU
879	OK1AEH	908	JR1FVW
880	JA1UTQ	909	JA1AZS
881	WD4RCO	910	JH6BZI
882	SM5HPB	911	KG4WM
883	W1AGA	912	SM6CTQ
884	G3YNC	913	YB0WR
885	JA3APL	914	DA1MV
886	JA1EF	915	EA7PW
887	KB8JF	916	SM4KL
888	ZS2PZ	917	W2MIG
889	UA0NR	918	W1DMD
890	UF6VAG	919	JH4PRU
891	UK6LKP	920	JB2XJO
892	UA4CZ	921	JA2KSI
893	UR2FQ		

WAS (VHF) AWARD

Cert. No.	Call Sign
78	VK3AKK plus 14 additional countries. (amendment)
100	VK3AMK plus 15 additional countries. (amendment)
128	VK3AWY plus 11 additional countries. (amendment)
133	VK2BHO.
134	HL9TG.
135	VK3BDL plus 4 additional countrie
135	VK3BDL plus 5 additional countries.

WAVKSA (VHF) AWARD

Cert. No.	Call Sign
14	VK2BHO.
15	VK3BDL.

HAVKCA (SWL) AWARD

Cert. No.	Call Sign
49	L30848, Mark Stephenson.
50	SWL-VK1, Barry L. Bennetts.
51	UA9-084-200, Andrey G. Korpachev.
52	L50355, Robert Duncan.

DXCC — TOP LISTINGS
(All at 275 and over)

PHONE

Call Sign	Tally	Call Sign	Tally
VK6RU	317/362	VK4PX	295/310
VK5MS	317/359	VK3AHO	294/326
VK4KS	316/348	VK7DK	294/309
VK5AB	315/345	VK5WV	294/306
VK6MK	312/349	VK2APK	293/313
VK4FJ	306/343	VK4UC	293/306
VK6LK	302/316	VK4AK	289/298
VK3JF	300/312	VK3AKK	289/291
VK4RF	300/310	VK3AT	288/289
VK7LZ	298/315	VK5XN	285/298
VK4VC	298/309	VK7AE	282/284
VK3AMK	296/305		

CW

VK2QL	309/347	VK3AHQ	299/331
VK2EO	309/346	VK2APK	283/304
VK3YL	305/336	VK3YD	281/313
VK4FJ	302/345	VK4RF	275/296

OPEN

VK6RU	317/362	VK3AMK	296/305
VK4SD	317/348	VK7DK	295/310
VK4KS	316/352	VK3AHO	294/326
VK3YL	314/346	VK2SG	293/311
VK4FJ	312/356	VK3OT	291/292
VK6MK	312/349	VK3AKK	290/292
VK4RF	308/332	VK4AK	289/299
VK3JF	308/328	VK7BC	284/288
VK4PX	302/321	VK5RX	282/313
VK2APK	301/329	VK2AHH	279/305
VK7LZ	300/332	VK3XB	278/306
VK4UC	296/310	VK4DP	278/287

DXCC — NEW MEMBERS

PHONE

Cert. No.	Call Sign	Tally
232	VK2DEJ	157
233	VK2NNI	106/107
234	VK3NSR	155/156
235	VK7NFR	100
236	VK2VDR	103
237	VK6NDE	103/104
238	VK3VU	139
239	VK2BNN	107/108
240	VK3ADT	100/101
241	VK6AJW	101
242	P29RP	101/102
243	VK8NRI	105
244	VK2BQN	109
245	VK3VHA	106
246	VK3NXX	111
247	VK2VUQ	100
248	VK3TD	106/107
249	VK3NIO	103/104
250	VK2VPN	105/106
251	VK3VDW	108

NOTE: Certificate No. 247 is endorsed "All contacts made from mobile station", quite a commendable effort by Phil Greentree.

CW

112	VK4XA	211/21

OPEN

188	VK3BFD	104/105
189	VK5BO	191/213
190	VK5ARA	110
191	VK3ADT	102/103
192	VK6NDJ	103
193	VK5NJR	110/111
194	VK3TD	107/108
195	VK6NAT	150/151
196	VK3LG	98/103
197	VK3OT	291/292
198	VK3OV	104/105
199	VK3AKK	290/292

RTTY

1	VK2SG	100/101

DXCC — AMENDMENTS

PHONE

Call Sign	Tally	Call Sign	Tally
VK2FD	182/183	VK3VGD	160/161
VK3DU	263/265	VK4BG	245/255
VK3GB	205/223	VK4ABM	205/206
VK3RF	257/259	VK4AMB	229/230
VK3ACD	272/285	VK5OU	235/236
VK3AJJ	198/199	VK5RX	267/270
VK3AWY	222/223	VK5NVW	123
VK3BLN	198/199	VK6YL	250/251
VK3NDY	231/232	VK6NAT	149/150
VK3NOA	192/193	VK6NBU	145/146
VK3NOL	169/170	VK7BC	266/269

CW

VK3JF	217/231	VK5RX	203/234
VK4LV	137/143	VK7BC	131/132
VK4PX	104/112		

OPEN

VK2NOG	152/153	VK3NDV	233/234
VK3ACD	272/286	VK3NOA	200/201
VK3AJJ	201/202	VK4BG	259/272
VK3BLN	203/204		

■

Ron Wilkinson Achievement Award 1980

Details of this 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 VK3AKC.

For the year 1980 the Executive received four nominations. After careful evaluation it was decided that Cecil Bardwell VK2IR should receive the Award. He was nominated by the President and entire Divisional Council of the WIA, NSW Division. He had given the Division 20 years of service in the provisions of AOCP education classes both by personal lectures and the conduct of the correspondence course which in fact is Australia-wide. He will continue to conduct the correspondence course and will supervise the personal lecture classes. During this period "Ces" presented 1436 actual lectures in person to 21 separate classes and his untiring efforts have also received recognition by the WIA NSW Divisional Council.

Congratulations Ces. ■

Athol Tilley VK2BAD (left) congratulates Ces on the Award.

MOUNT GAMBIER AMATEUR CONVENTION

Plans are once again under way for the 17th Annual South-East Radio Group Convention to be held in Mt. Gambier on the Queen's Birthday long weekend on June 6-7-8th. Due to the record crowd in 1980 (around 250 people, which included some 130 call signs), a much larger venue has been booked, namely the main pavilion at the Mount Gambier Showgrounds, in anticipation of an equal ro larger attendance.

The usual events, including various scrambles and fox-hunts and hidden transmitter hunts, will be held, plus several new events and, as usual, extensive exhibits of all major brands will be represented.

Prizes will be awarded to winners of all events, plus the South-East Radio Group Perpetual Trophy awarded for the best overall performance. Bevan VK5TV has won this trophy in 1979 and 1980, and will be trying for a hat-trick in 1981.

As the South-East Radio Group is celebrating its 21st birthday this year, a special dinner is being arranged on the Saturday evening of the Convention.

Any person who has not been to a Mount Gambier Convention in recent years and wishes to attend may obtain a registration form from the Convention Registrar, C/- ERG, PO Box 1103, Mount Gambier, SA 5290. ■

TECHNICAL CORRESPONDENCE

LARGE ANTENNA GYRATING INHIBITOR

Dear Sir,

Near the top of the list of aversions outside the control of the amateur operator must surely be strong winds, especially if he operates with a large antenna.

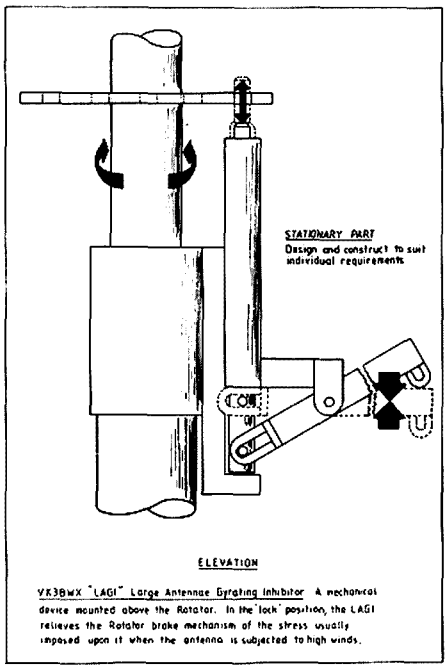
This operator's QTH seems to be located directly in the path of sudden winds which blow very strongly in short bursts, usually at inappropriate times. All calculation indicate that the Emotator 520 CXX should be capable of handling a 3 el. mono yagi on 10m and a 4 el. duo bander for 15 and 20, all without traps and having full length elements. Intuition *tempered with fear* tells *me* that if the brake on the rotator was allowed to be subjected constantly to the stress placed upon it by the leverage of the long elements during a strong wind, then, beginning with a gentle yawing action, the whole array would very soon exhibit the characteristics of a weather-vane..

The "LAGI" was installed so that the array could be locked in a position which would present the least wind surface during a storm. It may also be locked on that preferred beam heading at times of strong winds.

I am convinced that the Lagi has on two occasions prevented the internal mechanism of the 520 CXX from resembling the product of a domestic food blender.

The diagram is not meant to be a detailed working drawing, but rather an illustration of the concept. The circular plate with the holes would need to be in two halves, with a saddle welded to each half and then bolted together around the rotating pipe. The stationary part would need to be made to suit the requirements of the individual.

The material for the BWX Lagi was by tradition obtained from the nearest scrap metal dealer.

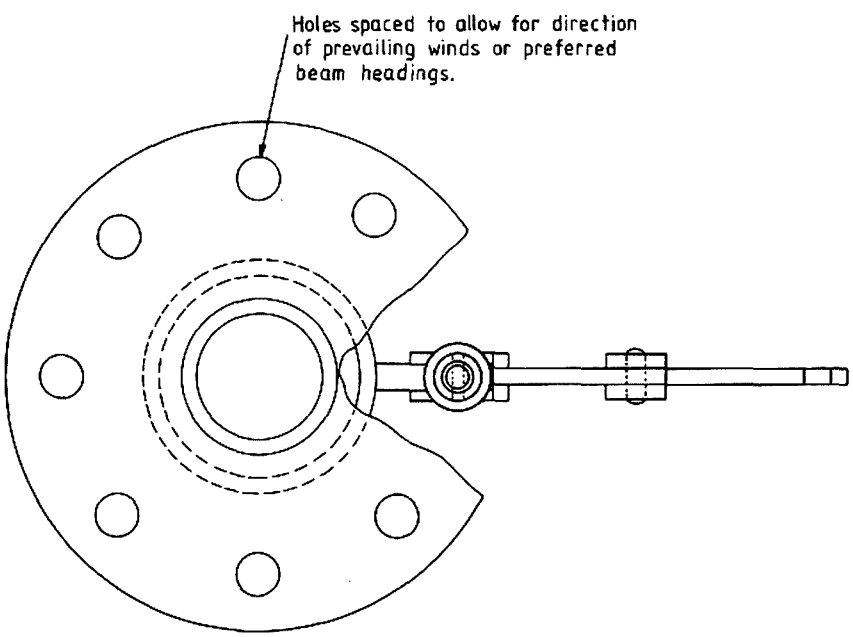


VK3BWX "LAGI" Large Antennae Gyrating Inhibitor. A mechanical device mounted above the Rotator. In the 'lock' position, the LAGI relieves the Rotator brake mechanism of the stress usually imposed upon it when the antenna is subjected to high winds.

Manipulation of the device is by means of two ropes (rods or cables); pull one rope on the lever to shoot the pin into the hole; pull the other rope from the bottom of the pin to release the lock.

Oh yes, it is a good idea to devise something at the rotator control so that the rotator cannot be activated when the Lagi is in the locked position . . . it will not turn when it is locked.

Bruce Saxon VK3BWX. ■



PLAN VIEW

VK3BWX "LAGI" inhibits the gyrating effect of large antennae when subjected to strong winds

NOTES ON THE PREDICTIONS

The mode of propagation used by IPS in compiling their predictions are reflected in the bar charts used to convert the Grafflex symbols into a graphic picture.

When generating the Grafflex charts (reproduced in a number of publications) the following symbols are used.

1. "." — Propagation is possible but probably less than 50% of the days of the month.
2. "%" — Propagation is possible between 50% and 90% of the days of the month.
3. "F" — Propagation is possible by the first F mode on at least 90% of the days of the month unless there is a severe ionospheric disturbance.
4. "M" — Propagation is possible by both first and second F modes. The strongest mode is normally the first mode, but the vertical aerial pattern may influence the mode received.
5. "A" — High absorption, i.e. above the absorption limiting frequency but probably too close to it for good communication.
6. "X" — Complex mixtures of modes including the second E mode.

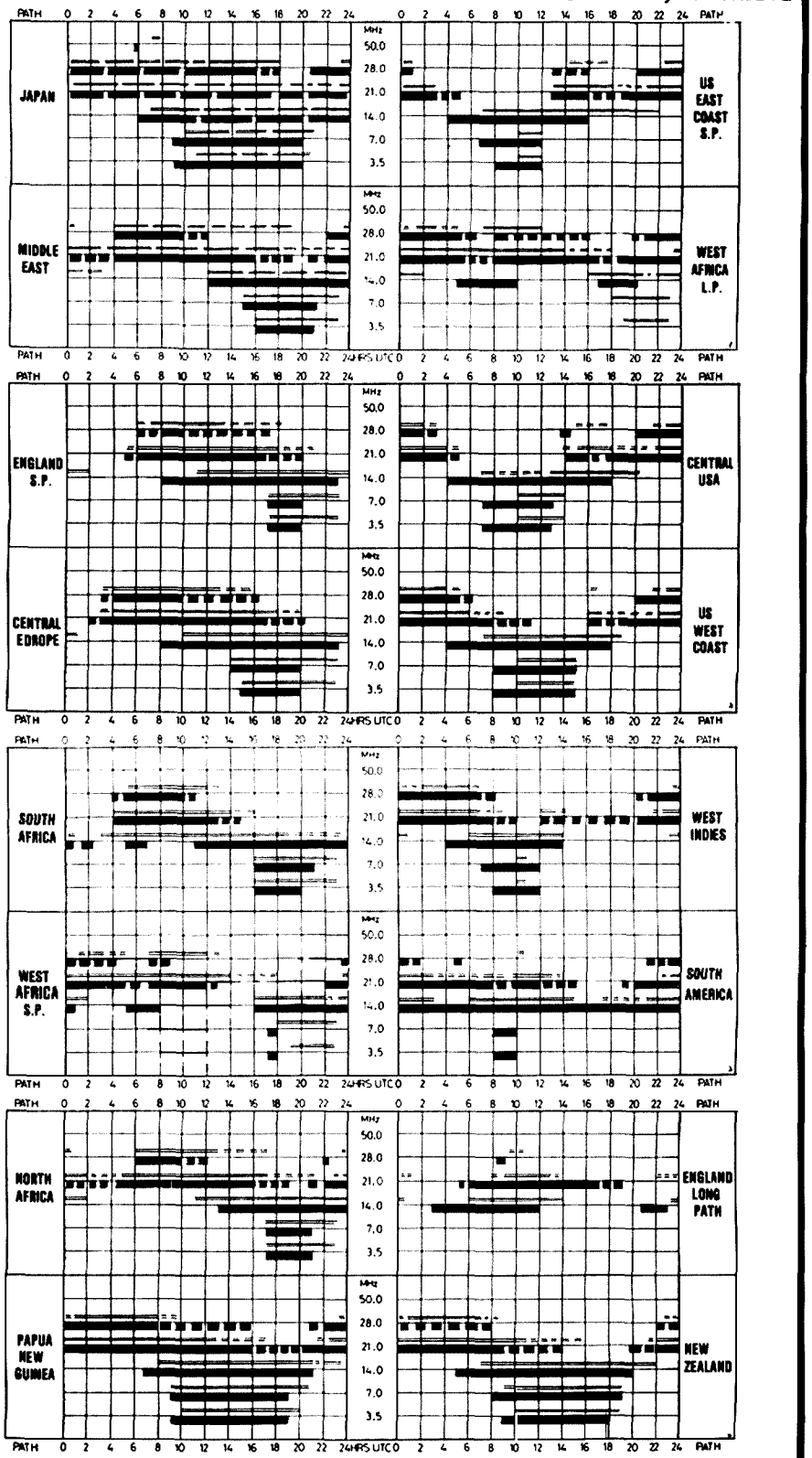
These are the most significant types we encounter. The full lines or bars on the chart cover 2, 3, 4 taking 5 into account. The broken lines or bars are depicted by 1. 6 is extremely hard to verify and is not taken into account.

The paths from Eastern Australia are based on Canberra. The paths from West Australia are from Perth. Suitable allowance should be made on Eastern paths for geographical differences. Times, as much as 1 hour difference between Victoria and Queensland in band openings occur. Often there is no signal available in one State, whereas the opposite effect occurs in the other State, they get the lot. Marginal differences produced by layer tilt and varying degress of ionisation can be very frustrating.

Generally the predictions show that time of day when the path should be open between the two areas. All other factors notwithstanding. ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

SILENT KEYS

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

Mr. G. T. MILES	VK2KI
Mr. A. J. TURNER	L20990

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.

43 Boyana Cres., Croydon 3136
7th January, 1981

The Editor,
Dear Sir,
Radio Amateurs should not have to pay tax on components. At present, we are slugged up to 27½ per cent on components which are to be used in private home construction projects. It is in the interests of the Australian community that technical prowess in radio matters be actively encouraged, not discouraged, by a heavy tax. The greater amount of home-building today is done by the younger, enthusiastic amateurs with little money. In time of war, these same people would find themselves in some signals unit contributing skills won at considerable cost to themselves.

In the event of an emergency, our equipment and skills may be commandeered by Government Officials for the good of the community. What a cheek, if the owner has built a clean, efficient station at 27½ per cent tax!

Today, all sorts of people in business are obtaining tax "perks" for the most incredible reasons. Surely it is not unreasonable to ask that the tax on components used in private amateur projects be removed.

Yours faithfully,
Drew Diamond VK3XU. ■

St. Vincent's Hospital
15/1/1981

The Editor,
Dear Sir,
I would like to convey the thanks of myself and the patients in St. Paul's Ward in St. Vincent's Hospital to Bill VK3YZI publicly through AR for his kind gesture in donating a lovely fan for the comfort of myself and the patient's of St. Paul's Ward.

Bill delivered the fan on the 14th January to St. Vincent's Hospital all the way from Gembrook. The temperature this day was 42 degrees. This in itself was a wonderful gesture at the discomfort of himself travelling on such a hot day for the comfort of others, which makes Bill a great ambassador for WIA.

J. P. Watts VK3YZW. ■

23 Falcon Rd., Macleod 3085
Phone 459 6445

The Editor,
Dear Sir,
I just received a letter and cheque from you for article, the DJ4LB ATV transmitter as a basis for a 70 cm SSB transverter. I would like to point out, as given in the corrections, June AR, that this article was also written by Neville Darrach VK3YDR. Both Neville's and my name appeared on the original manuscript, but for some reason was never printed as such.

After speaking with Neville we both agreed to use the money on the new Melbourne 70 cm beacon VK3RAI. We are still waiting for some components but it is hoped to have this beacon operational soon.

Please thank all concerned for the award and I assure you that the money will be put back into the hobby for the benefit of others as well.

Yours faithfully,
Ian Glanville VK3AQU. ■

12 Ervin Rd., Kilsyth, Vic. 3137

The Editor,
Dear Sir,
My subject is one which must, above all else, have occasioned fury, depression, paranoia and probably, on occasion, the desire to end it all with a length of suitably knotted coax and a stout branch on a convenient tree.

I refer to the gain antenna and, more particularly, the erection of its attendant tower.

This letter does not refer to the technicalities or the manpower involved. During my short time among the ranks of novice operators I believe I have made more than enough friends to assist in construction and in the erection of a tower so vast that it would rival the mightiest in the land — well almost.

The problem lies in the attitude of the multitude of civic authorities and conflicting municipal edicts which are so much at variance with one another that the average operator, wishing only to raise a support 30 odd feet above ground and with a vested interest in the edifice staying there, could be forgiven for believing that he had been transported back to the fragmented states which preceded the German nation during the 18th century rather than inhabiting a land of modern democratic principles — in this case dubious tenets to say the least.

Having vented my spleen I arrive at the point.

1. Among the many amateur operators of this country there must exist those learned at law and others with a deep knowledge of municipal regulations.
2. It should be possible, given the will, for such a group to convene and produce a reference listing past test cases and arguments relating to the subject.
3. Such a reference could be made available by the Institute for a reasonable price for the use of any member desperate enough to resort to legal argument and would supply his representative with information which he might logically hesitate to assemble himself having regard to the cost involved.

Such an organisation exists in the United States and, whilst I am not aware of their success rate, I feel that they must have assisted many operators in achieving full enjoyment of their hobby while not interfering to any degree with the rights of others in their vicinity.

Self interest does not prompt this letter — I have a tower. It is in the knowledge that there are many amateurs in Australia grappling with the problem that I put this suggestion forward for consideration and, hopelully, feedback.

Yours faithfully,
N. W. Fairweather VK3VFQ.

EDITOR'S NOTE:

All Divisions provide a free advisory and, if the circumstances warrant, a free legal service to members who run into municipal problems.

The WIA has many documented cases which have been won through various appeals to planning authorities, etc. ■

The Editor,
Dear Sir,
I wish to correct a statement attributed to me in a letter to you (AR December 1980, page 53) from Neil VK6NE.

My statement to the 1980 Federal Convention was "That I spent 200 hours during the first four weeks after the RD contest on the preliminary work". I am unable to estimaet the total time spent on the whole of the log checking.

However, being a progressive amateur and Contest Manager, I use a microprocessor to do the larger part of the tedious checking and this allowed me to process the 1980 "RD" logs in record time.

It would be prudent for Contest Managers to arrange rules and log formats to fit in with modern data processing and so fall into line with paragraph 3 of "The Amateur Code" as published in the ARRL Handbook — "The Amateur is Progressive".

Wally Watkins VK2DEW,
Federal Contest Manager. ■

31 Helms Court, Benalla 3672
22/12/1980

The Editor,
Dear Sir,
Over a period of time there have been a number of letters in this and another amateur radio magazine critical of the lack of help and courtesy expressed by experienced amateurs to newcomers to the hobby. Now many of these comments may be true, and also it may be true that some of the new amateurs by their "know it all attitude" have bitten the hands that may well have helped them. Faults probably lie on both sides, but also I can assure our readers that there are those amateurs who do do their best to help others.

A few months ago I put an advert in Amateur Radio and Amateur Radio Action asking for assistance to help equip a newly qualified novice in the Benalla area. I said that he was a penniless new novice. The lad concerned is Ray Thaus VK3VVE, a 4th form technical student, who lives on a small property a few kilometres out of Benaila. He has no income and is not in the position, living out in the country, to earn money on paper rounds or the like.

I had several phone calls and several letters offering equipment at extremely reasonable prices, although most of these were outside Ray's financial means. However, some kind amateurs also offered equipment gratis, and Ray is negotiating with them on methods of transporting the equipment to Benalla. Hopefully by the time this is in print Ray should have the equipment and be on the air. He is a technically inclined lad and should learn quite a lot through commissioning this equipment.

I say thank you to those amateurs who answered my request — you have helped a new young novice along the road to amateur radio. Amateurs helping the newcomer is not dead.

Best regards,
Rodney Champness VK3UG. ■

A letter from Terry Robinson L31105, who has RTTY Rx gear, complains about interference to amateur RTTY stations on 40m by phone stations and suggests segments for RTTY, etc., on amateur bands. Terry, this is done by agreement amongst amateurs, please see page 24 in the WIA 1979 Call Book. The RTTY frequencies actually in use may not coincide with those shown in that Call Book and in any event depend to some extent on international custom amongst amateurs. ■

16 Gari Street, Charlestown, NSW 2290
14th January, 1981

The Editor,
Dear Sir,
Objection has been made to a statement which appeared over my signature in the November 1980 issue of AR on page 32. The statement objected to occurs within the sentence: "But Mr. Bles apparently . . . will be affected."

I withdraw the statement complained of, which was made in error, and apologize to Mr. Arle Bles VK2AVA over this matter.

Yours faithfully,
Colin Yates. ■

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

Info-Tech 300 Keyboard, M-200E decoder, half price, $650; VDU to suit, $85; Leader LSG-11 signal generator, $65; 2.5 amp power supply, $20; model 7 and model 9 ATU, best offer. VK3NPA, QTHR. Ph. (050) 92 1024.

Kenwood TS820, CW filter fitted, hand mic., instruction manual, original packaging, little use, $740; VFO 820, never used, $110. VK2NJX, QTHR. Ph. (02) 871 2945.

Six only 6JB6A RCA brand new valves, ex USA; one only dual power trani for FT101. VK4HK, Box 59, Atherton 4883.

Hand-held Kenwood TR-2400, 2m, in v.g.c., complete with charger and box, 3 months old, $310. Contact Frank VK3ZO, QTHR, around 6.30 p.m. on (03) 478 5972.

Rx, DX300 Wadley loop circuit, digital readout, in good cond., with service manual, $275; or will trade Kenwood TS120 either S or V model, with cash adjustment. Peter VK2VIY, QTHR. Ph. (066) 62 2460.

FT101E Txcvr, 2½ yrs. old, with spare driver and final tubes, 250 Hz CW filter, spare RF board, service manual, etc., $575; FV101B, 18 months old, little use, $100. Will separate if required. VK3DL. Ph. (03) 489 4954 after 9 p.m. daily.

Home Base/Mobile Station: Heathkit SB101 Txcvr, with up-dates to SB102, CW filter, 10 to 80m, as new; included with above: Heathkit CB640 external VFO, Heathkit HP23A 240V AC power supply, solid state, Heathkit 12V DC power supply, solid state, for mobile, connecting cables, manuals, $400. VK2DA, QTHR. Tel. (02) 94 1039.

Deceased Estate, late VK2ADE: Kenwood TS520 Txcvr, Kenwood VFO 520 ext. VFO, cables and manuals, $650. Mrs. F. N. Leverrier. Ph. (02) 407 2758.

Equipment owned by former **VK4AOD: FT101B** Txcvr, Yaesu, $500; Yaesu dummy load wattmeter, $85; Oskerblok SWR-201 SWR and power meter, $60; 3-way coax switch (manual), $5; morse keys at $5 each. Mint cond., all boxes and manuals included. Mrs. Sutherland, 34 Ashbourne Tce., Labrador 4215, at the Gold Coast. Ph. (075) 37 1109.

Kenwood TS600 all mode 6m Txcvr., in perfect cond., $575, ONO. Lionel VK3NM. Ph. (03) 88 3710 Home, (03) 568 2733 Work.

FT301D, mint cond., with handbook, $580; 100W lin. 15-6m, $90; multi-7 146 unit, $180. VK2AJY. Ph. (043) 96 4553.

Vicom IC202 SSB Txcvr, with Oscar crystal, manual and original carton, $170, ONO. VK2BY, QTHR. Ph. (080) 3484.

IC701, Incl. PS, Imm. cond., $995; N. Stilwell VK3ACN, QTHR. Ph. (054 42 1288 Bus., (054) 43 7592 Private.

Bound Copies QST 1930 and 1931, good cond. (2), also ditto Amateur Radio 1933-35 and 1937-39, covers water soiled (2), all or singly, no reasonable offer refused. VK3RJ, QTHR. Ph. (03) 89 6141.

TH3JR Beam, with balun, in v.g. cond., $130. VK3NWZ. Ph. (03) 435 9770 AH.

Antennas: Hy-gain TH60XX triband yagi, $200; Cushcraft ARX2 2m vertical, $20; both only 3 yrs. old, v.g.c. John Tilley VK1FT, QTHR. Ph. (062) 86 2364 AH, (062) 80 6481 Bus.

Icom IC551 6m, IC251A 2m Txcvr, linear 2m 10W-20W with pre-amp., Swiss quads, 2m, 6m, 10m, 15m, HF Alpha 374AE linear, yagi 2m 16 el. 20 ft. beam, all as new. VK3AOR. Ph. (03) 240 1231 Bus., (03) 509 8637 AH.

SWLs: The "Southern Cross DX Club" has the latest news from the SW, MW and amateur bands in our monthly "DX Post". Subscription $8 per year, students and pensioners $6 per year, and $2 joining fee, first year only. For a free "DX Post" write to Membership Secretary, Grantley Williams, 19 Wicklow Ave., Athelstone, SA 5076, mentioning this ad.

Leader LSG-11 Sig. Gen., perfect cond., $50; aircraft compass receiver BC433C, with control unit, solid state supply, speaker, loop, manual, 142.5 kHz IF, coverage 200 to 1500 kHz, Ideal for QSer or broadcast band DX reception, $65; 135 mm Tanimex tele-lens, $25; Universal movie splicer, $10; Seconic leader exposure meter, $10. VK3AHG, QTHR. Ph. (03) 288 2024.

Kenwood TS120-V, new cond., complete with accessories and instruction manual, best reasonable offer, Sydney area sale preferred. Ross Treloar VK2BPZ. Ph. (02) 239 5267, office hours.

Ham's Home for Sale at Barmah, on Murray, 6 yrs. old 2-storey masonry brick and timber, 24 squares, self contained flat included, 3 showers, 3 toilets, 3 air-conditioners, floor coverings and drapes, 40 ft. steel tower, TH3, 9 element yagi, 2m rotator, all antenna systems serviceable, vendor finance available, must sell, moving intersate, $39,500. Ph. (058) 69 3283.

Heath SB-200 Linear Amplifier, exc. cond., little used, $500. VK2AGZ, QTHR.

ICOM IC202, exc. cond., $190; 3 el 52 MHz yagi, folds up, $10. VK4ZNC, QTHR. Ph. 52 2954 Bus., 205 2121 A.H.

SE502 Txcvr, Katsumi speech compressor and mic., good cond., 28.1 MHz to 28.6 MHz in 23 channels, modified to tune ±3 kHz (VXO), inbuilt SWR meter, low SSB, ideal for novice, the lot $155. VK2DDH, QTHR. Ph. (048) 71 1953.

Transverter, 3.5/27 MHz, $90; converter (Rx only), 3.5/27 MHz, $30; marine radio, 7 ch. PLL, $110; marine base aerial, 27 MHz, $40. Nom VK6NOR. Ph. (09) 276 3000.

ICOM IC22A Rptr, ch. 2, 3, 4, 5, 6, 7, 8, simplex 37, 40, 42, 50, 53 built into handbag, complete with 5/8 wave ant. and nicad batt., also mobile cradle, $140. VK1ZAS, QTHR. Ph. (062) 51 3711 Bus.

Swan Astro 150, complete with 20 amp PSU and mic., brand new, $825. VK5FR, QTHR. Ph. (08) 295 2331.

DC200, 12V DC power supply for FT200, with cables, $145. VK1BE, QTHR. Ph. (062) 81 3301.

Yaesu FT101E plus MC50 mic., $500. VK4NOD, QTHR. Ph. (077) 43 5668.

QST, most copies 1926 to 1977; CQ and 73, early 1960s onwards, many in binds, plus early books, mobile and antenna manuals, etc., many are rare copies; a lifetime of circuits for library or historical collection, approximately 3½ cwt. total weight, $150. Bill Sides VK3YBS, QTHR. Ph. (03) 531 4961.

Uniden Model 2020 HF Txcvr, 240V AC or 12V DC operation, digital/analogue dial, 180W PEP input, 6156B finals (plus spares), 80 to 80m operation plus the old 11m band and WWV on 10 MHz, complete with mic., owner's handbook (including novice conversion information), workshop manual, calibrated homebrew external VFO, all in good cond. and a bargain at $400, ONO; Yaesu FT-221 all mode 2m Txcvr, 240V AC or 12V DC operation, complete with mic. and full set of crystals giving the 50 kHz channels (the VFO covers the remainder), including handbook, price $450. VK3APA, QTHR. Ph. (07) 59 6965.

ADVERTISERS' INDEX

Kyoguto FM 144-10SXR11 2m FM 800 channel synthesised Txcvr, exc. cond., $220; Kenwood MC50 desk mic., in original box, virtually brand new, $35. Steve VK3JY, QTHR. Ph. (03) 836 3841.

Alias 215X Mobile Txcvr, 200W, 160-15m, with mobile cradle, AC PS, dgital R/O and fixed xtal osc., $500, ONO; Icom IC225A, as new, $365; Palomar RF matching transformer, $55; Daiwa mic. compressor MC33A, $49; 6m linear amp Eimac 4/500A valve (no power supply), $130; Johnson Viking PLL CB converted to 10m with 10kz slide, $140. Prices, ONO, VK3BEJ, QTHR. Ph. (050) 24 5814.

BC221 Frequency Meter with mains supply, $25; teletype model 15, good working order, with spare paper rolls, $50, ONO. VK3SU, QTHR. Ph. (059) 44 3552.

Icom IC22A, serial No. 8882, exc. cond., with instruction manual, xtals for rpts. 2, 3, 4, 5, 6, 7, 8 and simplex channels 40, 49, 50, original, no mods., $240, ONO. VK3YLN. Ph. (03) 842 2260, or C/o VK3BH, QTHR.

Kenwood TS520S, as new, with CW filter, external VFO 520, MC10 mic., operator's and workshop manuals, in orig. cartons, $700, ONO, or will separate; CHIBA SWR-FS meter and Hi-Q balun I tol. 50 ohms, never used, /14 each. VK3PR, QTHR. Ph. (056) 62 2711.

Electronic Keyer, Dick Smith complete kit to make up ,buyer collect Sydney, $30; At Davis-Rice VK2AXR, 70 Killeaton Street, St. Ives. Ph. 44 1389 after 6 p.m.

IC502, 6m SSB, mod., including 40W SS final, $200, or swap for OR666 Rx or similar; Trio 9R59DS Rx, v.g.c., $80; PRC-10 Rx. 38-55 MHz, $35; CB conversion xtals, set of four, $10. Contact Neville VK2QF, QTHR. Ph. (063) 7384 — (operator) 9V A.H.

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Rx for FM Band, 88?108 MHz IE QR666 FM, etc., QQE06/40 valve, and cond. Contact Neville VK3QF, QTHR. Ph. (063) 7384 — (operator) 9V A.H.

10-80m HF Equipment, working or not, AM, CW or SSB; homebrew or old AM, CW OK, required by newly formed radio Club, anything you don't want or use may be great for us. PO Box 505, Bondi Junction, 2022 NSW. Ph. (02) 798 4868.

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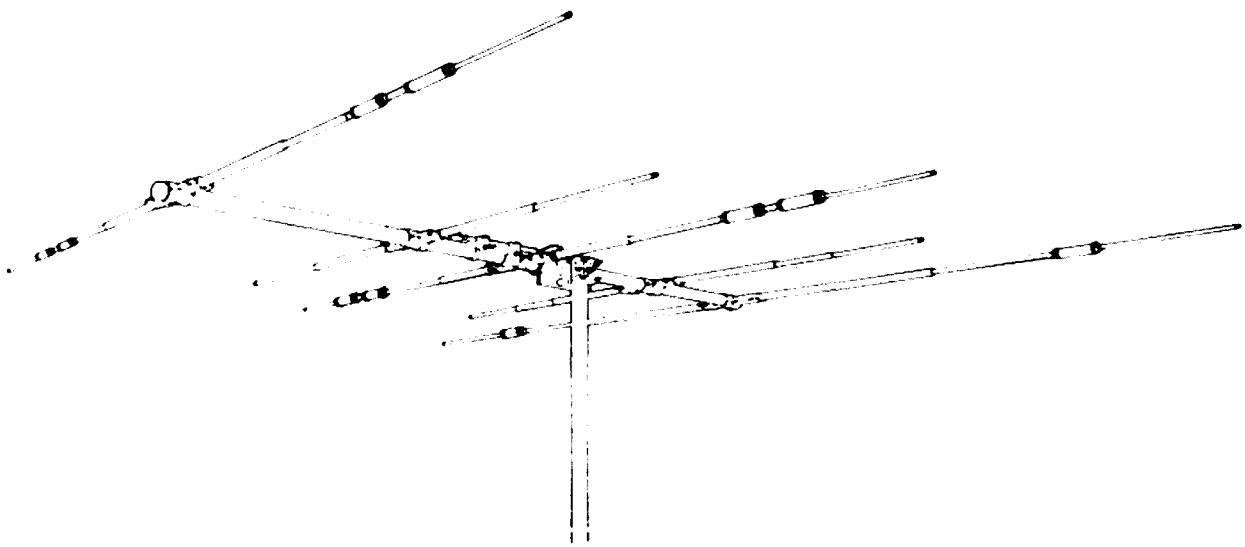

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PARRAMATTA 2150.
Telephone 633 4344

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 49, No. 4 APRIL 1981

FEATURED IN THIS ISSUE:

- ★ MORE ON ANTENNA NOISE BRIDGES
- ★ THE EVOLUTION OF A 10 METRE MULTI-ELEMENT BEAM
- ★ NUCLEAR POWER
- ★ THE IMPORTANCE OF SATELLITE COMMUNICATIONS IN DEVELOPING COUNTRIES

Registered for posting as a Publication — Category B

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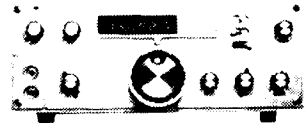

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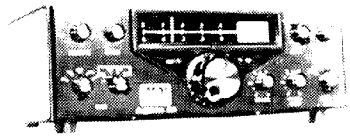

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W.A.: 5/319 Pearson St., Osborne Park 6017 Tel. 446 4657 Telex AA94825

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DEPARTMENTS

Cover Photo

At the Victorian Midland Zone Convention, Strathfieldsaye, near Bendigo. Gwen Bloomfield, Kay Fairbairn, Michelle Cartwright and Wendy Hogg getting on with the important part. **See Story, page 46.**

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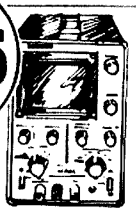

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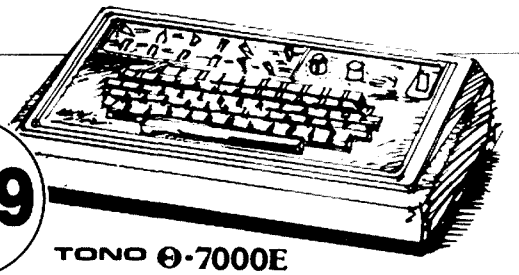

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Automatic mobile HF Whip.

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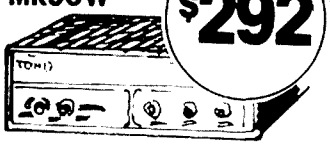

Tono's new solid state linear incorporates a receiver pre-amp into the 80-90 Watt unit Handles 2 metre mode SSB/FM/CW/RTTY Model MR1300E 120-130W **$357**

4000 Australians can't be wrong.

This simple to operate mobile radio has no digital display or complicated channel changes. That's why it's the most popular fm. rig in Australia.

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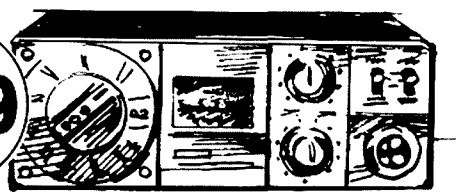

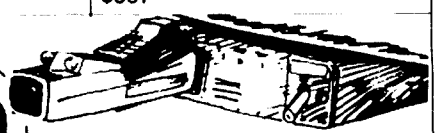

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The ultimate in cordless operation for mobile systems.

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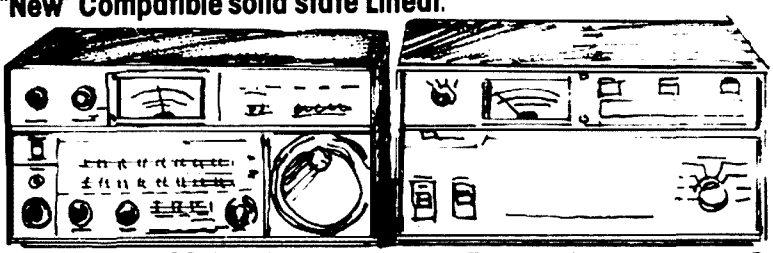
"New" Compatible solid state Linear.



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QSP QSP QSP

A Backward Glance

Just how important is the history of amateur radio and more particularly, how important is the history of it here in Australia? Should we go out of our way to record or preserve this history?

'Old-timers' looking back can gain a sense of achievement, especially if their past was studded with 'pioneering' activities on which they can reflect. The historical researcher seeks to discover that tantalising snippet of information — perhaps overlooked by others, which can cause long-held beliefs to be shattered — or at the least shaken. Often historical achievements can be used gainfully to press a contemporary point. Amateurs have not been backward in relying on the past to press for gains for the future.

In 1985, organised Amateur Radio in Australia will have been in existence for 75 years. Our Institute is the world's oldest Amateur Radio Organisation. Such an anniversary seems to present itself as an ideal vehicle by which we can promote ourselves to the public and perhaps even take a backward glance at those first 75 years.

This issue contains an article by Chris Long, which reveals many fascinating aspects of one man's involvement with the development of radio and television communication in Australia. The late Gil Miles VK2KI deserves a place in the history books; but how many others have short memories already forgotten or worse, how many have even passed on without leaving their part of the jigsaw behind?

It has been suggested that the W.I.A. should prepare a history of Amateur Radio in this country. For many years individuals and representatives of the Institute, both State and Federal, have been preserving the little information that has been forthcoming. Some of this activity has manifested itself as articles in A.R. over the years. To research, collate and prepare a comprehensive history would be a major task for any one individual or even the Institute.

Oral histories are of equal importance, and it is fortunate that Ron Fisher, VK3OM, recorded a short interview with the late Max Howden, VK3BQ, and Arthur Berry, VK3CZ, just before they died. Both Max and Arthur's involvement in Amateur Radio dated back to the early days of international communications. At the December, 1979 General Meeting of the Victorian Division of the Institute, two 'founding fathers' W. K. Witt and T. F. O'Shannessy, both of whom were present at the inaugural meeting of the Amateur Wireless Society of Victoria, told their stories of the early days of Amateur Radio in this country. The stories were tape-recorded. Likewise Chris Long succeeded in recording an interview with Gil Miles before he passed on, and it was largely this recording which enabled Chris to prepare his article.

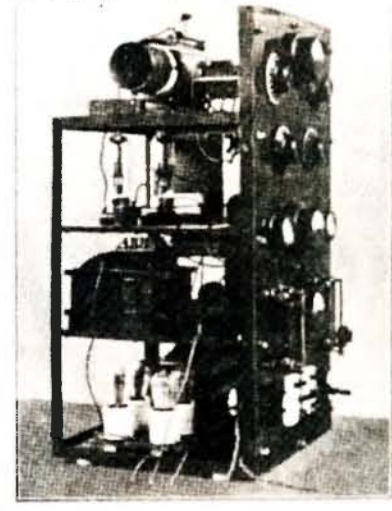
What have you to contribute? How about listening to that old-timer at your club when he next starts to talk about 'the good old days' — better still try to get his story down on tape and do your bit to complete the jigsaw so that our backward glance is not too hazy.

P. WOLFENDEN,
Federal President ■

Gadsden — The First 100 Years

In a centenary book of this name published recently under the authorship of Jules Feldmann there is a reference to the amateur activities of Stanley Wilkinson Gadsden, Governing Director of the J. Gadsden Australia Limited successful commercial packaging enterprises from the death of his father and founder, Jabez Gadsden, in December 1936 through to his death in 1957. Stanley Gadsden was quoted as a widely known pioneer of Australian radio — one of the earlier radio amateurs with the call 3SW. A photograph of his QSL is reproduced and shows the QTH as Kew, which was also recorded in a 1926 call sign list and included in a 1936 call book but with a changed address.

Thanks to Mr. Ronald S. Gadsden, Chairman of the Company and the son of 3SW for permitting these references to be published. ■



WIANEWS

Several letters received from the Department of Communications to report this month.

Here is the text of 51/1/55 of 25th February, 1981:—

10 MINUTE IDENTIFICATION

"I refer again to your letter of 25 August 1980, in which among other things, you made reference to the identification of amateur stations.

I would like to confirm that in discussions with the Institute, the Department agreed in principle to the interval between 'within transmission' identifications being extended to ten (10) minutes. It is appreciated that this period does not coincide with that stated in the Wireless Telegraphy Regulations and it is intended that at an appropriate time, the Regulations will be suitably modified.

In the meantime, the Department has no objection to amateur stations observing the identification procedure outlined in paragraph 7.2 of the current Amateur Operators' Handbook . . ."

The text of RB4/4/48, also of the same date:—

"APPROVAL FOR AMATEUR STATION LICENSEES TO CONDUCT NARROW BAND VOICE MODULATION (NBVM) EXPERIMENTS.

I refer to our recent discussion on this matter and I have much pleasure in confirming that this approval is now in force. It applies to all Full Privilege Amateurs as well as Limited Amateur Licensees. Novice Amateur Licensees however are not included in this arrangement.

The operation of amateur stations participating in NBVM experiments, should be in accordance with the current conditions applicable to all full and limited privilege amateur stations licensees.

NBVM is recognised as an effective method of speech bandwidth compression which to some extent is still in an evolutionary stage. For this reason, no further minimum technical standards are to be imposed at present and system parameters based on those described in the 1979-81 editions of the ARRL handbook are currently acceptable.

To facilitate recognition of this new form of modulation, each licensee employing NBVM should identify his station during the first twelve months of such operation at not less frequent intervals than once every ten minutes, by employing a normal unprocessed modulation method appropriate to the emission in use. This special identification requirement is proposed for review at the end of a twelve months period.

The Department would welcome feedback from the Institute after a six months period, in terms of advice as to the level of use being made of this system and details of any significant technical development trends which may assist in formulating a new emission standard . . ."

In connection with NBVM it is understood one or two amateurs in VK are conducting experiments at the present time. General observations, principles and technical information for AR would be of great interest.

WIA/DOC JOINT COMMITTEE

Agenda Items for the Convention are still coming in. Those already referred to in last month's WIANEWS are now firm.

A number of Agenda Items have been received from VK4. They suggest that discussions should be held —

(a) on bandplanning tor the proposed 50-52 MHz band segment;

(b) on beacon frequency allocations and co-ordination at a Federal level;

(c) on third party traffic with specific emphasis on WICEN activities;

(d) on proposals to change the date of the JMN Field Day Contest to November and to alter the scoring so that two call areas straddle the Tropic of Capricorn.

Others require —

— a report on the efforts being made to make fog-keeping voluntary instead of mandatory;

— a discussion on "K" call conditions (with particular reference to increased power on HF, RTTY, FM and SSTV on HF, CW on VHF and increased band segments on HF, for example, 29.0 to 29.4 MHz);

a policy to seek approval for the transmission of music in conjunction with ATV (incidental music as an integral part of training programmes is quoted as an example);

— negotiations to begin for the mean output power of A5 transmissions to be increased to 400W maximum.

Three organisational Agenda Items from VK4 want continuous publicity to be given for the gentlemen's agreements for band usage, more competitive attractions for original technical articles for AR and to confine advertising in one section of AR.

Other Agenda Items believed to be in the pipeline include an approach to be made to replace negation with suitable conditions for the cross-linking of repeaters, the standardisation in a more realistic manner of VK call sign suffix series, establishing proper agreements on frequencies for special modes on HF bands (RTTY, SSTV, etc.), general agreement to re-locate slow morse on 3535 kHz instead of 3550 kHz, to review policy relating to 10m band beacon frequencies (e.g., no beacons below 28.2 MHz or above 28.3 MHz) and discussions to be held on standardised conditions for WIA concessional member grades. It is also possible that the WIA EDP system in relation to the Call Book and WIA Magpubs will be discussed.

1981 FEDERAL CONVENTION

A meeting of the Central Committee was held on 26th February. Examinations were again in the news, including the WIA request to extend the validity of 10 w.p.m. morse test passes by Novice licensees who are attempting to obtain passes in AOCP theory.

"Non-examinable" parts of the Handbook are still being sorted out for early finality.

It appears probable that broad statistics relating to examination performances may be made available after the February exams.

Some time was devoted to discussing the 50-52 MHz band segment in depth, including possible interference to broadcasting stations, particularly under DX conditions.

The use of special prefixes (e.g. AX) was thoroughly discussed and it appears that some headway is now being made to establish suitable guidelines.

WICEN call signs in relation to acceptable abbreviations which could be concessionally approved under all likely situations were discussed.

Intruder Watching was an item which generated considerable discussion, particularly in connection with exclusive amateur bands and also with the "Woodpeckers". The latter is a special target this year tor reports by amateurs; see International News in this issue.

EXECUTIVE MEETING

Amongst a host of items received and discussed it was noted that the VK1 Division appear likely to find a keen amateur to undertake the work of Federal Contest Manager for the next three year period from May.

The question of reduced licence fees for pensioners has been raised again with the Minister. A most complimentary reply from the Department concerning the WIA's submissions relating to the proposed Radio Communication legislation has been received. The ARRL's request to the FCC for telephony extensions to certain USA HF bands for some licence classes was raised again but discerning amateurs will doubtless have noted, for example, the response by the RSGB as printed in Radio Communications January 1981 issue. Amateurs in Australia are free to operate their stations on any frequencies within the amateur bands (subject to gentlemen's agreements amongst amateurs themselves) without Government restrictions other than by specific licence conditions

WIANEWS

(novices, repeaters, etc.) and that a similar absence of restrictions applies to most other countries. There are many other aspects to this matter.

EXAMINATIONS — REMOTE AREAS

The relevant text of a letter from the Minister to a member is printed here, although this question has been publicised in AR before (e.g. AR October 1978). After stating the specal arrangements made for this country area examinee the Minister wrote —

"You will no doubt be pleased to learn that special examinations may now be conducted in capital cities and at district offices for any candidate who resides more than 80 km from the nearest office of my Department's Radio Frequency Management Division. Radio inspectors may also conduct special examinations in remote areas during routine visits. This will allow some candidates whom would otherwise encounter difficulty in attending the main centres, to contest examinations closer to home.

With the exception of very special circumstances, Novice Amateur Operators' Certificate of Proficiency (NAOCP) examinations are not held at country post offices. Although the Postal Commission has agreed to continue providing examination facilities for both the full and limited classes of amateur certificate, no such agreement has been reached in regard to the novice examination.

Consideration has been given to expanding the use of pre-recorded telegraphy tests as part of the AOCP examination. Unfortunately, Postmasters who do not have morse qualifications are reluctant to supervise such tests. Furthermore, as I am sure you will appreciate, the provision of suitable monitoring facilities may also present special difficulties, particularly in those instances involving several candidates.

You may be assured that my Department will continue to maintain flexibility in meeting the needs of examination candidates from remote areas."

"C" CALLS

Letter 51/1/55 of 13th February from the Department advises the proposed changes relating to the issue of "C" calls as foreshadowed in WIANEWS in last month's AR. After pointing out that only the Department has the authority to change any part of a call sign assigned by them, the letter states that when the holder of a "C" call sign moves interstate temporarily the normal procedure of mobile identification shall apply — i.e. "VK3CCC mobile 2 at Albury". It appears to follow therefore that if the holder of a "C" call sign transfers interstate the procedures in paragraphs 6.14 and 6.19 of the Handbook apply.

The letter concerned continues:—

"With regard to the Department's existing policy concerning 'C' calls, your query also raises the question of whether continuation of the existing 'C' calls concept is justified. The Department feels that the original need for such calls has been largely nullified by the recent granting of more liberal portable and mobile operating conditions.

Additionally, the Department is conscious of the fact that it cannot extend the 'C' call concept to other than full privilege amateur licensees and also seriously doubts whether the benefits of maintaining this system justify the Departmental effort and additional system complications involved . . .

Accordingly, it is proposed that the 'C' call series should be made available for general allocation. Existing 'C' call allocations would, of course, remain so as not to disadvantage any existing licensee."

THIRD PARTY CANADA

The text of letter RB4/4/6 of 13/2/81 from DOC is published hereunder for information.

"Further to previous correspondence on this topic, I wish to advise that following an exchange of letters, a special agreement, pursuant to Article 41 of the International Radio Regulations, now exists between this Administration and the Administration of Canada, concerning third party traffic between amaetur stations.

Consequently, it is now permissible for amateur stations of Canada and Australia, duly licensed in accordance with the legislation in force in these two countries, to exchange messages or other communications from or to third parties provided:

(a) the amateur stations exchanging such third party communications are not paid any direct or indirect compensation for them; and

(b) such communications are limited to conversations or messages of a technical or personal nature, for which by reason of their unimportance, recourse to the public telecommunication service is not justified . . .

I might add that an approach has also been made to the United States of America in relation to third party traffic. I will advise you when an agreement is completed."

SPECIAL CALL PREFIXES

And finally, of the letters, here is the text of DOC letter 4/8/1 of 25/2/81:—

"I would like to confirm verbal advice that the call sign suffixes from WIA to WIZ associated with the prefix VK have been reserved in all States for use by stations of the Wireless Institute of Australia."

HISTORICAL BOOKS

There is a possibility that the Institute might acquire for re-sale a few copies of the historical amateur radio books "Two Hundred Metres and Down" and "Fifty Years of ARRL". The former was printed by the ARRL in 1936 and the latter in 1965. The price would be $4.50 each plus postage on 300g each and orders will be processed strictly on a "first come first served" basis.

A Review of Antenna Noise Bridges Part 2

Bob Slutzkin VK3SK
8 Lynedoch Ave., Balaclava 3183

This part of the article was submitted as an appendix to the first part which appeared last month. It contains much interesting data and discussion on factors of interest to the serious user and constructor of rF noise bridges. The author has submitted an article describing a noise bridge which, as a result of the research associated with this article, gives a professional level of performance using amateur techniques. The concluding part of the article will appear next month.

1. THE RF PERFORMANCE OF POTENTIOMETERS

POTENTIOMETERS

With the help of K4CX, W6BXI and others, some impedance measurements were made on a number of composition potentiometers as used in noise bridges as the component, Rv. Laboratory rf bridges were used to measure Rp and Cp for different settings of the potentiometers, and the results are summarised in the Table of Fig. 5, and entered on to the graph paper to enable a curve to be fitted.

The tests showed that for each potentiometer there was a setting which would produce a non-reactive reading which remained non-reactive over the whole HF spectrum, and in each case this setting was very close to 130 ohms (irrespective of the size or make of the component). For settings above 130 ohms Cp readings would be unaffected by frequency; and for those from 130 down to about 25 ohms the inductive (—Cp) readings were also constant with frequency.

Supposing the strays in the potentiometer consist of a small amount of series inductance, L, and a small amount of shunt capacitance, C, with L and C both unaffected by changes in the potentiometer setting, R. Then the admittance of the component would be:

$$Y = (R - jwL)/(R^2 + w^2L^2) + jwC$$

and for values of R and f which would make wL very much smaller than R, w^2L^2 would be of second order of smallness, to allow the use of the approximation:

$$Y \approx 1/R + jw(C - L/R^2).$$

This is the expression for the admittance of the parallel combination of a resistance, R, and capacitance $(C - L/R^2)$. Giving C the value of 1.8 pF and L the value of 0.03 uH in the approximate equation, produces the curve which can be seen to very nearly fit the points plotted in Fig. 5.

The correlation between the measured data and the curve is sufficient to indicate that the above supposition is fairly close; so that we may assume that a composition potentiometer, when wired as shown in the sketch of Fig. 5 will behave as a variable pure resistance In series with an inductance of about 0.03 uH and shunted by a capacitance of about 1.8 pF.

TABULATION OF MEASURED VALUES OF Cp

Rp	16	25	30	50	60	100	130	150	200	230	250
Cp	—67	—30	—36	—11	—7.7	—1	0	.3	.8	1.2	2.7
range	—78	—34	—45	—12	—8.6	—1.5	0	1	1.5	1.3	2.8

By courtesy of K4CX and W6BXI

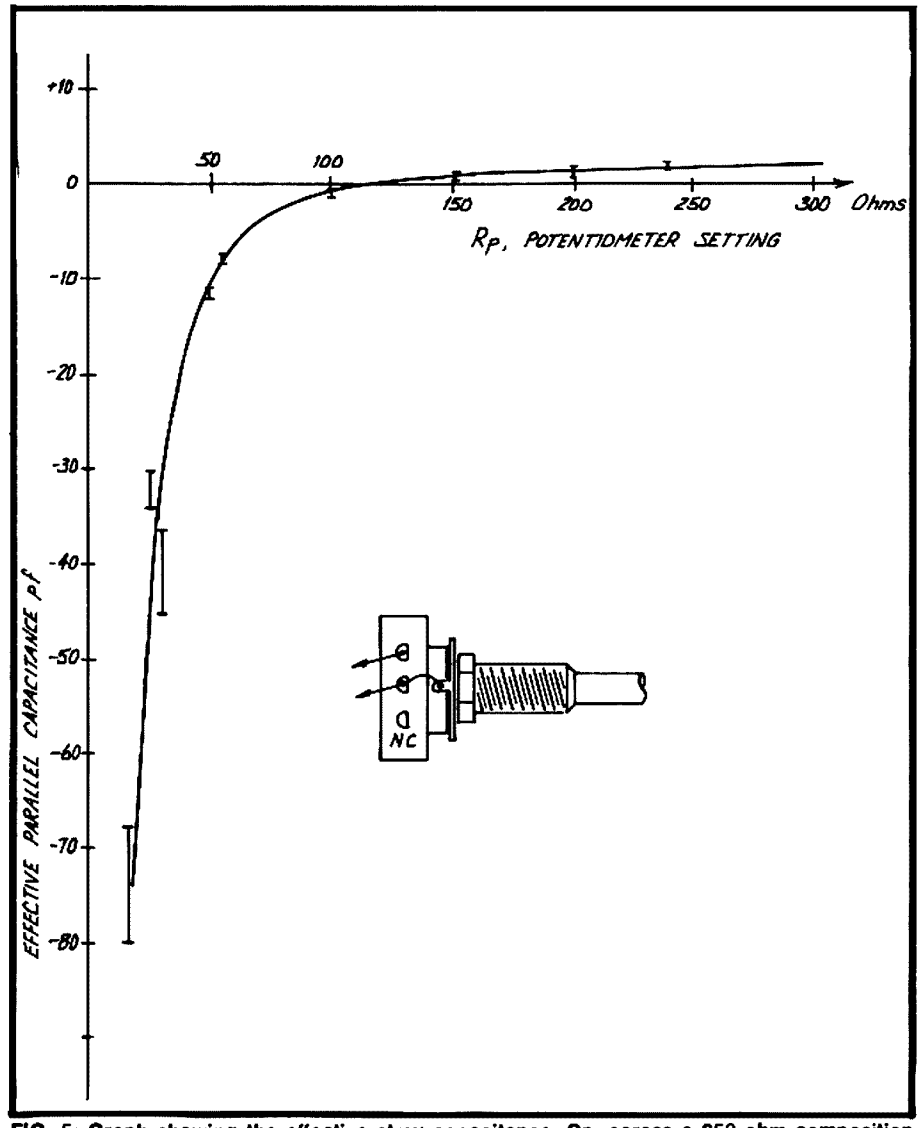


FIG. 5: Graph showing the effective stray capacitance, Cp, across a 250 ohm composition potentiometer, for different settings. The curve Cp = C — $10^6L/R^2$, with C = 1.8 pF and L = .03 uH, shows reasonable agreement with the measured values of Cp. The measured values are shown as vertical bars, centred on the value measured, and length equal to the uncertainty of the measurement.

2. THE PERFORMANCE OF CAPACITORS AT HF

All capacitors contain some stray series inductance; and this causes changes to occur in the apparent capacitance as the frequency is changed.

Let $w = 2\pi f$ (F in MHz),
Let $w = 2\pi f$ (f in MHz),
L the stray inductance in uH,
C the actual capacitance, and
Ca the apparent capacitance both in pF.

Then:

$$Ca = \frac{C}{1 - 10^{-6}w^2LC}$$

The graphs in Fig. 6 show how the apparent capacitance of various fixed capacitors varies with frequency. At the low end of the HF spectrum, it can be seen that moderate strays are no problem, whilst at the higher frequencies small strays can cause serious changes in apparent capacitance. The rise in apparent capacitance is steeper with larger capacitors, and series resonance will occur when $w^2LC = 10^6$.

An approximation for the equation above may be used for the shallow part of the curves. It Is $Ca \approx C + 10^{-6}w^2LC^2$ (when $10^{-6}w^2LC$ is much smaller than 1).

It is difficult to predict the value of stray inductance in a capacitor, and impossible to avoid it, so we must live with it. If we keep the value of capacitors down to the minimum needed, we can reduce the effects of the strays.

In the noise bridge, steps can be taken to balance out the stray inductance in one arm of the bridge by deliberately adding inductance to another arm — the process described as equalization.

3. ANALYSES OF THE R-X NOISE BRIDGES

(a) THE SERIES BRIDGE

This is an adaptation of the Wien Capacitance Bridge. The Capacitor, Ck, added to the Wien bridge circuit allows both capacitive and inductive reactances to be measured. Referring to Fig. 1d (see Part 1):

Neglecting the markings of the Cv dial for the moment, at balance,

$$Z3 = Z4$$

i.e. $R3 + jX3 = R4 + jX4$

$Ru + jXu - jXk = Rv - jXv$,

where Xv is the reactance of Cv etc.

Equating reals, then Imaginaries,

$Ru = Rv$

$Xu = Xk - Xv$

$= 10^6/(wCk) - 10^6/(wCv)$ (using pF and MHz)

In the Palomar bridge, the first term becomes 2270/f (in MHz) and in the MFJ 202, the first term becomes 1060f (in MHz).

The value of Xu may also be expressed as:

$$Xu = 10^6(Cv - Ck)/(wCvCk)$$

Note: The dial markings for Cv are in pF either side of a central zero, where Cv = Ck. For lower values of Cv the graduations correspond to Ck — Cv, and that quadrant is labelled "Xc". For higher values of Cv the graduations correspond to Cv — Ck, and that quadrant Is labelled "XL". For mathematical convenience, I shall call the dial reading at any setting, "Cd", so that Cd = Ck — Cv, and in the XL quadrant, the dial readings will be considered as negative.

Now, the above equation can be expressed in terms of Cd, and for the Palomar, Xu = 2270 Cd/(f(70 — Cd)), and for the MFJ Xu = 1060 Cd/(f(150 — Cd)).

Graphs based on these equations, and with f = 1 are compared in Fig. 7. The appropriate graph may be used for quick conversion Into Xu by dividing the quantity obtained from the graph by the frequency of measurement.

The analysis above assumed the bridge components to be perfect, and did not allow for strays. There will be stray series inductance in the components and in their leads, and stray shunt capacitance within the components and to ground. All strays can be compensated for, in one shot, by placing a small amount of inductance in series with one arm of the bridge, adjusted so that the bridge will balance against a 50 ohm dummy load at both 3.5 MHz and 30 MHz without any change in the Cv setting. In theory, changes in Rv after that would upset the compensation, but in practice the effect should be very small over the HF bands and over an R range of 25 to 150 ohms.

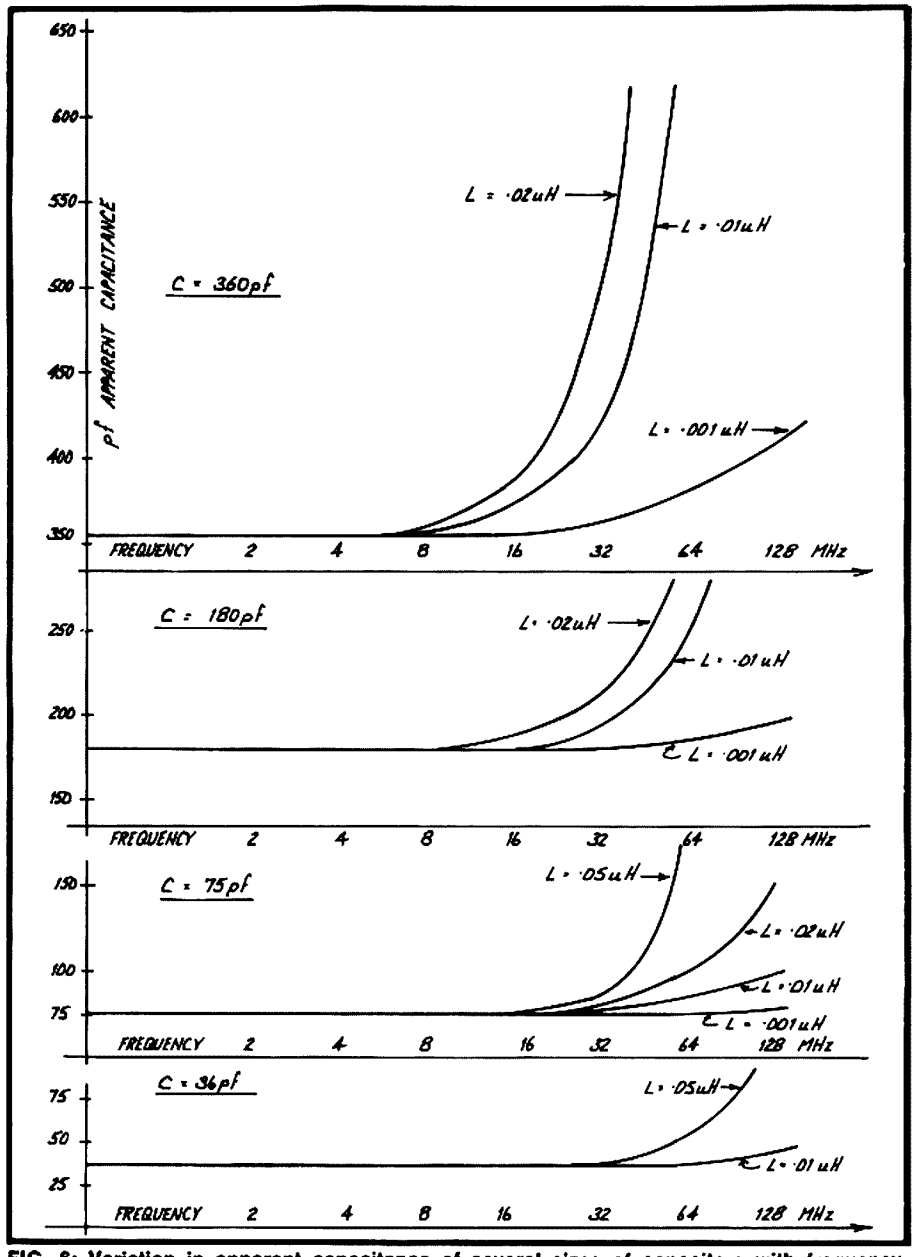


FIG. 6: Variation in apparent capacitance of several sizes of capacitors with frequency, due to stray inductance L (calculated from: $Ca = C/(1-10^6W^2LC)$.

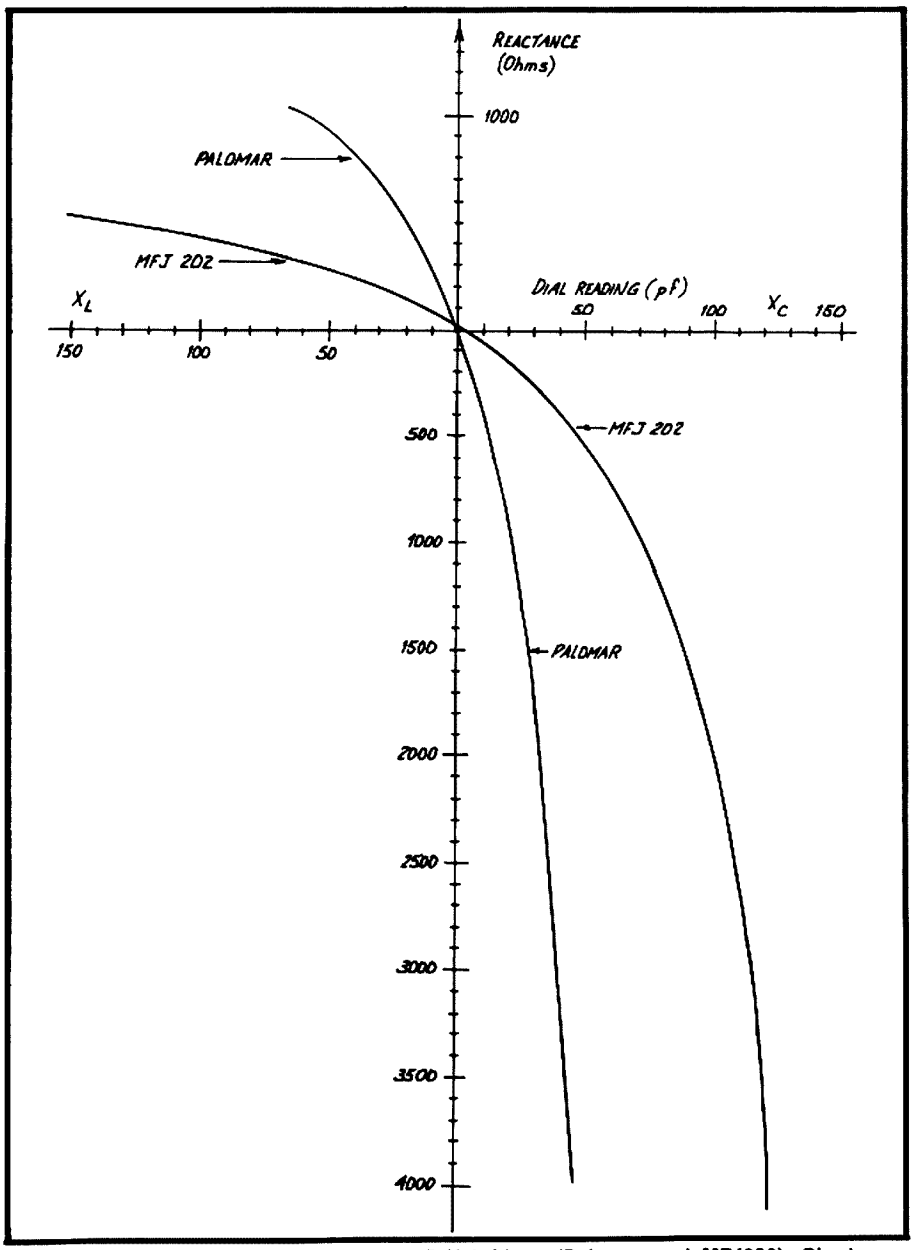


FIG. 7: Conversion chart for series type R-X bridges (Palomar and MFJ202). Chart converts dial reading on bridge into ohms reactance for 1 MHz. This value to be divided by frequency of measurement in MHz.

NOTE: These graphs differ from those in the instruction sheets of the Palomar and MFJ bridges: (a) the scales have been changed; (b) the graphs have been inverted to conform with convention (that capacitive reactance is negative) and to agree with the mathematics used in this appendix.

The sensitivity of the X dial is the big problem in this bridge. At the low frequencies, a very small movement of the dial is needed to cover a significant change in reactance indication. For example, in the Palomar bridge when measuring exactly 50 ohms, rotation of the Cv dial by 1 degree causes only .078 pF change, but at 3.5 MHz this is sufficient to indicate 7.2 ohms capacitive reactance. Less than 5 degrees angular rotation is sufficient to cover the full range of capacitive reactance for a 2 : 1 SWR. These angles may be doubled approximately for the MFJ bridge; but in either bridge this order of sensitivity is too high for reliable and accurate readings to be obtained near resonance at the low frequencies, and the situation becomes worse as capacitive reactance measurements are made. Parallax errors in the order of 1 or 2 pF might be difficult to avoid on these bridges, and it has just been demonstrated that even this magnitude of error is series. Another way that this effect is felt is that an unsuspecting operator may be pleased that his 80 metre antenna balances beautifully with the dials set to near 50 ohms and *near to* $X = 0$. With parallax error and all, his antenna system may be well off resonance, and the SWR close to 2 : 1.

It is a pity that a notation has been adopted for the series R-X noise bridges which is fundamentally incorrect, and that two commercial manufacturers of noise bridges are perpetuating the error. The X dial has a central zero to indicate resonance, with XL and Xc quadrant marked on either side. So far this is quite correct. The error occurs in the designation of pFs either side of zero. Mathematically, Cv is in series with —Ck, and this cannot be represented correctly by Cv — Ck. If the dial is to be graduated in pFs, it should be either graduated in terms of Cv (and the equations and graphs modified to suit) or in effective series capacitance, Cs, which would be equal to CvCk/(Cv — Ck). Either would be fundamentally correct, but the second alternative is rather inconvenient, because at resonance Cs = ∞, and close to resonance the values are very high, which makes calibration difficult. The scale could be graduated in terms of 1/Cs to overcome this problem, but to go one step further and graduate in ohms reactance for 1 MHz would be a better solution (perhaps a second scale showing actual values of Cv could be included to allow the use of the MFJ type range extender).

(b) THE PARALLEL R-X BRIDGE

The Cv dial markings of this bridge are similar to those of the series type, with a central zero, when Cv = Ck, but with the higher values of Cv marked +pFs, and the lower values marked —pFs. If we call the dial reading Cd, then the equation:

$$Cd = Cv - Ck$$

satisfies normal conventions.

The mathematical analysis is tidiest in terms of admittance. In Fig. 1e, (see Part 1), the requirement for balance is:

Z3 = Z4 (in terms of impedance)

i.e. Y3 = Y4 (in terms of admittance)
and Y3 comprises Yu and Ck in parallel and Y4 comprises Gv and Cv in parallel (Gv being 1/Rv),

therefore

$$Yu + jBk = Gv + jBv$$

(Bk, Bv and Bd being the susceptance of Ck, Cv and Cd)

so that

$$Yu = Gv + j(Bv - Bk)$$
$$= Gv + jBd$$

(the admittance of Rv and Cd in parallel).

Using MHz, mS and pF, we have

$$Yu = 1000/Rv + j\pi fC/500.$$

Of course, the Rp and Cp readings may be used to first calculate Xp and then find the impedance in terms of R + jX using the equations set out later in this section; or the admittance may be determined first, and then converted to impedance if needed.

The above analysis assumed that there were no strays in the bridge circuit. In practice, there will be stray inductance in the components and leads, and stray capacitance across the components. The stray capacitance is of no consequence, because it causes a constant error which is nullified when the bridge is calibrated. Equalization looks after the stray inductance, and the method described by W6BXI and W6NKU in February 1977 Ham Radio is excellent.

The notation Rp and ± Cp is not unacceptable mathematically (although conductance (G) and Cp would be tidier). The sensitivity of the C control is no problem in the parallel type bridge; i.e. small changes in Cp cause only small changes in reactance values, and we find that at 30 MHz (where the parallel type bridge is most sensitive) a measurement error as great as 10 pF will produce a reactance error so small that the resulting SWR error will be 10 per cent or less.

4. NOTES ON RESIDUAL NOISE

The following notes explain how receiver intermodulation and spurious response can produce residual noise to interfere with noise bridge measurements.

When two or more signals of different frequency pass through a non-linear device, the signals modulate each other to produce "Intermodulation Products" which contain all the possible combinations of the sums and differences of the fundamentals and the harmonics of the signals. The intermodulation products of an SSB transmission's component frequencies can cover a wide spread of frequencies either side of the original sideband, and superimposed on it. We are all familiar with the result; distortion on the signal and splatter on either side. This intermodulation can occur, and so often does occur, in the transmitter as a result of it being either wrongly adjusted or driven too hard, or both. But often the intermodulation occurs *in the receiver*, because *it* is being driven too hard by a strong signal from a neighbouring ham, although most of us are inclined to blame the other fellow. Some receivers are better than others, and a lot of receivers would be over-driven by a signal of S9 + 30. If we are tuned to a weak signal, and our neighbour opens up with a clean 9 + 30 signal just to one side, we could receive his splatter due to our receiver entirely. Supposing the whole band in which we are operating is full of such signals, all S9 + 30 and all interfering with each other, except for the one little slot where we are listening. The total splatter signal in that slot would be very much stronger than from just one signal. Now if we were to replace all these strong signals with a wide-band noise of level S9 + 30 over the entire band, except for that one slot to which the receiver is tuned, we have the situation that exists when a noise bridge is balanced for the measurement of a resonant device, such as an antenna. (The noise spectrum fed to the receiver is shown in Fig. 3b.) The result of all the intermodulation products of all the component frequencies of the noise would appear as residual noise over the entire band, but noticeable *only in the slot*. This is not something new, found only in noise bridges. One of the performance tests on multi-channel telecommunication systems is to feed a broad-band noise signal, first through a slot filter, and then through the system, and to measure the intermodulation noise at the slot frequency at the other end.

Spurious response of a receiver means the response of the receiver to images, mixer products, IF filter spurii (or "pop-ups") and even IF feed-through. The ARRL Handbook (p. 245 of the 1977 edition) gives a chart of all the mixer products of a superheterodyne that can produce spurious responses (and at more frequencies than most of us would realise). The specification of many an amateur band receiver contains claims spurious rejection of better than 50 dB (and we will see claims of better than 70 dB in some specifications). Experts tell me that many receivers are sold which do not come near this standard, and that quite a number of published specifications are misleading in this area. But what is the effect that spurious response has on a noise bridge measurement? Referring again to Fig. 3b (Part 1), assume the receiver is tuned to the slot in which there is no signal at all, but that the receiver is responding to the noise from the bridge at any number of spurious frequencies (of course reduced by the amount that the receiver can in practice reject spurii). These will add up and appear in the output of the receiver, but will be *indistinguishable from a noise which might have been directly received on the frequency to which the receiver is tuned.* There is one further complication. The noise output from any broad-band source tends to drop off towards the band edges. For example, one noise source that I built up had an output on ten metres which was 20 dB down on the level on all the other HF amateur bands. This type of thing will exaggerate the receiver's response to lower frequency spurii during noise measurements on ten metres.

The receiver's intermodulation and spurious performance can thus combine to produce residual noise to mar the accuracy of balance in noise bridge measurements.

"Leakage around the bridge" perhaps needs a little explanation. Some noise bridges are not shielded at all (for example the TE7-01) and some receivers are poorly shielded. It is possible for noise from the noise source to find its way into the receiver without passing through the bridge, either due to poor shielding or via earth loops inside the instrument. The difficulty is that it requires only a small amount of leakage to interfere with a sharp deep null. We should expect good communications receivers to be sufficiently well shielded for use even with a TE7-01 with its massive noise output and no shielding, just as we would expect the basic receiver noise to be no problem. But these are matters which must not be forgotten if we ever commandeer a portable all-waver for noise bridge measurements outside the range of our amateur-band-only receiver.

5. IMPEDANCE MATHEMATICS

The expression, $Z = R + jX$ is the common form of stating impedance, namely as a *series* combination of resistance and reactance. For the time being, I shall add the suffix s, making the expression $Z = Rs + jXs$ to designate that it *is* a series combination. Another arrangement would be possible, a *parallel* combination o fRp and Xp, which would have identical impedance to Rs + jXs; but the values of Rp and Ss would differ, as would the values of Xp and Xs. The impedance of the parallel combination would not be $Z = Rp + jXp$ but would be in a more complicated form. The equivalent Rs and Xs values of a parallel Rp, Xp combination can be calculated from the equations:

$$Rs = RpXp^2/Rp^2 + Xp^2$$

and

$$Xs = XpRp^2/Rp^2 + Xp^2$$

To find the parallel equivalents of a series combination:

$$Rp = Rs + Xs^2/Rs$$

and

$$Xp = Xs + Rs^2/Xs$$

There are a few simplifications possible: Xs/Rs is the Q of a circuit, and this equals Rp/Xp. If we are looking at either parallel combinations or series combinations, the quantity X/R + R/X will equal (Q + 1/Q), which I shall call Q'. Then:

$$Rs = Xp/Q' \text{ and } Xs = Rp/Q'.$$

Also:

$$Rp = XsQ' \text{ and } Xp = RsQ'.$$

These are equations that are easily memorised.

There are simpler approximations which can be used under certain circumstances. If Q is 10 or greater, $Q' \approx Q$ to within 1 per cent; and if Q is 0.1 or less $Q' \approx 1/Q$ to within 1 per cent. I shall leave it to the reader to develop approximations for the above equations in the case of high Q or low Q circuits.

6. ADMITTANCE — AN ALTERNATIVE NOTATION FOR PARALLEL CIRCUITS

Although Rp and Xp cannot be expressed as Rp + jXp, their *reciprocals* may be expressed in that form.

The reciprocal of resistance is *conductance* the symbol for which is G; and $G = 1/Rp$.

The reciprocal of reactance is *susceptance* the symbol for which is B; and $B = -1/Xp$ (note the negative sign).

The algebraic sum of these two is known as *admittance*, the symbol for which is Y; and we have the general expression:

$$Y = G + jB.$$

The basic unit for Y, G and B is siemens — denoted S (which is capital S to differentiate it from small s for seconds). The unit mhos (ohms spelt backwards), now obsolete, might still be found in some texts. Millisiemens (mS) is the practical unit used in antenna work, and the conductance of 50 ohms of resistance is 20 mS.

Using ohms and mS:

$G = 1000/Rp$ and $B = 1000/Xp$.

The susceptance for an inductance L uH is $B = -1000/2\pi fL$ mS (with f in MHz) and of a capacitance C pF is

$B = 2\pi fC/1000$ mS (f in MHz).

The similarity between these and the reactance equations is obvious, but the inversions and change in signs should also be noted.

There are many occasions when it is simpler to calculate the parameters of a parallel circuit in terms of admittance; and one important case is that of the parallel type noise bridge.

The impedance of a circuit of known admittance, or the admittance of a circuit of known impedance can be calculated from the following equations:

(a) in basic units (ohms and siemens)

$$Y = G + jB = R/(R^2 + X^2) - jX/(R^2 + X^2)$$

and

$$Z = R + jX = G/(G^2 + B^2) - jB/(G^2 + B^2)$$

(b) in practical units (ohms and mS)

$$Y = 1000R/(R^2 + X^2) - j\,1000X/(R^2 + X^2)$$
$$Z = 1000G/(G^2 + B^2) - j\,1000B/(G^2 + B^2)$$

Some useful reminders:

A short circuit has zero impedance but infinite admittance.

An open circuit has infinite impedance but zero admittance.

The result of several admittances in parallel is the sum of their conductance plus j times the algebraic sum of their susceptances. Impedances in series may be added in the same way; but admittances in series or impedances in parallel are calculated by the "reciprocal of the sum of reciprocals" rule.

50 ohms is the equivalent of 20 mS.

7. PARALLEL CAPACITANCE

In some RF bridges, as in the parallel R-X noise bridge, the dials are marked in Rp in parallel with Cp; but Sp can have positive or negative values. Positive pF readings would be understood by all of us, and we could easily calculate the value of capacitive reactance Xp in parallel with Rp, and then convert into series equivalents to obtain the impedance in terms of R + jX.

What about a negative pF reading? It must be obvious to most that this would have to indicate inductive reactance; but what may not be so obvious is that the —pF value obtained from a bridge measurement is the capacitance which would be needed to make the circuit being measured resonant. It is sometimes called "the resonating capacitance". We know that in a resonant circuit the capacitive reactance is equal and opposite to the inductive reactance, so that the two cancel out. The capacitive reactance is calculated from the formula $X = -1/2\pi fC$. If we have a resonating capacitance with a negative sign, we could use the same equation, and finish up with a positive reactance, which is effectively an inductive reactance calculated from the equation for capacitance. This is precisely what we do; so when we have a reading of **Rp** and ±Cp we may calculate Xp using the capacitance equation, and then calculate the impedance, allowing the sign of the reactance to indicate whether it is capacitive or inductive.

There are many occasions when we need not do all this. We can sometimes obtain sufficient information from a Rp and Cp reading, e.g. a 50 ohm line to the transmitter measures at 14 MHz 68 ohms Rp and +160 pF Cp. If the loading capacitor of the final pi coupler can accommodate it, we can detune it down by the 160 pF, and the final will be looking at a pure 68 ohms, without blushing.

If we were to look at this example from the admittance point of view we have:

$G = 1000/68 = 14.7$ mS, and
$B = (2\pi 14 \times 160)/1000 = 14.1$ mS
so $Y = 14.7 + j14.1$ mS.

Normalised admittance for the Smith Chart (for 20 mS, i.e. 50 ohm line) is:

$Y = 0.735 + j0.7$

which when plotted on the Smith Chart indicates an SWR of 2.4 : 1 and an impedance of 36 — j34 ohms (see Fig. 8).

We may have calculated this using Rp and Xp:

Rp = 68 ohms and
$Xp = -10^6/2 \times \pi \times 14 \times 160$
$= -71$ ohms
$Q' = -68/71 - 71/68 = -2$
$Rs = Xp/Q' = +71/2 = 36$ ohms
$Xs = Rp/Q' = -68/2 = -34$ ohms
$Z = 36 - j34$ ohms . . . confirming

Smith Chart calculations. However we calculate it, an SWR of 2.4 : 1 would be considered high by most amateur operators, yet when looking at it from the point of view of Rp and Cp, we can see that this impedance would load the final beautifully if the output capacitor of the pi coupler can be detuned by the required amount. The losses in the coax cable at this frequency due to an SWR of 2.4 : 1 in most installations would be negligible.

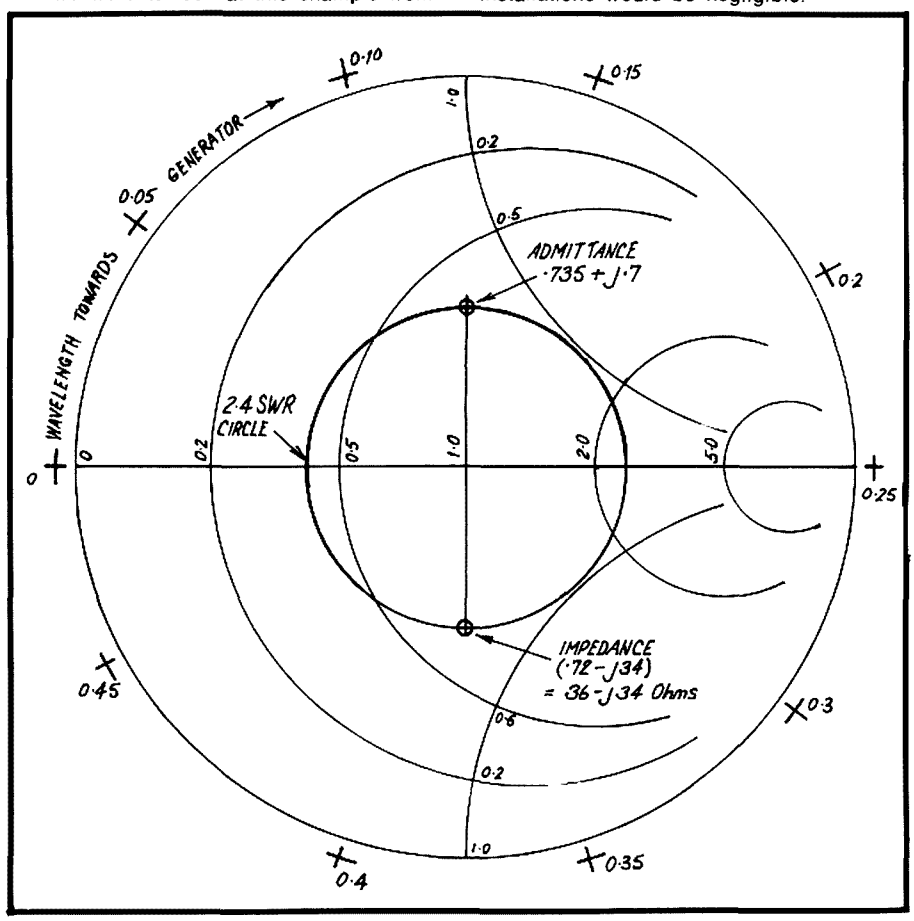


FIG. 8: Plot of Rp = 68 ohms parallel with Cp = 160 ohms at 14 MHz in a 50 ohm co-ax system. Admittance plotted first, then SWR circle drawn, and then impedance found diametrically opposite on circle.

This example has shown:

1. The advantage of working in Rp and Cp.
2. The advantage of working in admittance for parallel circuits.
3. That the SWR does not give the full story.

8. RANGE EXTENDER AND DUMMY LOADS

For the convenience of readers, the drawing from page 522 of the 1977 ARRL Handbook showing how to make a dummy load in a PL259 plug is reproduced in Fig. 9. To keep stray inductance to a minimum the pin of the plug should be filled with solder and not just soldered at the tip. Also the shank should be shortened to keep the pigtail at the back as short as possible. Applying heat so close to the body of the resistor might alter its value slightly. Because of this possibility, it is perhaps a waste of time selecting accurate values for these devices. If they can be measured accurately after completion that will be better; and it is of little consequence if the ohmic value finishes up some odd figure, so long as it is known. Depending on the accuracy needed, it is a good idea to check the values again a year or so later, as the values can drift with time, particularly after being overheated.

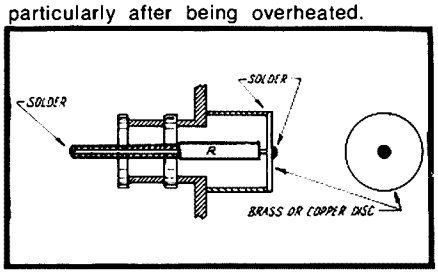


FIG. 9: Dummy antenna made by mounting a composition resistor in a PL-259 coaxial plug. Only the inner portion of the plug is shown, the cap screws on after the assembly is completed.

EDITOR'S NOTE:

Although the author has indicated that the series type bridge has shortcomings, experience has shown that in practice the series type bridge is a more accurate instrument and that the deficiencies can be overcome.

In a parallel bridge of a type easily constructed by an amateur there is a stray inductance of 0.3 uH associated with the potentiometer. This cannot be completely compensated for and represents an inductive reactance of 56.5 ohms which is not acceptable.

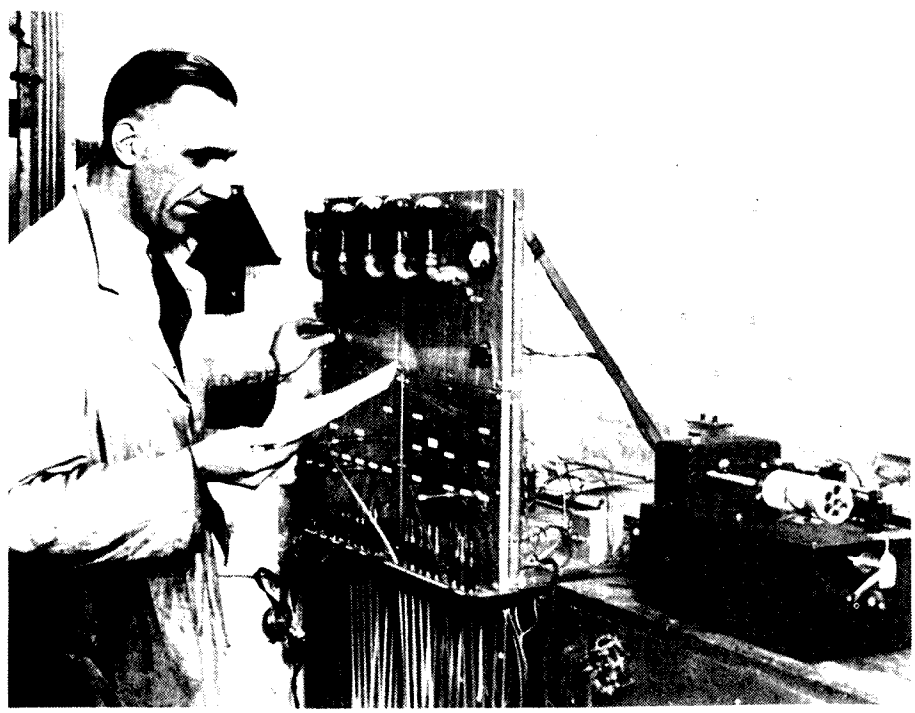
In a series bridge of a type easily constructed by an amateur there is some stray capacitance which may be less than 5 pF, which represents a reactive of 1061 ohms, which is not critical for most measurements. The residual inductance can be compensated for. Hence in a following article the author describes a series type bridge which is designed so as to minimise the problems of strays, etc., and which operates into the low end of the VHF spectrum with good accuracy. ■

Vale Gil Miles VK2KI (Vale History?)

CHRIS LONG
6 Torring Road
East Hawthorn 3123

Pioneer Australian Aviator and Radio Engineer

Born:
ARMADALE, MELBOURNE, 1904
Died:
SYDNEY, JANUARY, 1981



Gil Miles in 1929, at the South Melbourne Television and Radio Laboratories Pty. Ltd., feeding facsimile and TV video signals to 3UZ and 3DB. "Fultograph" machine at right used potassium Iodide coated paper to build up the picture and was used in the first Australian TV broadcast on 10th January 1929.

Photo from Science Museum, Vic.

Gil joined the Royal Australian Air Force as an aero engine fitter in 1922. Like many engineers of his generation, he had an early interest in the new technology of radio, having joined the Wireless Institute of Australia in 1919. By 1922 Gil acquired his amateur radio licence, initially going to air under the call sign 3II, later A3II, and later still VK3II. Spark equipment, almost standard at the time, became the basis of his station, but he soon progressed to using the new de Forest valves, and began to experiment in the relatively untouched field of HF communication.

In the early 20s, several Australian "hams" succeeded in using the new high frequency radio equipment to receive signals over unprecedented distances with low power, making commercial radio concerns take notice of this major achievement.

Gil had been receiving the signals of the Macmillan polar expedition on relatively simple valve receiving equipment for some time, when he eventually drew the attention of his military superiors at Point Cook to the possible advantages of HF radio. Having proved the validity of his

proposals with a practical demonstration, he was seconded from the Number One Squadron Aeronautical Section into the Radio Section, to design and build the Australian Air Force's first shortwave radio transmitter in 1924. This was given the call sign of V1S (Victorian Number 1 Squadron), and allocated a wavelength of 32 metres, a very high frequency for that time, with the intention of establishing direct communication with the Air Ministry in London. After this flurry of activity, Gil returned to aero engineering for some time, retaining radio as a constant hobby interest.

Gil's radio experience again became useful in 1925 when the Air Force was given the job of surveying Australia for the coming air routes to be used in the burgeoning field of civil aviation. He accompanied several survey flights from Point Cook to Tasmania by seaplane; and from Point Cook to Fort Forrest near Fremantle in Western Australia. On these flights, apart from providing aero engineering skills, he supervised the operation of airborne radio equipment, receiving from the various coastal radio stations around 600 metres, and transmitting position back to base regularly. On the Tasmanian flight, the two seaplanes which surveyed the route were able to keep in contact with the outside world constantly through the Point Cook station, or the ship stations VIM, Melbourne, and VIL, Flinders Island.

Civil aviation was an up-and-coming industry in 1927, when Gil left the Air Force to join Qantas Airlines in Longreach, Queensland, again as an aero engine fitter. But the real interest which Gil wanted to pursue was radio research, and Gil wasn't happy with the way the airline, at that time, was losing money. He jokingly said in later years that he couldn't see Qantas ever "making it" financially.

At this time Gil's father knew the radio engineer Donald Macdonald, who was responsible for the supervision of the construction of broadcasting stations 3AR, 5CL and 7ZL. Macdonald was a man of remarkable enterprise and inventiveness, whose professional radio experience extended back almost to the dawn of radio communications.

In September 1927, Macdonald formed his own company, *Television and Radio Laboratories Pty. Ltd.*, in Melbourne. Putting the embryonic invention of "visual wireless" before the Australian public, he was concerned to find an engineer with the necessary mechanical and electronic talents who could construct a working television system along the lines of the contemporary experiments of C. F. Jenkins in America, and John Logie Baird in England. Macdonald had met the American television pioneer, Jenkins, while on an American tour in 1926, and returned to Australia with plans, circuit diagrams, and key components such as photocells and neon lamps, which helped the little concern to be the first in the television field in Australia.

In Gil Miles, Macdonald found the perfect combination of mechanical and electrical experience for the job. Joining the company in April 1928, Gil immediately got stuck into constructing a mechanical-optical motion picture film scanner employing nipkow scanning discs, and built several mechanical television receivers for demonstration purposes. Following the lead of the world's first regular public television station run by GE in America — WGY of Schenectady, NY, which transmitted its first TV programme on May 10, 1928 — the Australian experimenters used the same standard of 24 lines per picture, 15 pictures per second.

By the end of 1928 Gil was able to transmit simple cartoon films, grey scales and geometric designs with the system, and on January 10, 1929, using the same system, he transmitted Australia's first test of broadcast television through station 3UZ, Melbourne, outside regular broadcasting hours. The video signal, comprising a bandwidth of no more than a few kilohertz for these simple transmissions, was carried from the TRL laboratory in Albert Road, South Melbourne, to 3UZ in Bourke Street by equalised PMG telephone lines, and transmitted by 3UZ on their usual broadcast-band wavelength.

Television's use, at this time, for anything more than an experimental service was fairly questionable. So by June 1929 *Television and Radio Laboratories* began to phase out their television transmissions in favour of a facsimile picture service of a more utilitarian nature. Experimental transmissions of still pictures using a process similar to the "Fultographic" service provided by the BBC in the late 20s were made by the company from 1929 to 1931, through stations 3UZ, 3DB and 2UE at the end of the stations' evening programmes. In the design and operation of this facsimile equipment, Gil played a major part. The intention was to institute a public broadcast service of facsimile of news photographs, written and typescript messages for public dissemination, and for dissemination to country newspapers. An earlier attempt to tender for the supply of facsimile gear used by the PMG in their Sydney-Melbourne phone service had been unsuccessful. Siemens and Halske won this tender for the PMG service which commenced in September 1929.

Tony Sanderson VK3AM on narrow band TV system. This was one of Gil Miles' last projects, in association with the author.

Permission to commence the *public* facsimile service was given In July 1930 by the PMG so that Television and Radio Laboratories could be re-floated as a public company under the name of *Radiovision (Australasia) Ltd.* on September 2, 1930. And so the first public service of broadcast pictures in Australia commenced from 3DB, Melbourne, on September 15th, 1930, with 3UZ commencing public broadcasts of facsimile pictures on the following day. The technical arrangements were under the control of Gil Miles, Macdonald, and Ross Pitkethly of the Radiovision company.

It seemed that the company was finally on a firm financial basis for further business, so that a move was made to larger factory premises at 378 St. Kilda Road for the manufacture of still picture receiving apparatus, with Miles and Macdonald in charge. But they hadn't calculated on the commencement of this century's worst financial depression, and a consequent lack of public response to the transmissions in spite of technical excellence.

Towards the end of 1921, Radiovision Ltd. was forced into the manufacture of radio receivers as a survival measure and, discouraged by the nature of this routine and repetitive work, Gil sought greener fields for his creativity.

Through the 1930s Gil built the original transmitters of several broadcast stations, including that of 3AW, Melbourne, built under contract by Gil while he was working for O. J. Nilsen's, operators of 3UZ, in 1932. In the mid-1930s he built the original transmitter of Hobart station 7HT in Melbourne, and after supervising the installation of the transmitter he was appointed the chief engineer of 7HT until 1940. Prior to leaving Melbourne, Gil had done some of the first local phone transmissions on the five metre band, in association with Ivor Morgan VK3DH, H. K. Love VK3HK, George Thompson VK3TH, and many others. In fact, it was H. K. Love, a past president of the Vic. Division, who took over from Gil at *Radiovision Ltd.* in 1932 — an operation which eventually lead to the establishment of Kingsley Radio, makers of the famous AR7 receivers.

During the war, Gil moved to Sydney to take charge of the transmitter test room at AWA's Ashfield works, and every transmitter from 500 milliwatts to 2 kilowatts that AWA manufactured for the armed services went through Gil's hands.

On the cessation of hostilities Gil joined CSIRO's Sydney Radio Physics Laboratory, doing the work he'd always wanted to do in fundamental and applied radio research. This was a particularly happy time for him. Working in diverse fields such as upper atmosphere research and radioastronomy, he found an absorbing interest at almost every turn. In the course of these experiments he found a use for his early experience in television, building a tiny mechanical television scanner out of a modified alarm clock mechanism to detect condensing nuclei in airborne cloud chambers, carried aloft into the atmosphere by unmanned weather balloons. This allowed him to do quantitative research into the effects of gamma and cosmic rays in the upper atmosphere.

By 1957, working under the new call sign of VK2KI, he designed circuits and wrote articles on the design of television gear using readily available disposals components. These articles in *"Radio, Television and Hobbies* (now *Electronics Australia)* gave many amateurs their first view of the early Australian television programmes. In times when television tubes were rare, and surplus radar tubes from the war were still common, information on the adaptation of electrostatic CRTs to the television service was eagerly sought after. These circuits, much later, became the basis of several important pieces of equipment used in the development of narrow band television systems constructed by D. B. Pitt and Alan Short in England, and by Dan Van Elkan VK3UI and myself in Australia.

Retiring in 1965, Gil reconstructed his original 1929 film scanner/monitor and early RAAF radio gear as exhibits for the Science Museum, Melbourne. He also continued research into slow scan television, being one of the first Australian radio amateurs to receive that mode of transmission.

Following the publication of an article on Miles' early TV experiments in December 1969's *Electronics Australia*, I was enthused to try some of the simple techniques employed by Miles to achieve TV. I'd been experimenting with modulated light communication systems for several years prior to this, and realised that this equipment could be made to transmit television with the addition of a suitable mechanical scanner. Starting with an 8-line scanner, I proceeded to 16 and 30 lines. At this stage I wrote to Mr. Miles for the first time.

His enthusiasm and encouragement was infectious. "I delayed the answer to your letter," he wrote, as I had intended visiting Melbourne before Christmas 1971 . . ."

Thus commenced a decade of correspondence, friendship and occasional collaboration, cut short only by his death. By the time he visited me early in 1972 while I was still 17, a 48-line scanner had been built, and Dan Van Elkan VK3UI and myself had put the first signals in the current resurgence of narrow band television interest to air. Concurrently, Gil was constructing his museum exhibit of 24-line TV for the Melbourne Science Museum.

His encouragement pushed us further ahead, and his practical experience was always invaluable. Development of systems for narrow band (moving picture) television on HF radio shifted from the reconstruction of mechanical systems to the development of newer and more efficient electronic systems for achieving the same ends.

By 1975 correspondence with British narrow band television experimenters had been progressing for about three years, and Gil became interested in our experiments in a practical way. In 1978 and 1979 Gil visited the British group and was elected president of the Narrow Band Television Association, based in Nottingham, UK. He also had the opportunity of meeting many of the British television pioneers, such as Douglas C. Birkinshaw, the BBC's first television engineer and a noted technical author. In the course of these visits he located a taped copy of a video recording made on a 78 r.p.m. gramophone record by John Logie Baird in the 1930s. On his return to Australia he built equipment to display this early 30-line video recording, which must rate as one of the earliest surviving video recordings.

The author, reproduced by narrow band TV system, a joint project with Gil Miles.

From 1976 to 1980 Gil carried on as the only Australian contact for the Narrow Band Television Association. Around 1978-1980 I visited Sydney in the course of research jobs, and always made a point of visiting Gil. His inventiveness and quick mind remained with him right to the end, and he latterly devised many new and novel means of synchronised systems for narrow band television, based on logic circuitry.

On September 20th, 1980, we saw the culmination of our efforts in the first long distance HF transmission of NBTV, using a bandwidth no greater than that of a standard AM transmission (N kHz). Tony Sanderson VK3AML transmitted images of moving subjects from Melbourne on 1840 kHz, while Gil Miles VK2KI, in Sydney, and John Ingham VK5KG and myself, in Adelaide, simultaneously watched readable moving pictures come through over 450 miles for the first time.

These pictures were relayed on fast scan TV over the Adelaide ATV repeater, VK5RTV, via a CRT screen and vidicon camera patch. About 15 ATV enthusiasts in Adelaide witnessed the event via the repeater, and a videotape of the event was made by John 5KG, which is now held by the WIA. The pictures were rather noisy, but titles and movement were clearly legible, although conditions and equipment were far from optimum.

On my last visit to Gil, just before Christmas 1980, his construction work was still progressing and he showed me a tape that he'd recorded from the VK3AML NBTV transmission with great enthusiasm. During that visit I recorded an interview with him, talking over his early career and achievements in electronic and aviation engineering. He showed no sign of ill-health, and his death at the end of January 1981, after a very brief illness, came as a shock to everyone, particularly those of us in Australia who knew him well.

Though some 50 years separated us in age, Gil always was like a "favourite uncle" and his friendship will remain a cherished memory and a valued inspiration to all of us who knew him.

Chris Long would like to hear from anyone with information on the early TV experiments in Australia. ■

VHF-UHF Band Plans

John Martin VK3ZJC
for the VHF-UHF Advisory Committee

The following is a summary of the official WIA Band Plans for the VHF and UHF bands, followed by a proposal for the microwave bands.

TUNABLE SEGMENT

For each band, a segment 1 MHz wide is set aside for tunable operation. For the sake of convenience and consistency, this segment is the same on each band.

The plan for the tunable segment is shown in Figs. 1 and 2. The entire 1 MHz segment is shown in Fig.1, while the first 100 kHz are detailed in Fig. 2. The frequency shown as "fo" is the lower limit of the band in question (i.e. 52.0, 144.0, 432.0 or 576.0 MHz).

In order to ensure the most effective use of these tunable segments, all amateurs are asked to observe them as a "gentlemen's agreement". Interference can be greatly reduced if the following restraints are observed:

1. EME and beacon segments should be left clear of all other operation.
2. The DX segment should be left clear of any local operation.
3. Calling frequencies should be used only for calling and establishing contact, and cleared once contact has been made.
4. Net operation, or the use of wide band modes (i.e. modes other than those listed in Note 2) should be done outside the tunable segment.

BAND-BY-BAND SUMMARY

6 METRES

52.0–53.0 Tunable segment (Fig. 1). NOTE: Because of FM nets immediately above 52.5 MHz, the secondary beacon segment is 52.3-52.4, rather than 52.5-52.6 MHz.

53.0–54.0 FM repeaters and simplex nets.

2 METRES

144.0–145.0 Tunable segment (Fig. 1).

145.0–145.7 General operation, DX, local and experimental; all modes.

1457.–146.0 Satellite allocation.

146.0–148.0 FM repeater and simplex nets.

70 CENTIMETRES

420–432 ATV primary channel, DSB or VSB. Video 426.25 MHz, sound 431.75 MHz.

432–433 Tunable segment (Fig. 1).

433–435 FM repeater outputs.

435–438 Satellite allocation .

438–440 FM repeater inputs and simplex nets.

440–443 General and experimental operation.

443–450 ATV secondary channel (VSB). Video 444.25 MHz, sound 449.75 MHz.

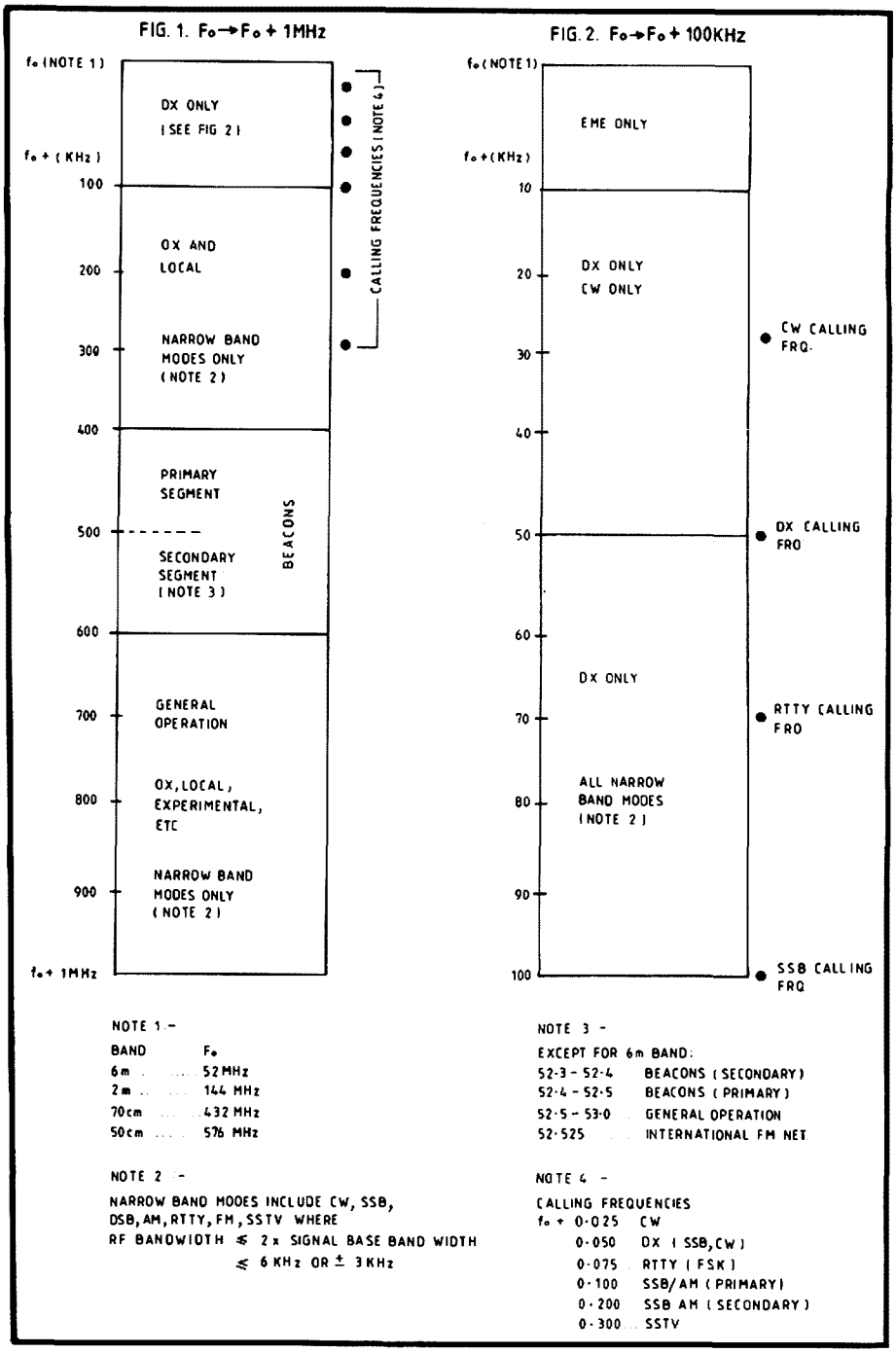


FIG. 3: Suggested tunable segments for microwave bands.

Band	Freq. Limits	Fo (MHz)	Fo = 144 MHz X
23 cm	1215- 1300 MHz	1296	9
13 cm	2300- 2450 MHz.	2304	16
9 cm	3300- 3500 MHz	3456	24
6 cm	5659- 5850 MHz	5760	40
3 cm	10,000-15,000 MHz	10368	72

50 CENTIMETRES

576–577 Tunable segment (Fig. 1).
577–578 General, experimental and net operation.
578–585 ATV channel (VSB) and ATV repeater output. Video 579.25 MHz, sound 584.75 MHz.

BAND PLANNING FOR 23 CM AND HIGHER BANDS.

The VHF-UHF Advisory Committee has been investigating band planning for 23 cm and higher bands. Information from overseas sources is rather hard to come by, and the Committee feels that we should not commit ourselves to full band plans until we have more information about developments in ather countries.

The VHFAC does, however, recommend the adoption of a 1 MHz wide tunable segment in each of the microwave bands, following the plan already current for 6 metres, 2 metres, 70 cm and 50 cm. The tunable segment in each band would begin at a frequency ("fo" in Figs. 1 and 2) which was a multiple of 144.0 MHz. This is consistent with existing Australian and international practice, due to the widespread use of varactor multipliers driven by 144 MHz transmitters. The suggested frequency "fo" for each band, and its harmonic relationship to 144 MHz, can be seen in Fig. 3. Comments on these proposals from any interested amateurs would be most appreciated, as would comments on any other aspects of band planning. ■

BOOK REVIEW

Reviewed by VK3UV

THE ARRL AMATEUR'S 1981 HANDBOOK

Like most radio amateurs, the need for a good up-to-date technical reference book is a must.

The 58th edition of the ARRL Handbook certainly fulfills this requirement. Included in the additional 64 pages are many state-of-the-art circuit designs (including PCB artwork), antenna design criteria and fundamental tutorial law.—VK3YTP/NMJ.

Available from MAGPUBS, $12.00 (plus P&P — 1 kg); P.O. Box 150, Toorak, Vic. 3142. ■

TITLE: Early Radio Wave Detectors.

AUTHOR: V. J. Phillips, University of Wales.

PRICE: £E19.00. Available from Peter Peregrinus Ltd., Marketing Department, Station House, Nightingale Road, Hitchin, Hertfordshire, England SG5 1RJ.

The book is a survey of early detectors. It provides an insight into the difficulties experienced by the early experimenters, who, until quite a late stage, had no effective way of amplifying an incoming RF signal, and it evokes admiration for their ingenuity and inventiveness.

The book covers a period extending from Hertz's experiments up to the coming of the crystal detector and valve, which events may be considered as taking radio into the modern era.

Many hundreds of references to other sources of Information are made, and would be most useful for those readers desiring to explore any particular item described in greater depth.

It is interesting to read how our forefathers evolved the electronics explosion. All experiments are graphically explained with reproductions of the original schematics and patents. Although this reviewer may consider the cost of the book a little expensive for general information purposes, it certainly provides the knowledge and history unobtainable in other single volumes.

Fascinating reading for the not too technical reader.—VK3UV. ■

TITLE: A Guide to Amateur Radio — 18th Edition.

PUBLISHER: RSGB.

AUTHOR: Pat Hawker G3VA.

PRICE: $A5.90, plus p. and p. (260 g). Available from WIA Magpubs, PO Box 150, Toorak, Vic. 3142, or direct to RSGB — £E2.99 (plus p. and p.).

An updated version of the previous editions, written with the usual excellence of Pat Hawker's (Radio Communication's "Technical Topics" editor) capabilities, containing clear schematics and explanations, with several printed circuit board layouts for various projects.

The book is intended to assist the newcomer to learn more about the hobby, but I feel is basically a little "too technical" in the opening chapters and remarks for a raw beginner.

The author possibly assumes the newcomer has a reasonable grasp of high school physics at least, as without some sort of prior basic knowledge of some of the technical terms introduced early, the non-technical newcomer could quickly become disinterested.

Therefore, the book is recommended as a textbook for classroom use where a tutor is on hand to explain subtle and unfamiliar terms or, alternatively, as a reference for simpler explanation of some of the areas covered in the RSGB Amateur Radio manuals themselves.

Designed basically for the British amateur, it contains the usual chapters on getting started, operating an amateur station, communications receivers, transmitters, antennas, etc.

The book also contains technical information and operating data of interest to all radio amateurs, including a useful chapter on factory built receivers, transmitters and transceivers.

Would be a very useful and handy reference for Australian novice licence applicants, who have commenced or are about to commence study under some form of local tuition, also for the newly licensed amateur (novice or full) who desires to learn with simpler explanations of material covered in the more technical publications and handbooks. ■

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Nuclear Power

Colin Yates VK2AGZ
16 Garl Street, Charlestown 2290

Uranium! Now an emotional word and on everyone's lips but when I was a student in secondary school in the early nineteen-thirties, uranium was just one of the 92 known elements. In Chemistry we were told of its chemical compounds and its industrial uses and then, almost as an after-thought, it was mentioned casually that the element was weakly radioactive. It still IS only weakly radioactive.

There were usually a few lumps of uranium ore lying around in a cupboard in the chem. lab. and we had this interesting property of radioactivity demonstrated to us by the discharge of a gold-leaf electroscope. We were not to know then that the time would come when a few lumps of uranium ore would be regarded with fear and suspicion by the lay public. At that time the element that was "in the news" was radium, which we were told was one million times more radioactive than uranium. It still is — but who worries about radium today?

I recall also very well the announcement in 1932 of the discovery of the neutron, as that particle is now known. This news item merited about two inches of column space in the daily press. Up till that time the construction of matter had been explained entirely in terms of protons and electrons.

Towards the end of the nineteen-thirties we were startled to learn that the nucleus of one particular isotope of uranium (U235) could be caused by neutron absorption to split into two nuclei each approximately half the atomic weight of parent nucleus. Here at last was the dream of the alchemist realised — the transmutation of an element into other elements. The significance of this discovery is that when fission of the nucleus occurs more than one neutron is released (either two or three in point of fact) so that the possibility of a chain reaction exists. U235 is the only element occuring in nature that does this. Unfortunately naturally-occurring uranium contains less than one per cent of U235, the balance being U238, which is ordinarily non-fissionable. The physics of this transformation has been described so many times that I need not re-hash it here except to say that the total energy of the fission products is less than the energy of the original particle, the difference appearing as heat and is considerable. Others may prefer to explain the appearance of free energy in terms of Einstein's equation relating to the equivalence of mass and energy.

I cannot refrain from mentioning here that in 1940 as a young engineer I attended a gathering which was addressed by an eminent engineer who was at the time I think the President of the Institution of Engineers, Australia. His subject was the energy crisis (yes, they had an energy crisis in those days, too!) and in the course of his address he referred to "scientists who pursue that Will-o'-the-Wisp, the energy locked up in the atom". Will-o'-the-Wisp indeed! That eminent engineer did not know what was just around the corner.

Come 1945 and the world at large was astonished to learn of the immense research effort that had been going on under the cloak of wartime secrecy. We learned with awe of the production of completely new elements, one of which, Plutonium (No. 94), looks like changing the course of world history. Even the alchemists were not so ambitious as to attempt the manufacture of completely new elements.

I must say that I heard with the utmost astonishment the news that uranium, a weakly radioactive element, could be the source of the immense energy now revealed to us.

POWER STATIONS

Those of us concerned with the production of energy for industrial purposes were immediately interested in the possibility of utilising this new source of energy. But it was quickly obvious that there was a serious snag, namely, the second law of thermodynamics. This sounds forbidding, but it means in practice that for the efficient conversion of heat energy into mechanical energy (thence to electrical energy) the source of heat must be at a fairly high temperature — I am thinking of at least 500°C. The nuclear reactors in use at that time were primarily for the production of plutonium intended for war-like purposes and the cooling fluid (water) emerged at a temperature far too low for efficient energy conversion.

Those readers who have visited a large modern steam power station and who have observed the Immense boilers in use, boilers which evaporate tonnes of water per hour and produce steam at a temperature of about 500°C, will immediately recognise the tremendous difficulties of utilising nuclear fuel for steam-raising purposes: Vast quantities of heat are required; the heat must be at a high temperature; the effect of radiation on the structural materials used was at that time quite unknown (and radiation of the most intense kind, too); the whole reactor had to be enclosed behind a heavy protective shield to safeguard humans against the disastrous effects of radiation; the control of the equipment had to be by remote means; any failure of equipment could lead to immense disaster. It was a daunting prospect.

It is a great tribute to the nuclear engineers concerned with the development work, ably supported by the physicists and the metallurgists, that these difficulties have been overcome and large nuclear power stations have been successfully brought into operation.

The Central Electricity Generating Board (CEGB) in the United Kingdom now has nine large nuclear power stations in operation making a substantial contribution to electricity supplies.

A typical nuclear power station has two reactors each containing about 26,000 elements. Typically each fuel element is about 1m long and about 5 cm in diameter, and weighs about 12 kilograms. The material is natural uranium and is contained in a sheath which could be a magnesium alloy. Fuel elements remain within the reactor until the energy within the fuel is spent which could be from 3 to 7 years. During operation a small amount of U238 is converted to plutonium. The plutonium is dispersed throughout the uranium and must subsequently be separated out by a complex chemical process.

Spent fuel rods are stored at the power stations for at least one year by which time the short-lived radioactive elements will have lost most of their activity. They are then sent by rail to Windscale in Cumbria for reprocessing.

WASTE

The disposal of waste has been a matter much in the public eye. What is this waste? The capture of a neutron by the nucleus of a U235 atom causes that nucleus to shatter and the nuclei of a considerable number of other elements are formed. It is as though you hit a large stone with a sledge causing it to shatter into smaller stones together with a considerable quantity of pebbles of various sizes. Additionally, other radioactive elements are formed by irradiation of the structural material of the reactor.

A total of something like 300 different elements so formed have been found in the fission products. Of these about 180 are radioactive. However, many of the radioactive elements thus formed have very short half-lives and rapidly lose their radioactivity.

Some of these fission products are gaseous and if in sufficient quantity must be trapped and bottled. We note for instance xenon-133 with a half-life of 5 days and krypton-85 with a half-life of about 10 years. These gases are of the inert gas group and therefore do not enter into the chemistry of the human body. The only danger to humans is from radiation from the gas (not to be underestimated, however). It was the escape of xenon-133 into the atmosphere which caused concern at the Three Mile Island affair. Subsequently during re-commissioning operations radioactive krypton was released. This latter element is normally absorbed into the uranium during formation and is driven out only by high temperature.

Examining the list of fission products we note two isotopes of iodine. They are I131 with a half-life of only 8 days and I129 with a half-life of 17 million years. Iodine is an element readily absorbed into the human body. The I131 is clearly not much to worry about (the life being so short). So far as the I-129 is concerned, I am informed that the yield is low, and as in the case of all long-lived radioactive elements the activity is low. However, if this element gets into the water-cycle of the earth we will have it with us for evermore. With the proliferation of nuclear power stations the I-129 will have to be separated out from the waste and either transmuted to another element or stored.

The elements in the waste which cause the most concern are the ones with an intermediate half-life (say about thirty years) and which are abundantly produced. Amongst these we note: Cerium-44, with a half-life of 284 days, contributes the most activity in waste about one year old. Strontium-90 and Caesium-137 both abundantly produced and with half-lives of about 30 years; this material will have to be stored for the time being. Then there is Ruthenium-106 with a half-life of one year; ruthenium is a metal in the platinum group of metals; it is difficult to separate out by chemical means.

Waste? The more I probe the subject the more impressed I am with the difficulties. In this brief article I have barely glanced at the subject. It is fair to point out, however, that it has been stated on good authority that if all the power required in the UK were produced in nuclear power stations the total amount of fission waste would only be about 35 tonnes per annum; it may be nasty stuff but there is not very much of it.

FAST BREEDER REACTORS

I sometimes hear it said that we don't need to worry about supplies of uranium since "we can breed it now". This is not true. It is **plutonium** that is bred, not uranium. The so-called fast reactor does two things simultaneously: it produces energy by fission of plutonium and at the same time converts U238 into plutonium. It is possible to produce more plutonium than is consumed, so it is termed a "breeder reactor" but the "raw material", so to speak, is U238. You have the interesting situation that an energy-producing device manufactures more fuel than it consumes!

I should interpose here that it is possible to manufacture uranium from thorium (No. 90 on the list of elements) in a reactor but the yield is less than unity so it could not properly be described as a "breeder reactor". The uranium thus manufactured is the isotope U233, which does not occur in nature, but is fissionable.

Why is the term "**fast** breeder reactor" used? The word "fast" refers to the velocity of the neutrons. Reactors fuelled with U235 have to have the neutrons produced by fission slowed before they will cause fission in further atoms. This is performed by a so-called moderator, usually graphite. When plutonium is the fuel it is not necessary to slow the neutrons with a moderator, and the reactor is referred to as a fast reactor because it employs fast neutrons.

Incidentally plutonium is one of the most dangerous substances produced by man. It is undisputed that 1 milligram will kill a human. When you remember that there are **tonnes** of the stuff in a fast reactor the dangers are apparent.

An engineer high up in the United Kingdom Atomic Energy Authority (UKAEA) told me recently that there was really no alternative but to go ahead and develop fast breeder reactors for commercial use in the production of power, if for no other purpose but to "burn up" the plutonium (which he referred to as "this nasty stuff") which was accumulating from the operation of uranium-fuelled reactors.

Much of the research and development work carried on in the UK in this field has been performed at a research establishment at a place called Dounreay on the far north coast of Scotland. The time will come when Dounreay will go down in the history books as the place where the detailed work was carried out which eventually enabled Great Britain to survive the energy crisis. It is the workers there — the university-trained engineers, physicists, metallurgists and others, ably supported by that indispensable hand-maiden of the physical-sciencies, mathematics — who have demonstrated yet once again that these days it is the patient detailed work by well-trained and well-eductated people that matters in the field of scientific research.

THE FUTURE?

The role of a prophet is a thankless one. Nevertheless I will predict that during the 1980s fast breeder reactors will come into commercial use for the production of power; that during the 1990s glassified-waste will become general; and that during the 21st century fusion-reactors will take over from fission-reactors. ■

JOIN A NEW MEMBER — NOW!

The Evolution of a 10 metre Multi-Element Beam

Leo Weller VK3YX
44 Pepperell Ave., Glen Waverley 3150

Many amateurs who construct their own beam antennas are content to reproduce in every detail a published design and accept the resulting performance without question. VK3YX has instead carried through a programme of investigation from dipole to 5-element beam, adding one element at a time. He found the results most informative and now shares them with us all.

To approach a job like this, some basic tools and skills are needed plus an SWR meter, a grid dip oscillator, a dummy load, an impedance bridge and a support for the aerial. The top of the mast must be above houses, trees and other aerials. Easy access to the top of the mast is essential. For maximum experimental benefit it should be possible, without much physical effort, to lower the beam within ten minutes.

The first test was to check the 50 ohm coaxial cable. With one end terminated in the 50 ohm dummy load and the other end in a one turn link, the grid dipper, as hoped, gave no sharp dips between 27-31 MHz. After replacing the one turn link with a plug and connecting the cable to the SWR meter, the reading was unity, both before and after installing on the mast.

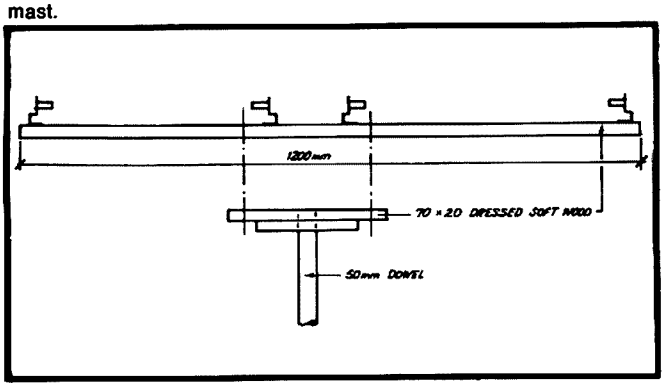

FIGURE 1

Construction began. The radiator of ½ inch aluminium tubing, was 8 feet long on each side. The opening in the centre was 25 mm, fixing hardware mainly cadmium-plated, insulators were plastic curtain rod fixtures and the board was 20 mm by 70 mm by 1.2m softwood. See Fig. 1.

RESONANCE

It is essential for understanding the experimental results to have a clear appreciation of resonance. To quote from William I. Orr W6SAI, in his wire antenna handbook:

"For any antenna there is one frequency, called the resonant frequency, at which various characteristics of the antenna are in a state of electrical balance, and at which frequency the antenna is in a condition of maximum efficiency. The resonant frequency is a function of the electrical length of the antenna, which may or may not bear a relationship to the physical length in feet and inches. Any antenna may be tuned to resonance by auxiliary gadgets, but such devices may be a nuisance and of questionable efficiency. A resonant antenna requires no such devices and is a simple and effective radiator and receiver of radio energy."

The dipole was mounted in the operating position with cable connected, as in Photo 1. Resonance was checked with the GDO and found to be outside the low end of the band. By cutting off short lengths from each end of the element the desired frequency was reached. An SWR check agreed roughly with the GDO and was accepted. Unity SWR could not be achieved as the dipole impedance is greater than 50 ohms.

Many contacts (some DX) were worked on this dipole, including W6, D, XE, ZL, I, in the four weeks before venturing to the next step.

REFLECTOR

The second element, to be used as a reflector, was made 5 per cent longer than the measured length of the dipole. It was fitted in the same way as the radiator to a timber board with four curtain fixtures.

PHOTO 1: Start of the experiment, later became reference dipole.

A boom was assembled as in Fig. 2, using coach bolts and wood screws. Element lengths were re-checked after assembly. Photo 2 shows the antenna.

Under test, the SWR was found to be unity and the resonance sharper and slightly lower in frequency. This is a natural phenomenon, it just has to do this.

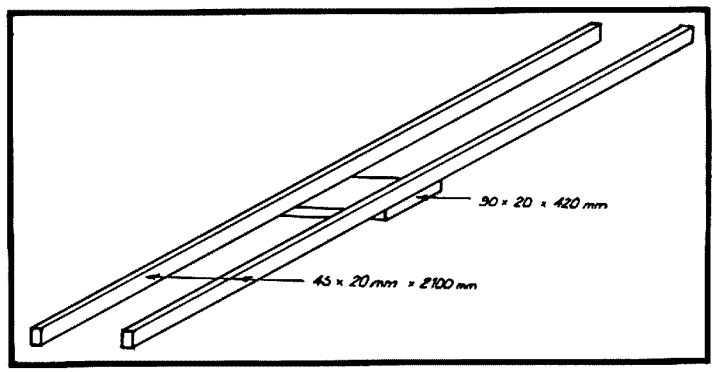

FIGURE 2

This beam was used successfully for some time before further development and enabled contacts to be made with KA, OH, BK, G, OZ, RA.

BALUN

The centre fed radiator is a balanced circuit, but coaxial cable is an unbalanced line. To achieve efficient operation a balanced to unbalanced balun is needed. There are many commercial baluns on the

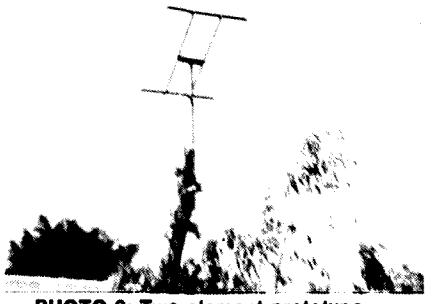

PHOTO 2: Two element prototype.

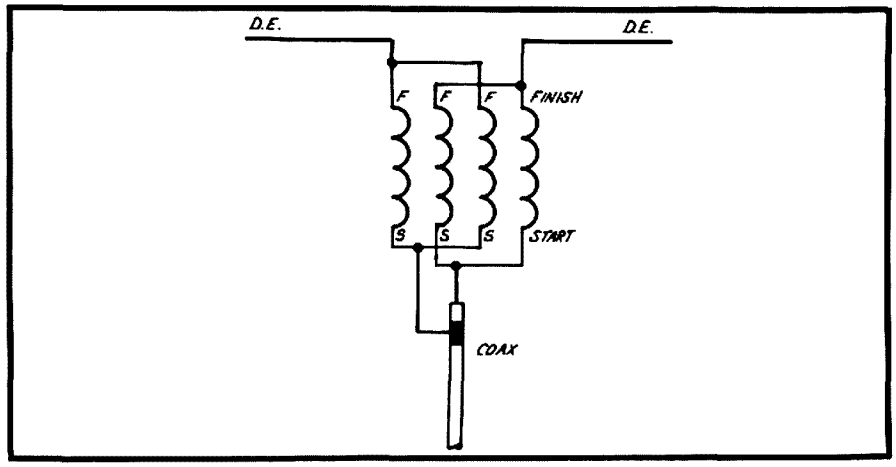

FIGURE 3

market, but most are wide band and maximum efficiency might not be at 30 MHz.

A balun kit was purchased from "Uncle Dick". Wound as specified in the leaflet, the balun seemed appropriate for lower frequencies, but on 10m introduced inductance in the centre of the radiator, lowering the resonance frequency, thereby needing reduction of radiator length. The final balun had only seven multifilar turns of four wires connected in two parallel pairs, as in Fig. 3. It could be inserted between cable and radiator without altering SWR or necessitating re-tuning. Moreover, feeding a dummy load SWR remained 1.0 and a VTVM showed equal voltage between the cable braid and each of the outputs. The balun was used successfully in different configurations on ten and fifteen metres. Other windings were tried but this was found most effective. An alternative was six turns of coax on a ferrite core ring; bulky and heavy, but it performed well.

IMPEDANCE MATCHING

So far in the experiment there was only one unknown, the resonance frequency. The impedance of the antenna being close to 50 ohms needed no special matching.

To achieve maximum efficiency the matching between cable and antenna has to be perfect. Energy transfer is maximum when cable and antenna impedances are equal. SWR is then 1.0.

The continuous battle for unity SWR is to achieve this accurate matching. Finally, some wise words from one of my lecturers from the late 1940s. He was an older man with a grey beard and a voice like Winston Churchill.

"My dear gentlemen, whatever is wrong on one end of the cable cannot, and I repeat cannot be fixed at the other end of the cable."

DIRECTOR

The next logical step was three elements on a 0.2 wavelength boom, making the distance between elements 0.1 wavelength. See Photo 3. More gain, but less bandwidth, was expected. This beam was rather small, weighing only 3 kg, and was used to experiment with different matching configurations, gaining some experience with low impedance antennas. The new (director) element was made 5 per cent shorter than the driven element. Resonance was expected exactly at the design frequency, the effect of the 5 per cent longer reflector and the 5 per cent shorter director cancelling out; however unity SWR was found at a slightly lower frequency. The antenna was re-tuned to the design frequency by cutting 10 mm at a time off the tips of the driven element. Later, the driven element was made adjustable, using ⅝ inch and ½ inch telescoping tubing secured together with a hose clip over a lengthwise saw-cut in the ⅝ tubing.

The three-element close-spaced beam has less than 50 ohm impedance so needs a matching device. The Beta Match with balun proved most successful, easy to make and adjust. Some authors refer to it as Inducto Match. The Hy-Gain Catalogue refers to it in more detail:

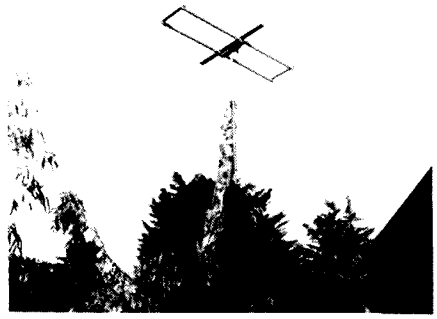

PHOTO 3: Three element beam. Note shorter support for reflector and director.

"The exclusive Beta Match provides the precise amount of inductive reactance to the characteristics capacitive reactance of a half-wave centre fed element to achieve the resisitive impedance required to insure an optimum transfer of electrical energy with minimum SWR. The Beta Match and balun eliminates pattern distortion and spurious side and back lobes to ensure an extremely clean pattern."

Later the Beta Match was found to be TVI *free*. *Very* good contacts were made with SM, OE, VU, plenty of UL, UA, UI and even more Js.

WIDE SPACING

All textbooks quote far better figures for gain, back-to-front ratio and bandwidth for wider spacing between elements. Except for matching between cable and radiator no change was required but a longer boom. So a boom support and extension as in Fig. 4 was fitted with coach bolts. For more pessimistic constructors, let me assure you that this construction (with up to five elements) survived all storms in 1978-1979.

The first attempt to match this beam in the same way as the closed-spaced one failed. Unity SWR could not be achieved, and after ten attempts the last line in the notebook reads "impossible". A 1 : 4 impedance ratio balun was wound, tapped to the radiator in delta match fashion some 50 cm from centre and the centre shorted across. This produced unity SWR spot on design frequency.

And what a beam it was! Like having an extra pre-amp in the receiver and a linear on the transmitter. More bandwidth, better reports and all the things an amateur could wish for. Unfortunately, some slight TVI was reported by the family. Contacts were made with DA, DF, OZ, SM and Gs.

MORE MATCHING

At this stage of the experiment, with the three element beam working well, reasons were sought for the failure of the beta match. Cable length was investigated in the hope that the original GDO test, showing correct cable operation, might have been insufficient.

The length of the cable was made an exact number of half wave lengths. Theoretically, then, the impedance bridge

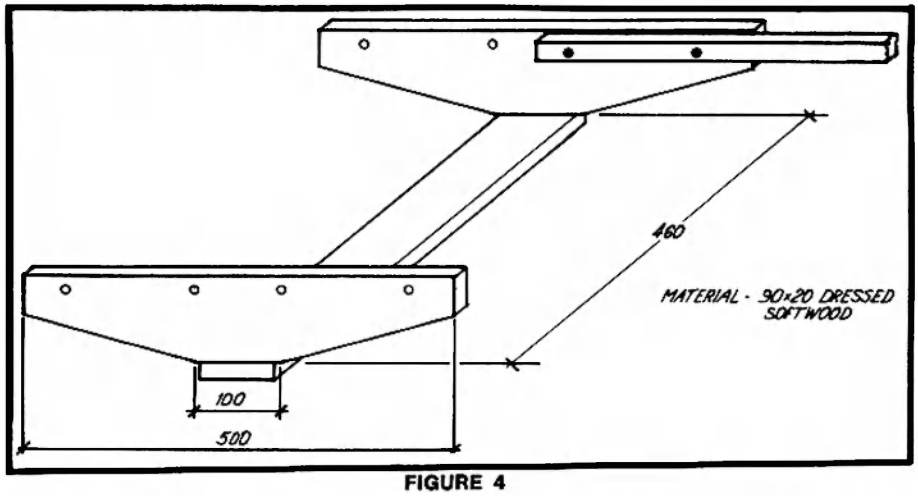

FIGURE 4

would indicate the actual impedance of the antenna regardless of the characteristic impedance of the cable. The length was calculated assuming a velocity factor of 0.66 and necessitated reduction by approximately 50 cm. Unfortunately, no check was made whether this would make the beta match function. More tests showed the cable still to be too long. Tests were made with GDO, impedance bridge and also with a signal generator and a VTVM. While readings were not exactly identical, all measurements showed too low a resonance frequency. Eventually a further 20 cm was removed before the cable resonance was correct.

At this time, test cables were also made, one one-half wave length and one one-quarter wave length complete with plugs. The physical lengths of antenna cable and test cables were found to be integral multiples. Resonance testing with the impedance bridge on a sub-harmonic was most successful, the quarter-wave cable being tested as a half-wave at twice the frequency.

A new attempt was made to produce a beta match for the three element wide-spaced configuration.

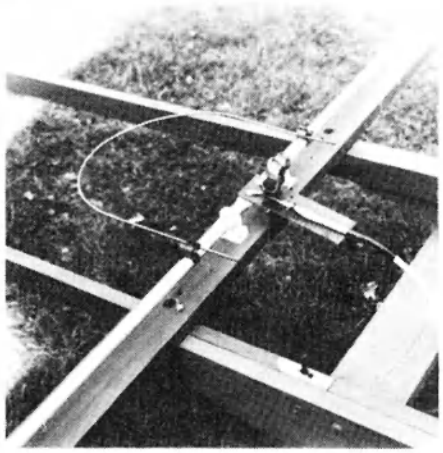

PHOTO 4: Driven element, beta match with balun (cover removed).

radiator was shortened by 5 cm to bring the resonance back to the design frequency readjusting the beta match to keep the SWR unity. No difference was found in performance, but the antenna did not receive on frequencies outside the band. This gave less QRM and quieter reception In the band.

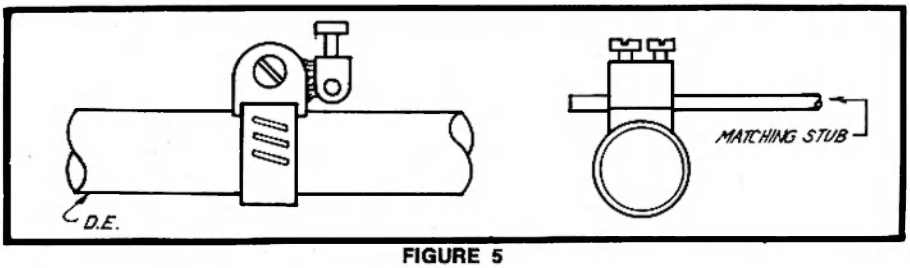

FIGURE 5

Inserts from connector strips were silver soldered to hose clips (Fig. 5), which made possible the shifting of the tapping on the radiator as well as changing the length of the matching stub. The 1 : 1 balun connected in the centre and a full length of bronze welding rod tapped on 10 cm from centre produced 1 : 1 SWR (Photo 4). However due to the inductance in the centre the resonance frequency was too low. The

Having solved the problem, it seemed incredible that a mismatched antenna and 70 cm of coax could make a mockery of impedance bridge, GDO and the SWR meter.

(This seems to have been a classic case of RF outside the coax as well as inside, thus causing misleading and incorrect measurements.—Tech. Ed.)

FOUR ELEMENTS

Very soon the question came up, could one more director be added to the antenna without changing the boom length, achieving more gain and not sacrificing too much bandwidth? Another director was produced. The previous support was thought to be over-designed and the new one was only 45 cm long of 20 x 10 mm timber, using two rod fixtures and in the centre an aluminium bracket made up from flattened tubing. See Photo 5. The new director, of the same length as the first, was fixed halfway between the first

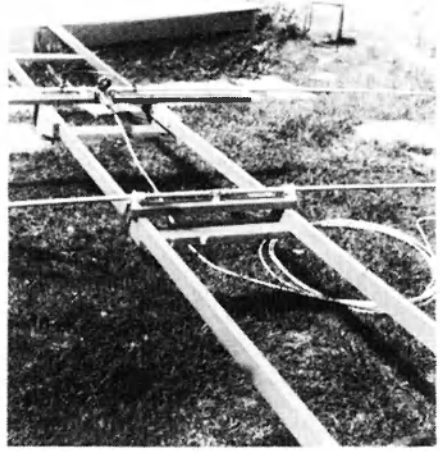

PHOTO 5: Reflector, lighter construction.

director and the driven element. Matching created no problem. The driven element was moved towards the reflector until maximum gain was achieved, at spacings of 0.1-0.12-0.18 wavelength. This was the most successful yagi produced, SWR 1.2 at 28.457 and 28.7 MHz. See Photo 6. New countries were PA, ON, HB, EA, EI, HS, A9 YB.

MORE?

Five elements on equal spacing (0.1 wavelength) were also investigated but because of lower gain and too small bandwidth this experiment was abandoned. See Photo 7. While working on this antenna we stumbled on a very elegant way of widening the bandwidth of a Yagi. Adjust the length of

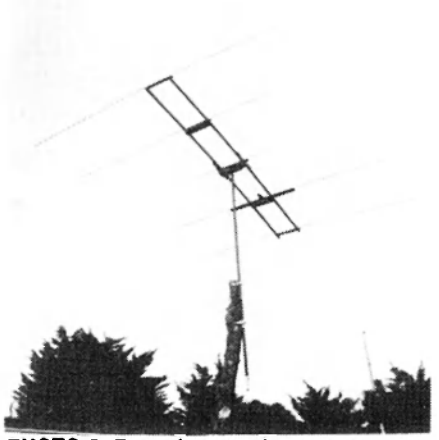

PHOTO 6: Four element, the most successful yagi produced.

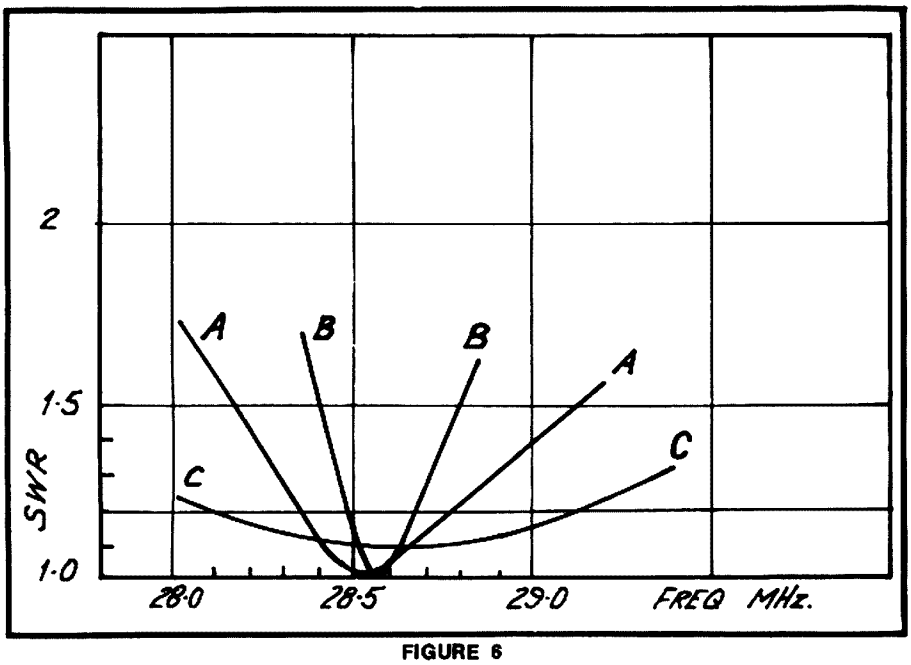

FIGURE 6

the driven element and the matching system to achieve unity SWR on a frequency 0.5 per cent higher than the design frequency. Without changing the match extend the driven element 1 per cent. SWR will be lower over a much wider portion of the band. This is a form of "stagger tuning". Needless to say, efficiency was down, particularly on the two ends of the band.

After bringing the antenna back to four elements and readjusting the beta match, some more investigating was carried out on cable length. Having on hand extension cables ¼ wave and ½ wave long enabled some very interesting observations to be made. Extending the antenna cable ½ wavelength produced no difference in performance. Extending the antenna cable ¼ wavelength impaired the performance. Unity SWR could not be achieved and the bandwidth was reduced. Most remarkable was the beacon segment; the signals around 28.2 MHz completely disappeared with the ¼ wave and ¾ wave (¼ + ½ wave) cable extension while not affected by ½ wave extension.

Stagger tuning was tried to see if this was practical with a four element yagi. It worked in the same manner as with the five element. If there is a real need to cover a wide range of the band this setting could be more effective than the correct tuning. But as there was no need for the full spectrum in this case, correct tuning was adopted. Fig. 6 gives SWR curves for A, normal tuning; B, with ¼ wave extension cable; and C, stagger tuning.

CONCLUSIONS

To withstand all Melbourne's storms ½ inch 20G aluminium tubing has sufficient strength for a 10 metre beam.

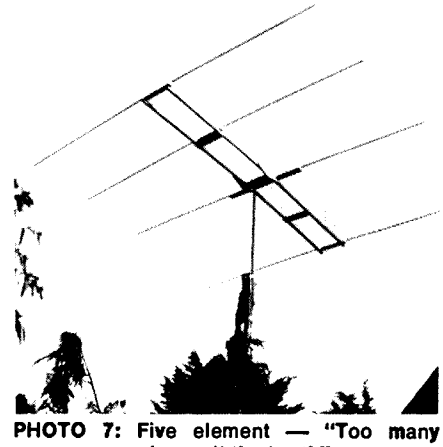

PHOTO 7: Five element — "Too many cooks spoil the broth".

After establishing the length of the dipole to resonate on the design frequency, the length of the reflector and directors can be calculated. To maintain resonance of the antenna on the design frequency only the driven element need be shortened.

Optimum performance of a balun specifically for the 10 metre band is achieved with 6 turns. Omission of the centre equalizing winding eliminates the need for returning the driven element.

If the length of transmission cable is cut to a multiple of ½ wavelength it simplifies matching and tuning adjustments. Specific length improves transmitting and receiving on frequencies away from resonance. (This is debatable!—Tech. Ed.)

The beta match with a balun is superior to the gamma match. On receive the S/N ratio is better (lower noise), and on transmit TVI was not produced.

An antenna impedance bridge is a necessity, a GDO is a luxury and an SWR indicator belongs to every transmitter. ■

Band Plans

(PLEASE READ THE NOTES ALSO)

By mutual agreement, to promote the orderly use of the HF bands, there are gentleman's agreements in use all over the world for the HF bands. These vary from region to region or place to place depending on the widths of each band in use for the amateur service in different places.

In Australia the following are the band agreements in use (including Novices) —

Band	CW only kHz	Ph. & CW kHz
80m	3500-3535	3535-3700
80m Novice	3525-3535	3535-3625
40m	7000-7030	7030-7150
20m	14000-14100	14100-14350
15m	21000-21150	21150-21450
15m Novice	21125-21150	21150-21200
10m	28000-28200	*28200-29700
10m Novice	28100-28200	*28200-28600

* The sub-band 28200-28300 kHz is in use world-wide for beacons and therefore should be avoided for general contacts.

SPECIAL FREQUENCIES

WICEN nets identified as such (in kHz):
Primary: 3600, 7050, 14100
Secondary for CW: 3575, 7025, 14075
for Phone: 3625, 7075, 14125

RTTY, ATV and other modes will be included later when positively identified.

NOTES

1. CW may be used in all parts of these bands.
2. Telephony may *not* be used in the "CW only" parts of the bands.
3. Authorised WIA broadcast frequencies and times are set out in the WIA Directory appearing in each AR.
4. There is a satellite beacon and downlink window in use for the 10 metre band either side of 29500 kHz.
5. In the USA the band segments are specified by FCC Regulations. ■

The Importance of Satellite Communications in Developing Countries

This paper was originally presented at the seminar on computers in developing nations, the proceedings of which will be published by the North-Holland Publishing Company and edited by Prof. J. Bennett, Dr. R. Kalman and Mr. J. Shaw.

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The spectacular way in which communications services using Intelsat facilities have grown in recent years and the rapid spread in small developing countries of the Standard B Intelsat Earth Station and the consequent effects of improved international communications on development are outlined. So are the still unfilled needs for better communications in large rural areas and many settlements on islands and other geographically isolated places. The pressure on the International Telecommunications Union to come up with solutions to this problem has led to a satellite proposal called "Glodom" which is summarised. But Glodom still leaves unfilled an important area now filled in the Pacific by PEACESAT, a low cost satellite providing low density wide area coverage appropriate to Pacific development. PEACESAT is discussed as is the total public service usage of the single voice channel on ATSI. Finally the Amateur Satellite service is discussed and its pioneering contribution to the field of low cost space communication.

The space age has changed completely the whole technology of communications in the last 15 years since the first successful launch of a geostationary satellite. Simultaneously there were several very significant communications break-throughs, any one of which could have brought about a major technological change in world communications.

Radio, High Frequency, Very High Frequency and Ultra High Frequency became possible without vacuum tubes. New high powered solid state components enabled less expensive units of medium power to be introduced — all very much improved in efficiency. For communications single sideband techniques multiplied the spectrum space available by many times for terrestrial point to point communications and computer and digital techniques revolutionised tuning and automatic calling procedures.

About the same time really wideband ocean cables with very simple repeater stations built into them became available and cost effective with other modes of International communications.

But although greatly improved these technologies were not developed to their full new potential because of the advent of the communications satellite and particularly the efficiency and global use of the services provided by Intelsat. Over 100 countries are members of Intelsat. They have money invested in the organisation and now draw financial dividends from it In addition to using it for their extended, efficient and appropriate international public communications services.

Multi-million dollar earth stations have grown like mushrooms throughout the world in member and non-member countries and more recently smaller countries such as those of the pacific and ioslated communities with more limited traffic demands have discovered the smaller standard B earth stations and SCPC (Single Channel per Carrier) operation cost effective for their international requirements.

Of all space operations that of Intelsat, because of its scale and because of the technical efficiency of those behind it has obtained the greatest benefits from its expenditure.

Because of increased and steadily increasing use and new generations of satellites with greater capacity the cost of the space sector In communications has steadily come down.

But the public user has not yet benefited financially. There is today much more invested in the earth stations than in the space sector and with costs on earth tending to increase with inflation both in capital and and in operations the user is paying more, rather than less, for his use of the international communications network for voice and data use.

Nevertheless, the whole system Is efficient and cost reductions to the user are probable in the near future.

But despite the efficiency and appropriateness of the Intelsat system for linking the developed countries and the main urban centres of the less developed countries, both large and small, there are many rural areas whose development is greatly hindered by a lack of electrical or electronic communications of any kind. Two years ago there were 420 million telephones world-wide, of these 75 per cent were in eight countries and only 7 per cent altogether in countries classed as developing. Good communications goes hand in hand with development. The gains of telecommunications cannot be measured in terms of the profit or loss made by the telecommunications authorities.

There are many indirect profits from improved telecommunications which in many cases can far exceed the losses which may be made in operating them.

However, the International Telecommunications Union (ITU) realises this and is very conscious of the need for cheaper and more effective communications in rural areas. Other United Nations Agencies have a common interest in seeing improved and less expensive communications in developing countries and have put pressure on the ITU to develop them.

What has so far been proposed is a system called "Glodom", a concept developed by William Pierce of the Technical Co-operation Department of the ITU in Geneva.

GLODOM

This Glodom system uses the same technology, essentially, as Intelsat. A series of satellites would give global coverage with spot beams covering the areas or countries that require the system. Terminals in their simplest and cheapest form would use 3 metre dishes, operate from a 12 volt battery, provide one telephone channel with provision for more to be added and one simplex channel which would be available for teleconferencing to provide very essential education in fact in any field that would accelerate development.

Such a minimum size terminal, if mass produced, could cost as little as $20,000. Glodom plans on the eventual establishment of tens of thousands of such terminals. The total world-wide space segment to go with Glodom would cost at least $200,000,000.

There is no question but that this system or one very similar to it will come into being and will prove more cost effective in linking thousands of settlements in the large underdeveloped countries than any system of reticulated wiring or series of

terrestrial microwave or radio links. However, for a single isolated user the cost is high, even in Australia's outback. Some of the most important significant work done so far in satellite communications over wide areas using very low cost, simple and, where necessary, portable equipment has been carried out over the last decade using NASA's ATS1 and ATS3 satellites.

ATSI AND PEACESAT

These satellites, launched In 1966 and 1967 respectively, are equipped with VHF transponders operating above and below the 2 metre amateur band. They cover a 100 kHz segment with the centre uplink frequency at 149.22 MHz and the centre downlink frequency at 135.60 MHz.

ATS1 is situated on 149 degrees west longitude. This gives it almost complete coverage of the Pacific area, from central Australia to the east coast of the US, from the Arctic to the Antarctic.

For the past 10 years it has been used for many experiments in low cost communications between islands, between institutions and in the Pacific area Interested in development and for direct health, educational and scientific purposes.

It has in effect only one voice channel as the normal mode of use FM and if two carriers on different frequencies access the satellite at one time then the output power is shared and received signals deteriorate. So it provides one simplex voice grade circuit or one half telephone circuit. Yet it has given and is giving spectacular service to the Pacific area.

Despite a very expensive upgrading of telecommunications ATS1 is still giving medical service to many isolated locations in Alaska. Nineteen small terminals have, for the last three years, given health and administration communications services to the seven main centres of the Trust Territories of the Pacific Islands, the University of the South Pacific uses ATS1 for administrave purposes and direct teaching tutorials to students in its ten member countries, small oceanographic research vessels use ATS1 for long range communications with their operating bases, many special scientific teams have used it for communications with their bases, the American Lutheran Church has used a small network to join with their Churches in isolated areas of the US and the first service to start using the satellite for health and education, PEACESAT (Pacific Educational and Communications Experiment by Satellite) continues to use the satellie for Pacific wide conferencing for several hours daily.

Efficient time sharing of this one half telephone channel has made all these services possible. This time sharing is coordinated by NASA.

Like all satellite systems that of ATS1 can be used for any communications made possible on a single simplex voice channel.

PEACESAT has used the network for facsimile, slow scan TV, teletype and computer linking. The USP is currently Installing computers and slow scan TV in many of its terminals. The Aloha network at the University of Hawaii used it for transmission of computer packets, working in conjunction with various US terminals, Sydney University and Tohuku University in Japan, which latter two are continuing with these experiments.

But the main value of the ATS1 experimental service lies in its provision of conferencing facilities over more than one-third of the globe. The PEACESAT network comprises about 20 terminals, and encourages others to participate.

Any terminal in the network can suggest a topic for a conference or series of conferences and if several terminals favour the topic planning will be done and the series commenced, usually with a specially competent resource person leading the discussion. Whatever the topic, everyone participating can add to the discussion or disagree with anything that is suggested.

In the Cook Islands, which is in a very isolated part of the Pacific, much has been made of PEACESAT and the USP network. In fact about ten per cent of the adult population have taken part in PEACESAT exchanges. Many technical innovations even new crops, have resulted from these exchanges and the total social and development impacts of the experiment, while difficult to evaluate, are certainly worth much more than the small amount of effort and money put into the operation of the network. The free use of ATS1 is probably the greatest single piece of aid that the US has given to the Pacific Region. The fact that ITS has outlived all other geostationary satellites in functional life and still appears to have much useful life ahead Is a tribute to the appropriate VHF technology employed. The fact that satisfactory ground terminals operating from a car battery can be set up for as little as $600 when bought off the shelf or be constructed for much less shows how simple the earth sector can be on these frequencies.

Yet the new radio regulations passed at the 1979 World Administrative Radio Conference in Geneva made no provision for the use of VHF frequencies on satellites other than by the Amateur Satellite Service.

The Amateur Satellite service has to date launched ten OSCARs — Orbit Satellites Carrying Amateur Radio. Currently three are in use. Of these satellites amateur stations communicate with each other over long distances in all parts of the world. Many firsts In space have been achieved by amateurs such as the first ever space communications between the US and the Soviet Union In 1965.

Perhaps the main contribution to communications satellites by radio amateurs has been the demonstration of what can be done on a 100 kHz transponder bandwidth by limiting power to the minimum required and operating many single sideband channels simultaneously. Amateurs everywhere had great hopes for AMSAT stage 3 or Oscar 9, which had been scheduled for launch in May of this year. This satellite was to have gone into a very elliptical 12 hour orbit and would have given almost geostationary service to many parts of the world over a large part of each day. Unfortunately a faulty Arlame launch necessitated the destruction of the satellite minutes after take-off. It had taken many many manhours plus materials costing about a quarter million dollars, donated from all over the world, to build. A new launch of a satellite now being built is scheduled for early 1982. It is hoped that this satellite, to an even greater extent than ATS1 and ATS3 will demonstrate the value of VHF satellite communications. It is expected to have more than 5000 regular users.

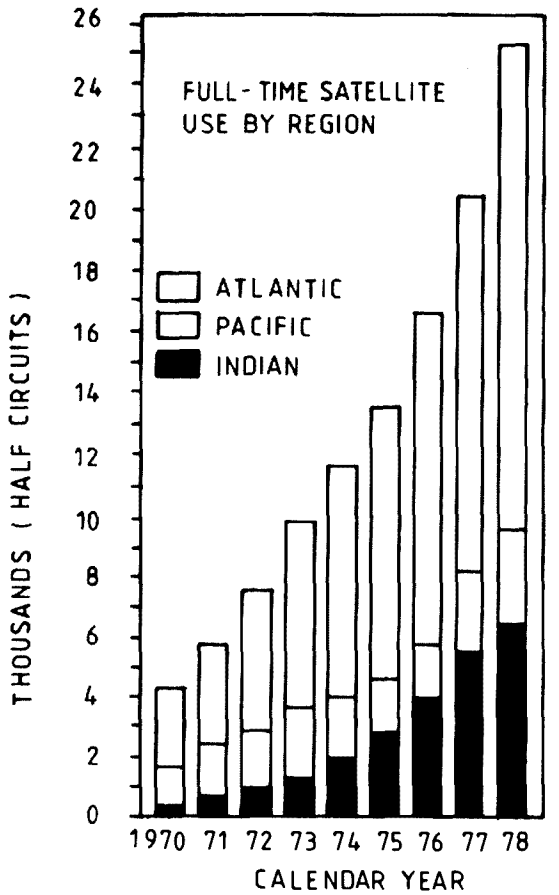
From these brief descriptions it can be seen that space communications offers many possibilities but for that matter so does modern radio communications. Never has it been easier for communications by voice or computer to be conducted between any two points on earth. Amateur radio has enabled individuals in any part of the world to communicate with amateurs in any other part, either through satellites or directly by radio. In either case the equipment needed can be small and portable. When in Geneva at the WARC meeting last year I had dally direct contacts with my home in Rarotonga using small solid state transceivers. Despite a modern trend to rely on satellites for all communications, radio is today very advanced on what it was in the past and without question can fill many of the needs of developing countries.

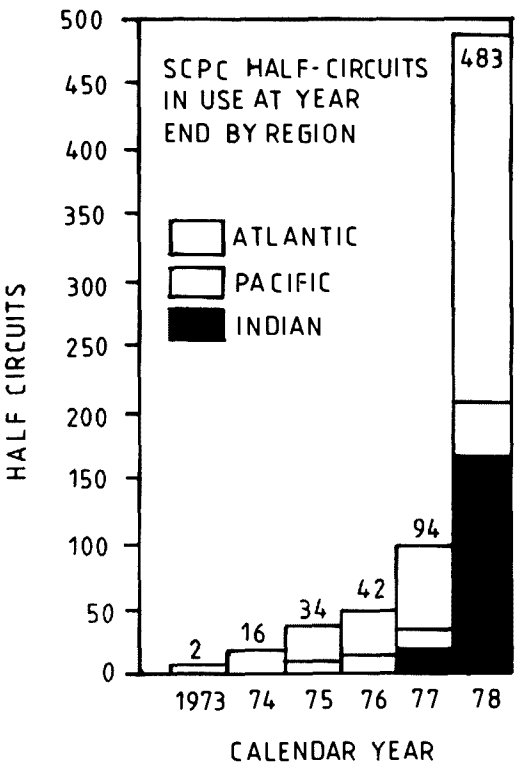
PEACESAT has, more than anything else, demonstrated the value of direct communications between institutions, particularly Universities and those engaged in medical, health or scientific research, and between those institutions and persons associated with them in field work.

The requirements for such communications will continue and grow in both developed and developing countries — it must if development is to be accelerated in fields such as health, education, science, energy and social development. But such communications must be as free as possible to allow institutions to do their own thing, to develop their own appropriate networks rather than be tied to what, for these purposes, is a grossly expensive public communications service. Just as telecommunications authorities allow individuals as radio amateurs to conduct their own communications of a non-commercial nature so they must allow institutions to do the same thing. Just as radio amateurs have their exclusive allocations of spectrum space for both terrestrial and space communications so should universities and similar institutions. And at any future World Administrative Radio Conference some VHF allocations should be given for satellite services like those now provided by ATS1.

Appendix

The following graph, taken from the annual report of INTELSAT 1979, gives an indication of the spectacular growth of that organisation.





CALENDAR YEAR	ATLANTIC	PACIFIC	INDIAN	TOTAL
1965	150	—	—	150
1966	172	—	—	172
1967	418	270	—	688
1968	720	422	—	1·142
1969	1·829	904	102	2·835
1970	2·633	1·312	314	4·259
1971	3·514	1·654	654	5·822
1972	4·748	1·849	900	7·497
1973	6·291	2·251	1·272	9·814
1974	7·695	1·859	1·953	11·507
1975	8·862	1·926	2·581	13·369
1976	10·783	1·972	3·765	16·520
1977	13·002	2·234	4·970	20·206
1978	16·260	2·940	6·077	25·277

CALENDAR YEAR	ATLANTIC	PACIFIC	INDIAN	TOTAL
1973	2	—	—	2
1974	16	—	—	16
1975	30	4	—	34
1976	36	6	—	42
1977	70	12	12	94
1978	286	40	157	483

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VK7 — Mr. R. K. Emmett VK7AK.

MORSE EXAMS

Candidates for morse exams are specially reminded that the morse sending or receiving of letters is not adequate in itself. There is a space of 7 dots between words and this has to be observed so that whatever is sent or written down should be in understandable composition English. Thus, to omit a space between two words is one error. Many errors could be recorded against you if, for example, in receiving morse, you write down a string of letters not separated into discrete words. This reminder is given to dispel any rumours to the contrary and to alert candidates to the official requirements. ■

Are you checking our bands for

INTRUDERS

AND REPORTING SAME TO THE INTRUDER WATCH CO-ORDINATOR?

VK2 MINIBULLETIN

AOCP EXAM DATE CHANGE

The next AOCP exam conducted by the D of C in Sydney would normally take place on the third Tuesday in August. However, for this year in Sydney ONLY the AOCP exam will be held on the first Tuesday in September, i.e., TUESDAY, 1st SEPTEMBER, at Macquarie University. Apparently the University is not available on the usual exam date. Elsewhere in NSW the exam will be held as usual on the third Tuesday in August, the 18th. The closing date for enrolment in the exam, 8th July, remains the same for both city and country applicants.

ON-AIR GAMES

Several amateurs have rung the DOC in Sydney recently seeking clarification on the playing of games on air. Departmental enquiries reveal that there have been no changes to regulations on this subject, despite proposed changes in Third Party Traffic privileges. Amateurs are asked to note that the playing of games via amateur radio is not permitted.

COUNCIL REPORT

$260 has been donated to the Tower Fund (see February AR) to date (1/3/81). Thanks for recent donations of $50 from Coffs Harbour ADARC and $10 from M. McCulloch. A Town Planner has been hired by Mr. Martyn's counsel to advise his barrister. The Town Planner's services cost $40-$60 per hour, so any donations to help Mr. Martyn defray costs will be gratefully received by Council. Please send donations to Box 123, St. Leonards 2065, with cheques written out to the WIA.

The Division's Property Officer, Henry Lundell VK2ZHE, conducted a stock-take at Atchison Street in February. In order to ensure that the 1981 stock-take is accurate, Council requests that anyone holding equipment owned by the Division notify the Secretary by phone or letter by 30th May. Please include serial numbers and the use to which the equipment is being put. Any equipment not being used should be returned to Atchison Street.

WIRELESS INSTITUTE CENTRE

The WIC at 14 Atchison Street, Crows Nest, is used by various groups every day of the week. Below is a list of groups meeting there which may be of interest to members.

Microprocessor Enthusiasts' Group (MEGS): 1st and 3rd Monday nights.

RTTY Group: 1st Friday night of even months, 7.30 p.m.

VHF AND TV Group: 1st Friday nights of odd months, 7.30 p.m.

Sorcerer Users' Group (SUGS): 3rd Friday nights.

Novice Amateur Radio Group (WIA Affiliated): Saturdays, 1-5 p.m.

Anyone interested in finding out more about these groups can ring the Divisional office on (02) 43 5795 between 9.45-1.45 p.m. on Tuesdays or Thursdays, or write to Box 123, St. Leonards 2065.

GOSFORD FIELD DAY

770 amateurs and other interested people attended the 22nd Annual Gosford Field Day on Sunday, 22nd February last. There were the usual ecellent trade displays, ladies' stalls, disposals markets (350 items sold) and local trips. The results of the field events were: VHF scramble, Eric 2ZUR; HF scramble, Les 2ALK; junior pedestrian hunts, Jamie Harrison, Mark Hale, Craig Brewer and Craig 2VZL/YXN; open pedestrian hunts, Les 2ALK, Doug 2ZYM and Paul 2BZC; long DF hunt, Steve 2ZEY (2m), Athol 2BAD (10m); overall winners, Les 2ALK senior; Craig 2VZL/YXN junior; raffle, Pierce 2APQ; ladies' quiz, M. Silk; ham quiz, Sue 2BSB. Central Coast ARC would like to thank all those who helped make the day a success.

URUNGA FIELD DAY

Coffs Harbour and District Amateur Radio Club announce that the 35th Annual Urunga Convention and Field Day will be held over the Easter weekend, Saturday 18th and Sunday 19th April. Registration will be at 8 p.m. on Friday, 17th April, at the Ocean View Hotel, Urunga. Events proposed include a 40m DF hunt, 2 x 2m pedestrian hunts, 2 x 2 TX DF hunts on 2m, 2 talk In hunts on 2 and 10m, and an all band scramble. As well as the usual Saturday evening film night and supper, there will be lucky dips, trade displays, for sale and swap table, repeater fund raffle and a lucky door prize. The Saturday events will be at Urunga and the Sunday events at Bellingen Showground. For further information or a programme, call in on the Coffs Harbour ADARC net, Mondays 8 p.m., on 3610 kHz, write to PO Box 655, Coffs Harbour 2450, or ring (066) 55 1115.

Details of three clubs affiliated with the NSW Division.

NOVICE AMATEUR RADIO GROUP

Box 128, Pyrmont 2009.

Meetings and classes: February-May, June-November, Saturdays 1-5 p.m., at 14 Atchison Street, Crows Nest.

President, T. Krakowszky; Vice-President, M. Price VK2VUA/YTF; Secretary, F. Tam VK2VRL; Other Committee, A. Hinvest VK2DSP, J. Gallagher VK2PBW, L. Dupont VK2PBB, D. Jones VK2PBI.

The group operates only when classes are in progress.

BATHURST AMATEUR RADIO GROUP

Box 755, Bathurst 2795.

Meetings: SES headquarters, George Street, Bathurst, 3rd Fridays at 8 p.m.

President, G. Burge VK2BVU; Vice-President, N. Sweetnam VK2DLG; Secretary, G. Godfrey VK2NZZ; Other Committee, M. Salmon VK2DLD, S. Morriss VK2DLL, I. Denmead VK2VFY.

GUNNEDAH AND DISTRICTS AMATEUR RADIO GROUP

"Womboyne", Kelvin 2380.

Meetings: 1st Thursdays at Gunnedah Scout Hall.
President, S. Lister VK2ADS; Vice-President, B. Harwood VK2ZAY/VLD; Secretary, J. Watson VK2ZQX.

Club call: VK2DEO.

Repeater: VHF VK2RAB, channel 6850, at Gunnedah.

☆

COMING EVENTS

18th and 19th April (Saturday and Sunday): 35th Urunga Field Day.

3rd May (Sunday), 8 a.m.: Club liaison net on 3575 kHz.

12th April (Sunday), 10 a.m.: Informal meeting at WIC to discuss Federal Convention Agenda.

16th April (Thursday): Close of agenda for 4th C of C.

24th May (Sunday), 10 a.m.: Fourth Conference of Clubs at Goulburn RSL Club, Market Street, Goulburn.

30th May (Saturday), 2 p.m.: Divisional Auction, 14 Atchison Street, Crows Nest.

News for inclusion in the VK2 Minibulletin must reach Box 123, St. Leonards 2065, two days before the first of the month prior to publication, e.g. by 28th April for June AR.

Susan Brown VK2BSB. ■

VK2 VHF & TV GROUP ANNUAL ELECTIONS

Members of this Group are advised that elections for Group Committee will be conducted at the meeting on Friday evening, 1st May 1981, to be held at 14 Atchison St., Crows Nest, at 7.30 p.m.

Nominations will be received at the meeting from financial Members of the Institute. Committee duties include the conduct of meetings (held first Friday of the odd months); Conducting of Sunday evening broadcasts on behalf of the Division; Involvement and assistance in VK2 on matters pertaining to the VHF and higher bands.

M. Farrel VK2AM, Secretary ■

QRK5

A monthly transmission from the Victorian Division WIA.

By the time you come to read this I imagine that the abundance of conventions, trade displays and what-have-you will be a thing of the past, and we'll be able to settle back into our everyday routines once more. Before you file these events to the dusty archives of your memory banks, however, spare a thought for all those people who brought those functions to fruition — the organisers, exhibitors, guest speakers and so on. It is a long list, and few did it for anyone else than YOU, the radio amateur. So like I said, spare a thought of thanks to these folk who worked so hard for your benefit. Better still, if you know any of them, let them know that you appreciate their efforts. Everyone likes a pat on the head once in a while.

I'm still not sure just exactly how I "volunteered" for this chore, but somehow your previous scribe — "Three Whisky Whisky" — managed to sweet-talk me into it. Mike, of course, is moving away from the Melbourne scene and intends, so I understand, to grow himself an aerial farm. The very best of luck to you, Mike, and thank you for the many "Hats" which you wore so well.

From that you might conclude that his leaving will leave a few positions vacant around the VK3 Division — and you would be right — Librarian, Councillor, Chief Thug . . . Oh yes, and thereby hangs a tale. Last Thursday, 6th February, we had to elect a new Chief Thug. Nothing democratic about this election, though, it was a case of last one out through the door loses, with the honour falling to Ray VK3DL. Congratulations, Ray, and may the power of the Blue Quaft be with you.

Have had quite a few comments about the name of this column, QRK-5, by the way. The best to date was from the holder of an AOCP who said, "QRK-5? I thought that was the South Australian column so I didn't read it!". One can only wonder how he passed his regulations exam. I must advise you all, though, that despite intense pressure being brought to bear (two persons) I will maintain the present title mainly, I guess, because I can't think of anything more appropriate. If you have any strong feelings about this then write and tell me. I am QTHR.

The only items of correspondence is reproduced herewith for your perusal. This writer offers no comment, save for wholehearted agreement.

Dear Sir,

It has been with some amazement that I have been following the correspondence from VK3NWO and VK3ZFA in your columns.

I think that both have put forward arguments which are valid and pertinent. However, they are tending to lose sight of the basic aim of amateur radio which is comradeship in a common hobby.

As the Novice, Limited and "Full" calls are all LICENSED by the DOC, let's have an end to all this sniping at each other, and present a united front as amateurs.

Yours faithfully.

VK3KBA.

I must admit that the new "K" calls have me intrigued — what does the "K" stand for? Kombi, perhaps. Whatever, they seem to be a good idea to me, although I suspect that one group of amateurs may not be too thrilled with the idea. I'm referring to those normally silent folk who "sandbag" on the repeaters just waiting for a dual call holder to accidentally drop his Novice call sign. At that time they've been "in" — boots and all, reminding me vaguely of a vulture with the vapours. What will they do for "kicks" now? Or are there a few stalwarts amongst you who'll retain both calls just in order to keep these mugwumps happy?

The topic of conversation at a well wetted watering hole near the VK3 rooms recently was the concept of an Advanced Grade of Amateur Licence. The examination questions for such licence could concentrate on such esoteric subjects as ATV, RTTY, FAX, Digital, and the like with, say, a 20 w.p.m. CW test. One well known — dare I say, "well OILed" gentleman suggested that DOC should rescind all the two letters calls and reserve them for advanced grade amateurs. No wonder they make jokes about Irishmen If they come up with suggestions like that!

Sacred cows department. There's no denying that the use of phonetics is desirable, even mandatory under conditions of poor transmission/reception. I fail to be impressed by those enthusiasts who insist on using phonetic call sign identification on 2 metres FM under ideal communication and quality conditions. Most times I'm left slightly breathless wondering what was all that verbosity about. Come on, fellas, let commonsense prevail. I suppose that while I'm bashing the beloved bovine I may as well spare space for those who call a station and end with "Are you there?" or words to that effect. These same geniuses are those who will omit the VK3 bit from all call signs, in the interests of brevity! If you think about these problems for a moment you'll realise that if the person called IS there, he'll answer, and if he's NOT there how can he answer? So the question is redundant and should be deleted in the interests of good operating procedure.

Finally, for this month, it's time for the annual elections once more. It's really astounding how many there are in our fraternity who will carp and criticize the work of others all year, but at this time — like the toothpaste advertisement — just fade away. Your Division needs new blood, new ideas, new expertise and energy. Are you concerned about what we are going to do in the 80s; are you prepared to be involved, to give time and effort? If so, we'd like to hear from you. Maybe this isn't your "thing" but you know someone who would suit, and who would be willing. Talk to him/her, and do your bit by nominating that person. But please, PLEASE don't sit back and wait for someone else to dot it, as it won't get done.

Get that news/gossip rolling in, folk, and I'll see you all next month.

73s. Peter VK3JN. ■

QRM

The Monthly Bulletin from the Tasmanian Division WIA

This month sees the start of what is hoped to be a long and happy relationship between AR and the VK7 Division. The Bulletin QRM has been in existence in VK7 for 10 years, firstly as a publication for the Northern and North Western Branches of the Division and then over the past three years or so became the means of communication for news from all the Branches as well as Divisional Council. Unfortunately, like most things today, the ravages of economics caught up with us and a decision had to be made. What to do about QRM? The outcome of that decision you are now reading. It is hoped that, through these columns, that you, the reader, will better understand what is happening in VK7.

NORTHERN BRANCH NEWS

The February meeting was a very successful one from the point of view of membership involvement. It is pleasing to the office-bearers to see members actively interested in the Branch's future. On the financial scene, the Branch's future looks quite healthy. The club station VK7NB is hoped to be used more often this year, so keep an ear open for it.

NEW MEMBERS

The Branch welcomes Mr. Donald Bartley VK7NDI, and Mr. Ken Clark, Associate, to its ranks and hopes to see them at future meetings and activities. ■

REPEATER 8

The rebuilding programme is coming along slowly and it is hoped that this project may soon come to a conclusion. Tests are being carried out on this repeater for the relaying of the other two repeaters (Repeater 2 in Hobart and Repeater 3 in the Northwest) for Divisional broadcast purposes — further information when available.

NORTHWEST BRANCH NOTES

The AGM of this Branch was held in February, with the outgoing President, Peter VK7BQ, outlining to the meeting the aims and objectives that were dealt with during the past twelve months. He also expressed his thanks to members in the way in which they raised funds for the ATV and VHF repeaters, which are now nearing completion. On the financial side of things, the Branch had a very satisfactory year. The reins have now been handed over to Martin VK7MM and his henchmen for the year 1981.

As this is the year of the disabled, a Northwest net is being operated every day at 2230 on 3.600 MHz and this Branch is looking forward to operators on this frequency.

NEW MEMBER

The Branch welcomes Phillip van Beek, of Ulverstone, and hopes to see him at meetings soon.

COUNCIL NEWS

The Federal Councillor for the year 1981 is Peter Fudge VK7BQ, and the alternate councillor is Mike Hennessey VK7MC.

Members are reminded that membership subscriptions are now overdue. If someone says "I did not receive my AR" you can tell them why.

73. Brian Yeoman VK7ZBY. ■

QSP

EXAM QUESTIONS AND ANSWERS

How to pass examinations the easy way. How to qualify without knowing a thing about the subject. Instant licensing. Degrading the service. Throw pride of achievement out of the window. The black box syndrome. And so on. The editorial from Ham Radio December 1980 addresses the problem and here are some quotes:

"It seems that a West Coast Amateur has decided lo make some easy money by publishing material to aid prospective licensees in passing FCC Amateur examinations. His material is crafted so that mere memorization of answers to FCC exam questions practically guarantees a passing grade. His product apparently is derived from FCC exam materials. Such material is gleaned by a well-organized effort to collect questions verbatim from the various exams when they are administered by FCC representatives. Very often this has happened at Radio Amateur conclaves and conventions."

"Where do these questions and answers come from? From Radio Amateurs. The publisher in question solicits FCC lest questions from those who have recently taken the exam, then publishes these questions along with the proper answers. Pretty neat. All one has to do is memorize the questions and answers, and the exam is a comparative cinch."

"All prospective Amateurs should lake a closer look at this problem. We licensed Amateurs who organize training classes and other tutorial endeavours have a special responsibillty in this regard. Obtaining an Amateur licence requires some effort. It is usually a difficult, time-consuming process. The successful licence applicant will find the process rewarding for years to come."

"The Amateur Radio Service cannot survive If licences are obtained without due regard to technical knowledge: that is, passing FCC exams by learning the questions and answers by rote." ■

VHF-UHF
An expanding world

Eric Jamieson, VK5LP
Forreston, S.A. 5233

APRIL 1981

VHF/UHF BEACONS

Freq.	Call Sign	Location
28.335	VK2WI	Sydney
50.005	H44HIR	Honiara
50.100	KH6EQI	Pearl Harbour
51.022	ZL1UHF	Auckland
51.999	YJ8PV	Vanuata
52.013	P29SIX	New Guinea
52.150	VK5KK	Arthurton
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.320	VK6RTT	Carnarvon
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.400	VK7RNT	Launceston
52.425	VK2RAB	Gunnedah
52.435	VK3RMV	Hamilton *
52.440	VK4RTL	Townsville
52.450	VK2WI	Sydney
52.500	JA2IGY	Mie
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
53.000	VK5VF	Mt. Lofty
144.010	VK2WI	Sydney
144.162	VK3RGI	Gippsland
144.400	VK4RTT	Mt. Mowbullan
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.800	VK5VF	Mt. Lofty
144.900	VK7RTX	Launceston
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.400	VK4RBB	Brisbane
432.450	VK3RMB	Mt. Bunningyong
10.3 GHz	VK6RVF	Perth

* Denotes a change of call sign. Steve VK3OT advises his beacon has received official approval to operate with the call sign VK3RMV.

Last month I spent some considerable time on the subject of beacons, but it is too early at this writing for anything to come back from the comments outlined. Some on-air comments in VK5 seem to indicate that some beacons are too high in frequency, including those in VK5 — the antenna gain of some of the better narrow bandwidth antennae could start falling off a t144.800 with consequent loss of a weak signal in other States. 30 watts of output power seems mostly acceptable and I have overheard discussions that the VK5 beacons are too high on Mt. Lofty and too far from the sea and they would serve a much better purpose as an indicator of actual Adelaide activity if they were located on the Adelaide Plains, possibly from high sites on the Queen Elizabeth Hospital or Modbury Hospital. Possibly in these positions the beacons would not have to be looked through when operating to VK3 as they do now. Anyway, by the time the next lot of notes is due there may be some feedback from the March issue.

Some operators have suggested I try and obtain information from the custodians of the various beacons as to the type of antenna in use, height a.s.l., power and e.r.p., form of ident, location, etc. In order that this information might be gathered would the various custodians please let me have the relevant information as soon as possible so it may be distributed.

Peter Taylor H44PT is the new President of the Solomon Islands Radio Society, and advises the beacon H44HIR is now operating 24 hours a day on 50.005, running 10 watts to a vertically polarized dipole. Reports to Peter, care of P.O. Box 418, Honiara, Solomon Islands. Thanks to Peter Dodd, WIA Headquarters, for that lot.

MELBOURNE LETTER

Gil VK3AUI sent me a photo of the reception report received in Melbourne by 3FOX FM from Mar Del Plata, Argentina, which is 400 km south of Buenos Aires. The report was from a member of the Marpla DX Club for 13/9/80 at 1829 Melbourne time on 101.9 MHz, and S2 on 5 point SINPO scale. Sufficient information was sent to enable the station to verify the report, which might have led to a possible extension to 2 metres had more been known about the reception.

"3FOX FM has 10 kW ERP of mixed polarization. They use a beam centred on Geelong from Mt. Dandenong on the Channel 10 (ex 0) tower, and the beam is such as to cover the Mornington Peninsula and the northern suburbs of Melbourne. Buenos Aires would be within the beam. The transmitter puts 2.7 kW RMS into the feedline.

"Other FM stations may have been heard but the interval between idents and ads may have been too long. FOX had only been on the air for about one month and EON was similar. The only other station likely would be the ABC, but their idents tend to be fewer. The other stations, 3MBS, 3RRR and 3PBS, have either low power or are on very odd transmission schedules."

Thanks, Gil, for passing that on, quite an interesting event — I wonder what the station operators thought about the reception report?

Gil also advises 6 metre activity in Melbourne was good during January. He was able to work H44PT, P29DJ, FK8BG and YJ8PD. Also a good VK1 opening as well as JAs and ZL. Missed VK8 but got VK2, 4 and 6 and 7.

70 cm ACROSS FROM NEW ZEALAND

Ross VK2ZRU has written with some details of the 70 cm opening to New Zealand on 26/1 and 27/1. Opened at 0950Z and continued to after 1300Z on 26/1 when VK2ZRU, VK2BDN and VK2BSV worked ZL1AXX, ZL1TAB and ZL1AVZ, and ZL1TCX. On 27/1 ZL1THG at 0920 to 1040Z worked by VK2BDN and VK2ZRU. Signals were 5 x 1 to 5 x 8 with long slow fades. Dick VK2BDN tried both nights with 50 watts of 1296 MHz SSB without success.

Ross VK2ZRU runs 40 watts SSB to an 18 element yagi and receive pre-amp; Dick VK2BDN 100 watts PEP on 1296 MHz to four 6 element loop yagis and 250 watts on 432 MHz to 88 elements of yagis.

TRANS-TASMAN VHF AND UHF PROPAGATION

Relevant to the above is the following taken from "The Propagator" for February 1981, and supplied by **Lyle VK2ALU.**

"Checks for reception of 70 cm beacons in ZL have been made over recent weeks at VK2ALU, when weather patterns seemed at all likely to support propagation across the Tasman.

"The ZL2VHP beacon at Palmerston North on 433.250 MHz was heard for approximately 1½ hours from 0420Z on Saturday, 10/1/81, at up to 2 S-points above noise, with slow QSB. A subsequent check of weather maps for Friday and Saturday indicated that a ridge of high pressure may have supported Trans-Tasman propagation from early morning on Saturday, 10/1/81.

"No other ZL 70 cm beacons were heard, nor any other signals on this band, and calls on the ZL calling frequency of 432.2 got no response. A phone call to ZL1THG was unsuccessful because he was at work. VK2BDN was then phoned, to activate any possible Sydney stations with suitable capability, but as far as is known no contacts were made. A quick check of the two metre band showed it to be relatively lively but still no sign of ZL signals.

"ZL1THG has since advised that ZL2TAL identified two VK2 repeaters on

146.7 and 146.9 MHz between 0900 and 1100Z on 10/1, and he states also that VKs have been heard spasmodically on two metres over recent times.

"It seems rather a coincidence that the first known 70 cm opening between VK and ZL occurred on 9/1/79, almost two years to the day before the latest opening. A difference was however that the isobaric weather pattern was not nearly as complex during the recent opening, which leads one to suspect that openings may occur more regularly than is realised, when ducts form which support 70 cm signals but not 2 metre signals. Accordingly, a more effective check has now been started at VK2ALU, using slow speed chart recorder to monitor 433.25 MHz with antenna pointed towards ZL when the weather map looks promising.

"It Is known VK2ZQT is getting set up with stacked yagi antennae on 70 cm pointing towards New Zealand, and hopes to be able to start similar checks. VK2ZLX near Nowra is also looking across the Tasman on two metres with a good antenna system and adequate transmit power."

NEWS FROM BOORAGOON

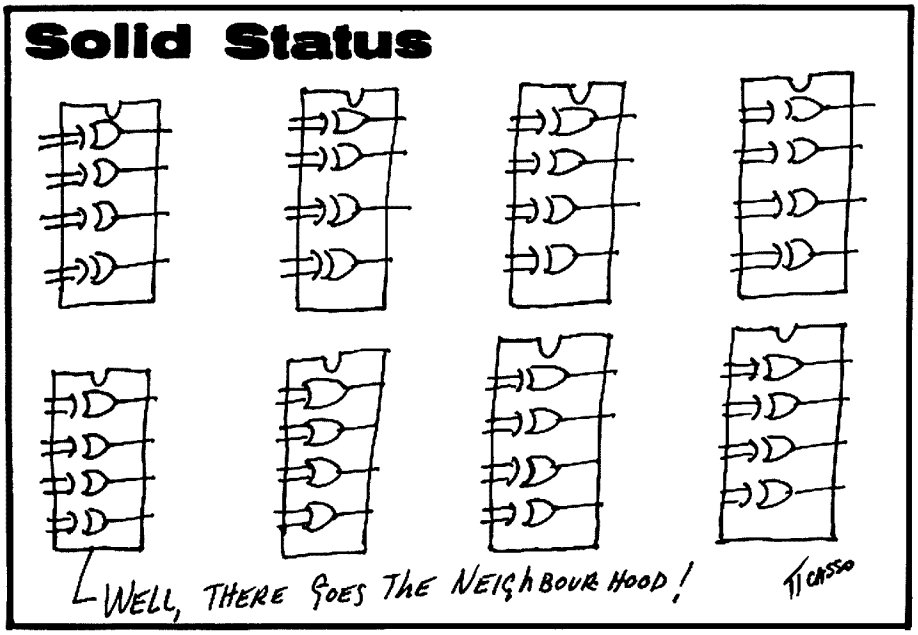
Wally VK6KZ has sent a very interesting letter from his QTH at the Perth suburb of Booragoon, extracts from which are included:

"Firstly I am postulating the theory that the DX season has been a poor one in VK6 due to the long wave weather pattern for the southern hemisphere which has had a major ridge at 110° E, i.e. in the Indian Ocean, west of WA, and hence the Great Australian Bight has only received a series of fairly fast moving highs of central pressures about 1022 to 1024 millibars, whereas two years ago the pattern had its ridge in the Bight.

"I made one foray only to the South Coast, namely the trip to Cape Leeuwin on 22/1, 23/1 and 24/1, which started off with some good north-south DX. The highlights were working Don Graham VK6HK at 1145Z on 22/1 on 1296 MHz initially CW from me and SSB from Don, but the fault in my SSB was later fixed and we had signals ranging initially from 5 x 3 to Don and 559 from me to 5 x 9 on SSB. Then at 1225Z we made it on 2304 MHz CW, Don being 419 and me 429, although I did copy Don on FM just briefly. Power levels on 1296 were both about 1 watt whereas on 2304 I had 1 watt and Don about ½ watt. We are both using 90 cm parabolic dishes, Don using a log periodic multiband feed for 1.3 to 5.7 GHz, whereas I changed over my dipole feeds.

"The path was 274 km — far short of the VK6KZ/P and VK5MC distance on 1296 and the VK5QR to VK6WG path on 2304 MHz. It was exciting though. We tried 3456 MHz but had no success which was not surprising since Don and I had only just achieved the QTH/QTH path of 15 km on that band and had yet to optimise our present gear on that frequency. The 1296 MHz path was checked again with good results on the morning of 24/1 before I left for Perth. Actually 1296 and 432 MHz were reported better than on 144 MHz!

"However, east/west it was a different story. On 23/1 at night conditions north/south were just so-so, and no signals from VK5, and the Albany beacon was weak. Imagine my surprise when on Saturday morning, 24/1, I found out that the Albany boys had been working Adelaide and Reg VK5QR and Bernie VK6KJ had had a long crossband QSO on 1296 MHz. To rub it in, after finishing talking to VK6WG, I heard he and VK6KJ working both VK5ATD and VK3AOS! There was no sign whatsoever of the VK5 or VK3 signals or VK5VF beacon. It appeared that the high pressure cell must have moved fairly fast on 23/1 and I missed out or else the mechanism for getting into the duct didn't form at Cape Leeuwin.



A TRY FROM ESPERANCE

Wally VK6KZ continues:

"My second journey to the South Coast took me to Esperance and at 1152Z on 30/1 on Wireless Hill at Esperance heard VK5VF, but nil from Perth. Worked Peter VK5ZPS and Bob VK5ZRO on 144 MHz. Also worked VK5ZRO on 432 5 x 1 both ways, although conditions did improve later. Worked VK6WG Albany, VK6NL Denmark and Reg VK5QR. Despite VK6WG's reception on 1296 and 2304 MHz ot signals from VK5QR I did not hear anything of Reg on either band. Esperance is 4½° off the Adelaide/Albany line. On 24/1 next morning worked VK6WG againl on 144 MHz but had no fuck from Esperance on 432, 1296 or 2304 MHz! Esperance to Albany is 390 km and to Adelaide 1533 km."

Thank you for the information, Wal, makes good reading and helps to keep others informed and we hope interested enough to try as well. As a matter of fact, I was pleased to be able to act as host to Wal recently for a night and morning when he paid me a State visit and we covered a lot of territory in discussions. One point which did come from the discussions is the continuing problem on 144.100 MHz calling frequency where QSOs are being continued after making contact and making it difficult for others to use it. I, together with most others, occasionally fail to move off the calling frequency myself, but I do try and shift 10 to 20 kHz at least after establishing a contact. Wal certainly feels that had the frequency been clear it would have helped during the Perth/Adelaide 2 metre contacts in January 1980 and the most recent ones on 28/12/80 at about 2200Z. So once more let's all try and be helpful and shift off the frequency after contact has been established.

MOBILE OPERATION

On 14/2 **Bob VK5ZRO** made what would normally be long hours of travelling into an interesting pediod while on the way to Melbourne by using his 10 watt mobile on both FM and SSB to make contact with Steve VK5AIM/P and Ken VK5EA/P, who went out on a hill near Mt. Gawler in the Mt. Crawford Forest area.

The parties were obviously aided by a good set of conditions, but Adelaide Channel 8 repeater was finally lost at Nhill in Victoria, whilst Channel 7 at Mt. William was accessed at Coomandook in SA. Contact was maintained with those in SA by switching from Channel 8 to Channel 7, depending on the terrain Bob was passing through at the time. From Keith the parties found the direct path was superior to either repeater. Contact was made again at Bordertown at 1008Z and maintained through to Kaniva. Trevor VK5ADY/P was also out on a hill near One Tree Hill and was able to maintain contact until finally signing with Bob when he was at Horsham!

Most of the time there was little difference on direct paths between FW and SSB as vertical polarisation was used on both.

Steve and Ken used 10 watts to a 3 element vertical beam, whilst Bob had a vertical whip. All this goes to show what can be done and what fun you can have if you like to make some effort and prior arrangements. But to show the difference good conditions can make, on the return journey Bob was unable to make contact with the same parties until about Tailem Bend, less than 100 km from Adelaide.

THE WEST FADES OUT

Tony VK6BV reports activity from the Northam area dropped off very rapidly from 1/1/81 when 6 metres started closing down! Contacts were made to VK5 on 1/1, 2/1, 3/1, 4/1, 5/1, then to VK4 on 8/1, same day ZL TV audio followed by VK1 and VK7. The beacons VK5VF, VK5KK and VK3OT were audible at varying times during the first 15 days of the month when Tony went on leave. On 10/1 video noted on 48.250 and 49.750 at 0700Z.

Part of Tony's holiday was spent in Kalgoorlie where he found a lack of six metre activity, or even operational gear, which is a pity.

Also from the West, most are now aware that *Andy VK6OX* is no longer at Carnarvon, having accepted a position at Kyogle in northern NSW, and as reported in the February issue, just to leave a lasting impression of his activities whilst in Carnarvon worked G4BPY and others in G-land crossband 52 to 10 metres. He was heard and worked here from his new QTH on 1/281 with extremely strong signals, so we will be hearing more of Andy in the future.

ANOTHER NEWS BULLETIN

For the first time in a long time a new news bulletin has arrived at my desk. It is from the Liverpool and Districts Amateur Radio Club and sent per courtesy of **Nev VK2ZBQ** to whom I say thank you and look forward to receiving further copies.

From its pages I note a number of operators worked into New Zealand on 26/1 and 27/1 on SSB. **Barry VK2AHE/P** worked a ZL for 40 minutes on 432.200 MHz with armchair copy all the way. **Neville VK2YNB** also made several good SSB contacts. As far as is known no FM contacts were made.

On the same dates mentioned 2 metres was quite congested, and it was reported that on FM simplex there was standing room only for VK and ZL operators! During this two day period **Bob VK2ASZ** worked 35 ZLs on 2 metres! One ZL reported to have worked 52 VK stations. ZL1 and ZL3 main areas worked.

THE LOCAL SCENE

Activity on 6 metres has continued at a reduced pace, but still openings to various parts of Japan on at least 8 days in Februrary. Good opening on 10/2 and 20/2 with signals to 5 x 9+, mainly JA8 and JA7. On 9/2 noted ZLs were working W6. FK8BG running 10 watts 0033Z to VK2QF and others on 7/2. Good Es to VK2 on 1/2, and to VK4 and VK6 on 3/2, 6/2, 7/2, 8/2, 11/2, and a few other since.

On 2 metres a number of good contacts to VK2 and VK3 from VK5CK. VK5RO and VK5ZDR heard working VK3 several times, finally signals decided to come into my **QTH** on 17/2 when I had contacts with Les VK3ZBJ and Roy VK3AOS, and heard VK3ZL, VK3BES and a couple of others but too weak to work. On 17/2 I tried 432 MHz to Roy VK3AOS as he was 5 x 9+ on 2 metres, but not a sign of a signal either way, not even a CW beat note! Very strange.

David VK5KK at Arthurton had his 52.150 off the air for a few days whilst antenna repairs were made. So now instead of 2 metre beams pointing at the ground he has a 16 element KLM type up about 70 feet and underneath an 8 element on 6 metres at about 60 feet. Test signals to me on 24/2 indicated the beams were working very well and 5 x 9 signals both ways on both bands resulted from about 2 watts over the 70 mile path. The 5 element beam on the VK5KK beacon will continue to point north-east as previously so you can be assured that its direction is reasonably permanent wherever you live.

TECHNICAL TOPIC

This month I would like to give you a brief outline of a 6 metre solid state linear submitted by **John VK4ZJB** and which should be of general interest. Details of circuitry, layout, parts, etc., can be obtained by sending a s.a.s.e. to J. D. Bisgrove VK4ZJB, 26 Kennedy Street, Brighton, Queensland 4017.

"The MRF 454 (flange mount) and MRF454A (stud mount) have been around for quite a while, Initially classed as 'Amateur-CB Transistors'. 12.6V and 80W CW output, frequency 2 to 30 MH,z gain 12 dB.

"Even though tailored to 30 MHz I decided to try an MRF454. In a conventional single device circuit the results were as follows: A CW input of 1 watt gave a CW output of 3 watts; 2W gave 20W; 3W gave 35W; 4W gave 50W; 10W gave a minimum of 80W (saturation). Vcc 13.8V, readings taken with BIRD Thermaline. At 13.8V the device saturates at about 110W, the best operating point Is when an increase in drive produces no further increase in output, then back off drive slightly. This form of amplifier should be useful to users of 2 to 4W PEP equipment, as well as an excellent mobile linear. Very worthwhile stable power gains are achievable in conventional-design amplifier figurations.

"It must be emphasised that you need to be liberal with your heatsInking on this device. Maximum dissipation is 180 watts, max. Ic = 15.0A. At all phase angles with Vcc 13.8V and 50 per cent overdrive, the device will not be damaged with adequate heatsInking . . . so there you are, give it a try!"

Closing with the thought for the month: "We often pardon those who bore us, but we cannot pardon those whom we bore."

73. The Voice in the Hills. ■

WICEN

R. G. HENDERSON,
Federal WICEN Co-ordinator,

The Department of Communications has recently issued a new brochure RB297 "Conditions Governing the Licensing and Operation of State and Territory Emergency Services Radiocommunications Service".

Whilst the title of this brochure suggests little connection with amateur radio, our continued WICEN liaison with the Natural Disasters Organization has ensured appropriate mention therein of amateur emergency networks. Some relevant extracts from RB297 follow:

Extracts from "RB297 Conditions Governing the Licensing and Operation of State and Territory Emergency Services Radiocommunication Services" Mov80.

PART 1 — INTRODUCTION

66 1. Licences in accordance with the provisions o fthe Wireless Telegraphy Act may be granted by the Department to State/Territory Emergency Services (SES/TES) for the establishment, maintenance and use of radiocommunication stations for training and operations in connection with their dual roles associated with disasters and civil defence activities.

1.1 Licences covering the radio activities of persons, volunteer groups, councils and government instrumentalities engaged in SES/TES operations shall be issued in the name of the SES/TES, which shall accept the full responsibility of the operation of the stations concerned.

1.2 Subject to approval by the Department, radiocommunications may be established between stations as indicated below:

(a) inter-communication between State Headquarters;

(b) State Headquarters and Regional Headquarters;

(c) Regional Headquarters and Local Headquarters;

(d) State, Regional and Local Headquarters and Local Mobile Units;

(e) inter-communication between Local Mobile Units; and

(f) combination of (a) to (e) to meet particular circumstances.

1.3 In approved cases, licences may be granted for the operation of low-powered personal mobile stations for communication over short distances with base or mobile stations. Paging receiving units may be licensed for participation in land mobile, radiocommunication services on the basis, generally, that the number of units does not exceed the number of land mobile stations in each service. In areas not served by a Telecom Australia paging service consideration will be given, where a need can be clearly demonstrated, for a greater number of paging units to be incorporated in a service.

1.4 It should be noted that public telecommunication facilities provided by Telecom, where available, shall be used for communication between fixed locations except in circumstances as indicated in section 3.9 and 3.17 of this brochure.

3.13 Emergency Amateur Station Networks — With the approval of an authorised officer of the Department and under prescribed conditions, the licensee of an amateur station may, as a member of an organisation of amateurs recognised by the Department, participate in special radiocommunication networks in time of civil emergency or disaster.

3.14 During a period of emergency, through a nominated co-ordinator and control station, may pass messages on behalf of the SES/TES. The log book of the control station shall have entered in it the name, rank and telephone number of the officer of the SES/TES who requested the communications assistance.

3.15 During the period of the emergency the licensee shall confine his transmissions to those necessary for the exchange of essential traffic. Casual conversation or necessary testing should be conducted on a frequency separate from that used for emergency communications. Correct procedure for the amateur service should be adhered to throughout the emergency working.

3.16 Exercises by SES/TES organisations to enable amateur operators to obtain practice in passing and recording messages may be permitted, following written application by the SES/TES and approval by the Superintendant, Regulatory and Licensing, in the State concerned.

FREQUENCY USEAGE

5.5 In view of the number of existing services already operating in the MF and HF bands, assignment of clear channels for use by SES/TES cannot be guaranteed. Therefore the possibility of the need to share frequencies with other users should be recognised.

5.6 Although certain frequencies have been reserved for use by SES/TES they may not be available for use at a particular location because of unacceptable interaction with existing services.

5.7 The frequencies 27.24 MHz and 27.26 MHz where assigned may be employed for both training and operational purposes.

5.8 The frequency 3733.5 kHz is a common frequency available to fixed stations and for this reason may be used as an emergency channel at times of failure of all other systems, including interstate operations.

5.9 Approval may be given for SES/TES stations to be operated on the frequency 119.1 MHz for communication with aircraft engaged in search and rescue activities on the understanding that the service is employed for the exchange of messages relating to the safety of life and property in an emergency. This frequency may be employed for training exercises involving communications with aircraft.

5.10 Use of the frequency 119.1 MHz, although authorised by a licence, shall be subject to co-ordination with the Department of Transport on each occasion it is required by the SES/TES.99

ACT WICEN EXERCISE, DEC. 1980

If you happened to hear some strange traffic on the Canberra Channel 6900 repeater one Saturday in December, it was more than likely you were listening to the annual WICEN communications exercise.

Twenty-three WICEN operators from the ACT Division participated in this year's exercise which, as in previous years, was held in support of the ACT junior tennis championships.

This year's exercise, however, was significantly different from those in the past. Besides the normal voice traffic from field operators to WICEN control — this year located inside the John James Hospital pathology laboratory computer centre — an RTTY link was used between the WICEN control centre and the tennis organisers at Lyneham.

The new features of the exercise were introduced so that problems experienced in previous years might be eliminated or controlled and to test coding and decoding of voice messages using a glass terminal and a mini computer.

The organisers, both from WICEN and

the tennis centre, agree that it was a most valuable exercise, very informative and of significant PR value. Briefly, the procedure was to encode field messages of tennis scores into a standard format by the WICEN operators before transmission to WICEN control. The coded messages greatly facilitated the speed with which messages could be handled. This year it was not necessary, as in past years, to have two VHF channels operating, as the one channel used was quite adequate to handle the volume of traffic.

Once received the messages were typed into a computer terminal then decoded by the computer. This process occurred simultaneously with other voice messages being transmitted and received and there was no interference noticed between the two systems at any stage. The messages, once decoded by the computer were prepared for RTTY transmission and displayed in full before despatch. Once checked for acuracy the prepared message was transmitted on a UHF link to an RTTY terminal at Lyneham tennis centre some 12 km to the north. The messages were also displayed on a glass terminal, a refinement introduced in the field by the local operator.

In all 333 RTTY messages were passed — for those interested in ASCII code at 110 band — representing 40,000 characters sent during the whole exercise without a single character being garbled.

A further 178 administrative messages raised the total to 511 (considerably higher than in past years), in 540 minutes of on-air operations. The aims of the exercise were therefore achieved with considerable success. There were a number of problems encountered but these were quickly overcome in the co-operative spirit that prevailed among those participating.

The response from the members of the ACT Division to a request to participate can, however, only be described as fair, especially when one considers that this was the only exercise for 1980. ■

Close-Up

Mr. Henry Moritz VK3VMO. Henry is a lecturer at the Ballarat CAE and also Secretary of the Ballarat Amateur Radio Group. Henry judged the marquetry section at last year's Royal Melbourne Show. He is pictured with an example of his work, a picture made from inlaid wood. His work is represented in private collections and churches in USA, Europe and Japan.

From the Ballarat Courier

WIA

FEDERAL EMC CO-ORDINATION

- **Tony Tregale VK3QQ,** is the Co-ordinator
- Do you have any interference problems? (power-line, TVI, AFI, etc.)
- If so, send details to:

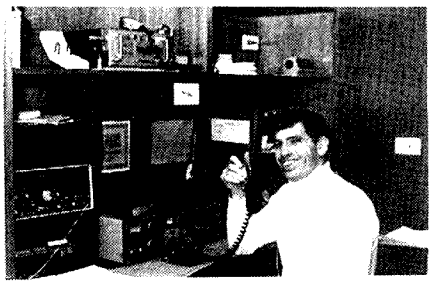
VK3QQ — QTHR

or via

WIA Executive Office,
Box 150, Toorak 3142

SPOTLIGHT ON SWLing

Robin Hawood VK7RH
5 Helen St., Launceston, Tasmania 7250



I recently received my copy o fthe World Radio TV Handbook for 1981. It is the 35th edition with a print run of over 60,000. This is an authoritative directory of international radio and television and has the current details of practically all the broadcasting stations and outlets throughout the world. Not only is it useful to broadcasters and programme makers, but also to the listeners, be they casual or serious in attitude.

The countries are listed alphabetically within regional and geographical areas such as Europe, Africa, Near and Middle East, Asia and South-East Asia, Pacific, North America, Central America and the Caribbean and South America. It also is divided into separate sections for radio and television broadcasting.

It certainly has a wealth of information with frequencies, times of transmissions, languages used, and programme policies. There are also special articles on various facets of the broadcasting scene written from the viewpoint of the technical and administrative side as well as from the DX groups and individuals.

One article in particular — an Assessment of Broadcasting after WARC 1979 by Herr Willi Menzel — certainly merits reading. Herr Menzel was head of the Broadcasting Secretariat of the International Frequency Registration Board (IFRB) for 20 years and was an observer at WARC.

One conclusion from his article is that pressures for frequency space will increase despite the advantages of other forms of transmission such as satellites, cable and optical (laser). Many developing and emerging nations find that the utilization of HF communications is more economical than the use of the more advanced forms of technology. They also, in many instances, are in difficult economic circumstances, which precludes them from readily acquiring these sophisticated communications systems.

The biggest users of the HF spectrum over many years have been the Maritime Ship/Shore Stations. With other services pressing for more channels, there is pressure on them to relinquish some frequencies. It is interesting to note that in the past couple of weeks it has been announced that a satellite is scheduled to be launched early next year to carry the maritime communications traffic. It will be known as IMSAT. It is planned to have geostationary satellites over the three major oceans — Atlantic, Indian and Pacific. If more and more users do go over to utilizing IMSAT, it could relieve the congestion of some circuits, and their usage by other services. However, satellites have been known to fail going into orbit!

Another conclusion of Herr Menzel's article is that the release of the new allocations to various services such as the new amateur frequencies, will not be as swift as some would have hoped. It could be up to 1985 or beyond before the existing services are relocated.

This seems to confirm my own observations with particular reference to the proposed new frequencies for amateurs In the HF spectrum. Possibly the first one to be available would be 24.89 to 24.99 MHz. There appear to be few users occupying these frequencies at present. However, it is highly doubtful that the band 18.068 to 18.168 MHz will be cleared for many years. Many of the existing users such as the military, telecommunication, and aviation facilities will be reluctant to give up their frequencies. The 30 metre band (10.1 to 10.15 MHz) has been allocated to the amateur service on a secondary basis, and is heavily congested particularly in the evening hours, and I do not see that being open for some time.

Another factor will be how quickly the various administrations will clear these two new amateur exclusive allocations for utilization. Probably our own administration, the Department of Communications, will wait and see what the other administrations will do, and how quickly they will act.

I am looking forward to trying out the new frequencies when they do become available, for the propagation to be derived from them will be extremely interesting, especially the 30 metre allocation, which during the winter seasons should be open for DX communication practically 24 hours a day.

I have received a letter from **Mick Power VK4NGW** expressing interest in hearing about medium wave DXing and how to go about it, in this column. Anyone who has attempted DXing down on the medium waves certainly knows how frustrating and difficult it can be. Mick has only logged 3 to 4 American stations, 4 to 5 from Europe and a number from Japan. Well, Mick, you are certainly ahead of me, as the best I can claim are several Chinese megawatters, Korea, Japan and Bladivostock, also a Megawatter. With many Australasian stations now broadcasting for 24 hours it is very trying to say the least.

However, I have heard of one ardent MW "buff" who logged a station in Canada when they went to 50 kW and won a trip to Canada for being their most distant listener! I call that rewarding.

Mick would like to see a few articles on M/W antennas, loops, ATUs, etc., as there could be quite a number of people interested. So if there are any who feel that they could contribute in this field, could they contact me at the above address. Those who are interested in MW DXing could also contact either the Australian Radio DX Club or the Southern Cross DX Club, as they both have quite a good medium wave section in their respective publications.

Well, that is all for this month. 73s and the best of DXing! ■

YOU and DX

G. (Nick) Nichols VK6XI
6 Briar Place, Ferndale, WA 6155.

Oh boy, it's going to be one of those months, the shack floor resembles a garbage dump of ripped, torn and shredded notes, 10 metres is alive with DX (the sudden and slightly overdue upturn in conditions makes concentrating on anything other than the receiver a difficult task), however what is really causing me problems is knowing just how far I can go in recounting the story of what happened to *David N2KK* during his trip to the rarer Indian Ocean and Northern African nations.

No doubt many of you worked him, he operated from 4S7KK, 8Q7KK, J20CN, N2KK/ST2, and was able to fill for many elusive zone 24 on 10, 40 and 80 whilst at the latter mentioned location. However if you had followed David's trip as closely as I had, his non-appearance from ST0 had many of us wondering just what had gone wrong. Was he OK, was it equipment failure, what???? Rumours flooded the bands, however we will choose to ignore them, as fact in this instance was a lot stranger than fiction.

Firstly, in case you didn't know, there is no such thing as an amateur licence in South Sudan, you allocate your own call sign, decide what bands you'd like to activate and go for your life. Sounds easy? Well David arrived in Duba, booked into his hotel and promptly got his station on air. However being fairly tired he felt a good night's sleep was probably far more beneficial than a few hours of marginal propagation. At 3 a.m. he was awoken by the sound of his hotel room door being being forcibly opened, a somewhat rude awakening — to be confronted by a group of uniformed personnel armed with automatic weapons, placed under arrest and locked in his room — he was charged with spying!

Apparently the Head of Security had received an "anonymous" tip-off, the source of which is believed to have come from

another amateur. Apparently David had failed to realise the custom is to bridge and/or leave a donation of equipment — a mistake that could have proved fatal. Happily the authorities there listened to reason, withdrew the charges and returned the equipment. David, needless to say, did not hang around and is now safely back in the U.S. — what's all this got to do with DX? Well next time you work a DX-pedition from the comfort of your favourite chair, in a comfortable shack with a cup of steaming coffee or whatever close at hand, spare a thought for the op on the other end, his financial commitment, the hours of planning, the risks. Whilst the places may sound utopian the conditions seldom are.

FACT & FICTION

IRCs are causing problems redemption-wise in Liberia, green stamps should ensure prompt return of QSLs.

Don't totally write Kermadec off yet, rumours still abound, including one involving a well known VK, only time will tell.

4W didn't come off, the OE operator named as expedition leader denies all knowledge.

600DX cards are not being accepted by ARRL for DXCC status — despite authority to operate being obtained — perhaps he hasn't worked the "right" people yet.

VK4N1C/3X at time of writing was accepted for DXCC status and yet the Australia DXCC award authorities only accept if contacts are made in acknowledged NOVICE bands — that's plain stupid. He is licensed to *operate* in any band authorised by the Guinea government; as such any contact on any band for which authority has been granted is legal. This bias against novice operators by certain gentlemen is just going too far.

ON THE BANDS

10 Metres

Europe, North America, Africa and just a sprinkling of South American pounding in like locals — take advantage of the fine conditions while they last. On phone JT1KAI, FG0FOK, T30AC, W5JW/KX6, W5JMM/SU, OX1TW, FM7AV, OD5MR, A51PN, VK9NYG, A22ED, KV4AA, HV1AB, HV3SJ, HR1MZM, J73PP and EL2AK generated lots of interest, whilst on CW things were quiet — A4XIH being the only one of interest.

15 Metres

Overshadowed by the fine conditions on 10, most notable on phone FM7AV and VP8PP, whilst on CW FK8CE, KC6MW, VQ9NN and ZB2G were workable if you could break the pile-ups.

20 Metres

CW again was the mode to be concentrating on, A35EK, A5XHI, BV2A, CO7UPC, FH8CB, FM7AV, FG0FOK, FW0VU, VS5RP, VP9DR, ZF2AI and 5N0DOG, plus many more too numerous to list were very active during the month.

40 Metres

With the utmost respect the Japenese kill phone operations from here, piled six or seven deep and well over S9 the mode to us is undoubtely CW. FO0VU, KC6MW, VS6DO plus ZS and some Central Americans made this mode well worthwhile.

80 Metres

Hard work to find anything; on phone A4XIH and 7Z4AP found a patch of fine propagation, whilst on CW A4XIH, YU3ZH plus HS and JA were all workable. A4XIH will make scheds with VK on both modes but much prefers CW — he's on 10 most evenings.

Thanks go this month to Eric L3-0042 and Allen VK2AIR for their contributions.

QSL INFORMATION

EL2AK — via PO Box 1025, Monrovia, Liberia
HV3SJ — via I0DUD
FG0FOK — via YASME
600DX — via I2YAE (3 x IRC)
W5JMM/SU — via KA5AZT
T30AC — via WB6FBM
OD5MR — via HB9ABV
A35EK — via Fanga, PO Box 111, Nukualofa CI
A4XHI — Box 8530, Salala, Sultanate of Oman
FM7AV — via F6BFH
FO0VU, FW0VU, ZK1XG, 5W1DC — via DL2RM
KC6MW — via JR1AIB
ZF2AI — via W0CW

73s. ■

AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

For this month I have included details of three awards which are available for working amateur stations in the Northern Territory (VK8).

The **"BOUGAINVILLE AWARD"** is sponsored by the Darwin Amateur Radio Club to coincide with the Darwin Bougainville Festival held in May each year.

The **"WORKED ALL VK8 AWARD"** and the **"WORKED DARWIN AWARD"** are made available by the Darwin DX Working Group, which is a separate body to the Darwin Amateur Radio Club, although most members of the Group are also DARC members. The basic aims of the Group are to promote the interest of overseas operators in the NT and to promote DX activity by means of achieving awards and competing in contests, as well as normal DX activity. The Group also assists approved charities in the NT with surplus funds raised by the issue of the two awards. The current project is to assist the NT Blind Association. As a long term project, the Group intends to compile information regarding the construction and/or modification of equipment to be used by blind operators. It is also hoped to devise training aids for those blind persons wishing to gain their amateur licence.

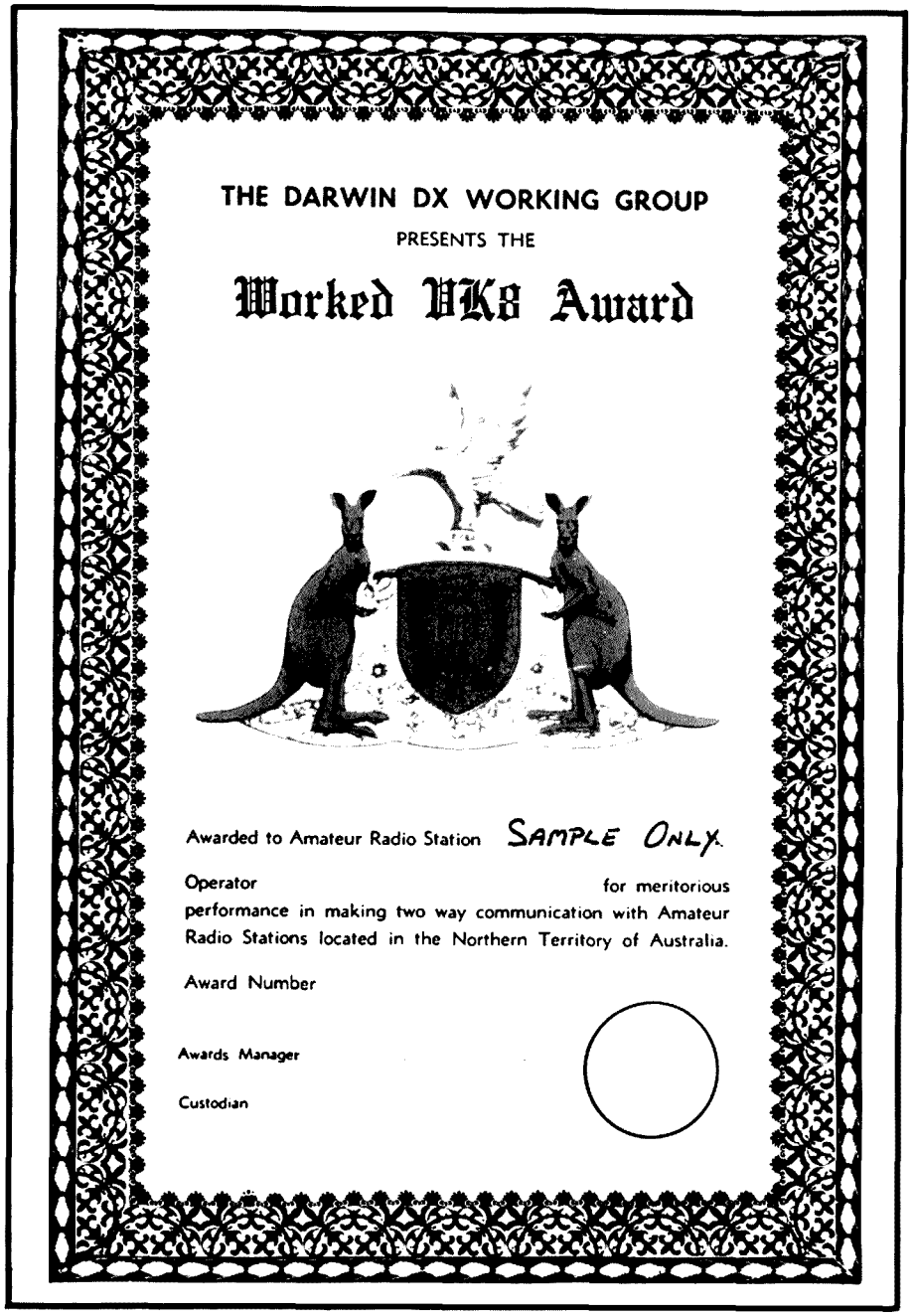
The rules for the awards are:—

BOUGAINVILLE AWARD
Work ten (10) different amateur radio stations in the greater Darwin area during the period from 0000Z 1st May to 2400Z on 31st May in the same year. Contacts made during previous years do not count. Contact with the Club station VK8DA counts as two (2) stations. SWLs hear ten (10) different stations in the greater Darwin area. The Club station VK8DA and the beacon VK8VF each count double. The ten differen stations can be worked/heard on any band, any mode.

Send a log extract signed by two other amateurs accompanied by a fee of $A1.00 or ten (10) IRCs to cover postage to the Awards Manager, Darwin Amateur Radio Club, PO Box 1418, Darwin, NT 5794.

WORKED DARWIN AWARD
Requirements:
DX stations require five (5) contacts with stations located in the greater Darwin area. VK stations require eight (8) contacts with stations located in the greater Darwin area.

WORKED VK8 AWARD
Requirements:
Irrespective of the applicant's geographic location, eight (8) contacts are required with stations located in the Northern Territory of Australia.



Any band, any mode, may be used, and SWLs are also eligible for both awards. The cost of each award is $A3.00 or 10 IRCs. A GCR certified copy of a log extract is required, i.e. the log extract shall be signed by the Federal Awards Manager, WIA, or any elected official of a WIA Division or affiliated Club, a JP or two other licensed amateurs.

Applications shall be forwarded to the Awards Custodian, C. Humfrey VK8NCT, PO Box 40318, Casuarina, NT 5792. Cheques, Money Orders or International Money Orders shall be made payable to "The Darwin DX Working Group".

DESCRIPTIONS
Bougainville Award:
Measures 235 mm x 200 mm, printed in two colours on thick white parchment type paper.

Worked Darwin Award:
Measures 295 mm x 210 mm, printed on high quality gloss paper with the surround and title in brown and remaining printing in black.

Worked VK8 Award:
Measures 220 mm x 320 mm — all other details as above.

Good hunting. ■

THE DARWIN DX WORKING GROUP

PRESENTS THE

Worked Darwin Award

Awarded to Amateur Radio Station ...SAMPLE ONLY.....

Operator ..... for meritorious performance in making two way communication with Amateur Radio Stations located in the City of Darwin.

Award No.....

.....No.....

Mode .....

Date .....

Awards Manager.....

Custodian.....

Correction to February AR: Address for Pioneer Shire Centenary Award is:
AWARDS MANAGER
MACKAY AMATEUR RADIO CLUB
Box 1065, Mackay 4740

Darwin Amateur Radio Club Inc. VK8DA-VK8VF

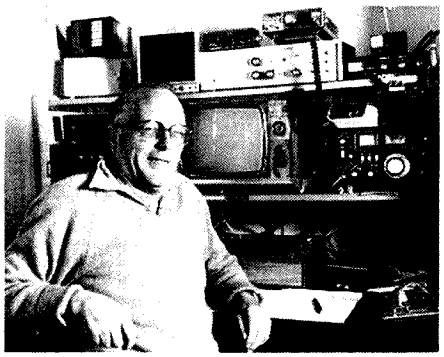
BOUGAINVILLEA FESTIVAL AWARD

Acknowledgement

VK5WV

CONTESTS

Wally Watkins VK2DEW
Box 1065, Orange 2800



April		
4/5	Polish CW	FCM
18/19	Polish Phone	FCM
25/26	King of Spain Contest	AR 4/81
25/26	Helvetia Contest CW/Phone	AR 4/81
May		
10	"Corona" 10m RTTY	CQ 4/81
23/24	Europe and Africa RTTY	CQ 4/81
30/31	CQ WW WPX CW	CQ 2/81

KING OF SPAIN CONTEST

1. The trophy will be open to all nations, between Spanish stations and world stations calling Spanish EA stations, i.e. to be accepted QSO should operate with at least one EA station.
2. The competition will be held last complete weekend of April 1981.
3. TYPES: All types recognised by radio amateurs will be permitted.
4. FREQUENCIES: HF — 160, 80, 40, 20, 15, 10. VHF — 144, 432, 1.296.
5. SCORING: One point per QSO.
6. TIME TABLE: From 20.00 hrs. GMT Saturday to 20.00 hrs. GMT Sunday, with perodic rest of four consecutive hours.
7. QSOs: Only one QSO per station in each frequency and type will be accepted. 15 consecutive minutes should be worked on each band or type.
8. CONTROLS: The EA stations will give RS or RST and matriculations of the province. For example, a station in the province of Barcelona should submit 59B. Stations in other parts of the world should give the following information: RS or RST plus the contact number beginning with 001. The time should not be submitted, but should be entered in the lists in GMT.
9. FINAL SCORE: Number of QSOs multiplied by the number of provinces obtained for band, taking into account that stations in Calella count as extra multipliers.
10. CALL SIGN: "CQ Calella — III Trofeo SM el Rey de Espana" to call stations in Calella, and the general call sign of the contest will be "CQ III Trofeo SM el Rey de Espana".
11. LISTS: Should be submitted to "Agrupacio Radioaficionats Calella. Apartado 181. CALELLA (Barcelona) Espana. Closing date: postmark 10th June, 1981, 2 IRC or $1.
12. The station which obtains a total of 75 QSOs will receive the commemorative award. Special QSL to all received logs under 75 QSOs.
13. The SWL stations which wish to participate will receive the commemorative Diploma by obtaining 150 QSOs.

TROPHIES:

— Trophy H.M. The King of Spain for the first place, international and national.

— Trophies for the second and third places, national and international.

— Trophies awarded to the highest classification, national and international.

— Special prize for the highest classification, national and international, with an invitation for the winner and one companion to spend eight days in Calella in the second fortnight of August 1981 to receive the trophy.

— Trophies 1er classification SWL — national and international (HF).

— Trophies 1er classification SWL — national VHF.

Calella-Cost del Maresme, August 1980.

HELVETIA CONTEST

Each year, last full weekend in April.
1981: April 25th to 26th, 1500-1500 UTC.

Use bands between 160 and 10 metres.

Mode CW or Phone.

Send RS(T) plus a three-figure serial starting with 001. Swiss stations will send an additional two-letter designation of their canton. Example: 57(9) 001 BL. The abbreviations of the cantons are as follow: ZH BE LU UR SZ OW NW GL ZG FR SO BS BLU SH AR AI SG GR AG TG TI VD VS NE GE JU.

Each contact with a HB-station counts 3 points.

A station can be worked once per band (either CW or Phone). The multiplier is the sum of Swiss cantons per band (a possible multiplier of 26 per band). Final score will be the sum of QSO points multiplied by the sum of cantons. Awards will be given to the highest entry from each country. USA and Canada call areas are considered as separate countries.

Logs postmarked not later than 30 days after contest should be sent to:

TM USKA K. Bindschedler, HB9MX, Strahleggweg 28 8400 Winterthur, Switzerland.

For the new attractive award only contacts made after January 1st, 1979, have validity.

Mail your list and the confirmations for each of the 26 cantons worked on CW and/or Phone, RTTY or SSTV to Award Manager: Walter Blattner, HB9ALF, PO Box 450, Locarno 6601, Switzerland.

Results of the 1980-81 Ross Hull Contest:

Outright winner is VK6KZ with 45750 points.

Individual scores (* denotes a certificate winner):

	48 HOUR	7 DAY
VK6KZ	208070	45750*
VK3YII	8984	29244*
VK6HK	9220*	25000
VK3YNB		10399
VK3AUI	26828	8812
VK6OX	2800	7840
VK4DO	2324	7812*
VK3XQ	2962*	7490
VK2QF	3060	5498*
VK1ZAR	1356	4129*
VK2YHU	1402*	3711
VK4GM	890	2928
VK4PZ	1248*	2832
VK7ZLB	838	2633*
VK4ZTV	730	2198
VK3YRP	496	2018
VK7KJ	712*	1966
VK3AOS		1489
VK2YEP	554	1242
VK8GF	1020	1160*
VK2HZ	373	1071
VK2BVO	520	808
VK4LX	750	
CW		
VK2DEW	22*	
OVERSEAS		
ZL2CD	4100	7500*
ZL2BGJ	2800*	4900
JA2TTO	250*	

Logs submitted this year are double those of last year. The band multiplier certainly helped the winner, five bands each day, as did an excellent opening on 52 MHz to JA where many prefixes were worked. Gone are the days of sitting back in a superb location with plenty of time to win this contest.

A letter to hand from Harold VK4DO and others. They raise some points (anomalies) regarding this contest.

1. Five weeks is too long. Three weeks at Christmas would do.

2. Abolish serial number; this gives the opponent a clue as to how you are doing.
3. Abolish the multiplier rule as this puts the country amateur at a disadvantage.
4. Start a YL section.
5. If rule amendments are not made then the chap in the country cannot compete with the big city fellows on present conditions.

COMMENTS:

1. Five weeks allows for those who have staggered holidays at Christmas, if any at all. It must be remembered that only 7 days count for the final score, be it 7 in 21 or 7 in 35.
2. Giving a serial number shows that the other fellow is "in" the contest. Perhaps the Romanian way may be better. If the other fellow does not put in a log your contact with him does not count.
3. This is a memorial contest and the contest should honour the man and we should also remember his endeavours in the VHF/UHF field, and so encourage others to follow suit. Ross Hull was an experimenter on many bands and the multiplier is used to encourage this. If a "country" amateur has an amateur neighbour within 100 km, and not many haven't, then with a bit of building and effort, like Ross Hull, he could get further multipliers in the contest.
4. A "YL" section? The CW section is not used — look at this year's results.

A note from one of the logs sums up the general feeling from comments this year — "Do not tamper with the new rules too soon, but give them at least a two year run to see if activity improves." ■

The following may be of interest to you. Last year the VHF and TV Group revived the "*State of the Art Contest*" at the suggestion of the Secretary, Mike Farrell VK2AM.

The object of the contest was to promote the use of State of the Art equipment to communicate in the amateur bands above 52 MHz, and to promote activity in these bands in general. To do this, points scoring favoured the "harder" areas (microwaves, etc.) and "easy" modes were disallowed (e.g. sporadic E on 6m).

The contest was held from 19th July, 1980, to 31st August, 1980. The frequencies in use were all amateur bands above and including the 52 MHz band and net frequencies.

Here are the results:—

Call Sign	*Points Claimed*	*Points Allowed*
VK2ZQC	1200	1200
VK2ZYM	3050	3050
VK2BYY	3050	3050
VK4ZRQ	8386	8386
VK2YHS	10230	11730
(Now VK2ZAB)	+ maybe 1500	

■

NOVICE NOTES

Edited by Ron Cook VK3AFW

Each leg = λ/4 at 3.5 MHz.
5 λ/4 at 21 MHz.
7 λ/4 at 28 MHz.

All shorting wires on antenna: Set 3.5 MHz operation. Clip-on centre insulation removed: 28 MHz operation. Clip-on insulator closest to feed point only: 21 MHz operation.

The insulators should be connected into the legs with about 30 cm of wire left hanging for tuning and then clipping to the other side of the insulator for other band operation with aligator clips.

21 MHz must be tuned first then 28 MHz, and last of all 3.5 MHz.

The feed point of rig antenna is only at 6m, and the ends at each leg can be reached easily from the ground.

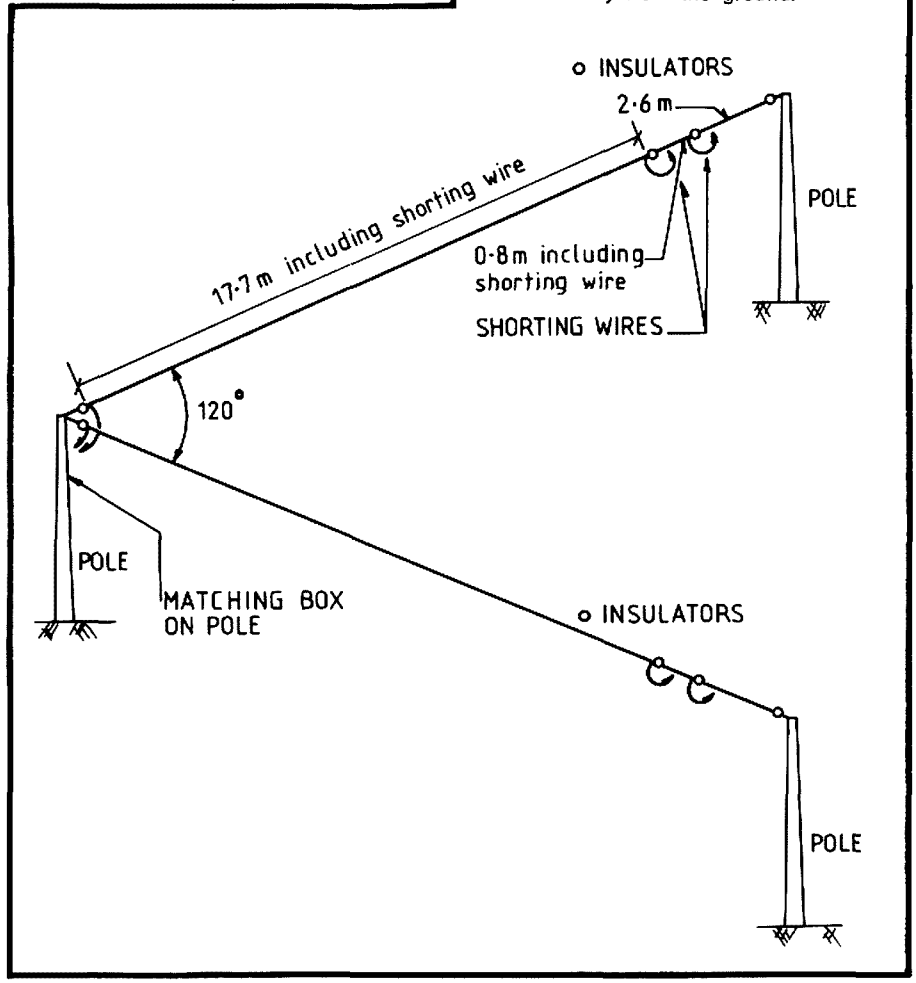


FIG. 1: The triband V-beam.

Here is an interesting antenna from David VK3NOB/VK3XBC.

A WIRE BEAM FOR NOVICE OPERATION

The antenna described here was used because of my need for a cheap antenna with a reasonable gain and did not require much room (small backyard) and yet gave multi-band operation.

The "V" beam configuration was settled on, so after construction tuning was commenced. It was found that the antenna feed point impedance of 21 and 28 MHz was

about 200 ohm and at 3.5 MHz about 45 ohm. I determined this with the use of an RF impedance bridge, see Fig. 3.

I used a 4 : 1 and a 1 : 1 balun with a chanegover relay "4 PDT". See Fig. 2. The antenna has been used with good results on all three novice bands and compares fairly well against a 10m mono-band Yagi.

VSWR is pretty low across all bands and I keep regular skeds on 15m with VK0DB, and reports are pretty close to those received by another novice located about 2 km south of my QTH, who uses a 4 element duo-band Yagi.

With careful thought on aiming the beam, maximum use of its bi-directional radiation pattern can be utilized.

Thank you very much, David.

Let's hear more from you, the reader. ■

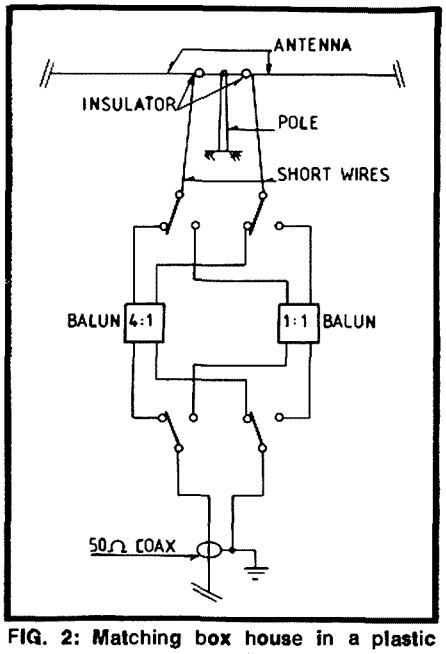


FIG. 2: Matching box house in a plastic waterproof box.

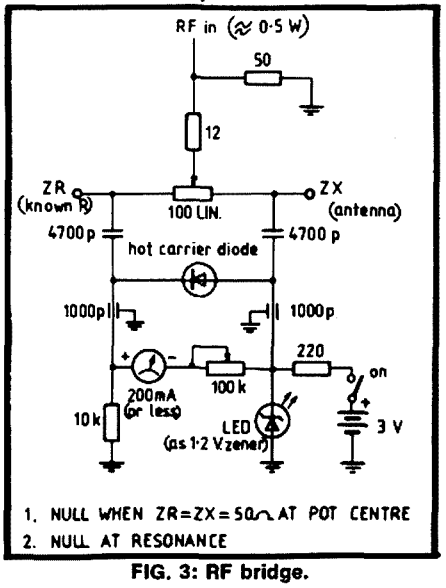


FIG. 3: RF bridge.

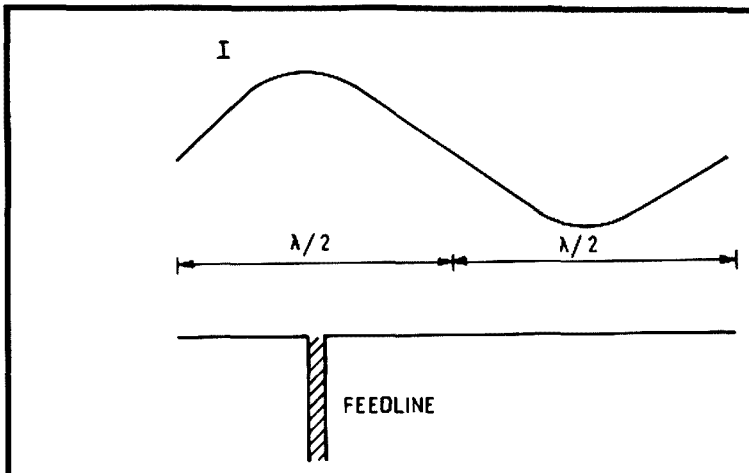


FIG. 1. FULL-WAVE DIPOLE, OFFSET FEED

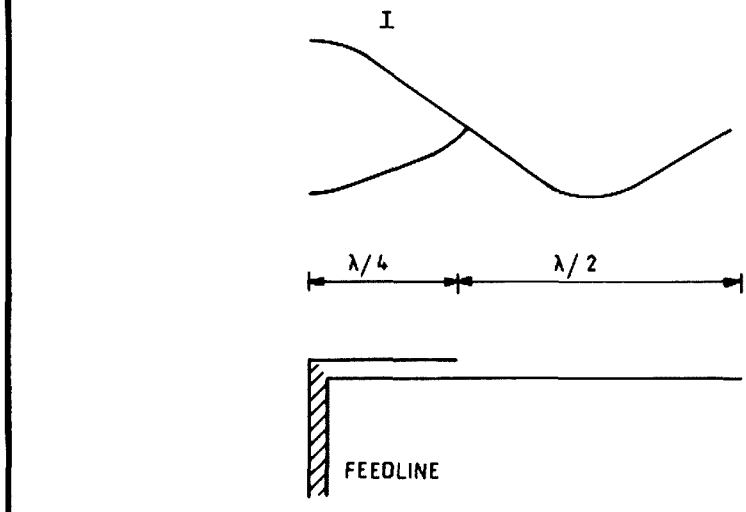


FIG. 2. END-FED DIPOLE, QUARTER-WAVE MATCHING SECTION IN LINE WITH RADIATOR

A ROSE BY ANY OTHER NAME

One antenna that is enjoying a high degree of popularity in Melbourne, at least amongst the 2m FM fraternity, is the "Slim Vim". This is none other than the End Fed Zepp in thin disguise.

Sixty years or so ago Count Von Zeppilin was amazing the world with scheduled passenger carrying Zeppilin flights from Germany to South America. These gas filled dirigibles were in the air for about a week and, although twice as fast as a steamship, communication with the landing fields, booking office, etc., was essential. Radio was the obvious answer, although it was not as well developed as was desirable.

The antennae in use at that time used large efficient ground systems and so were not suitable for airships. A new type of balanced (or nearly so) antenna was devised, suitable for trailing from the airship. This came to be called the End Fed Zepp and was widely used by amateurs before WW 2. After hiding away for 30 years it has re-appeared.

Although it is essentially a single-band antenna it is easy to build and so is of interest to the novice. No high efficiency ground system is required and a single pole at the centre or end is sufficient for its support.

First let us consider the theory and evolution of the Zepp. In Fig. 1 we have a centre fed half-wave dipole to which has been added another half-wave at one end. The feedline is connected at a current maximum. The feed resistance may be around 100 ohms which would give a VSWR less than 1.3 : 1 for a 75 ohm line. Although the feed is not symmetrically placed the unbalance in feedline current is acceptable.

Now suppose that the left-hand end of this dipole is folded over as in Fig. 2. We now have almost the same situation but we recognise that the radiator is now only a half wavelength long. It is now end fed through a quarter wavelength section of transmission line, which has very nearly equal currents in each leg and so does very little radiating. This transmission line will have a characteristic impedance Zo. If the feedline has an impedance Zf, then the combination will match the impedance of the antenna Za when

$$Za = (Zo)^2/Zf.$$

If Zf = 50 ohms and Zo = 300 ohms, then Za = 300 × 300/50
= 1,800 ohms.

This is the order of resistance we expect at the end of a resonant half-wave dipole. If the dipole is resonant, altering the spacing between the two wires will alter Zo and so allow a good match to be obtained for the feedline.

Fig. 3 shows various alternative arrangements for the Zepp. In Fig. 3a the quarter-wave section hangs down from the antenna, which is supported on insulators at A and B. This reduces the distance between supports. If only one support is available then the Zepp may be hung from the far end at B as in Fig. 3c, or it may be elected in the centre, C, and the ends may be as low as F, 2m, as in Fig. 3d. There is tnother possibility for 10m operation and that is a vertical arrangement as in Fig. 3d. In all cases the feedline is connected at X.

Another name for the vertical End Fed Zepp of Fig. 3d is the "J-pole".

Any dipole may be "folded", that is given an extra one or more wires to increase the feed resistance as is done for a folded dipole. The Zepp may be folded as well. Fig. 4 shows a Zepp of this form. It could be made of 300 ohm ribbon and Fig. 5 gives suggested dimensions for use on 10m.

A modification to the feed system is necessary if 300 ohm ribbon is used in construction. The end of the ribbon is shorted and a feed point for lowest VSWR located by using two pins to push through the insulation and temporarily connect to the feedline.

The dimensions a, b, in Fig. 5 may be scaled for other frequencies. On 28.5 MHz the feed point will be about 240 mm from the bottom.

The Zepp is similar to another antenna, the Ringo. The RIngo is an end-fed half-wave but it uses a tuned circuit for matching instead of a transmission line.

The 300 ohm Zepp rolls up for easy transport. It may be hung inside a PVC tube and sealed against the weather. The assembly may be clamped to a mast. Keep the top section with the antenna and matching section away from other metal objects. Do not use grey PVC tubing as this reputably has high RF losses.

So why not try zapping the DX with a Zepp? ■

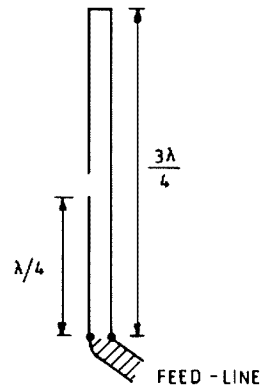


FIG. 4. FOLDED ZEPP OR SLIM JIM

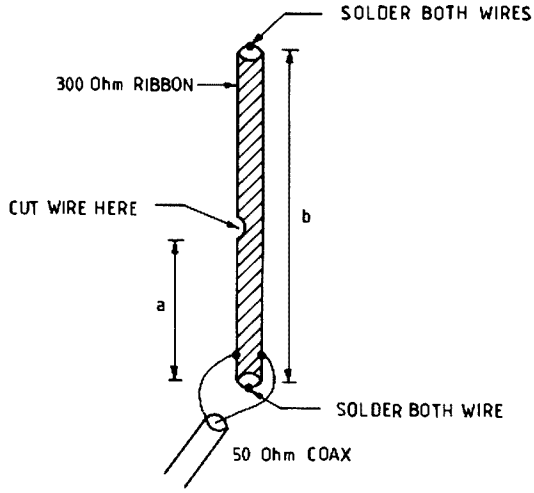


FIG. 5. ZEPP MADE FROM 300 Ohm RIBBON FOR 28·5 MHz
a = 2·05 m
b = 6·15

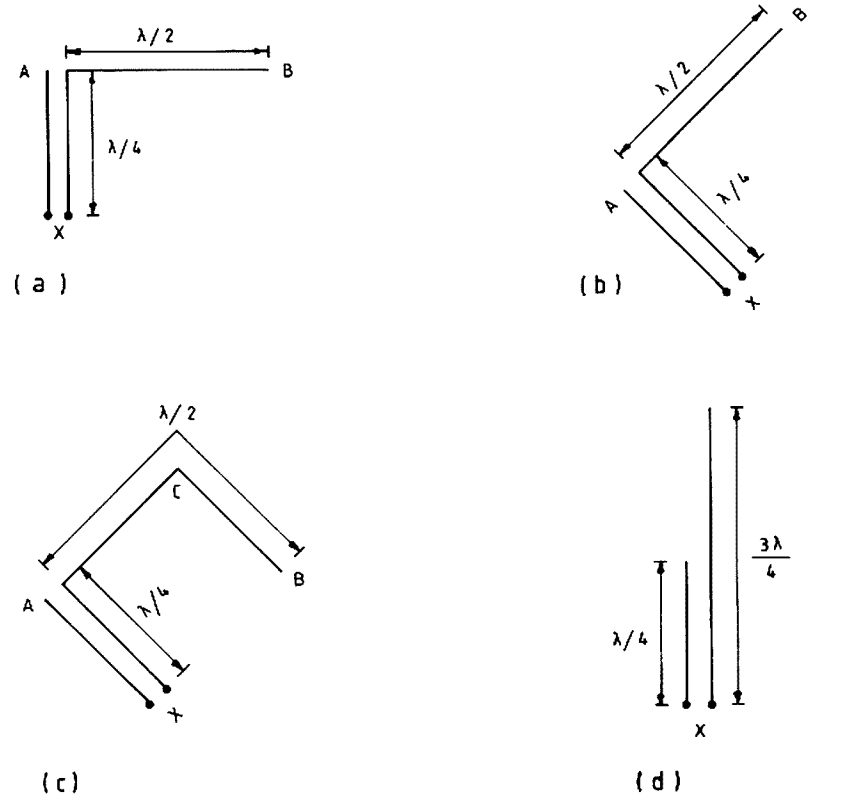


FIG. 3. ALTERNATIVE PHYSICAL ARRANGEMENTS FOR END FED ZEPPS SUPPORT AT A,B,C FEED AT X.

Victorian Midland Zone Convention

STRATHFIELDSAYE HALL
(15 km East of Bendigo)

Murray VK3DOV No. 2

In very fine and sunny conditions the Annual Convention of the Midland Zone was held at the Strathfieldsaye Hall on Sunday, 22nd February. Four excellent suppliers exhibited their wares and amateurs and their wives from all parts of Victoria, and including one couple from VK2, enjoyed the barbecue lunch prepared by the ever willing wives of those in the Bendigo and Harcourt areas of the Zone. Very little interest was shown in the hidden 2m transmitter and the fox hunts did not get the attention the prizes deserved. The hammer throw and nail driving contest for the wives of those attending drew an excellent entry, their aim was straight, they drove a mean straight nail in spite of being harassed by their OMs.

As a Zone we sincerely thank those distributors who attended:

Bail Electronics, Dick Smith, Eastern Communications and George Sumner.

A convention without gear on display is akin to a witch without her broom. Pre-loved gear is mostly in the hands of the original lover.

Howard Rider and his mate gave some pointers on ATV and the afternoon tea, which was consumed by those who paid their way and those who failed to meet the cost, was followed by some very pertinent words from Alan Noble, President of Victorian Division, WIA.

The organisers who spent more than 12 hours at the hall, vowed and declared that they will do the same job next year, the good fellowship is worth the hard work involved. ■

Stan Roberts VK3BSR and his wife.

George VK3ZZI filling a vacancy at noon and talking with Kay the XYL of Doug. VK3VQT, our President.

Murray VK3AMP No. 1.

If you have a Convention you need the support of your distributors.

Fred VK3ZZN (centre), Keith VK3ACE and onlooker.

INTERNATIONAL NEWS

WEST GERMAN LICENSING

Advice from DARC states that amendments to the West German legislation concerning amateur radio came into effect 1/6/1980. Three classes of amateur licence are provided for and power limits are now based on RF output power. Licence fees are stated to be DM3 per month. The class B licence appears to be similar to our full call but 750W peak output is permitted except on 160m and all bands above 23 cm for which 75W is permitted — the code test is 12 w.p.m.; call signs are in the prefix series DF, DJ, DK and DL. The class C licence is similar to our limited licence but applies on 2 m and above and peak RF output power is 75W maximum; call signs are in the prefix series DB, DC, DD and DG. The class A licence allows 150W peak RF, output power is 150W for telegraphy (CW, RTTY) modes in the bands 3.52-3.6, 21.09-21.15 MHz and 28 MHz bands and up (but 75W peak powers on bands above 23 cm); morse code test is 6 w.p.m.; call sign prefix series is DH.

Other amateur prefix series in West Germany include DA for military stations and various prefixes for reciprocal licensees and club stations.

A reciprocal agreement with West Germany is currently under negotation.

* * *

SPANISH LICENSING

According to IARU R1 News 3 classes of amateur licence are in force in Spain. Class A for max. 250W on bands 3.5-3.55, 3.75-3.8, 7.0-7.2, 7.03-7.1, 14-14.35, 21.15-21.45, 28.2-29.7 MHz, class B for max. 50W on 2 metres and up and class C for 20W max. power for 3.55-3.575, 7.02-7.03, 21-21.15 and FM 29-29.1 MHz.

* * *

JAPAN, ETC.

Work is continuing on negotiating a reciprocal agreement with Japan. Negotiations have opened with Denmark for a reciprocal agreement.

* * *

THIRD PARTY APPROVAL — CANADA

A letter received from the Department of Communications is included in WIANEWS in this issue.

THE WOODPECKERS

In a circular of 27th January, 1981, the Secretary of IARU writes that a prominent administration wishes once again to address the problem of the so-called Russian Woodpecker, which is reported to be an over-the-horizon radar system and which causes extreme interference to a number of important radio services, including the amateur radio service.

The IARU regards it is as important to the future of amateur radio that as many amateurs as possible file as many reports as possible of interference to the amateur radio service from the Russian Woodpeckers. All such reports should be channelled through the WIA Intruder Watch Co-ordinators so that complaints can be filed with our own administration.

The circular from the IARU draws attention to the fact that the proper avenue of complaint about this interference is through the telecommunications administration of the stations which suffer harmful interference. In the world of the ITU it is these administrations which wield the power. In a problem such as this effective action can result only when a number of administrations can be vocal enough in their concern. ■

AMATEUR SATELLITES

C. J. Robinson VK3ACR

By courtesy of the AMSAT Bulletin a number of interesting items of news have been noted. These are:—

Oscar 7 has had a tendency to drop out of its schedule, the transponder dropping into Mode B, but in general the quality is OK in both A and B Mode.

The only schedule change is that on Thursdays Oscar 7 will be in Mode D (Mode B with reduced power). However, it will be difficult to notice any change in operation in this condition.

Because Oscar 8 is having battery and base heating to some degree, this satellite until further notice will be operating in both modes (A and J) each day; this will be changed from time to time. It has been recorded that the batteries and base plate have reached temperatures near 44°C, which is very close to maximum allowable.

This is due to the near continuous sunlight being somewhat warmer than it has been in previous seasons. As this temperature condition subsides it will be found that Oscar 8 will return to normal.

The following are estimated probable launch dates of satellites:

LO3 — June 1981.

LO4 — October 1981.

LO5 — December 1981.

LO6 — February 1982.

LO7 — April 1982 (Phase IIIB).

AMSAT reports that they are looking into the possibility of a new kick motor, in which they can use liquid fuel; this will allow greater control, such as stop and start, etc.

It is also reported that the Firewheel Project has been scrapped owing to the high costs.

A proposal has been made to incorporate a Mode L transponder in Phase IIIB, this having an uplink on 1296.15 to 1296.95 MHz and the downlink 436.15 to 436.95 MHz.

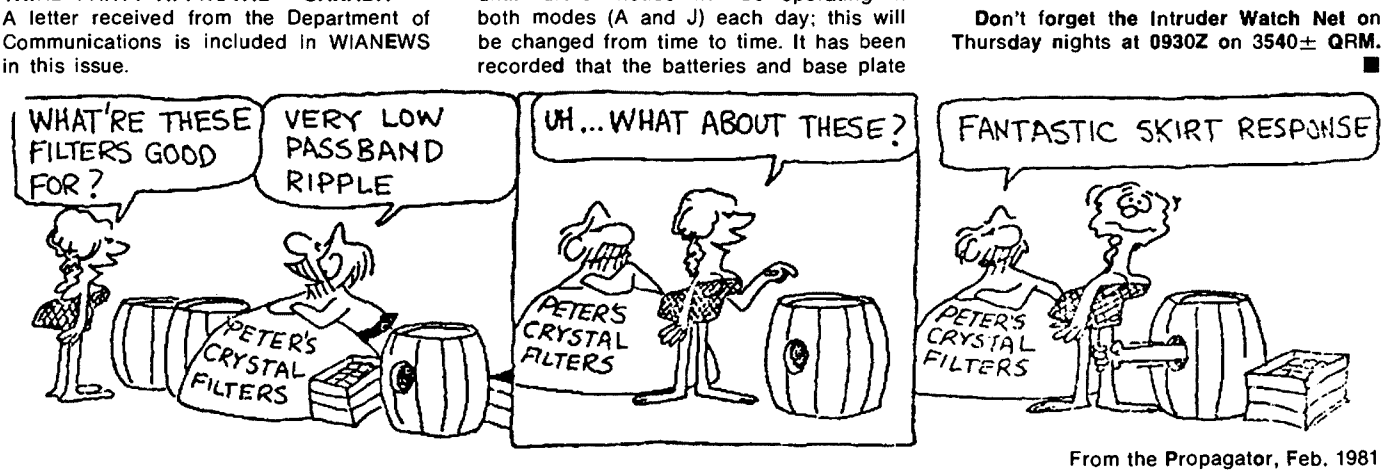
Congratulations to **John VK4TL** on his epoch making Oscar 7B two-way contact with the USSR, namely RA0LFI. I am sure that this would be a VK DX satellite record. ■

The Intruder Watch

It is pleasing to see the broadcast station radio of the Koran from Riyadh in Saudi Arabia has now QSYd from 21435 MHz. This follows from letters sent direct to the station and complaints to the DOC.

Amateurs are specially requested to send in as many reports as possible about the interference caused by the Russian "woodpecker" on our bands. Send these reports, with details of frequency, date, time, etc., direct to your Divisional IW Co-ordinator or to me. This problem is being tackled on a world-wide scale as it is a matter of importance to the future of amateur radio itself.

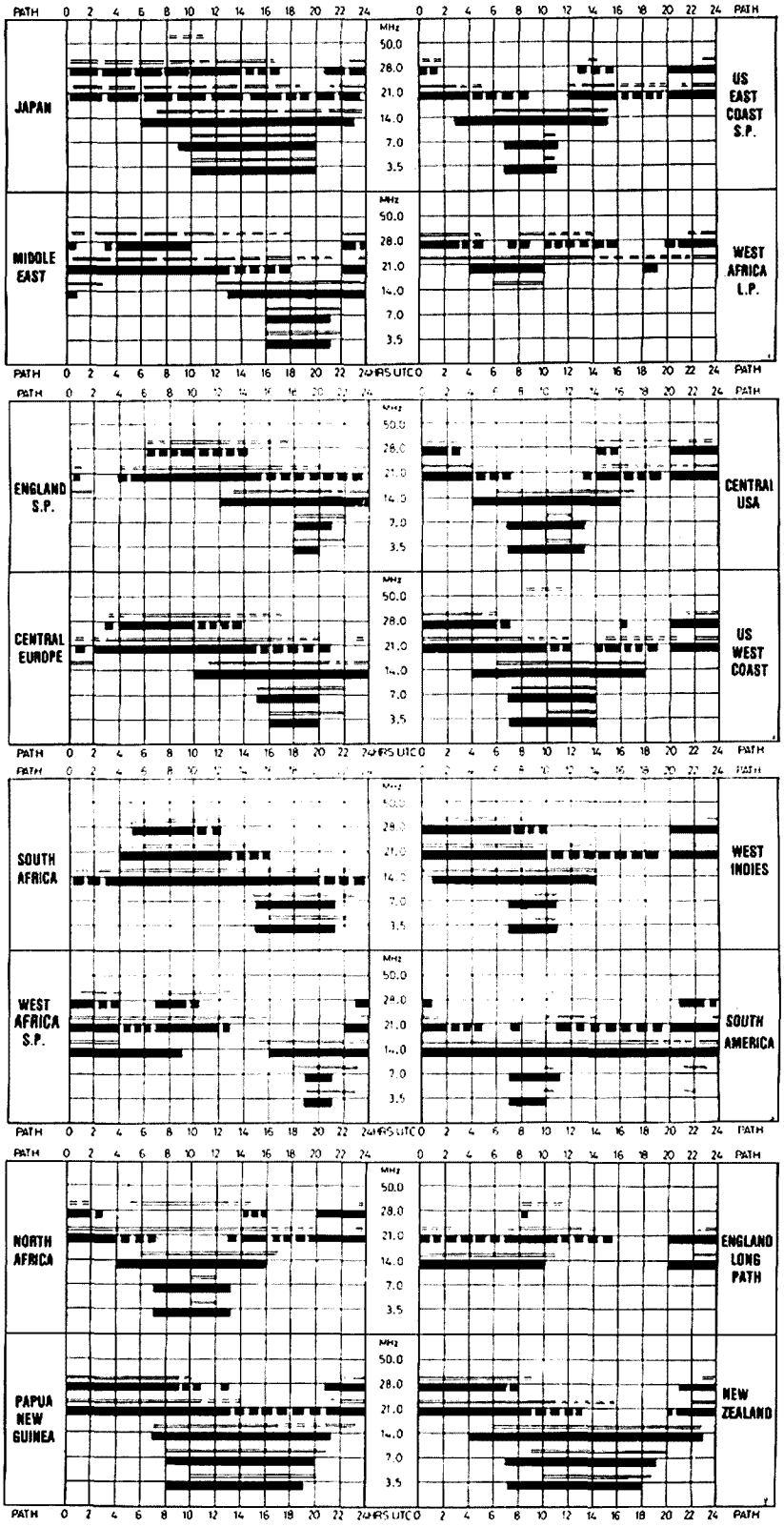
Don't forget the Intruder Watch Net on Thursday nights at 0930Z on 3540± QRM. ■



From the Propagator, Feb. 1981

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



LEGEND

FROM WESTERN AUSTRALIA

FROM EASTERN AUSTRALIA

BETTER THAN 50% OF THE MONTH, BUT NOT EVERYDAY.

LESS THAN 50% OF THE MONTH.

Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

SILENT KEYS

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

Mr. B. J. FAYLE	VK3IW
Mr. ERN COOK	ex VK3EC
Mr. A. H. B. BRODRICK	VK2HI
Mr. W. A. JONES	VK5NJA
Mr. C. K. STENFIELD	VK3CK
Mr. A. McCULLAGH	VK2RR
Major M. E. COLLETT	VK2RU

OBITUARIES

ERN COOK ex VK3EC

It is with deep regret that the death is announced of Ern Cook ex VK3EC on 17th February, 1981, aged 78 years.

Ern held the call 3EC before 1923, when he lived in the Swan Hill area.

During the war he served with the RAAF in an aircraft construction unit in the Northern Territory. After the war he moved to Melbourne and worked in the Radio Construction Section of the PMG Department.

All his life he was extremely active in Amateur Radio, being one of the early occupiers of the 144 MHz band on AM and also very active on 7 MHz.

After several severe strokes Ern was forced to give up his licence about five years ago and for the fast year was confined to a private hospital.

He leaves a wife Hilda, and deepest sympathy is extended to her from all radio amateurs.

Allen Crowther VK3SM. ■

BERNARD JOHN FAYLE VK3IW

Bern Fayle passed away on 22/1/81, after a short illness. He was licensed in the late 1930s and for many years operated home-brew gear with a zepp aerial from his Burnley OTH. Many Old Timers will remember him as a good CW operator. Later he lived at Nunawading, a move which coincided with the purchase of a sideband transceiver.

Bernie had a wide range of interests and activities. During the war years astronomy was substituted for radio and ha built his telescope, grinding and polishing the lens and mirror himself. He was a keen fly fisherman, bushwalker and photographer and his expeditions in pursuit of the elusive trout took him to many remote parts. There are not many likely streams in Victoria that he had not visited at one time or another.

His greatest love was the Australian bush and the outback. In more recent years his annual escape from Melbourne's winter took him by four-wheel drive vehicle, equipped with fishing gear, refrigerator and Atlas transceiver to warmer parts "up north".

Those of us who knew him well will remember him tor his cheerful and outgoing nature, his fund of stories and his interest in people. He will be greatly missed. To his sister, Una, we extend our sympathy.

ALAN COOK VK3AUC. ■

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.

Bellbird Private Hospital, South Blackburn
23/12/80

The Editor,
Dear Sir,
As an old member of the WIA I allowed my membership to lapse a few years back. This was an error of judgement which I freely acknowledge. I have repaired this by rejoining some months ago.

Am in this hospital with a somewhat uncertain future but am thinking positively. I may add that I am most impressed with the standard of AR and it hurts a little bit that it is not on the news stands, particularly in view of the lamentable rubbish which is there in the guise of "CB".

I have a Wadley loop type of receiver beside me and derive much pleasure from it.

Unfortunately hospital QRM and TV sets make it hard going on the short waves. But not to worry. I get a lot of pleasure from the ABC programmes.

A development on the ham bands in which I think we have slipped back is in the lack of "Catch as catch can" QSOs. This is largely the result of the "Net" nature of SSB.

I heard a couple of blokes meet for the first time the other morning after a CQ call and the resulting QSO was a beauty.

It's natural enough, particularly for we "oldies" that we should want regular contacts with our old cobbers. But the result is frequently a lively band occupied by a few nets.

So what about a "CQ a day" campaign, fellers, including the novice frequencies.

Bern. J. Fayle VK3IW. ■
(Now Silent Key. See obituary)

144 Newnham Road,
Mt. Gravatt 4122, Brisbane

The Editor,
Dear Sir,
I have broken away from my AOCP studies for a few minutes to put forward an idea.

In recent issues of "Letters to the Editor" I have read of the controversy surrounding the Multi Choice paper and the reasons for and against.

Regardless of the method of examination, my problem is in understanding the theory itself. Not being involved with electronics in any way in my everyday employment I, like many others, have to tackle the job when I can find the time. As I am unable to attend a AOCP night class, it's a matter of burying your head in a textbook and try to unravel what the author is trying to say. Which brings me to my idea, that being the possibility of someone, group or the WIA, producing a set of cassette tapes to coincide with the AOCP syllabus and textbooks, e.g., "Orr Radio H/Book or ARRL H/Book", etc. It could be done by a system of a cassette per chapter, for example, thereby allowing a person to stop and start the cassette at any point to fully understand what is being read or said. Also it could be studied at the person's own leisure, as I enjoy our hobby very much, I believe many current novice operators trying for the AOCP could more fully understand the theory in the time available to him. I would be interested in any comment on the feasibility of this idea.

73s. Mick Power VK4NGW. ■

7 Dallas Avenue, Oakleigh 3180
28/1/81

The Editor,
Dear Sir,

RE STANDARDS

On page 51 of December AR John VK2BTQ gives some definitions for standards of measurement. Although it does not detract from the thrust of his argument the definitions of the ampere and the ohm are incorrect. They were correct many many years ago and, just to set the record right, I draw your attention to the current definitions.

The ampere is defined as the unvarying current that, when flowing in each of two straight parallel conductors of infinite length and negligible cross section separated by a distance of one metre from each other, produces between those conductors a force of 0.0000002 Newton per metre length of conductor.

The ohm is defined as that resistance that produces a potential drop of one volt when one ampere flows through it. This is a shortened and simplified definition.

In the S.I. system (commonly called the metric system), under which we now operate, all units of measurement are derived from seven base units, the kilogram, metre, second, ampere, kilom, candela and the mole, plus two supplementary units, the radian and the steradian.

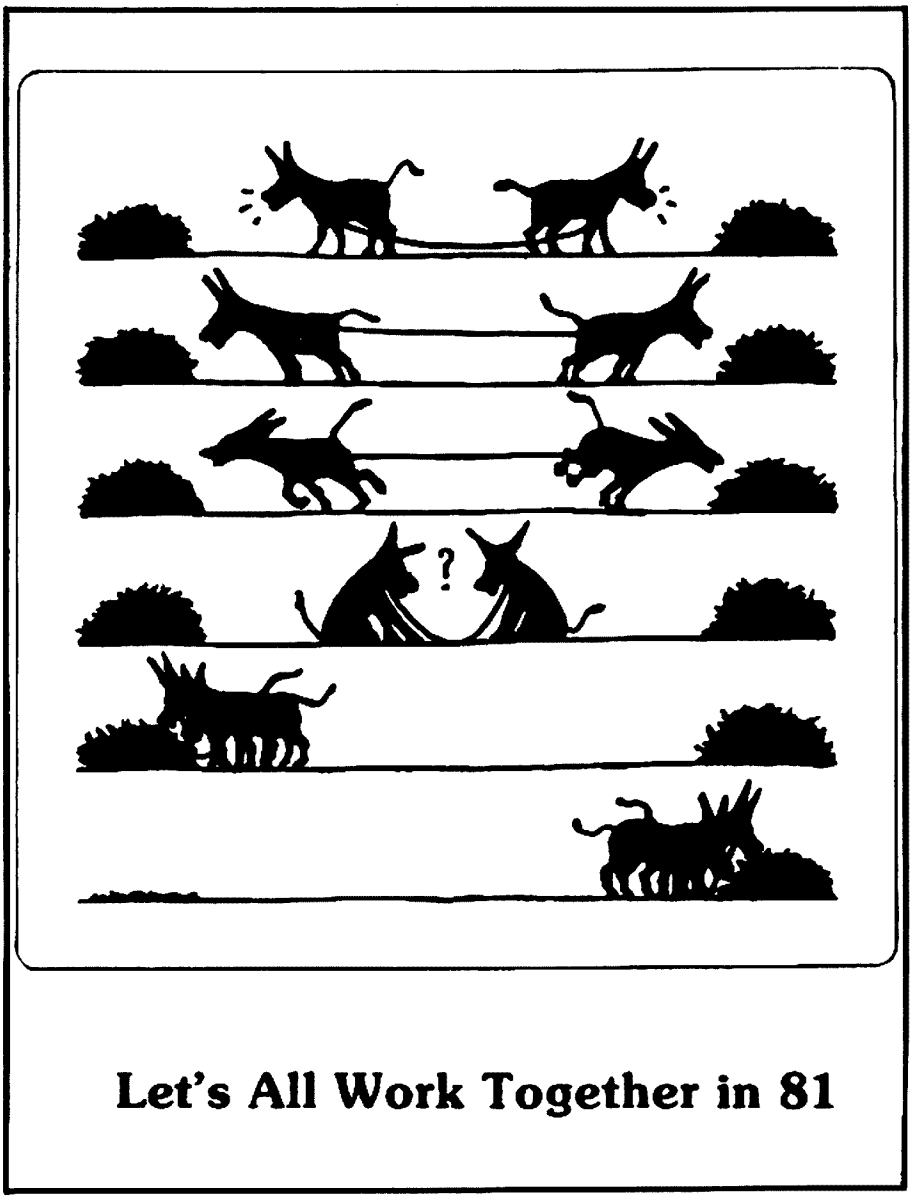
Radio amateurs have most interest in some of the derived units which have special names, such as the volt, watt, hertz, farad, ohm, henry and degree Celsius.

The definitions of the base units do change if scientists discover more accurate techniques and if the international meetings of legal and scientific bodies agree. The second is now based on the atomic properties of cesium and commercially available atomic clocks now keep time to better than 1 second in 3000 years — a considerable advance over previous clocks. Next year, as the result of better measurements of the speed of light and the frequency of light sources used as standards of length (wavelength standards), we can expect a new definition of the metre.

The results of such changes, which occur infrequently, is not to change the size of the base unit but to allow more accurate measurements of them.

Further information on standards of measurement can be obtained from CSIRO's Division of Applied Physics.

Yours faithfully,
R. R. Cook VK3AFW. ■



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Yaesu FTV-650 6m Transverter, new spare 6146R, $165, ONO; 4CX250B amplifier, 2m, with power supply, new spare tube, $220, ONO. VK4ZKE. Ph. (07) 377 3785 Bus., (07) 201 3006 A.H.

Amateur Radio WIA Journals, April 1979 to December 1980, $5, plus postage. VK2DET, QTHR. Ph. (042) 84 3400.

Kenwood TS700A Multi-mode 2m Txcvr, e.c., 0459; Yaesu FT101, CW filter, fan, speaker, PA tubes, e.c., 0425; new 455 kHz mech. filter with carrier xtals, VK2ZIM TV converter, 432 MHz varactor tripler, unused, diode I/out, 2 GHz, 7.5W; new HP hot carrier diodes, 5082/2800; tubes QQE0/40, 815, 832A, 866, 807, 811, 803, 805; cabinet for linear, transformers, assorted microphones. VK3ARS, QTHR. Ph. (059) 86 4619.

Communications Rx, Trio TR59DS, with crystal calibrator, built-in spkr., antenna kil, spare valves, manual, $100; power/SWR meter (dual meters), Hansen FS5, $35; antenna noise bridge, Omega TE7-01, $20; grid-dip meter, Tradiper TE-15, $30; dwell/tachometer, Micronta auto 22-014A (dual 5 in. meters in case, etc.), for garage workshop, $35. VK2CE, QTHR. Ph. (02) 871 7758.

First Copy "The Listener-in", vol. 1, No. 1, January 10th, 1925; volume 1, Nos. 1-15 inclusive of "Popular Radio Weekly", February 25th, 1925. Offers. VK3VNQ, PO Box 27, Portland 3305.

Complete Kenwood Mobile Station: TS-120S Txcvr., AT-120 antenna tuner, MC-30S mic., MA-5 five band mobile antenna, VP-1 bumper mount, in orig. packing, 8 mths. old, all handbooks, $850, ONO. VK2NLQ, QTHR. Ph. (049) 33 4648.

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Yaesu FT620, 50-54 MHz, SSB/CW/AM Txcvr., exc. cond., unmodified, /350. VK3ANY, QTHR. Ph. (051) 34 5384.

Argonaut 509 5 band QRP SSB/CW Txcvr., $290; multi-quartz 16 2m FM Txcvr. with rpts. 1-8, sim. 40 and 50, $120; SB-34, 80-15m SSB Txcvr., 12V DC, 110V AC, 240V AC, $220. Ph. (047) 74 8446, Bringelly, NSW.

Yaesu FT101B, gd. cond., CW filter, $500; Yaesu FT7, gd. cond., $350. VK4PM, QTHR. Ph. (074) 62 1021.

Dacwriter LA36 Computer Printer, $650; Uniden 2020 80-10 Txcvr., with CW filter, mic, 240V and 12V leads, $550; Icom 502 6m SSB/CW Txcvr., $100; converted CB to 10m SSB Txcvr., $95; Argonaut 509 80-10 5W Txcvr., 5300; Kenwood TR7200G 2m FM mobile with channels 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 40, $165. John VK2ASU, QTHR. Ph. (02) 639 7982.

Yaesu FTV650 6m Transverter with h'book and cables, $135; Yaesu FT200, full 10m, needs power supply, with h'book, $265. VK2BHO, QTHR. Ph. (042) 96 2142.

Yaesu FTDX401 Txcvr., 400W PEP, good order, with h'book, 600 Hz CW filter and mic., complete set of spare tubes. VK2AJT, QTHR. Ph. (044) 26111, (044) 22786 AH.

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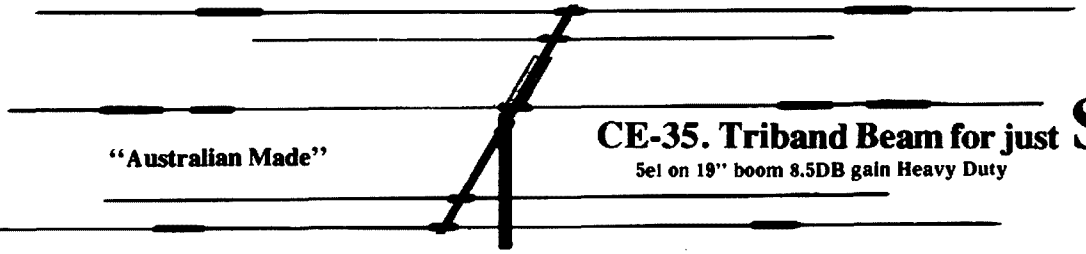

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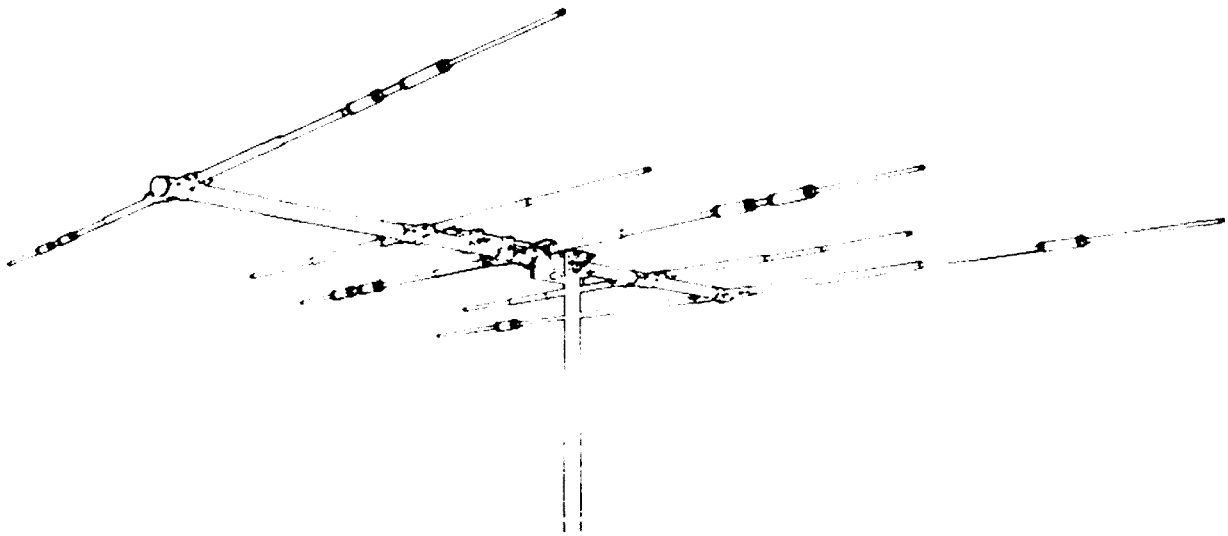

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amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 49, No. 5 MAY 1981

FEATURED IN THIS ISSUE:

- ★ AN IMPROVED SERIES R-X NOISE BRIDGE
- ★ AMATEUR RADIO IN JAPAN
- ★ THE TRINITY LOOP ANTENNA
- ★ A REVIEW OF THE FRG7700

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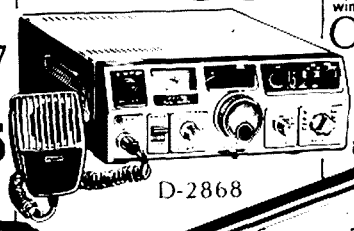

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DEPARTMENTS

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At the Liverpool and Districts Club Field Day. Craig Strudwicke, 9, takes off after the beeper and Lee Barry, 10, checks the scrub. See page 32.

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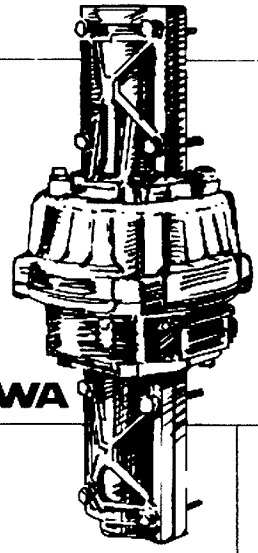
Netronics 46 3232
Kalgoorlie Hocks TV 21 1906

Tasmania
Launceston Gelston 44 3882
Advanced Electronics 31 7075
Hobart Harvey Skegg 43 6337

Dealer enquiries invited

VICOM



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"Can you afford not to have a Daiwa Rotator?"

Any direction anywhere in the world. There is a Daiwa Rotator available for every need.

Medium duty.
DR7500R Round Controller **$223**
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Heavy duty.
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Cable: **$1.20** per metre.

Tubes.

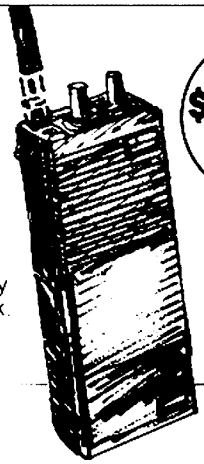
12BY7A **$5.80** 6JS6C **$11.50**
6146B **$15.00** 6KD6 **$11.50**

IC-2A

The hand held that's got the lot.

ICOM

Speaker/microphone, optional tone pad, desk charger, plus easy to carry slip on/slip off Ni Cad pack. The lightweight that takes on the heavies.



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The Kenwood TS130S. Compact design that's got the lot.

The TS-130 series is an incredibly compact, full featured, all solid state HF SSB/CW transceiver for both mobile and fixed operation. It covers 3.5 to 29.7 MHz (including the three amateur bands) and is loaded with optimum operating features such as digital display, IF shift, speech processor, narrow/wide filter selection (for both SSB and CW modes) and optional (DFC-230) digital frequency controller. The TS130S runs high power and the TS-130V is a low power version for QRP operation.

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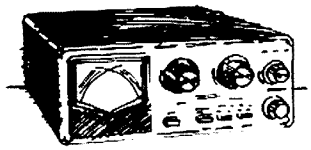
Unique Cross Needle SWR/PWR meters + Antenna Tuners.



The popular Daiwa Bridge, designed for quick and easy operation.

CN620A 1.8-150MHZ **$94**
CN630 140-450MHZ **$152**
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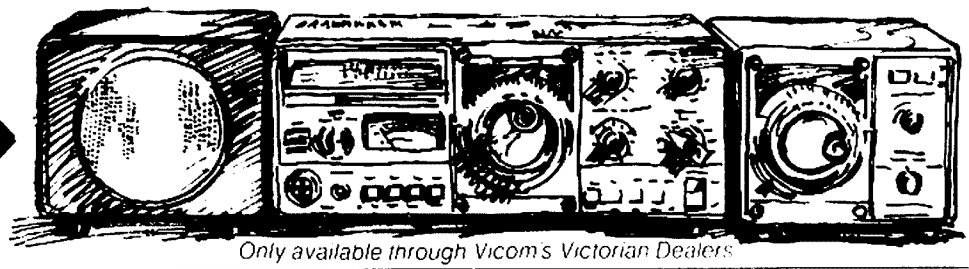
CNA1001 Automatic HF 200W **$319**
CNA2002 Automatic HF 2.5KW **$451**



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never leave you alone.

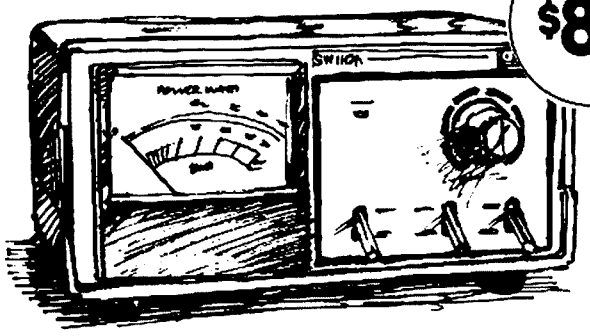
Vicom offer two exclusive and we think essential services. We thoroughly check your rig prior to delivery and then follow through with professional service from our own technicians and engineers. Add our genuine 90 day warranty and you have three important reasons for choosing Vicom.

Daiwa model SW-110A SWR/Power Meter.

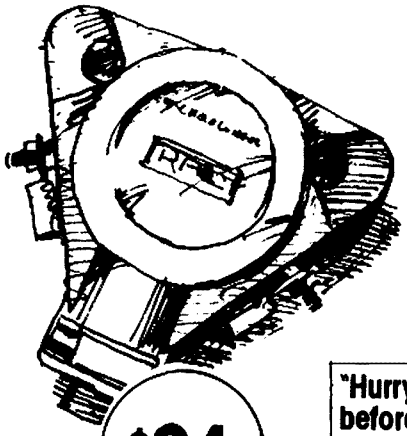
Easy to operate with power range to spare.

In this industry the name Daiwa has always stood for technical excellence and reliability.
A fine example of this is the model SW-110A/Power meter.

with its 1.8-150 MHZ frequency and 20/200w power range.
Other important features include a calibrated triple scale to allow automatically for fluctuations in the input power. Plus a led on the front panel which indicates whether sufficient power is available for the SWR bridge to operate.



$82



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Balun model BL70A

The RAIC Balun is useful for matching an unbalanced coaxial transmission line to a balanced antenna system, such as a horizontal dipole (or its modification), cubical quad or T-matched beam. It is weather proof, broad in the range of operating frequencies and perfectly factory tuned.
The Balun requires no further adjustment.
Band width. 1.8 to 30 MHz continuous.
Power rating. 4 KW PEP 2KW CW.
Impedance. New Deluxe BL-70A 75 ohm.

2M beam 9.5dbd Gain.

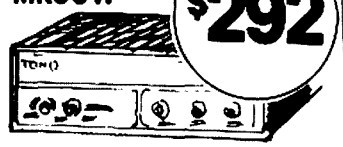
Popular 8 element Jaybeam for that elusive 2M DX! Solid construction and excellent design.

$57

Jaybeam

2M Linear MR90W

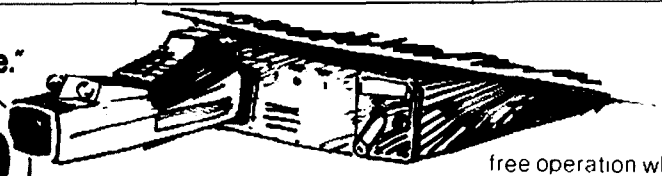
$292



Tono's new solid state linear incorporates a receiver pre-amp into the 80-90 Watt unit. Handles 2 metre mode SSB/FM/CW/RTTY.
Model MR1300E 120-130W
$357

"Hurry before price rise."

$139



The ultimate in cordless operation for mobile systems.

This infra-red, cordless, mobile system, clips in clothing to allow hands free operation while you drive. Its infra-red optic/electronic principle ensures that the mic. to infra-red sensor channel is completely unaffected by spurious radiation. For in car use, it is possible to use a second mic from the rear seat position.

NEW DAIWA RF speed processor.

DAIWA'S new model RF670, uses the new technique of photo coupling which offers technical improvements at a lower price.

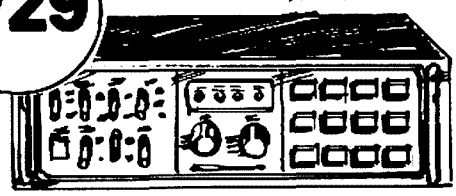
$85

Computerised RTTY/ CW/ASCII Reception.

TONO

Just plug into a T.V. screen or printer for superb demodulation of ham and commercial data. Handles a variety of morse and teletype speeds.

$729



QSP QSP QSP

Proposed Radiocommunication Legislation

The Wireless Institute of Australia has made a detailed Submission to the Department of Communications in respect of the proposed Radiocommunication Bill to replace the Wireless Telegraphy Act.

The Institute has been represented at a meeting convened in Canberra on the 25th March by the Department of Communications when the general principles behind the proposed legislation were discussed by representatives of the Department and representatives of various users of the spectrum.

As the representative of the Amateur Service, the Institute is concerned to see that any legislation does not detrimentally affect Amateurs. Such a result could occur, for example, if the particular characteristics of the Amateur Service were overlooked in the drafting of legislation of general application.

The Institute has expressed its general support for the principles proposed as a basis for the Bill. In particular, it has welcomed the proposal that reception be de-regulated and the proposal to change the forfeiture provisions to be found in the current Act.

No doubt the Bill will be very different from the present Wireless Telegraphy Act. For one thing, it will be a much more detailed law governing the use use of the spectrum. It will, for the first time, deal with matters such as interference and the control of interference. It seems that an approach of licensing people rather than equipment will be adopted — not new for the Amateur Service but new for most other users of the spectrum. Broadcasting, however, will continue to be regulated under the Broadcasting and Television Act.

Of course, the detail of the proposed Bill will have its own dangers. Particular provisions will require particular exceptions. The Institute has made a number of proposals. It is likely that new offences will be created and it would seem that one option will be the creation of a new offence along the lines of prohibiting the possession of a transmitter other than in accordance with a licence. Such an offence could be seen as simplifying the enforcement of the legislation, simply because it is easier to prove possession than it is to prove use.

The Institute would approach such a proposal with considerable caution. In the creation of criminal offences it is important that the nature of the wrong to be regulated be kept in perspective. In fact, no harm flows from the mere possession of a transmitter. Harm can flow from its use whether that use is unregulated or improper. The possession of a transmitter should not be treated on the same basis as the possession, for example, of heroin. There are a multitude of situations where a person other than the licensee will have possession of a transmitter — for example, repairers, warehousemen, wholesalers, carriers and so on. The licensee must be able to give permission for another person to possess (as distinct from use) a transmitter. Upon the death of a licensee possession of a transmitter will pass to his legal personal representative. A transmitter may be kept as a curio or a museum piece. The Institute believes that mere possession ought not to be an offence. The legislature will face two alternatives — either make it an offence without exceptions in which case all sorts of people will from time to time commit offences or it will be faced with creating an offence subject to numerous exceptions.

The Institute is not unaware of the difficulties of the proving of use. It is suggested that possession, other than pursuant to a licence, should be prima facie evidence of use. That is, a person accused of illegally using a transmitter will have to satisfy a Court that, despite the fact that he was in possession of a transmitter other than pursuant to a licence, he had nonetheless not used it. Of course, all the surrounding circumstances will throw light on the likelihood or otherwise of a transmitter having been used.

Another matter that has caused the Institute some concern are proposals to control the importation and sale of equipment that cannot be licensed in Australia. No doubt it is sensible to afford some protection for consumers. The dumping of substandard CB equipment in Australia has hardly been in the community interest. On the other hand, the mechanisms that are used to achieve this sort of regulation have to be thought out very carefully. It is a characteristic of the Amateur Service that Amateurs either build their own equipment or purchase commercial equipment or modify commercial equipment. Amateurs should not be inhibited from importing equipment from overseas. It must be recognised that Amateurs should have the right to modify equipment manufactured for use on non-Amateur frequencies and unlicensable in Australia on those frequencies for use on Amateur bands. The Institute is concerned to ensure that general prohibitions are not formulated to inhibit the normal activities of Radio Amateurs.

The control of interference is another important aspect of the proposed Bill. The Institute would hope to see the creation of powers to control radiation from non-communication as well as communication equipment that causes harmful interference to radio communication services. It would also like to see mechanisms established by which minimum standards as to the susceptibility of communication and non-communication devices to radio interference may be prescribed. It would reject the imposition of an absolute obligation on Amateur licensees, or indeed any licensee, to avoid causing interference irrespective of the quality and standard of the device being interfered with.

It should be pointed out, in the context of the control of interference, the Commonwealth can only legislate to the limit of its constitutional powers and it may well be that it cannot exercise all the powers really necessary to effectively control interference, at least without supporting State legislation.

The Department of Communications has repeatedly undertaken that after a Bill has been introduced, a reasonable time will be allowed for public discussion. For example, the Bill could be introduced in one sitting and not enacted until a subsequent sitting and then after the amendments that have been accepted are incorporated into the Bill.

Of course, a debate of principles can only go so far. What really matters is how those principles are expressed in the draft legislation and the mechanisms that are relied upon to achieve the ends sought. It is almost inevitable that the Institute will be making further Submissions in the context of the specific provisions of the Bill when it is introduced.

MICHAEL J. OWEN VK3KI ■

EDITOR'S DESK

Bruce Bathols VK3UV Editor

"A LETTER"

During the course of one's business, and in particular, editing this magazine, I often come across an item which warrants more than just a cursory glance — such an item arrived last week in the form of a letter to the editor. Normally I would just publish it without comment — but this one is different as you will see in just a moment.

The letter comes from one of our regular contributors, Drew Diamond VK3XU, and is dated 10/3/81.

Drew writes:—

43 Boyana Crescent,
Croydon 3136
10th March, 1981

"The Editor,
Dear Sir,

AR should be available from magazine outlets; or at least from those which sell technical magazines. Local publications presently available have forsaken radio amateurs, and now only provide computer and 'gee whiz' electronics projects, along with interminable equipment reviews.

The only off-the-rack magazine which purports to cater for amateurs is generally filled with soft articles; such as DX-peditions and boys' adventure stories.

The Institute, through AR, should be providing Australian amateurs with the technical information that we require so that we may keep abreast of the latest of the art, as there is still much to be done. At present, technically minded non-members depend heavily upon overseas publications for information.

It is wrong to provide AR on a 'members only' basis. Today, we have far more amateurs than ever, thanks to the introduction of the Novice licence. The Institute should be attempting to enlist the membership of these keen new amateurs.

It is therefore necessary that the official organ of the WIA be made readily available to all radio minded people.

Yours fraternally,
Drew Diamond VK3XU."

After first reading Drew's letter I stopped for a moment and thought "Why not?", this is a darn good suggestion!" — perhaps you, the reader, may also think the same — particularly so as I have had the same question asked of me many times previously by others.

Well, let's be practical — to put AR for sale on the newstands or wherever is not as simple as it first looks.

We have investigated this area very thoroughly in the past, even to the extent of obtaining legal opinions.

To cut a long story short, we will NOT be allowing AR to go an sale to the general public. I am not going to leave you in mid-air with an authoritative statement such as that without some sort of explanation as we see it.

Our main problems are as follows:—

1. Cost of publication, distribution, profit. To sell via booksellers means the retailer must take his share — this is usually in the order of 35 per cent of the cover price — at the existing cover price less printing costs, there is no profit — refer published expenditure statements.
2. There would be no return to cover administrations costs and running the WIA — we would lose many members, thus some of the services supplied by the WIA would of necessity have to be curtailed — would you remain a member if your AR can be purchased over the counter?
3. Relating to 2 above, if AR prices were raised to cover expected membership losses, each issue would have to sell for approximately $2.50 per copy — our research has shown that this is not a very competitive situation — our sales therefore could actually drop, as we would be pricing ourselves out of the market from our so-called competitors.
4. Taxation — a commercial proposition as suggested is subject to sales tax, and income tax is payable on profits made.
5. The existing members would have to bear the cost of the venture.

These are the main basic reasons, however, I have not mentioned in detail the effect which it may have on advertisers, or the production problems and costs in increasing the number of pages to produce an economical and saleable item — I have not even mentioned our constitution under which we operate.

I guess some or even most of the above negatives could be made into very large positives — there are naturally certain advantages which Drew refers to and of course if we were to venture into this proposition, we would certainly do it with all stops out — opposition magazines would not be able to compete, and would effectively disappear because I feel we could almost control a monopoly of the market with the product we could offer.

But is that our scene? I would dare to say NO!! — we really do not have the resources (money or the manpower, voluntary or paid full time employees, etc.).

Let us not let the matter rest there though, we would like some member feedback in overcoming some of the above problems — your suggestions are most welcome.

In the meantime it is up to WIA Divisions and members themselves to actively promote membership to new amateurs and existing non-members.

If we fail in this regard, we can only blame our own apathetic attitudes. ■

STOP PRESS

There is NO TRUTH in the rumour that the Department will revert to ITU-type morse for exams.

If this step were to be even contemplated, said the official spokesman, the WIA would be consulted well in advance.

WIANEWS

1981 FEDERAL CONVENTION

Early Agenda Items for the Convention have been reported in this column and on the Federal Tapes.

For those who like to keep up to date about the outcome of Convention discussions here are the late items —

That services be not provided by the WIA free of charge to non-members (VK6);

That 21190 and 28450 kHz be adopted as additional WICEN net frequencies and amateurs requested to keep these frequencies clear for all properly identified WICEN communication purposes (Exec.);

That a form of recognition for meritorious service to the Federal body be implemented (VK5);

That the allocation of Novice sub-bands be reviewed (VK5);

That call sign entries in the call book be marked to show those emanating from WIA membership records (VK4);

That a follow-up of unfinancials be discussed (VK4);

That expected dates of availability and usage be reported on for the new bands (VK2);

That full repeater details appear in the 1981 call book (VK6);

That autopatch on repeaters be approved by DOC (VK6);

That 3.7 to 3.9 MHz on a secondary basis be sought for amateurs (VK1);

That cross linking of repeaters be permitted under conditions (VK5);

That the transmission of incidental music for training programmes be allowed on all radio and TV bands where it is an integral part of such programmes (VK5);

That phone-patch prohibitions be removed (VK5);

That DOC be asked to extend the 80m Novice segment to 3515-3625 kHz (VK5);

That a joint WIA/DOC Committee be set up to review and report on continuing post-WARC matters (VK7);

That Handbook paragraphs 6.56, 6.20 and 6.21 be deleted (VK7);

That the requirement to produce QSL cards for WAVCKA Awards be deleted (VK7):

That plans for 75th WIA anniversary celebrations be discussed (Exec.) and discussions on IARU (including re-structure of IARU HO) and post-WARC 79 matters be discussed (Exec.).

These agenda item descriptions are necessarily very brief and any member desiring additional information concerning them should contact his Divisional Federal Councillor. It is not known if the last item (d) of the first column in April WIANEWS, page 7, will firm up as an agenda item from VK4 reference the John Moyle National Field Day.

DOC LETTERS

Here is the text of a letter dated 4th March, 1981, from the Minister for Communications —

"You recently asked for clarification of the Government's attitude on the subject of concession fees on amateur radio licences for pensioners eligible for "fringe benefits".

In 1976, the then Minister for Post and Telecommunications, the late Hon. E. L. Robinson, indicated his agreement in principle to the proposed concession on the understanding that the impact on revenue would not be significant, and drafting of a regulation was commenced. However, when the draft regulation was subsequently submitted to Mr. Robinson's successor, the Hon. A. A. Staley, the situation had changed. The new Citizens' Band Radio Service had been introduced and there was a real question whether the concession could be confined to amateurs, without extension to pensioners operating citizen band, harbour mobile, or other classes of radio equipment.

You will appreciate that this raised the prospect of revenue implications far greater than those associated with a concession restricted to amateurs. Consequently, the matter was referred to the Departments of Finance and Social Security for advice on the implications for general finance and welfare policy.

The response revealed that the proposed concession would not be consistent with Government policy which generally restricts "fringe benefits" to charges for services such as telephone rental or medical treatment both of which are regarded as essential for the health and welfare of pensioners. Recreational activities, such as amateur radio, while recognised as very valuable to pensioners, are not regarded as a suitable area for the extension of "fringe benefits."

A concession to pensioner amateurs would represent a new departure in Government policy, and similar benefits could scarcely be denied to pensioners using other types of radio equipment. Consequently, I regret that the Government is no longer able to proceed with the proposed concession."

In relation to the use of the AX prefix (see WIANEWS April AR, page 7) the Department was requested to confirm the following as being acceptable to the WIA —

WIANEWS

"Stations in the Amateur Service will, for so long as the prefix is not required by the Australian Administrations for the identification of stations in any other Service, be permitted (at the Amateur licensee's option) to use the prefix "AX" in lieu of the prefix "VK" on the following conditions:

1. **Except in special circumstances, such use shall be restricted to a continuous period of two months, not earlier than two years from the last day of the previous period of such use.**
2. **The time of such use shall be nominated by The Wireless Institute of Australia, and then only to coincide with, or relate to, an event of National, and not local, importance.**
3. **Except in special circumstances, and in order to allow the Administration to give such notifications as are necessary, the nomination of the period shall be made by The Wireless Institute of Australia at least six months prior to the first day of the period nominated.**
4. **Any question as to whether "special circumstances" as referred to 1 and 3 have arisen shall be resolved by discussion between The Wireless Institute of Australia and the Department.**

We have provided for exceptional circumstances of 1 and 3 of the conditions to meet the case of an event of national importance that may not be foreseen, for example, the coronation of a monarch."

In letter RB4/8/1 of 26th March the Department replied as follows —

"It is agreed that the conditions for use of the AX prefix as set out in your letter reflect the intent of our recent discussions on this matter, and are acceptable to the Department.

The Department therefore now awaits the Institute's recommendation on the next occasion on which use of the "AX" prefix should be authorised."

MEETINGS

At a meeting of the Publications Committee on 3rd March a discussion was held on incentives to attract serious technical articles for AR and the matter will be referred for consideration in the WIA budget.

At the Executive Meeting on 19th March it was noted that a successor had been nominated by VK1 Division to take over as Federal Contest Manager when Wally Watkins VK2DEW completes his term of office shortly. A report by an EDP sub-committee was received and discussed. It was noted that the RSGB had been duly admitted to membership of IARU R3.

Numerous specialist section annual reports for the 1981 Federal Convention have been received but space precludes comments at this time. ■

WIRELESS INSTITUTE OF AUSTRALIA

Federal President: Mr. P. A. Wolfenden VK3ZPA

Federal Council:
VK1 Mr. R. G. Henderson VK1RH
VK2 Mr. T. I. Mills VK2ZTM
VK3 Mr. G. A. G. Williams VK3ZXW
VK4 Mr. A. R. F. McDonald VK4TE
VK5 Mr. G. Preston VK5PI.
VK6 Mr. N. R. Penfold VK6NE
VK7 Mr. P. Fudge VK7BQ

Staff: Mr. P. B. Dodd VK3CIF, Secretary.
Part-time: Col. C. W. Perry, Mrs. Ann McCurdy.
Mr. Bill Baly (AR Production).

Executive Office: 3/105 Hawthorn Rd., Caulfield North, Vic. 3161. Ph. (03) 528 5962.

Divisional Information (all broadcasts are on Sundays unless otherwise stated).

ACT:
President — Mr. W. R. Maxwell VK1MX
Secretary — Mr. C. T. Vidler VK1KV
Broadcasts— 3570 kHz and 2m Ch. 6 (or 7): 10.00Z.

NSW:
President — Mr. A. D. Tilley VK2BAD
Secretary — Ms. S. J. Brown VK2BSB
Broadcasts— 1100 local. 1.825, 1.8125 (Ncle), 3.595, 7.146, 28.32, 52.1, 52.525, 144.15 MHz, Rptr. Ch. 6650 Oberon, 6750 Gosford, 6800 Lismore, 6850 Wollongong, 7000 Sydney, 8525 Sydney.
1930 local. 52.1, 52.525, 144.15 MHz, Rptr. Ch. 6650 Oberon, 6750 Gosford, 6850 Wollongong, 7000 Sydney, 8525 Sydney, Relays on 160, 80 and 10 metres.
RTTY 0030Z, 7.045, 14.090, 146.6 MHz. 0130Z. 21.095 MHz. 0930Z. 3.545, 146.6 MHz.
Mondays 1930 local. Newcastle. 3.595 MHz, 10m, Rptr. Ch. 6750 Gosford, 6900 Newcastle.

VIC.:
President — Mr. A. R. Noble VK3BBM
Secretary — Mr. J. D. M. Dowie VK3BVE
Broadcasts— 1840, 3600, 7135 kHz — 53.032 AM, 144.2 USB and 2m Ch. 2 (5) repealer: 10.30 local time.
Gen. Mtg. — 2nd Wed., 20.00.

QLD.:
President — Mr. D. Laurie VK4DT
Secretary — Mr. A. J. Aarsse VK4QA
Broadcasts— 1.825, 3.580, 7.120, 14.342, 21.175, 28.400, Rpt. Ch. 6700 and 7000 Sundays from 0900Z (Sat. 2300 UTC).
Re-broadcasts—Mondays 3.605 from 1930Z, Mondays 80 or 20m RTTY segment from 200Z.

SA:
President — Mr. I. J. Hunt VK5QX
Secretary — Mr. W. M. Wardrop VK5AWM
Broadcasts— 1820, 3550, 7095, 14175 kHz; 21.160 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.
Gen. Mtg. — 4th Tuesday, 19.30.

WA:
President — Mr. B. Hedland Thomas VK6OO
Secretary — Mr. Peter Savage VK6NCP.
Broadcasts— 3560, 7075, 14100, 14175 kHz. 28.47, 53.1 MHz. 2 metres Ch. 2 Perth, Ch. 6 Wagin. Time 0130Z.
Gen. Mtg. — 3rd Tuesday.

TAS.:
President — Mr. R. Emmett VK7KK
Secretary — Mr. G. D. Johnson VK7GD
Broadcasts— 7130 (SSB) kHz with relays on 6 and 2m Ch. 2 (S), Ch. 8 (N), Ch. 3 (NW), 09.30 EST.

NT:
President — Mr. T. A. Hine VK8NTA
Vice-Pres. — Barry Burns VK8DI
Secretary — Robert Milliken VK8NRM
Broadcasts— Relay of VK5WI on 3.555 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 9.45-13.45h).
P.O. Box 123, St. Leonards, NSW 2065.
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 417 3535 Weekdays 10.00-15.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HO at West Thebarton Rd., Thebartor.
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.

Slow morse transmissions — most week-day evenings 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 — OSL Bureau, C/- Hunter Branch, P.O. Teralba, N.S.W. 2284.
VK3 — Inwards QSL Bureau, Mrs. B. Gray VK3BYK, 1 Amery Street, Ashburton, Vic. 3147.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse VK3XY, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001
VK5 — QSL Bureau, Mr. Ray Dobson VK5DI, 16 Howden Road, Fulham, S.A. 5024.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 1418, Darwin, N.T. 5794.
VK9, 0 — Federal OSL Bureau, Mr. N. R. Penfold VK6NE, 388 Huntriss Rd., Woodlands, W.A. 6018.

An Improved Series R-X Noise Bridge

Bob Slutzkin VK3SK
8 Lynedoch Avenue, Balaclava 3083

This is an improved type of series R-X noise bridge which can be used for the measurement of antenna system impedances in terms of R + jX, the reactance term being obtained by dividing the "jfX" reading by the frequency in MHz.

In earlier series R-X noise bridges such as the commercially available Palomar or MFJ bridges a formula or graph was needed for the conversion of the readings of the "X" dial into ohms reactance; but their derived reactance ranges are awkward. The two commercial bridges mentioned have different conversion formulas, as their components are different, but neither has a large enough inductive reactance range at the higher frequencies. Then, the capacitive reactive ranges are excessive, and at the lower frequencies the slope of the conversion graph is so steep that reliability of capacitive reactance readings could be suspect.

The parallel R-X noise bridge, as described by W6BXI and W6NKU in February 1977 Ham Radio, and my "Squeeze-Box" an improved parallel type admittance bridge, overcame this range problem (although complex calculations were needed to convert the readings from either bridge into the form R + jX, even though I had pointed out that the use of admittance, in the form G + jB, might be simpler). After further work on the "Squeeze Box", I have discovered that the fall-off in measurement accuracy at the higher frequencies, resulting from the stray inductance that equalization will not fully compensate for, is greater than I had previously expected. In the worst case, even in a bridge in which special care had been taken to minimise stray inductance, and then to carefully equalize it, a measurement error as high as 30 per cent could occur on a capacitive load at 30 MHz on a line with an SWR of only 2 : 1.

Because this type of error reduces rapidly as the frequency is lowered (the error being proportional to the square of the frequency), and because it diminishes as resonance is approached, it is not too serious. Many radio amateurs would be content to accept that errors are likely in their measurements on lines with significant SWRs if there could be confidence in the indication of a correctly matched line. But because 30 per cent is a large error, we should look for an improvement on this situation.

Stray inductance is the cause of the problem in the parallel bridge, stray capacitance being fully compensatable. The components used in the parallel bridge have inbuilt stray inductance; and no matter what care is taken in the layout of the components for the reduction of wiring inductance, errors of the order of the above example will occur. In the series bridge, on the other hand, stray capacitance is the corresponding problem, and stray inductance is fully compensatable. Fortunately, it needs only moderate care to keep stray capacitance down to a harmless level in a series bridge; so the series bridge might become the better choice for antenna

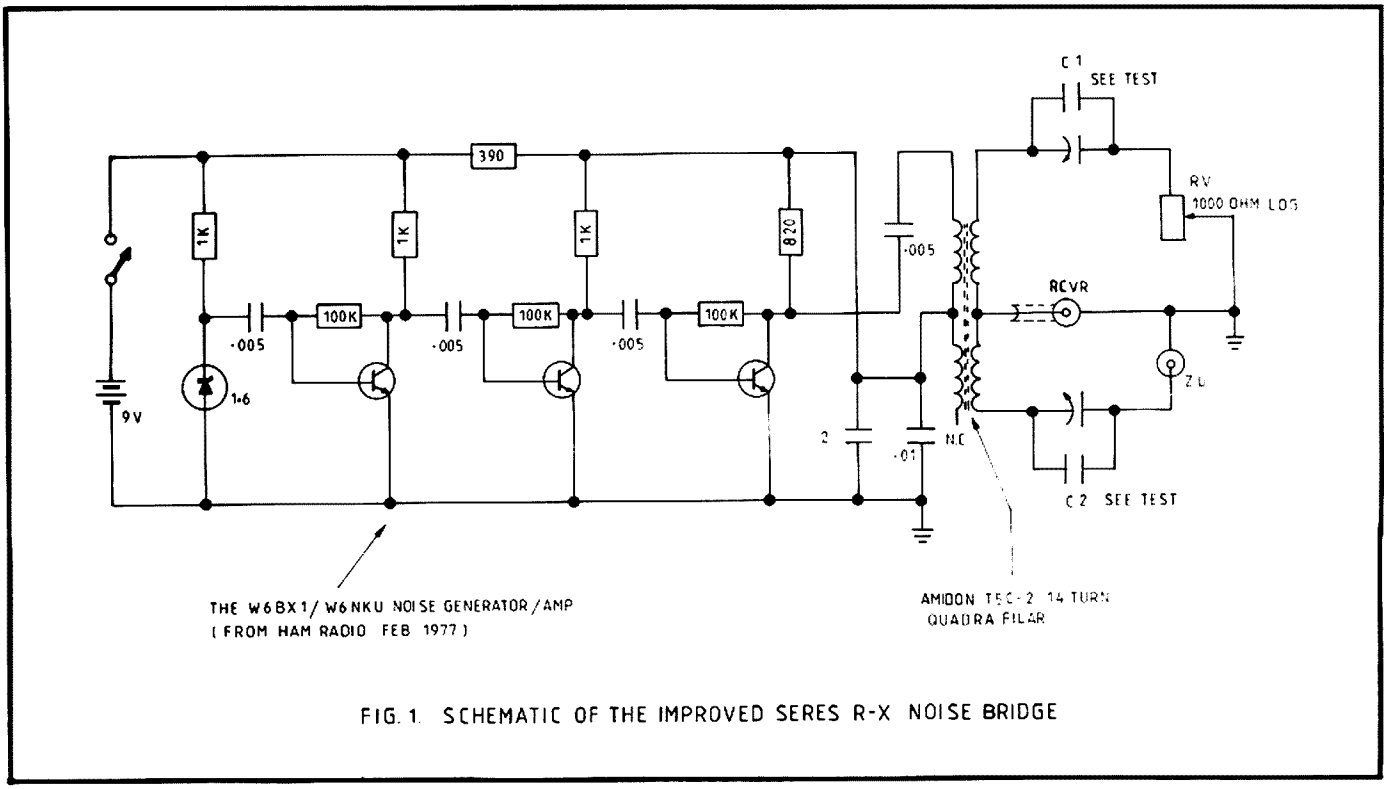


FIG. 1. SCHEMATIC OF THE IMPROVED SERES R-X NOISE BRIDGE

measurements at HF, if only the scale-range problem, mentioned above, could be overcome. Well, it can! The bridge that is described here has an almost linear reactance scale which is symmetrical about its zero point. Its range may be tailored to suit the individual user's needs.

The schematic in Fig. 1 shows that the circuit is not unlike those of the Palomar and MFJ bridges. The difference is that C1 and C2 are both variables instead of one being fixed. In fact, C1 and C2 are matched variables with matched shunts, and they are ganged together in opposition (like a differential capacitor, but with separate and insulated rotors). See photographs. It will be shown that the size of the variables is relatively unimportant, as the selection of the shunt size determines the reactance range.

When the bridge is balanced against a load of Ru + jXu, the following equations will be satisfied:

$$Ru = Rv, \text{ and}$$
$$Xu = (C2 - C1)/(2\pi f\ C1\ C2)$$

The scale is graduated in terms of 10^6 (C2 — C1)/(2π C1 C2), so that any reading on the dial can be divided by the frequency in MHz to give the reactance in ohms. We could say that the scale is a "jFX" scale, graduated in "MHz-ohms".

If C1 and C2 are each 2-12 pF with 33 pF shunts (making C1 35-45 pF and C2 45-35 pF) the MHz-ohms range would be —1011 to +1011 which would produce a reactance range of ± 36 ohms at 28 MHz (just barely sufficient to cover a 2 : 1 SWR range at that frequency), while it is double that X range at 14 MHz and ± 3.5 MHz. Reducing the shunt size to 27 pF would increase the MHz-ohms range to ± 1407 producing a ± 50 ohms reactance range at 28 MHz. Shunting the 33 pF shunts with 40 pFs will approximately divide the range by 4.

C1 and C2 could be larger, say 3-40 pF variables shunted by 57 pF, to provide the first range above. Suitable shunt sizes can be calculated to provide any desired jfX scale when combined with any sized variable capacitor; and the appendix tabulates the shunts required for combining with some typical variables for certain useful jfX ranges.

Thus there is a flexibility in the choice of variable capacitors for this bridge, which is quite an advantage, particularly in these days of component shortages.

CONSTRUCTION HINTS

Ham ingenuity is required to devise a good mechanical arrangement for the ganging, mounting and driving of C1 and C2; because the capacitors most suited for using in this manner may not be easily found. Even those little screwdriver-adjust air trimmers which were once so plentiful in disposals equipment can be adapted for the job, with a little patient fiddling. Once the capacitors have been prepared, the most difficult part of the whole project will have been completed.

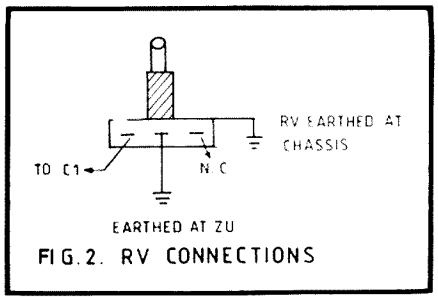
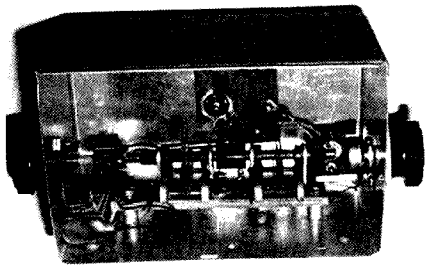
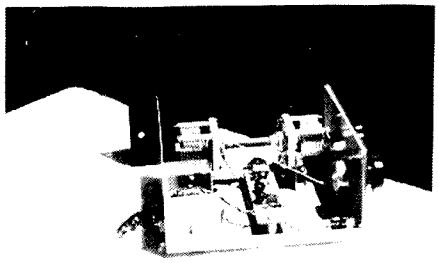


FIG. 2. RV CONNECTIONS

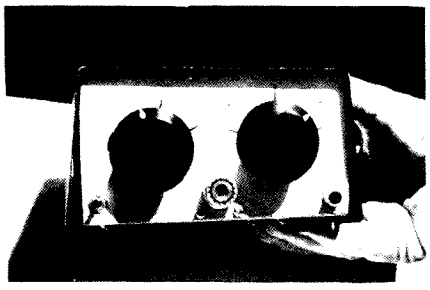
One method of making a differential capacitor from two small conventional variable capacitors.



Alternate construction of a differential capacitor. This one is installed in a parallel type noise bridge. The author has dubbed this instrument a "squeeze box" because of the method of operation.



The completed series noise bridge, showing where all the bits fit.



Front view of the instrument.

The instrument needs to be built into a box which is big enough to allow the capacitors to be mounted well clear of everything else, because this is a precaution necessary for the minimising of stray capacitance, 150 x 100 x 100 mm is a good size. I like the arrangement with the capacitors and the potentiometer mounted in line with each other, and their dials in the centres of the side panels. They should have either very large knobs (say 50 mm diameter or more) or planitary dials.

For the noise source, any of the designs which have been described elsewhere for other noise bridges would do, but the quadrafilar transformer arrangement of the W6BXI/W6NKU design in February 1977 Ham Radio is worth incorporating in any of the other noise sources which might be used.

The wiring is straightforward, so long as the normal precautions for HF equipment are taken — such as the avoidance of earth loops and of long leads. Of greatest importance is that stray capacitance be kept to a minimum. Tne C1-Rv lead, and the C2-Zu lead need special attention. The next process to be described is the equalizing of stray inductance, which involves adjusting the relative lengths of these two leads.

EQUALISING STRAY INDUCTANCE

For this process, the Zu socket needs to be terminated in a short circuit. A good way of doing this is to form a small pad of steel wool which will just neatly cover the end of the socket, and to then pass the pin of a PL259 through the centre of the pad before screwing the plug tightly into the socket. The steel wool provides the desired non-inductive short circuit termination. The equalization is done on a trial and error basis, using different lengths of leads until the correct lengths can be found which will enable the bridge to hold its jfX setting for balance over the HF spectrum.

First with the C1-Rv connection as short as possible, and a slack length of 22 gauge tinned copper used to connect C2 to Zu, the bridge should be balanced at 3.5 MHz. (For those new to noise bridges, this involves turning on the noise source, while the receiver socket is connected to the station receiver which will then produce a loud hiss noise. To balance the bridge, its dials are adjusted simultaneously until the noise is tuned out. In the test just described, the R control should finish up fairly close to its fully counterclockwise position, and the fX control about central.) Now, on returning the receiver to 28 MHz (unless by good fortune the length of the C2-Zu lead had been guessed correctly) the noise would reappear to indicate the bridge had not held its balance with the change of frequency. If rebalancing requires a decrease in C2's capacitance, the C2-Zu lead will need shortening, and vice versa. If its shortest length is still too long, then the C1-Rv lead will need to be lengthened; but by trial and error, in this

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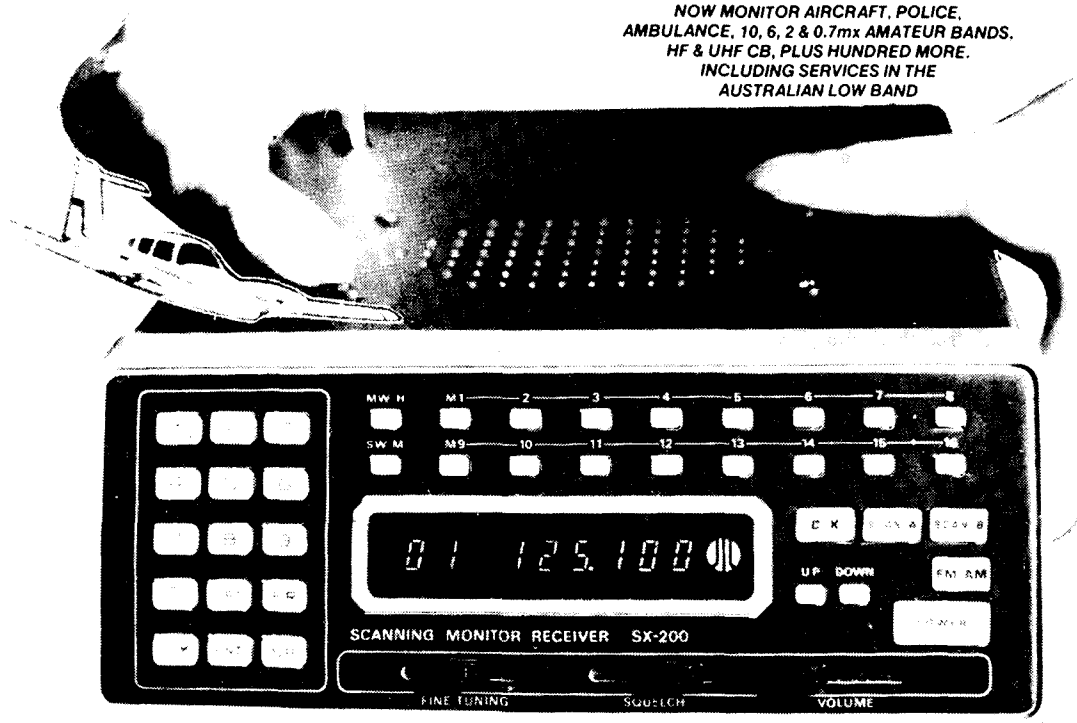

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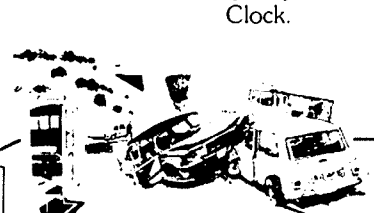

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manner, lead lengths can be established which will allow the bridge to hold its balance over the HF range. The connections may then be made permanent, and the point of the jfX scale corresponding to the adjustment for balance should be marked zero. This will have completed the equalization.

GRADUATING THE SCALES

The R scale may be graduated against its resistance values measured at DC, up to 100 ohms without introducing any appreciable errors in the frequency range to 30 MHz. Between 100 and 200 ohms stray capacitance might cause small but acceptable resistance measurement errors (which would be frequency dependent). Above 200 ohms RF resistance measurements would be unreliable if based on a DC measurement. Consequently, it is recommended that the R scale be graduated against DC resistance measurements made on a good quality ohm-meter (such as the Fluke digital multimeter model 8020A), and that graduations be marked in, every 10 ohms up to 100, then at 150 and 200 ohms.

The jfX scale may be graduated against measured values of C1 and C2 at different settings, and the fX values calculated from the equation:

$$fX = 10^6 (C2 - C1)/(2\pi\ C1\ C2)$$

To do this fully, the C1-Rv connection would need to be opened for C1's capacitance to be measured. However, the linearity of the two capacitors' scales may be assumed, so that measuring C2 (which can be done without disturbing any wiring) should be sufficient to establish the full scale; because the zero point on the scale will have been established during equalization, and when jfX is zero, C1 = C2. Therefore, an instrument capable of measuring capacitance to the desired accuracy will be required. The measurements should be made at as low a frequency as possible so that errors due to the leads from the noise bridge to the measuring instrument will be minimised. Even if the capacitors cannot be measured, and the marked values of the variable capacitors and their shunts assumed to be correct; the use of "dead reckoning" to graduate the scale might be close enough for many radio amateurs. The use of one or more fixed capacitors as "standards" (if their values are known accurately) will enable spot checks to be made on the negative part of the jfX scale. The standard capacitor should be plugged into the Zu socket, and the bridge balanced at the receiver's lowest frequency. The jfX value can then be calculated from the equation:

$$jfX = -10^6 j/(2\pi C)$$

where C is the capacitance of the standard in pF.

Some examples of standard capacitors and their jfX values:

C (pF)	jfX (MHz-ohms)
114	—1400
133	—1200
159	—1000
199	—800
265	—600
318	—500
398	—400

Once the scales have been graduated, the noise bridge is ready to put into service — ready to measure the impedances of all the antennas at the station, and perhaps of that can of oil over there in the corner which gets so hot when the "full legal" power is fed into it. If the dummy load does not measure as 50 + j0 ohms, do not be too surprised. The fault will not be in the noise bridge! *Even a little dummy load built into the back of a PL259 could measure slightly reactive, particularly if all the necessary precautions for minimising inductance during its construction have not been taken.*

CONCLUSION

The jfX noise bridge has been described. To build one should not be too large a project for the average amateur; nor should the understanding of its principles and operation be difficult. It is realised that long division is becoming a lost art, so an electronic calculator may be needed so that jfX readings can be divided by f to produce a reading of R + jX.

There may be an advantage in choosing larger variable capacitors to start with, in that calibration could be easier and the shunt values less critical.

With the smaller capacitors, and careful design of the toroidal output transformer, it is possible that a bridge could be built to measure at VHF, although the accuracy would be limited by the stray capacitance, particularly across the potentiometer.

An obvious refinement to this noise bridge would be to switch in alternative shunt capacitors to provide alternative MHz-ohms ranges. Special care would be needed to keep down the stray capacitance, from the switch to earth, in this case. ■

APPENDIX

REACTANCE RANGES FOR DIFFERENT C1 AND C2 RANGES

C1 and C2 Range (pF) Variable C	Shunt	Reactance Range ± MHz ohms	± ohms @ 28 MHz	3.5 MHz
2-12	27	1407	50	400
	33	1011	36	288
	73	250	9	72
3-40	46	1398	50	400
	57	1012	36	288
	132	254	9	72
4-50	49	1396	50	400
	81	1015	36	288
	146	249	9	72
5-70	54	1414	50	400
	69	1006	36	288
	168	251	9	72

HELP WITH INTRUDER WATCHING

THE NORTH WEST RADIO SOCIETY

PO Box 283, Port Hedland, WA 6721

Nets: Thursdays and Sundays, 1200Z, 3.605 MHz. Weekends 28.445 MHz.

Club Station: VK6ANW.

Repeater: VK6RNW, Channel 8 (expected to be operational mid-1981).

Current Office-bearers are:—
President: M. Dunning VK6WV.
Secretary: J. Farnan VK6NPH/ZPH.
Treasurer: N. Homer VK6NU.
Awards Manager: R. Sherington VK6NRS.

The North West Radio Society was formed at the end of 1979 with the broad aim of recognising the common interest of a number of old and new amateurs who found themselves living and working in the north-west of Western Australia. Over the past 18 months members of the Society have been located in Kununurra, Koolan Island, Port Hedland, Karratha and Newman. A Chapter of the Society was formed at Newman in 1980.

Most of the Club activities of the Society have been organised in the Port Hedland area, and members have been involved in —

Jamboree on the Air (1979 and 1980).

A weekend camping trip.

Emergency assistance to civil authorities during a cyclone.

Construction of Club station and antennas.

Club participation in Remembrance Day Contest 1980.

Organisation of the North West Award.

Membership mobility is an aspect of life in the north-west, but the Club tries to maintain contact with members who have moved to other places in WA or beyond.

The winter months are popular for tourism in the north-west, and the 3.605 MHz net has welcomed many amateurs from interstate. ■

Amateur Radio in Japan

P. L. Rodenhuis VK2AHB
50 Lawson Pde., St. Ives, NSW 2075

My interest in Japan commenced eight years ago when I started a night-school course in the Japanese language in Newcastle. Arising from the classes was the formation of an Australia-Japan Society in Newcastle. I was the founding Secretary, a position I had to relinquish when I moved to Sydney in 1977. Early in 1977, I studied for and received an Amateur Radio Licence. One of the motives for obtaining the licence was the opportunity to practice Japanese conversation with the numerous Japanese amateurs.

In 1980 I applied to the Australian-Japan Foundation for a Travel Grant in order to visit Japanese amateurs, examine their living and radio operating conditions and to talk about Australia and Australian amateurs. In May, 1980, I was informed by the Foundation that my application had been successful.

I had previously written to the Japan Amateur Radio League requesting assistance in arranging meetings with some of the 1500 Radio Clubs in Japan. I was referred to Tomita Iwao JA6BLV, an English teacher in Kumamoto, Kyushu. He is the Japanese Co-ordinator for International Amateur Radio Hosts, as well as being the President of the Kumamoto-Australia Friendship Society. This introduction was very fortuitous. Tomita-san was very helpful in arranging hosts in many cities for me The total number of hosts, including friends I had met previously was 23 (17 of whom were amateure).

As I wanted to see as much of Japan as possible in the time available (one month), I set myself a very busy schedule, covering three of the four main islands.

At present, most of the amateurs in Japan cannot speak English, so they converse amongst themselves. A minority of Japanese can speak English and do so on the radio, however, in most cases it Is limited to very basic conversation which becomes stereotyped. By using my book (see map caption), Australian amateurs will be able to express the same conversations to the Japanese, who certainly appreciate any attempt to speak to them in Japanese. My hope is that, once such conversations start the Australian and Japanese amateurs will help each other, so that the conversations and friendships will develop.

Japan has about 400,000 amateurs, not all of whom are active. Even though a minority operate on the shortwave international bands, they still constitute a large number. From various comments I had heard on the air from time to time, it seemed that the Japanese amateur was not popular. To gauge the opinions of Australian amateurs towards the Japanese, I sent 70 questionnaires throughout Australia. Fifty-six replies were received, which surprised me. The results of the survey also surprised me, as the attitudes were not as unfavourable as I had imagined.

IN JAPAN

I arrived at Narita Airport in Friday, 3rd October. After transferring at Haneda, I flew to Kumanoto, where I met Tomita-san. He lives in an old farmhouse in the country, about 30 km north of Kumanoto City. Here I had the first of many meetings with Radio Clubs. About 12 people attended the meeting, which was a dinner meeting held in a restaurant.

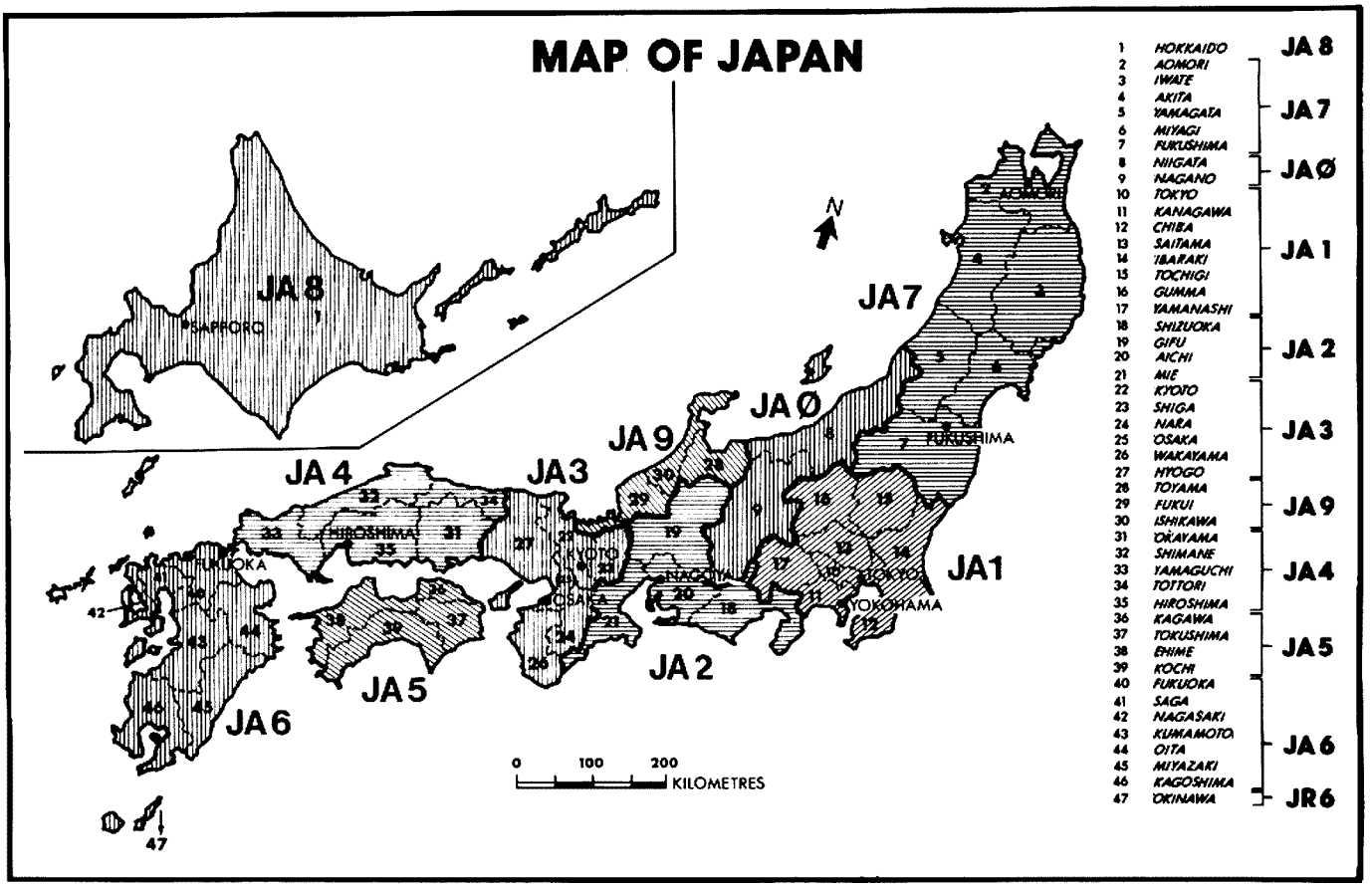
From Kumanoto I travelled by bus to Kukuoka, thence by train to Kitakyushu for another meeting with about 15 amateurs. The next day I left for Hiroshima by the Shinkansen or Bullet Train. Another meeting was held here, with the Hiroshima Amateur Radio Club. This schedule of travel, sightseeing and meeting took me through Osaka, Kyoto, Kobe, Wakayama, Shingu, Nagoya, Tokyo, Nikko, Fukushima, Shinchi, Sendai, Kakunodate, Mutsu, Aomori, Sapporo and Sunagawa. Fifteen meetings were held, with members ranging from four to 43 people.

In every instance, the friendship and hospitality was overwhelming. Often the host took a day's holiday from his five day allowance to conduct me on a sightseeing tour of his area.

The range of occupations of the hosts included servicemen, teachers, businessmen, electronics engineers. Incomes and houses varied accordingly.

In the month I travelled Japan, I stayed with 23 different families. In many of the 23 homes at least one grandparent was living with the family. The number of children ranged from one to four.

A meeting of amateurs and students at Shingu, Wakayama — JA3 country. Forty-three in attendance.



Taken from the author's book "QSO JA NOW", an introductory text on Japanese conversation for Radio Amateurs, published by Westlakes Amateur Radio Club. The book is being reviewed for AR.

The houses were generally small by Australian standards, usually two storeys. The lower section usually contained the entrance, living room, kitchen, bathroom and toilet, while the bedrooms were upstairs. The houses are built on flat ground, even if the plot has to be built up with stone walls and filled in. Housing blocks are about two hundred square metres or 20 x 10m. The houses are usually constructed of timber. Broad slats are nailed to the framework with gaps left between. They are then covered with plaster. This light form of construction is necessary because of the ever-present danger of earthquakes.

The entrance hall is a tiled area where shoes are taken off and slpipers put on. The floors of the halls and kitchen are usually polished wood, while the living room is tatami (rice straw mats, 1.8m x 0.9m) or carpet. Slippers are never worn on the tatami and often not on carpet either, so they are left in the hallway outside the door. Special plastic slippers are left inside the toilet door to wear whilst in there. It is very much frowned on to leave the toilet whilst still wearing the "toirei surippa".

The living rooms usually are quite small and cluttered. The TV has pride of place of course. A low table is set in the centre of the room, and meals eaten with the TV on — breakfast-time also. On only two or three occasions did I eat at a regular table in a Japanese home. In winter, a heater is attached under, and a rug placed over the low table. The family sits around the table with their legs under the rug. This is usually the only form of heating in the house.

The radio "shack" often consisted of a corner of the living room, although the wealthier hams with large houses often had a separate room set aside for radio. Equipment was all commercially manufactured, and some "shacks" were very impressive with a large array of transceivers.

The area of Honshu, west of Tokyo, including Osaka, Kobe, Hiroshima, was very crowded and industrialised, with air pollution being extremely visible. In contrast, the north-eastern region called Toohoku, was very rural, with little industrialisation, hence little pollution.

As is the case world-wide, the residents of the rural areas seemed friendlier, easier-going than their city dwelling counterparts. However, the overall feeling, irrespective of area was one of hospitality and generosity. Apparently every visitor to Japan has a story about the kindness of the Japanese. My story starts at Osaka station, one Monday night about 7 p.m. I was waiting to go to Tennoji, from whence I was leaving the next morning. As I stood on the platform with my luggage, a young man in front of me turned around and asked in English where I was going. When I told him Tennoji he replied he was also going there. We chatted on the train — I asked him if there were any hotels near the station. He told me there were, and when we reached Tennoji he escorted me to the hotel across the road. There were no vacancies so he enquired if there were any other hotels in the area. He was told a Japanese Inn was nearby, so he rang the Inn to enquire if there was a vacancy. There was, so he helped carry my luggage 200m to the Inn. There we decided on the room and cost. After all this was settled, I invited him to come for a drink. We went to a bar, had several dishes and beers and talked about many things (in English). After about two hours we left, but he insisted on paying for it all!

AMATEUR RADIO IN JAPAN

Licensing System

The licence classes for amateur operators are First Class (Joo kyuu menkyo), Second Class (Ni kyuu menkyo) and the Third Class level, Phone only and CW only licences. These are called Denwa kyuu menkyo and Den shin kyuu menkyo.

The Phone-CW licences have a power restriction of 10W supplied to the antenna. All bands except 20m may be used. The

Phone licence does not have a CW test. The CW licence has a test at 25 letters per minute or about 5 words/minute, the same as our novice licence. Before sitting for the test, the students attend courses conducted by the JARL. These can be over a period of months, or an intensive 10-day course held during holidays.

The rigs are approved by the JARL, so no inspection is necessary.

The Second Class licence has a higher level of electronics examination and regulations, and also has a CW test of 45 letters/minute. The power allowed to the antenna is 100W.

The First Class licence is very difficult, with a further exam in electronics, CW at 60 Roman lettetrs/minute, and also 50 Japanese characters/minute. This Japanese "Morse" is called Wabun. The First Class licence holder may then use 500W antenna power.

When the Second and First Class licensees want to set up their station they must have an inspection by the local RI and pay a fee which is on a sliding scale, depending on the power. Also, before being able to use another mode such as RTTY, Oscar, SSTV, etc., they must pass an examination and have an inspection of the equipment.

One First Class licensee I met in Kitakyushu had neglected to renew his licence (after about 18 years). He then had to go through the procedure of inspection again and, because he was using 500W, his fees were about $80!

Number of Licences

Everyone knows there are a lot of JAs on the air, we've all heard them. However, from my inquiries it would seem that only about 10 per cent of JAs talk to DX stations. The vast majority are on 2m simplex (there are no repeaters). The JARL Tokyo office supplied me with the following numbers of licences **issued.** (They don't reuse the call signs as we do.)

First Class	7902
Second Class	32935
Phone	725847
CW	55106
	825790

Again, this is the number issued, not the number active. The JARL says many Phone Class licences quickly become bored (frustrated?) on 2m, so after a few months they give it away. JARL estimate maybe only 300,000 to 400,000 are active, with about 100,000 belonging to the JARL.

Operation in JA by Foreigners

The JARL supplied me with some information on the **possible** operation by foreigners in Japan. I had previously written to the JA P. and T. Department asking about this, and had been told that as VK and JA did not have reciprocal agreements, I could not operate in JA.

The Radio Law of Japan states that, as a general rule, a foreign radio operator is prohibited from establishing and operating a radio station by himself.

However, if there is a reciprocal arrangement between the Governments of the two countries, then the foreign amateur may use a Club Station, "even if the foreign amateur is not qualified as a radio operator prescribed in the Radio Law of this country".

At the end of this article is the procedure to be followed by a foreigner wishing to transmit in Japan.

Equipment

All transceivers I saw were commercially made, mainly Yaesu or Kenwood (Trio), with some Collins and Drake seen. A very small minority of operators use modes other than SSB, so very few examples of home-brew equipment were seen. The place where I did see some was in those stations where the operator used RTTY, SSTV or ATV.

As I mentioned before, the operator must undergo an examination and inspection before he can use alternative modes. RTTY is not very common in Japan, the main reason being the lack of disposal Teletype equipment for beginners to cut their teeth on. I saw one huge ex-railway monster which uses a 6 bit code. The friend who has it is building a 6 to 5 bit converter. The advent of microprocessors, VDUs, etc., will make it a lot easier (if more expensive) for JAs to get on the air with RTTY. Yaesu have recently introduced a line of RTTY/ASCII/CW readers, keyboards, etc., so this may be the start of an upsurge in JA activity.

Antennas

As the vast majority of JAs use 2m, it was that type of antenna that I saw most frequently. 7 to 10 element Yagis were common, often in 2 or 4 stacks. I did see one 8 stack.

Large HF antennae were not seen often, although just about every major town I passed through had a couple visible from the train. Roof towers were a very popular means of getting the antenna into the air. This had the advantage of not using any precious space in the small yard. Still, I saw many towers, from 10 to 30m high. Many of these were "crank-up" types, so that the antenna could be lowered before a typhoon came. When I was in Wakayama a typhoon came, and all the antennae had been lowered or tilted over and tied down. The 30m tower I saw belonged to a farmer in Oyama, north of Tokyo. His name is Masa JA1CPX. He runs Collins S line with Heath Linear. The base of the tower is about 3m square, and is set in concrete about 2m deep.

L. to r.: Saitoo JH7XAO, Katoo JE1NOH/7, author at Saitoo's QTH, Fukushima.

The prize for the best antenna system would have to go to the JA7 who lives in Aomori. He has a full size 3-element yagi for 80m! The boom is 16m long and the elements 22m — a very impressive sight even by torchlight. Alongside was a 7-element yagi for 15m, also with a 16m boom.

EXTRACTS FROM THE NOTICE CONCERNED WITH THE OPERATION BY A FOREIGNER OF THE RADIO EQUIPMENT OF AN AMATEUR STATION

Of the Notice which the Ministry of Posts and Telecommunications has issued to prescribe the procedures for and conditions of the operation by a foreigner of the radio equipment of an amateur station in this, only the matters relating directly to such operation are given below, for some preliminary knowledge on the subject.

1. A foreigner who has an intention to operate the radio equipment of an amateur station in accordance with the provisions to be applied to this purpose of operation, shall be registered as such at the Ministry of Posts and Telecommunications by the submission of:
   (a) an application for the registration to operate the radio equipment of an amateur radio station in a fixed form;
   (b) the certificate for the technical ability to operate any radio equipment of an amateur station issued by the government of the state concerned, or its authorised copy; and
   (c) any note issued by the consul living in Japan of the state to which that foreigner's nationality belongs for endorsing that the certificate is the genuine and effective one.
2. A foreigner who has been thus registered under the above paragraph (1) may operate the radio equipment of an amateur station in accordance with the pertinent provisions on the fixed conditions:
   (a) that the operation shall be conducted under the command of those first, second and/or third class service radio operators and first and/or second class amateur radio operators associated with the incorporated body to which that foreigner belongs as a member; and
   (b) that the operation shall be limited within the operational scope of the radio equipment to be considered as appropriate in the light of the qualification expressed in the certificate that the foreigner holds and further the scope in which the commanding Japanese radio operators may operate the radio equipment. ■

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National Third Party Amateur Radio Network

Sam Voron VK2BVS
2 Griffith Ave., East Roseville 2069, NSW

Since the introduction of Third Party privileges to Australian amateurs, a National Third Party Net has evolved, with some (few) teething problems. The following article gives suggestions and operational ideas for the successful conduct of the net. The net operates daily on 3570 kHz at 1130Z.

1. The net has adopted the same policy used by Australia Post and US amateurs, i.e. all care taken but no responsibility accepted.

Before accepting a message the public is made aware that amateur radio does not guarantee delivery or accuracy of transmission. For most messages involving casual greetings and well wishes, this is of little concern, however if the content of a message is critical or delivery imperative, then the general public are advised that the commercial and public communications network may be a more appropriate medium for the transmission of their message.

It is hoped that a national standard message form similar to that printed by the ARRL for US amateurs would In due time be available to all amateurs in Australia through the WIA.

2. The operation of the net has shown that untrained amateurs can get together and very quickly learn the minimal requirements of basic traffic handling. Certainly WICEN personnel should advise and assist by joining or organising on-air sessions, however the handling of traffic should be open to all amateurs so that every Australian amateur has the chance of gaining minimal experience in message handling whether he is a competent WICEN/SES operator or not.

3. The net exists to take the ordinary amateur to a minimal level required for the proper handling of traffic. The net allows any amateur to learn a basic format and route his own message. It allows amateurs to learn in a fun and challenging way and takes the time to discuss the ins and outs with new participants.

There is no question of poor operating, just an opportunity for every amateur to learn a basic skill (message handling) which can be used in the daily service of the community (by those participating), or whenever required (by those listening).

4. In the US the Amateur Radio Public Service Corps is divided into two parts. The Amateur Radio Emergency Corps is the emergency preparedness group of 30,000 amateurs who have signed up to keep amateur radio in the forefront along preparedness lines (like our WICEN group). The other section is the National Traffic System, which allows all amateurs to participate in traffic work to whatever extent they wish, from an occasional message now and then, to becoming a part of organised traffic systems. (This is what the national third party amateur radio network is facilitating.)

Some WICEN co-ordinators have joined in the network and commented that such a net has the capacity to take all amateurs to a basic level of message handling procedure.

On one of the early net sessions a member of the NSW WICEN committee offered to look at suggestions for a standard third party "amateur radiogram" for use by Australian amateurs, who may only have the minimal of training in message handling. Ideas sent to our local WICEN committee include the concept of compatibility between WICEN, NTPN and NTS (for the day when international third party traffic is permitted into the USA and Canada).

A simplified WICEN message form has been suggested as a possibility.

Net participants have adopted a temporary message form until a national third party "amateur radiogram" format is agreed upon.

5. The net provides a nightly forum for experimentation in procedures and methods — the criticisms which arise and the knowledge gained by all those participating and those listening should be invaluable in the setting up of a permanent message handling network.

6. Third party traffic can be passed either within a net which has been formed to facilitate it (e.g. the third party net), or on a freelance basis (outside the net). All net participants are advised to keep a copy of messages for 12 months in case inspection is required.

This is the standard practice in the US whose relevant regulations we operate under at the present time.

Co-ordination and control should be the responsibility of the amateur radio service, with D. of C. providing the broad framework.

From the first day the net was functional the D. of C. both in Melbourne and Sydney and the WIA office at both capitals were notified and invited to tune In and hear how amateurs were using the new privilege.

The only comment I would expect from the department would be in relation to the carrying on and purposeful jamming by obviously licensed unidentfied amateurs.

I heard exactly this same behaviour during this century's worst hurricane a few months ago on a similar net carrying emergency US traffic into and out of the affected areas on 20 metres.

In both the Australian and US case, it's horrifying to realise that it's not just one person but several. Secondly, they are quite obviously licensed amateurs. To my surprise I learned that the incredible interference on the 2 metre Sydney repeaters over the last three months is also due to a licensed amateur.

When this type of behaviour arises there must be amateurs who know who these people are. It is the amateurs who knowingly allow fellow amateurs to operate and carry on anonymously on our amateur bands who must accept responsibility for the shame it brings upon us all.

I commend the following statement from the Council of the NSW Division of the WIA, which was printed as a NSW insert in September 1980 AR.

"Council urges all amateurs to refrain from openly acknowledging the presence of illegal operators on amateur frequencies. Amateurs are asked to note relevant information which may help the authorities in the apprehension of such offenders, and should communicate same in writing to the Department of Communications." (and I might add, send a copy to your Division's Council so they can ensure that appropriate action is being taken.)

7. Our thanks and recognition of what the WIA has done.

The third party traffic privilege is not only something which will launch us into a new era where amateur radio and the citizen in your local street or town will be seen in a closer more personal context, but it is now a story which shows how only the WIA has the infinite patience to keep pushing for what amateurs want, even if it seems impossible to achieve. With this attitude you must get what you want at the end, and the WIA did.

Clearly if we amateurs want something the WIA is the only body who has the time and resources to get it for us.

By taking the privilege with both hands and experimenting with the extent of its possibilities, the ordinary amateur radio operator is in effect thanking the Minister for the immediate grant, the WIA for making It all possible, and displaying that initiative and experimental flavour which makes amateur radio so exciting today.

The novice licence is introduced and you think you have seen it all. Then suddenly third party privileges, and a whole new range of possibilities for amateur radio add yet another new dimension to our hobby.

For today we are in the early days of a new privilege, only experimenting and forming no permanent structure. Join in each evening at 1130Z on 3570 kHz ± QRM on the National Third Party Amateur Radio Network.

EDITOR'S NOTE:

The National Third Party Net is the innovation of the author and, at the time of publication, has not been officially sanctioned by WIA Council. This matter will be brought up at the next WIA convention, where it is hoped broad guidelines and rules of operation will be made to the benefit of all amateurs, and the hobby in general. In the meantime, it is suggested that the net continue on the basis already in existence.

The experiment gained by those operators participating in these early stages will be vital to the formulation of a firm policy in the future.

Do give the lads a tree uninterrupted channel, the success or failure of this new privilege depends entirely on how we conduct ourselves.—VK3UV.

■

And What About Junk Boxes?

I was reading an article the other day on how to build a small portable transmitter when I came upon the phrase, "the whole outfit should not cost much as most of the parts can be culled from the junk box . . ."

It occurred to me that there could be readers of the article who would never become satisfied builders for the simple reason that they just hadn't got a junk box! You, Sir (or you, Madam), may be a hardened radio amateur and thus already have a box of splendidly varied junk, ancient and modern, collected over the years. In fact you may even have several junk boxes, as I have, chockful of valuable and, in some cases, irreplaceable rubbish. (For instance, I have a number of large air-spaced variables that, as they stand, make excellent toast racks.)

How difficult as it may be to believe, there are people who have virtually *no junk at all.* They have to make do with a commercial transmitter and receiver and do not have even one loose resistor with short wire ends! So what can these people do when they are confronted with a constructional article such as I have mentioned? You may be saying that if they have commercial gear they are not interested in building stuff, anyway. Don't you believe it! Deep down inside the most rabid commercial-gear type amateur there lurks one who would build everything he needed — from a loop lamp indicator up — provided he had the time. And a junk box.

Some enterprising manufacturer should therefore market a series of junk boxes to fill this long-felt want. The Junior Kit for the young impecunious — or perhaps even the old impecunious but just starting amateurs would retail at about, say, $1.10 and consist of the following:—

One stout cardboard carton as used for carrying butter (say).

One dozen assorted resistors with short ends (some open circuit).

One dozen capacitors, mainly electrolytic (over 50 per cent very doubtful).

Three dozen assorted nuts and bolts (none of which fit anything).

One ounce mixed fluff, used matches and dust.

Two peculiarly-shaped metal brackets.

To follow in the series there would be five other junk box outfits up to a ceiling price of $4.99 maximum — this last would, of course, be the *de luxe* offering, containing many surprises, such as an electric drill with a burnt-out field winding. The box holding the *de luxe* outfit would be of real wood, finished in a pleasant shade of olive drab, complete with carrying handles and original US lettering inside and out. Of course it would also be possible to start with the junior box and add to it by buying Supplementary Kits 2A, 3A, and so on.

I was going to deal with our *very* impecunious friends in my next article, but I know and appreciate how galling it can be to read the words "Next month I shall be dealing with 'Starting Your Own Junk Box' ", so I have decided to give those who would be unable to afford even the Junior Kit a few hints immediately.

Begin by visiting some of those old relatives of yours you haven't seen for years and ask if they happen to have an old broadcast receiver for disposal. When you get one, remove the chassis and hack it to bits. Yes, it must be *hacked* because some of the parts will be worn out anyway, so it's a waste of time to unsolder them carefully. You will now have before you a pile of junk. Put it all in a box, which can be cardboard, wood or metal. It is not necessary to have a lid — in fact, I think a lid is undesirable because you can't *look* at what you've got. And what have you got? A junk box of your very own!

From here on you can't miss. Any lump of surplus gear you come across at a reasonable price — buy it and dismantle it right away, so that you can add another layer to your box. It's a fascinating hobby in itself. You'll wonder what you ever saw in rag-chewing or DX chasing.

My next article will be a constructional one, describing how I looked at what I'd got in my junk box and made a rig *which fitted the parts available.* To save agonising speculation I'll tell you right now what the rig is. Actually it isn't exactly a rig — it's a reservoir capacitor shorting stick with a holder and should be handy for anyone provided you wear gloves when using it.— G3COI (adapted from SWM January 1963) (Westlakes Newsletter December 1980). ■

A Review of the Yaesu FRG-7700 Receiver

Ron Fisher VK3OM

The Yaesu Corporation has over the last few years established itself as a leader in the field of general coverage communications receivers. The original FRG-7 was the first receiver to incorporate the Wadley Loop principle in a popular priced receiver that actually looked and handled as a communications receiver should. Many might question this and suggest that the South African produced Barlow XCR-30 was the first. However, while this was certainly an excellent all wave receiver, it could not be called a communications receiver in the true sense of the definition. Why Barlow never went ahead with their rumoured version of the XCR-30 will perhaps never be known, but they certainly missed the boat. Yaesu undoubtedly saw the opportunity and came out with the incredibly successful FRG-7. This set the standard for some years. The updated FRG-7000 did not appear to achieve the popularity of the earlier model. The new FRG-7700 sets a new standard and we predict that it will be a top seller for Yaesu.

Let's take a good look at the FRG-7700 and see what it offers the ardent SWL or amateur who requires a good general coverage receiver. Operation has been greatly simplified with the elimination of the preselector tuning. This is now taken care of electronically along with the MHz selector switch. An LED digital readout indicates frequency to the nearest one kHz point. This readout also doubles as a clock. Certainly a first in the popular priced receiver is the optional memory unit which will allow up to 12 frequencies to be programmed for instant recall. Unfortunately our review receiver did not have this feature included, so we are unable to report on its actual operation.

Another first is the provision of all mode reception which includes not only AM, SSB and CW but also FM complete with squelch control. The addition of a simple converter for your favourite VHF band will now give all mode coverage. Perhaps in the future Yaesu might even produce a suitable device to give general coverage up to say 200 MHz.

One of the slight problems with the older receivers using the Wadley Loop system was the strong internally generated carrier on each MHz point. The new receiver has changed to a PLL generated heterodyne circuit coupled to a 48 MHz first IF which completely eliminates the problem.

Broadcast band DXers on both short wave and medium wave are well taken care of with three positions of selectivity, 12, 6 and 2.7 kHz at the 6 dB points. SSB selectivity is also 2.7 kHz at 6 dB with a rather wide 8 kHz at the 50 dB point. FM bandwidth is rated at 15 kHz.

Other features are: AGC fast or slow selection, noise blanker, dial light and frequency display dimmer, constant output record jack, variable RF attenuator and clock switching for the receiver and external accessories such as a tape recorder. A nice feature is a band switch segment that allows sequential switching of all the amateur bands, including the new WARC allocations.

CIRCUIT FEATURES

Antenna input connections are via an SO-239 coax socket for 50 ohms inputs or via separate push down terminals for long wire antennas for either short wave or broadcast band/long wave reception.

The front panel attenuator is connected between the antenna and the input to the front end band pass filters. These are automatically switched for the following ranges: 150 kHz to 1 MHz, 1 to 2 MHz, 2 to 4 MHz, and 4 to 8, 8 to 16 and 16 to 30 MHz.

The RF stage, a 3SK73GR dual gate MOS FET is followed by a buffer stage into a balanced first mixer using two FETs. A double conversion system is used converting first to 48 MHz and then 455 kHz with both heterodyning signals supplied from the P11 system.

WIA

FEDERAL EMC CO-ORDINATION

- Tony Tregale **VK3QQ**, is the Co-ordinator
- Do you have any interference problems? (power-line, TVI, AFI, etc.)
- If so, send details to:

VK3QQ — QTHR
or via
WIA Executive Office,
Box 150, Toorak 3142

View of digital read-out S meter.

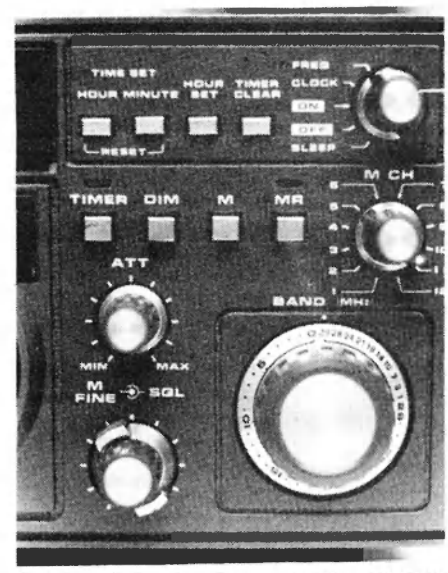
The 48 MHz IF has a 20 kHz bandwidth to reduce cross modulation effects. This is obtained from a special 48 MHz crystal filter. The second mixer is also balanced but this uses two dual gate FETs. Yaesu designers have gone to considerable trouble to keep spurious signals to a minimum. A second 20 kHz filter follows the second mixer at 455 kHz to give improved noise blanker operation. Three ceramic filters are switched by the front panel mode switch to obtain the SSB and three AM bandwidth positions. In the FM mode, output is taken from the 455 kHz IF section at the 20 kHz filter and then taken to a separate FM IF and discriminator circuit. The audio output is rated at 1.5 watts output and is fed to either the internal speaker or to a 3.5 mm jack for an external speaker or to a front panel mounted ¼ inch phone jack for headphone output.

THE FRG-7700 IN USE

The receiver is simple to operate and it takes only a short time to become familiar with the various controls. A quick check on the standard broadcast band showed up excellent quality AM reception. Dropping down to 398 kHz to listen to the terminal information from the local airport distant about 15 km provided a surprise. I could not locate it through the broadcast cross modulation. My old (very) tube type receiver pulls it in loud and clear. Things improved as the receiver was tuned higher and once above 2 MHz, cross modulation performance was rated as excellent. About this time, I noticed that the dial and S meter illumination was rather dull. I pushed the dim button and it almost went out. Please, Yaesu, boost up the dial illumination. The tuning was smooth and very free of backlash with a similar feel to the FT-101Z. But a surprising thing is the very non-linear tuning. The tuning rate varies almost two to one, depending on which part of the range you are in.

The low frequency end of the scale to about the 300 kHz point covers almost twice the scale length as compared with the middle section. The action of the RF attenuator was somewhat ineffective. It didn't do anything to help the cross modulation mentioned earlier on the low frequency band and wasn't needed on the short wave end. A more useful control would be an RF gain of the threshold type, similar to the FT-101Z. However full marks to the AGC fast/slow switch and an excellent tone control that provided adequate high frequency cut. This control is ganged with the audio gain control but one may be used without effecting the other. Frequency readout was checked and found to be spot on when in the AM mode but an error of around 1.5 kHz occurred when receiving SSB due to the fact that the BFO oscillator is not counted for the frequency readout.

We compared the sensitivity with an FT-101Z and found that any signal coplable on the 101 was there with equal readability on the 7700. But on the higher frequency bands the S meter of the 7700 was very



Band switch showing separate amateur band and general segment.

reluctant to move off the stop. It took something like an S 7 indication on the 101Z before the meter of the 7700 would show any sign of moving. It would seem that the overall gain of the receiver is just a bit too slow. The general resolution of SSB signals was excellent and the AGC action in the slow mode ideal.

The receiver was checked for spurious signals and found to be very clean. Only two of any significance were found, one at 18.675 MHz, the other at 23.572 MHz and both of these all but disappeared with the antenna connected. There were others audible with the antenna disconnected, but quite inaudible with the antenna on.

Perhaps one other small point. Why not a 24 hour clock display ,or better still a choice of 12 or 24 display?

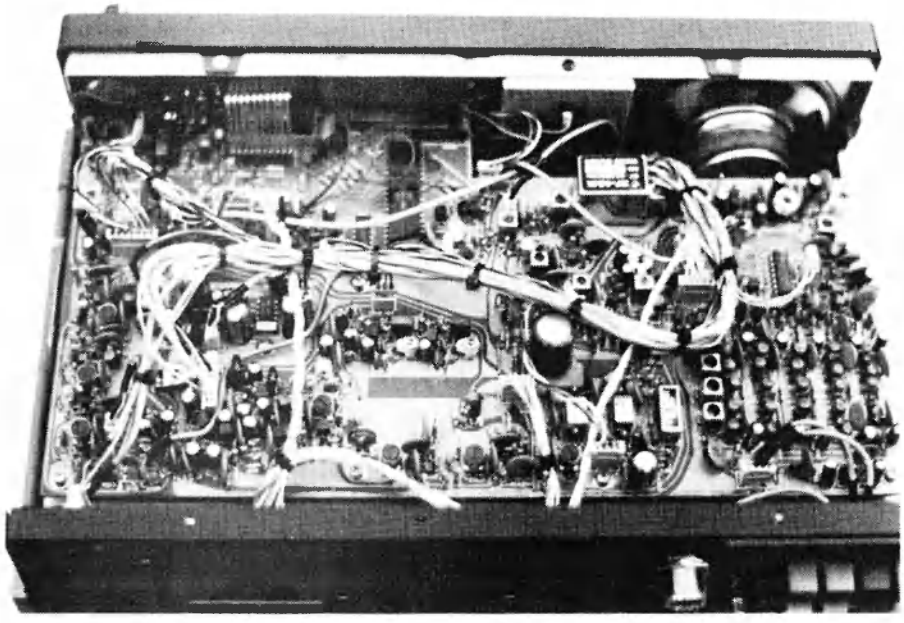
All in all the 7700 proved to be a smooth performer at which only minor criticisms can be levelled. I am sure that Yaesu will sort these out in the near future.

INSTRUCTION BOOK

It seems that the Yaesu instruction books are getting better all the time (perhaps the others are getting worse).

There is plenty of well illustrated information on operating the receiver. But best of all, plenty of data on maintenance and alignment. While it is probably true that most people would not attempt to align their receiver, this section does a lot to help owners to understand the operation of their receivers. There is also an excellent description of the circuit.

A full parts list and clear schematic diagram is included. Our receiver was supplied by Bail Electronics of Wangaratta. ■



Top view of receiver.

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The Trinity Loop Antenna

Bruce Hannaford VK5XI

This is a new development of the original Trinity Antenna also designed and described by the writer in Amateur Radio in July 1975. Where the original design was a normal open-ended antenna, thils is a closed loop system. The name Trinity is derived from the fact that the antenna is in effect three antennas in one. The antenna is directionally steerable by switching to any one of the "three" filxed antennas. The system may be used multi-band.

BRIEF DESCRIPTION

The Trinity Loop Antenna consists of three vertical "half" loops, equally spaced 120 degrees apart around a central point with their open ends at the centre, any two of which are combined by switching to make a complete "active" loop and thus giving three horizontally polarised bi-directional patterns.

From a bird's eye view the tops of each individual half loop are like spokes of a wheel extending out from a common central point. See Fig. 1.

The loops will normally be fed by a balanced feeder at the bottom central position where the open ends of the half loops are terminated, with this arrangement switching can be simplified by joining together the three top ends of the half loops at the top central point. The loop system now has three terminals at the bottom centre position and the directional changes are accomplished by switch selecting any two of these three terminals for connection to the equipment. The switching may take place at the loop terminals or a three wire Trinity feeder may extend from the loop terminals to the switching point. After switching takes place connection is usually made to a balanced tuner and then via coax cable to the equipment.

The main advantage of the Trinity Loop system is that it avoids the dead spots that occur with a normal single horizontal polarised antenna. With the Trinity Loop it is possible to get a good directional lobe in any desired direction. Compared with a good trapped vertical or a single fixed dipole the Trinity Loop will show an *average* gain of one or two S points. To equal the Trinity it would be necessary to erect at least three separate fixed antennas occupying extra space and using twice as much antenna hardware.

THEORY OF OPERATION

Under any switching conditions two half loops will be combined and the active loop thus formed although bent at 120 degrees *in the centre will function* quite well *in* transmission or reception. The disused half loop will have one side connected to a central zero voltage point on the active loop and will have Its other side open circuit. Because this disused half loop is subject to approximately equal and opposite fields from the two active half loops any RF pick-up from them will be *minimal and the* disused half loop will have very little effect on the active loop.

Where Trinity three wire feeders are used to reach the switching point, at any one time only two of these will be in use and the third due to the triangular arrangement of the feeder wires is subject to approximately equal and opposite fields from the active two and thus will not affect them or couple any appreciable power into the disused half loop to which it is connected.

Resonate loop lengths will be the most common practice but non-resonate lengths combined with a suitable tuner can be used.

TRINITY FEEDERS

A cross section of a feeder will show a triangle like arrangement of the three wires which are equally spaced from each other. Of course the feeder impedance needs to be appropriate for the loop terminal impedance and the tuning arrangements at the frequency or frequencies to be used. If the active loop is an odd number of electrical half waves in length at the operating frequency it will need high impedance feed and if an even number of half waves low impedance feed will be required. For example if the active loop is an electrical full wave on 40 metres it will require low impedance feed on 40, 20, 15 and 10 metres.

Low impedance Trinity feeder can be

FIG. 1. SOME EXAMPLES OF TRINITY LOOP SWITCHING

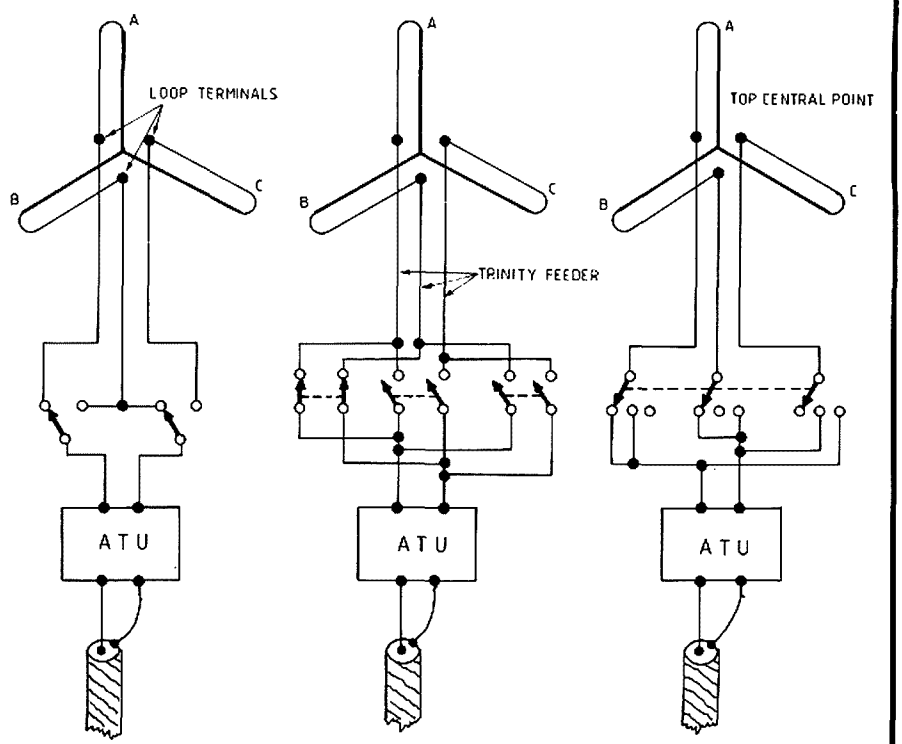

FIG. 1a
TWO SEPERATE SPDT SWITCHES DON'T USE THE POSITION THAT SHORTS THE ATU!

FIG 1b
THREE SEPERATE DPST SWITCHES. USE ONLY ONE AT A TIME.

FIG 1c
THREE POSITION THREE BANK SWITCH

In all the above, half loops A *and* B *are shown* connected, *in* use. The loops are *drawn* viewed from above. Tops of loops are shown as thick lines, bottoms as thin.

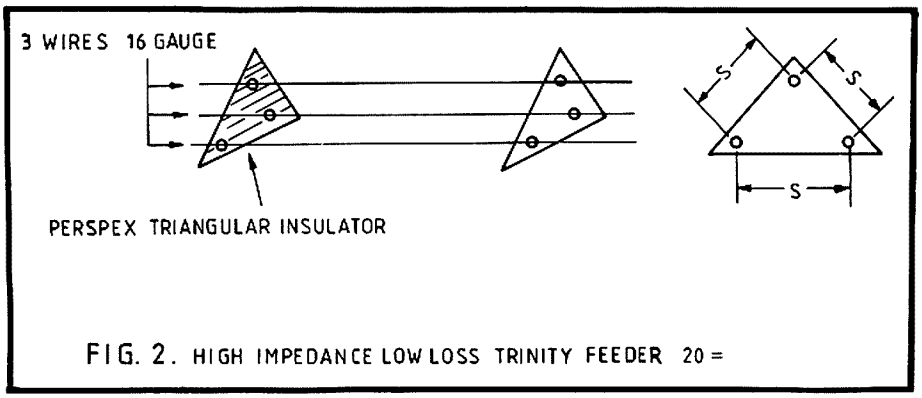

FIG. 2. HIGH IMPEDANCE LOW LOSS TRINITY FEEDER 20 =

simply three insulated wires twisted together, household electrical wire rated at about 15 amps is usually suitable. Some types of heavy three wire flex may also be suitable. Before using such a feeder, test the RF losses at the highest frequency to be used.

Three lengths of coax cable run side by side can be used, the three inner conductors go to the loop and switching terminals and the braids join together at each end of the runs and are earthed at the equipment end.

High impedance Trinity feeder can be made by using triangular insulated spreaders with an anchor hole at each corner, or very short pieces of about 50 mm plastic pipe with three anchor holes equally spaced around the circumference.

All the above remarks relate to reasonably low power transmissions. Keep the feeder as far as possible from the nearest antenna loops. (For higher power transmission objectional heating of some feedlines could occur. It is good practice to use low loss feeders for any power level of course. —Ed.)

SWITCHING

Various forms of switching can be used remembering that low impedance means low voltages with high current and high impedance means high voltages with low current. Usually it is preferable to do the switching at a low or medium impedance point to avoid high RF voltages.

Quite small switches or relays can be used with low impedance circuits but large high voltage switches or AC contactors may be needed for high impedance circuits.

When relays with long DC control lines are used these lines should be broken into non-resonate lengths with RF chokes. (Alternatively they should be screened.—Ed.)

Basically we need to select any two of the three loop terminals and connect these via a two wire connection to the ATU or equipment. A number of examples are shown in Fig. 1.

PRACTICAL CONSIDERATIONS

Supports

A Trinity Loop can be supported on a single central pole or tower with three equally spaced short anchor posts at equal distances from it at the outer points. Each half loop extends from a common junction point at the top of the pole to the short anchor post and then horizontally back to the centre pole where it is terminated with an insulator. The half loop will be like a V on its side.

Of course the anchor posts mentioned above need not be short and can be as high as the centre pole. In this case the half loops are run from the common junction point at the top of the central pole then horizontally to an outer pole then down parallel near to this pole and at a low level run horizontally back to the centre pole and terminated as before. The half loop will be like a flat bottomed U lying on its side.

If the three outer posts mentioned above are strong enough the centre pole can be replaced by a short central anchor post. As the three half loops join at the top centre this junction point can be suspended in mid span, once again the half loops will be shaped like a U on its side.

In all three cases the lower part of the loop should be at least 2 metres high and reasonably clear of conducting objects.

Generally speaking an active loop (on its lowest frequency) should enclose as large an area as possible and thus the Ideal shape would be a circle. However, in addition to being rather impractical this is not necessarily desirable if the loop is to be operated on harmonics of its lowest resonate frequency. I believe a flat loop is preferable in this case, that is a loop that is rather wide and not very high.

A metal tower or pole at the centre is not a problem as when balanced feed is used both the centre top and bottom are at earth potential for RF, however it may be preferable to insulate the loops from the tower at the top in case of any unbalance in the loop or feed system.

It should be possible to erect an effective 40 metres loop on a 10 metre pole with outer posts of about 3 metres. This loop will work well on higher frequencies.

Switching

The most efficient point for the switches will be right at the loop terminals and the most convenient point right at the operating position. Usually as the distance from the loop terminals to the operating position need not be very great a Trinity feeder to the operating position and switches is the best method.

ATUs

Ideally the Trinity Loop should be fed with balanced feed and so a balanced ATU or a balun is preferable, however tests have shown good results are possible with low impedance Trinity feeder fed from an unbalanced ATU. The type of ATU will, of course, depend on what impedances it will be required to match, or in other words what frequencies you expect to tune up on a given sized loop. With a very versatile ATU, open wire feeders and high voltage switches it should be possible to tune almost any frequency with almost any size loop. Normally the loop size will be chosen for full-wave resonance on the lowest frequency band possible for the amount of real estate available. This will give low impedance feed on that and all other harmonically related bands. An unbalanced ATU with a balun added should normally suffice in such cases.

USING THE TRINITY LOOP

When completed and optimum tuning settings noted for each band you are now ready to do some directional switching and note the results obtained. Do your first tests on reception and then compare reports for the same tests on transmission, usually the results will be very similar.

Be systematic about your testing, firstly name the three directional combinations 1, 2 and 3 and mark the switches so it is obvious what you are switched to and make a written record of which positions are best on a given band for each call area your normally work.

As you switch directions you may at first be disappointed as you will not get the same spectacular results as rotating a beam, sometimes it will make no difference which position you use, however on many occasions you will notice a variation of about two S points between the best and worst positions. When this happens you rejoice that you are not limited to a single fixed antenna in the position giving the weakest signal. In addition to signal gain sometimes interference can be reduced by switching to a position unfavourable to its reception.

When all positions give the same results this shows that all three positions have good lobes In the direction being worked. Remember there will be many lobes when the loop is used on one of its higher harmonics, and the best switch positions may not be the same on each band.

IN CONCLUSION

The Trinity Loop will not outperform a rotary beam but on average results taken in all directions it will outperform a single fixed antenna or even two such atennas facing different directions. In my location I also find that the signal to noise ratio is better with the Trinity Loop than with "open ended" antennas.

May your Trinity Loop work as well for you as mine does for me. ■

FORWARD BIAS

VK1 DIVISION

(Postal Address: WIA (ACT Division) Inc., PO Box 46, Canberra, 2600 ACT)

At the VK1 Division's Annual General Meeting on Monday, 23rd February, 1981, the following office-bearers were elected:—

President: Bill Maxwell VK1MX.

Vice-Presidents: Andrew Davis VK1DA, Fred Robertson-Mudie VK1MM.

Secretary: Theo Vidler VK1KV.

Treasurer: Kevin Olds VK1OK.

Committeemen: Ken Pyett VK1NDK, Ian Coleman VK1NDI, Cec Maloney VK1NCX.

Ron Henderson VK1RH was re-elected to his position as Federal Councillor. Attendance at the AGM was well down on the very high standard set throughout the 1980 General Meetings. The Committee trusts that this is only a temporary aberration, perhaps brought about by a reluctance among many to seek office.

Bert VK1ZAT, on behalf of the Repeater Group, reports that approval has been granted for the installation of a 70 cm repeater in VK1. A team headed by Peter VK1DS, Ed VK1VP, Merv VK1ML, Les VK1ZKL and Bert himself, made a pilgrimage to Mt. Ginini on 22nd February at 7 a.m., they would have us believe. A couple of hours was then spent digging the hole in which to plant the new electric finger. While suffering sore hands and ending up tired, cold and hungry, the crew reportedly enjoyed the chore. Ed has advised that it might be possible to have the repeater in operation before winter, provided Murphy stays home and all else goes well. The group hopes to hear everyone "upstairs" once their task is complete. ■

VK1MH — MELBA HIGH SCHOOL STATION

David Baume VK1UD (QTHR), Station Supervisor of the above High School station in Canberra has advised that VK1MH transmits in the HF bands each Wednesday at the following times: 0230-0310 UTC and 0515-0600 UTC.

The VK1MH operators — all students at Melba High — are interested in making "on air" contacts with other school stations.

At present six students attend these sessions and four of these lads also attend the VK1 Division's NAOCP classes at Melba High with "Uncle David" as their tutor.

VALE VK1JK — JACK KNIGHT

It is with regret that the VK1 Division records the passing of one of amateur radio's true gentlemen — Jack Knight VK1JK — on Sunday, 1st March, 1981.

Jack was the proud father of Senator John Knight, M.P., whose untimely death occurred only three days later on Wednesday, 4th March. ■

VK2 MINIBULLETIN

ANNUAL GENERAL MEETING

The 1981 Annual General Meeting of the New South Wales Division was held on Saturday, 28th March. The meeting was opened at 10.30 a.m. by the Chairman, Divisional President Athol Tilley VK2BAD. The minutes of the 1980 AGM, adjourned AGM and EGM were adopted as circulated. The President's Report, which included as appendices the sub-committee reports of the Education Service, WICEN and QSL Bureau, was adopted as circulated at the meeting. (Any member who would like a copy of the President's Report can obtain one by either ringing or writing to the Divisional Office.)

The Annual Accounts as prepared by Divisional Treasurer David Thompson VK2BDT were adopted as circulated. Returning Officer, Roger Henley VK2ZIG, announced that seven nominations had been received and that the 1981/82 Council is: **Susan Brown VK2BSB, Henry Lundell VK2ZHE, Tim Mills VK2ZTM, Jeff Pages VK2BYY, Stephen Pall VK2VHP, David Thompson VK2BDT and Athol Tilley VK2BAD.** A report from the Constitution Review Committee, presented by Pierce Healy VK2APQ, was received and referred by the meeting to Council. The motion expressing confidence in the Articles of Association and thanking and disbanding the Constitution Review Committee was carried.

The motion to confer Honorary Life Membership on T. Mills VK2ZTM was lost. The motion to bestow Honorary Life Membership on G. Sutherland VK2ZSG was lost. The motions to change Articles 82 and 48c were carried and, as approval had been received from the Attorney-General, the changes were effective from the meeting (28/3/81). The motion to invest the $500 Dick Smith auction money and use the interest to encourage and promote education was carried. The amendment to charge for circulation of minutes to affiliated clubs was not proceeded with. Roger Henley VK2ZIG was re-appointed as Returning Officer for 1981-1982. The meeting closed at 3.22 p.m.

COUNCIL REPORT

At its March meeting, Council was pleased to welcome Blue Mountains Amateur Radio Club to affiliation with the NSW Division. There are now 27 clubs affiliated with the Division. Orange Amateur Radio Club was given permission to conduct tests on relaying Divisional broadcasts on to local repeater channel 6700. Club members take call-backs and would appreciate reports on signal quality.

The NSW Division does not have an Intruder Watch Co-ordinator. Requests have been made on broadcasts for both a co-ordinator and others to report on intrusions by commercial stations into amateur allocations. Are you concerned about the Russian "woodpecker"? Do you value our frequencies enough to complain when they are taken over by commercial interests? If so, Divisional Council would like to hear from you.

Council has been advised that the costs of the Tower Appeal are likely to be in the vicinity of $3000-$4000, as much preparatory work is required to present as forceful a case as possible. Council regards this case as a test case **VITAL** to future amateur applications to erect towers, and has decided to *guarantee* payment of legal expenses up to $2000. To date (31/3/81), $340 has been donated to the fund. Thanks for recent donations from M. du Feu $20, E. van de Weyer $20, W. Field $5, Parkes ADARC $10, S. Brown $20, K. Matthews $10 (in April AR, the $50 donation attributed to Coffs Harbour ADARC actually came from Oxley ADARC — my apologies to Oxley). If you would like to support this fund, please send cheque made out to the WIA, Box 123, St. Leonards 2065.

Council wrote to the local office of the DOC congratulating them on the speedy issue of exam results after the February exam. Some candidates received their results by mail 21 days after the exam. Council decided that concessional membership rates for 1982 will not be less than the levies charged by the Federal WIA.

7th CENTRAL WEST AMATEUR CONFERENCE

The 7th Annual Central West Conference was held on Sunday, 22nd March, at Dubbo. Jim Edge VK2AJO welcomed 30

amateurs to the meeting, which was chaired by Wally Watkins VK2DEW, Alternate Federal Councillor for the NSW Division and Federal Contest Manager.

Many subjects were discussed, including additions to the 80m band, K calls, operating habits during contests, repeaters, log keeping, third party traffic, slow Morse frequency and the 75th anniversary of the WIA in 1985. Divisional Treasurer David Thompson VK2BDT addressed the meeting on the functions and value of the WIA. The NSW WICEN Net Controller Neville Wilde VK2DR discussed the organisation and benefits of WICEN.

The meeting carried a vote of thanks to Cec Bardwell VK2IR for his valued services in teaching and correspondence. The committee also recorded appreciation for the work done by the NSW Divisional Council during 1980-81. Any member who would like a copy of the minutes of the conference, please send an SAE to the Divisional Office. (Submitted by Jim VK2AJO.)

ATV GROUP

The first meeting of the VK2 ATV Group was held on February 23rd. Eighteen interested amateurs attended and elected George Hughes VK2ZNY as President. Future meetings will be held on the third Tuesday of each month, and new members will be welcomed. For further information about the Group, write to PO Box 330, Hurstville 2220.

WICEN

The 5th Schofields Air Show was held over the weekend 28th-29th March. WICEN provided a large radio and telephone network for ground communications. The exercise was most successful and a fuller report will be presented in a future AR.

Details of three clubs affiliated with the NSW Division.

NORTH WEST AMATEUR RADIO GROUP
Box 133, Inverell 2360.

Net: Mondays at 9 p.m. EST on 3575 kHz using VK2AZF.

President, T. Lumbewe VK2ZX; Vice-President, J. Belford VK2AZF; Secretary, G. Jopson VK2VPP; Other Committee, D. Bailey VK2NVN, W. Thomas VK2NXT, P. Beard VK2VBM.
Repeater: VHF VK2RMI, channel 6950, in Moree/Inverell area.

MOREE AND DISTRICT RADIO CLUB
Box 68, Moree 2400.

Net: Fridays at 4.30 p.m. on 3575 kHz using K2DGM.

Meetings: At East Moree Primary School.
Classes: Wednesdays and Sundays at 8 p.m. at 150 Heber Street, Moree.

President, C. Boughton VK2VSH; Vice-President, H. Schouten; Secretary, C. Barton VK2VXH; Other Committee, R. Page VK2YOW/VTH, E. Shone, R. Ireland, H. McKenzie, P. Moat VK2BYX.

GRIFFITH RADIO CLUB
Box 4, Griffith 2680.

Nets: Wednesdays at 8 p.m. on 28.48 MHz using VK2DBK. Wednesdays at 9 p.m. on 3.61 MHz using VK2DEI (SWARS net).

Meetings: Third Mondays at the Scout Hall in Kooba Street, Griffith.

President: G. Watkins VK2DGW; Vice-President, J. Lacey VK2NQL/YEZ; Secretary, J. Chandler VK2DFC; Other Committee, L. Boneham VK2DLN, J. Hill VK2DIX, G. Watkins VK2VRW, R. Speed VK2YNC, B. Barber VK2VXY.

Repeater: VHF VK2RGF, channel 6850. Located at Mt. Bingar, approximately 20 km north of Griffith, with a range of about 65 km. Output 10W into ringo ranger antenna.

COMING EVENTS

19th May (Tuesday): ATV Group meeting.
24th May (Sunday), 10 a.m.: Fourth Conference of Clubs at Goulburn RSL Club, Market Street, Goulburn.
31st May (Sunday), 2 p.m.: South West Amateur Radio Society AGM at Narrandera Ex-Servicemen's Club. Directions on channel 6000.
7th June (Sunday), 8 a.m.: Club liaison net on 3575 kHz.
27th June (Saturday), 2 p.m.: Divisional Auction at 14 Atchison Street, Crows Nest.

Accompanying the VK2 Minibulletin this month is a photo which was published in a Forbes newspaper in 1952. There are some familiar faces and call signs in the photograph, accompanying which was the following article:

"RADIO AMATEURS IN FORBES — ZONE CONVENTION

A convention of amateur wireless operators was held at Forbes during the weekend. Twenty-four members of the 'Ham' fraternity, the married ones bringing their wives, attended the first of such functions ever held in Forbes.

The President of the Wireless Institute of Australia, Mr. Corbin, was one of the Sydney contingent of four, while Coonamble, Wagga, Bathurst, Eugowra, Parks and Forbes (three delegates) were also represented.

At the business meeting in Flannery's Hotel lounge, Mr. J. Reed, one of the top men of Overseas Telecommunications, Sydney, delivered a lecture and showed films.

The well known Forbes hospitality was strongly in evidence with a barbecue lunch at Mr. Hugh Stitt's home, "Cumbijowa", and an evening at Mr. John Meagher's home in Wombat Street.

In previous years two Forbes delegates had attended North Coast conventions of amateur operators, but as the State is now zoned, it was felt that Forbes should grasp the opportunity to be host to its first Zone Convention."

Susan Brown VK2BSB. ■

Among the group pictured you may recognise Rod VK2ACU, Ern VK2ASE, Alec VK2ABU, Bill VK2BT, Hugo VK2WH, John VK2AMV, John Moyle VK2JU, Joe Reid VK2JR, Jim VK2YC, Alan VK2TA, Norm Moodie.

QRK5

A monthly transmission from the Victorian Division WIA.

With March 24th over and away, may we pass on our most sincere congratulations to those who received a "Lucky Letter" from the DOC; and commiserations to those of you who obtained 68 per cent or less. Contrary to the outspoken opinions of a minority few, it would seem that the new examination format is making us even more of an exclusive or elitist group — that is if you judge by the percentage of candidates who are successful. From all accounts less candidates are obtaining passes, and observations suggest that the exam standard is progressively increasing.

Now that it's all over, this seems to be a good time to make a few quick com-

ments about the State Convention. As it was to be the first State Convention for many years we expected to make some mistakes, but to learn by them, and so it was no great surprise when things did not turn out as planned. The general consensus of opinion is that it went well considering the short time available to prepare/ organise the entire show. Heartfelt thanks go to those companies and organisations who contributed to the event, and to that small band of enthusiasts who so unselfishly gave their time for the planning and running of the Convention. If any one person should be singled out, I'd nominate Alan Noble VK3BBM, who put untold hours and immeasurable effort into the convention — a real powerhouse of drive and enthusiasm. Good on you, Alan.

We view with some concern the gradual degeneration of behaviour on the Melbourne repeater channels. It's bad enough that we have to put up with some idiots whose great thrill in life is to make obscene and/or unsavory comments — anonymously, of course. **YOU** will enhance that thrill if you acknowledge his existence, so just ignore the clown, no matter how much self-control it takes. But what has happened to the 10 second breaks between overs? One has only to note the number of "Time-outs" where respondents have grabbed the mike so quickly in order to reply that the repeater hasn't deactivated and let the time reset. The main offenders seem to be those who spend most of their "ON AIR" time on the HF bands where you have to be quick; and the newcomers to the bands who haven't been told of correct operating procedures. In most cases a friendly word of advice is sufficient — if you manage to break in!

Amazing as it may seem, there are over 2500 WIA members in Victoria. Of that number, about 20 to 30 seem to keep in touch with the Institute by attending meetings, or by direct contact with councillors, or both. That means, in turn, that the decisions made on your behalf by Council reflect the opinions of a very small minority. This situation was highlighted at the last General Meeting when there weren't even enough members attending to make a quorum, so the meeting was a non-event! It reminds me of that rather well known piece of graffiti — "APATHY — WHO CARES?" Quite seriously there are many of you who voice good opinions and ideas (and crticisms, too) on air and that's where they stay — in the air. Why not present these ideas to Vic. Div. and let your Council see whether they can be implemented. Put aother way — put your money where your mouth is!

Further to my article last month on the thoughts of a special class of amateur licence, you would be amazed at some of the comments I've heard about that. It really dragged some of these sandbaggers out of the woodwork, and their screams of protest are still echoing around this QTH. It would appear that bit about rescinding all two letter calls is the bit that really hurt, but there's not really a problem when you consider the matter carefully. To retain his two letter call an amateur would merely have to pass this new grade of licence examination. Now one often hears derisive comments on air about how easy It is to get a licence these days. "Send in half-a-dozen Wheaty box-tops" or words to that effect. I'm sure that the thought of a higher-level exam in multi-choice format (multi-guess?) would pose no problem to these folk. Or Is it a case of "Methinks he doth protest too much"?

Those of you who have subscribed to this magazine for some time may remember an article entitled "Wee Willies Wonder" or similar. Without looking at the particular item, I suspect it described an ATU which Mike had developed. Going by some blurry babbling at Wee Willies Well-Wetted Watering Hole, a new wonder may yet emanate from that landed country gentleman. It was either 5 elements on 80 metres on the back of his Vespa, or a tranny radio in his shirt pocket for keeping up with the stock exchange. Time, and Mike, will tell!

That's all for this month — send In that gossip.

73. Pete Drury. ■

QRM

The Monthly Bulletin from the Tasmanian Division WIA

North West Notes submitted by Jim Davis VK7NOW (VK2KOW)

Meeting held Penguin High School with an attendance of 40, including guests.

The Australian National Band Contest (music of course) is being held during Easter week. A number of VK7s from North West Branch will be in attendance providing a comprehensive communications system.

Details of a mini Ham Fest at Port Sorell were discussed and to be advised.

A new member was welcomed — Arthur Trevaskis.

VK2BWI and VK5AWI take note! A VK7 CW net is to be set up on the north-west coast. (No more QRN and QRM locally.) Operators will be Charles VK7CF, ex ship's operator, Geoff VK7WZ, ex RAAF radio op., and Don VK7DP, with years of amateur experience. Good luck, gentlemen. A long needed service for VK7 frequency will be 3540. Times and days of operation to be advised.

VHF enthusiasts should also note that repeater 3 147-750$147.150 has been Increased in power. Thanks, Martin VK7MM.

During the evening a VK5 visitor was welcomed — John Ingham VK5KG (Are You Being Served fame). No, an ATV expert, possibly number one in this field. An interesting discussion was had by all with John. A video tape was screened during the evening, displaying the VK5RTV complex.

DXers take note. Jimmy Davis VK7NOW (VK7KOW) leaves on the 10th April per Qantas, 15 days in all, on a special kind of DXpedition to ZL. For more information watch next month's issue. Old-timers and Tasmanians will be thrilled with his discovery; could be sparking things along. Good luck, Jim.

NORTHERN NOTES

Friday 13th saw 19 members attend the annual general meeting. Elections were held and VK7AE was elected as President.

A working bee was organized by VK7NAB to assist in the erection of antennas at Eskleigh Hospital for a well known amateur, VK7WK, ex VK4NPJ, VK4APJ, VK3BWK, QRA, Kelvin Williams. To amateurs concerned he is in top shape and listening to all bands. Visitors welcome.

Repeater 8, Mt. Barrow. Gentlemen be patient as there are several problems regarding the antennas, power is down and area coverage is down. Several VK7s are blaming their faithful old rigs.

A new member, Homer Fairley, was welcomed.

Next meeting Friday, 10th April, at Bourke Street Club Rooms.

Recent visitors to Tasmania were VK1BM (JA1RHL) Daisuke Ara and VK1NBO Gus. Ara was heard on all repeaters and was the host of numerous VK7s. Highlights of his visit were a trip to Flinders Island and to Eskleigh Hospital, Perth, the QTH of VK7WK, ex VK3BWK Kel. Several photos and notes were taken and submitted to CQ magazine in Japan by Ara.

To all VK3s John Beckett, ex VK3FE, now VK7FI, Flinders Island, is now active on all bands, including 6 and 2m. All visitors are welcome at his "Blue Rocks" QTH. Possibly one of the best locations for amateur radio in Australia, QRN is non-existent. VK7FI's location on Flinders Island now adds another island to the "Worked ail Islands Award". Good luck, John; with the high cost of diesel fuel we will understand if the rig Is not switched on.

VK7FI, PO Box Whitemark, Flinders Island. (QTH "Blue Rocks".)

Amateurs wanting to increase their points for the Tasmanian Devil Award should now listen: Sundays 0100Z 28.560 ± QRM and 28.580 ± QRM; 0500Z 21.380 ± QRM; 1030Z 14.325 ± QRM. Tuesday 1000Z 3.580 ± QRM.

VK7 State Annual General Meeting held Saturday, 21st March, at Bourke Street Club Rooms. New State Council elected — President, Ivan VK7XL; Secretary, Ken VK7ZKJ; Treasurer, Shane VK7ZSC; Liaison Officer, Tony VK7ZTH; Federal Councillor, Peter VK7BQ; Alternate Federal Councillor, Mike VK7MC.

Next Division Council Meeting 25th April (Anzac Day) at Northern Branch Club Rooms.

Allen Burke VK7NAB/ZAN. ■

INTRUDER WATCH SPECIAL

Help Keep Intruders From Our Bands

THE WIRELESS INSTITUTE OF AUSTRALIA
EXECUTIVE

Founded 1910

P.O. BOX 150, TOORAK, VIC., 3142

April, 1981.

Dear Member,

This issue contains an Intruder Watch Special highlighting the importance of Intruder Watch.

In the H.F. spectrum, the amateur service is allocated a number of bands exclusively, yet non-amateur transmissions are obvious.

The 'rules of the game' are that any service may transmit anywhere so long as it does not interfere with internationally recognized users of that band or frequency. The exclusive amateur bands can be used by anyone anywhere, provided they do not interfere with amateurs. If amateurs do not complain of interference, then they have only themselves to blame if non-amateur stations disrupt our bands. This is what Intruder Watch is all about.

As you will see from the IARU's letter it is only the Administrations that can complain in any effective way of transmitters not adhering to their internationally recognized frequency bands. Intruder Watch is the channel to our Administration for interference complaints - It is Intruder Watch that can provide the pressure which will lead Australia to act.

A particularly insidious example of interference that disrupts internationally agreed frequency bands is the so-called "Woodpecker" - an over the horizon radar system and which is highlighted in the correspondence reproduced in this Intruder Watch Special. It dramatizes the problem of interference.

The W.I.A. welcomes any action that creates an awareness of individual amateurs responsibility to protect his own bands. That is what Intruder Watch is for and that is what Intruder Watch is all about.

Intruder Watch needs your support.

73

Peter M. Wolfenden VK3KAL

P. WOLFENDEN
FEDERAL PRESIDENT.

R.C.-700

INTRUDER WATCH CO-ORDINATORS

Federal: GRAEME FULLER VK3NXI
VK1:
VK2:
VK3:
VK4: VK4KAL
VK5: VK5LG
VK6: VK6WT
VK7:
VK8: VK8HA

POSITIVE STEPS TAKEN THRO

RECENT INTRUDER

- **Radio of the Koran QSYed**
- **AXM 32/34/37 spurious rem**
- **Radio Cairo on 7050 kHz will**

THE INTERNATIONAL AMATEUR RADIO UNION

January 27, 1981

A Newsletter for all IARU Societies

(Please make this information available to all members of your executive, as it contains information which we believe to be important to the future of amateur radio.)

A prominent western administration wishes once again to address the problem of the so-called Russian Woodpecker, which is reported to be an over-the-horizon radar system and which causes extreme interference to a number of important radio services, including the amateur radio service.

It is important that members of the several Intruder Watches, and other amateurs as well, file as many reports as possible of interference to the amateur radio service from the Russian Woodpecker. These reports of interference should, as usual, be filed with the appropriate telecommunication officials in your administration. In addition, informational summaries of the complaints filed should be sent to IARU Hq., either direct or via the regional Intruder Watch Coordinators, whose addresses are noted below.

By copy of this letter, the Regional Intruder Watch Coordinators are urged to encourage support of this project. Again, the proper avenue of complaint about this interference is through the telecommunications administration of the amateur radio service station which is being interfered with. In the world of the ITU, it's administrations which wield the power. Thus, effective action in a problem such as this can result only when an administration, or a number of administrations, can be vocal enough in their concern. Complaints sent by radio amateurs directly to an offending station, or to the administration of a foreign station causing interference, or to the staff of the International Telecommunication Union, will have negligible effect.

Sincerely yours,

73,

Richard L. Baldwin, W1RU
Secretary, IARU

RLB:dlf

Regional Intruder Watch Coordinators:

Region 1
C.J. Thomas, G3PSM
36 Chelwood Cres.
Leeds LS8 2AQ
England

Region 2
M.L. Gibson, W7JIE
1215 N. 28th Place
Renton, WA 98055 USA

Region 3
Alf Chandler, VK3LC
15 Point Ave.
Beaumaris, Victoria
Australia 3193

THE DEPARTMENT OF
THE PRIME MINISTER AND CABINET

CANBERRA, A.C.T. 2600

Dear Mr Chandler,

I am writing to acknowledge receipt of your letter of 5 February 1981 to the Prime Minister concerning radio interference.

I have been asked to let you know that the matter you raised has been brought to the attention of the Minister for Communications.

Yours sincerely,

(W. Ammon)
Senior Adviser
Operations Branch

Mr A.W. Chandler
IARU, Region 3
Intruder Watch Co-ordinator
15 Point Avenue
BEAUMARIS VIC 3193

Dear Mr Chandler

You wrote to the Prime Minister, concerning interference being experie due to Over the Horizon Radar. You views with concern any unauthorised bands.

It is correct that the interfere from Over the Horizon Radar transmiss employed by a number of countries as requirements. In such sensitive circu to positively identify the source of prove possible, you will appreciate any action initiated by the Australia changes in the attitude of the countr

Accordingly, it is believed that number of bands with other services frequencies to choose from at any giv avoiding the usually transient interf transmissions by amateur operators to frequency at the time such interferen

Parliament House, Canberra, A.C.T. 2600 Telephone (062)
37th Level, Australia Square Tower, Sydney Telephone (0

)UGH YOUR INTRUDER WATCH

WATCH SUCCESSES:

from 21435 kHz.
AR, April '81, p.47

oved from 14120 kHz.
AR, Sept. '80, p.37

QSY about May/June 1981.

MINISTER FOR COMMUNICATIONS

Deputy Leader of the National Country Party of Australia
Leader of the House — Member for New England

2 ER 1981

the Rt Hon J.M. Fraser CH MP,
nced to the Amateur and other bands
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ntrusion into the Australian amateur

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an important part of their defence
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n Government would produce significant
y concerned.

as the amateur service shares a
nd has a sizeable allocation of
en time, there should be scope for
erence affects from such Radar
mporarily shifting to another
ce is present.

Yours sincerely

(Ian Sinclair)

2 7578
241 1651

15 Point Ave. Beaumaris. 3193.
31.3.81

Hon Ian Sinclair.
Minister for Communications.
Canberra. ACT. 2600.

Dear Sir,

Further to my letter of recent date to the Prime Minister, and in reply to yours of 20th March, with respect, I do really think that you have missed the point.

The over the horizon radar signals referred to have definitely been identified as from USSR. Most European countries and also the USA and Great Britain have already sent complaints to the USSR. The signals are very persistent and impossible to ignore when operating on the Amateur bands. They blot out a large segment of the band at any given minute.

I have been participating in a particular net operation on 14332 kilohertz this evening which was made almost impossible by that persistent signal over-tiding our comparitively low power signals. There were over 90 stations on this net which operates primarily to take care of emergencies, and a possible may-day call could easily be missed because of it. It was impossible to get away from the signal as it covers so much of the band.

On Wednesday before receiving your letter I took more than a dozen separate Amateur's comprehensive observations to the Department of Communications here, but they will not initiate a complaint unless authorised by your goodself. The more Administrations that will officially complain, the more chance have we of the USSR doing something about their insidious signal.

As for it being a defensive measure I would equivocally call it an offensive measure, and I would go further and say it being such an extensive type propagation using anything up to 20 megawatts of power it is tracking any military and civilian aircraft throughout the world as well as the deployment of any naval vessels. It is a spying operation which could affect our defence.

I do hope that you will be able to see your way clear to authorise a complaint, and I would like to know what Mr Fraser thinks of the situation.

Thanking you,

Yours Sincerely,
(Alf.W.Chandler. VK3LC)
IARU Intruder Watch Co-ordinator for Region 3.

P.S - Enclosed is a copy of letter from IARU headquarters that sparked this off.

up to date [illegible]

After discussion with [illegible] consideration is being given to supply each [illegible] Co-ordinator, and possibly others, with a regular News Sheet containing listings of intruders and any other relevant information relating to our activities. The News Sheet will probably be on a trial basis for twelve months to enable its value to be determined.

For your information regular monthly reports compiled from information passed onto me by individual amateurs and the few known active Watchers have been forwarded to both the Department of Communications and Region 3 IARU Intruder Watch Co-ordinator.

Please give this matter your earliest attention.

Yours sincerely,

G. FULLER
FEDERAL INTRUDER WATCH CO-ORDINATOR

RECENT INTRUDER WATCH SUCCESSES:

- **Radio of the Koran QSYed from 21435 kHz.**
  AR, April '81, p.47
- **AXM 32/34/37 spurious removed from 14120 kHz.**
  AR, Sept. '80, p.37
- **Radio Cairo on 7050 kHz will QSY about May/June 1981.**

MINISTER FOR COMMUNICATIONS

Deputy Leader of the National Country Party of Australia
Leader of the House Member for New England

Mr A.W. Chandler
IARU, Region 3
Intruder Watch Co-ordinator
15 Point Avenue
BEAUMARIS VIC 3193

2 [illegible] 1981

Dear Mr Chandler

You wrote to the Prime Minister, the Rt Hon J.M. Fraser CH MP, concerning interference being experienced to the Amateur and other bands due to Over the Horizon Radar. You may be assured that my Department views with concern any unauthorised intrusion into the Australian amateur bands.

It is correct that the interference problem you describe results from Over the Horizon Radar transmissions. Such systems are, however, employed by a number of countries as an important part of their defence requirements. In such sensitive circumstances, it would be very difficult to positively identify the source of the offending signals. If this did prove possible, you will appreciate that it is extremely unlikely that any action initiated by the Australian Government would produce significant changes in the attitude of the country concerned.

Accordingly, it is believed that as the amateur service shares a number of bands with other services and has a sizeable allocation of frequencies to choose from at any given time, there should be scope for avoiding the usually transient interference affects from such Radar transmissions by amateur operators temporarily shifting to another frequency at the time such interference is present.

Yours sincerely

(Ian Sinclair)

Parliament House, Canberra, A.C.T. 2600 Telephone (062) 72 7578
37th Level, Australia Square Tower, Sydney Telephone (02) 241 1651

INTRUDER WATCH COLUMN

The following is an extract from an article by VK3LC printed in "Region 3 News".

In summarising Intruder Watch reports we find that Finland is number one in volume of reports, followed by the USA (about 5 times as many as the next), then Switzerland, Britain, New Zealand, West Germany, Barbados and Australia . . . followed by 5 other countries.

I as Federal Intruder Watch Co-ordinator am very pleased to see that Australia even rated a mentioned, as the response to Intruder Watch in this country is on a very low level.

By far the greatest number of reports in VK are coming from VK4, followed by VK6, VK3 and VK5. The rest of the Divisions leave a lot to be desired.

After appeals on State broadcasts for reports on the woodpecker, the response has been rather poor. The Intruder Watch Service would certainly like to receive a lot more reports. Reports are required on Radio Peking, which operates on the 7000-7100 MHz band, the strongest signal you are likely to encounter is on 7010 MHz with a very strong harmonic on 14020 MHz.

Please remember, for the WIA Intruder Watch Service to help you as amateurs you must be prepared to help yourselves.

A late QSP from VK3LC: "Owing to representation from the IARU Intruder Watch, Region 1, Great Britain, the Egyptian broadcast Radio Caori, operating on 7050 MHz (this signal is very strong early morning in VK), will be vacating the 7 MHz band in May or June of this year."

Finally I would like to appeal to any amateurs who have a sound knowledge of a particular language or languages(very little time involved), as I am working on a new approach to the Intruder Watch Service. Please write direct QTHR.

73. Graeme Fuller VK3NXI, Federal IW Co-ordinator. ■

HELP WITH INTRUDER WATCHING

IF YOU WOULD LIKE TO BECOME AN INTRUDER WATCHER

WRITE TO:

GRAEME FULLER VK3NXI

THE FEDERAL INTRUDER WATCH CO-ORDINATOR

Some Over-The-Horizon Radar Information

★ **RUSSIAN WOODPECKER**

AR April 1980, p.43

★ **OTHR**

QST April 1980, p.39

ETI Feb. 1978, p.35

PENSIONERS

If you believe you are entitled to a WIA pensioner grading —

PLEASE

clear this matter direct with

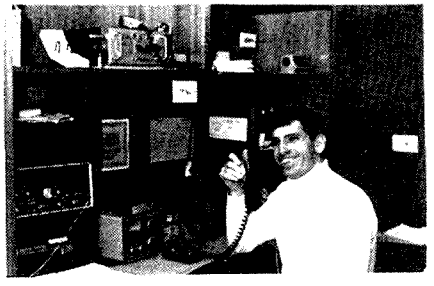
YOUR DIVISION

as early as possible.

Your subscription rate is based on your WIA grade — check your AR address label.

SPOTLIGHT ON SWLing

Robin Hawood VK7RH
5 Helen St., Launceston, Tasmania 7250



If you find that the VK2BWI/VK5WI Code Practice sessions on 3550 kHz difficult to copy due to QRM or QRN, or perhaps it is an unsatisfactory time period, you should consider copying the Maritime Communications Shore Stations. These serve the large naval and merchant marine fleets that ply the world's sea lanes. Most stations carry weather bulletins, navtigational warnings and some even send practice drills for trainee W/T officers.

Their primary purpose is to pass commercial traffic between ship and shore. As they operate on several frequency bands simultaneously, to take account of changing propagation conditions, it is comparatively easy to hear a station with traffic at any time of day. An added bonus to this being the listener gets acquainted with the different styles of sending or "fists".

The shore station operates on a fixed frequency, listening on a designated calling channel for ships with traffic. Once a ship makes contact with the station, he nominates a working frequency so as to leave the calling channel free for other vessels to use, in effect split-frequency operation. You will also hear the use of abbreviations, as well as the "Q" and "Z" codes.

At regular intervals, the shore station will transmit a list of traffic on hand for ships. It gives the ship's call sign (often twice) and may add QRJ after the call, indicating that they are holding radiotelephone traffic for that particular vessel. These traffic lists make good practice as they usually are four letter groups. The weather and other related information provides good plain language copy.

However, after getting used to listening to CW, you can easily slip into the trap of anticipating the next letter or word, and errors creep in as a letter is sent that you were not expecting. This is what we call "journalising". To overcome this, try copying faster fists, or concentrate on cypher groups. Another lurk could be copying FUJ in Noumea, heard very well in eastern Australia, as they transmit their information in French. That should eradicate your "journalising"!

If you are copying one of the many Japanese shore stations, be warned. They transmit copy almost exclusively in a completely different code. This is because the Japanese alphabet consists of 63 characters, compared to 26 in the Western, although the numerals remain the same. Soviet stations also send copy in a different code that relates to the Cyrillic alphabet. So unless you know the two different alphabets, skip listening to these otherwise you will get hopelessly confused!

The shore stations continuously transmit a Marker Signal or I/D when they are not engaged with commercial traffic. This is in order that the W/T operators aboard ship know if they will have propagation on that particular band. If that band is unsuitable, he listens for the station's signal on a higher or lower band.

Here is a typical example of what the procedure is:—

"VIS 26 VIS 26 DE JNSA JNSA QTC? K."

"JNSA JNSA DE VIS 26 QTC 2 QSS? K."

A Japanese ship on the 8 MHz calling frequency asks if VIS (Sydney Radio) has any traffic on hand for him. Sydney confirms that he has two messages on hand. QSS? means what is your working grequency.

"VIS 26 DE JNSA QSS 389 389 K?."
"JNSA DE VIS 26 389 UP."

Here JNSA nominates (8)389 as his working channel, VIS acknowledges and JNSA goes to that channel.

When contact is made, VIS sends the traffic still on its fixed frequency.

"JNSA DE VIS 26 NIL QRU? K."
"DE JNSA QRU SEE U TU VA."
"VIS 26 TU SEE U VA QRZ? K."

Sydney asks if he has any further traffic, as he has cleared his. JNSA confirms that he has nothing further and signs off. Meanwhile two further vessels are calling VIS 26 on the calling channel.

"VIS 26 DE FDRW FDRW QRK? QSS 402 OK?."

"FDRW DE VIS 26 QRK 1 QRM QSY 12 MHz K."

"VIS 26 DE FDRW R . . .R QSW 12 MHz TU VA."

This French ship apparently is not certain that his signal is being heard, so the shore op. suggests shifting to the 12 MHz band where another operator will handle the message, relieving the 8 MHz operator to take the other ship's traffic.

The approximate Maritime Communication Bands are:

Ships working	Shore Stations
4100 to 4150	4150 to 4390
6200 to 6300	6300 to 6500
8300 to 8450	8450 to 8720
12650 to 12700	12700 to 13100
16700 to 16870	16870 to 17200
22200 to 22300	22300 to 22600

There is also provision for a supplementary HF band from 25 to 25.5 MHz, but very few stations, mainly Scandinavians, utilize it. For semi-local operations, stations also use the 600 metre band, i.e. 410 to 520 kilohertz, with 500 kilohertz being the standard calling and emergency channel for both ship and shore. It is also mandatory for all maritime vessels to monitor this frequency continuously while at sea.

By keeping an ear on the various maritime stations, it can also be a guide to propagation. If you hear, for example, 4XO in Haifa, Israel, on 17146.4kHz around 0430, you will certainly find that Middle Eastern stations coming on the Long Path. Similarly the various South African shore stations on 17 MHz at around 0500 are a good pointer to propagation to Africa on the Short Path.

When PPR in Rio De Janiero is heard on either 22430 or 22352.5 kHz at a reasonable level, it usually is a good indication that exceptional propagational conditions exist on the higher frequencies.

It is also worth noting when propagation is coming in from regions at other than expected or normal periods, I have observed that this could indicate that there will be an ionospheric disturbance in the offing which will affect band conditions for up to 36 hours. Propagation often is very good after these auroral disturbances subside.

Well, that is all for this month. Hope you have a lot of fun listening and copying these stations. Until next time, the very best of DXing and 73s.—Robin L. Harwood.

LIST OF MAJOR SHORE STATIONS

Call	Frequency
VIX/VHP	4285, 6428.4, 12907.5, 16918.6, RAN Belconnen.
VIS	4245, 4272.5, 6464, 8521, 12952, 17161.3, OTC, Sydney.
VIP	8597, 12994, 6407, OTC, Perth (WA).
KFS	6350, 6365.5, 8444, 8558.4, 12840, 17025.5, San Francisco.
KPH	8620, 8640, 13002, 17016.5, RCA, Bolinas, California.
FUJ	8644, 12858, 16957.7, 22461, Noumea, New Caledonia.
GKC	13019.8, 8490, Portishead, UK.
WCC	13033, RCA, Catham, Mass. (nr. Cap Cod). ■

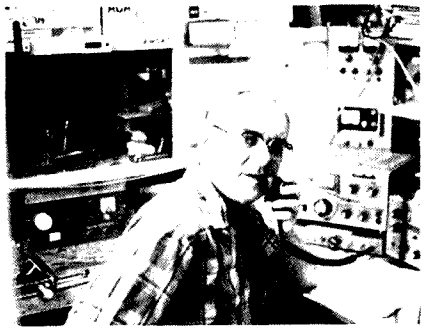
QSP

"There is a penalty of 20 pounds for operating an unlicensed receiving station." "It should be borne in mind that your broadcast receiving licence does not allow you to move your set from place to place at will. Before operating the portable set, permission must be obtained from the authorities to transfer it temporarily." The number of amateur transmitting stations in 1924 were about 130 each in NSW and Victoria, 30 in Qld., 28 in SA, 19 in WA, and 14 in Tasmania. Extracts from "Evening News" Wireless Handbook of 1924. ■

USA 6m BAND

IARU R3 News February 1981 reports that from 14/7/1980 the 50-54 MHz band in the USA has been de-regulated by the FCC, although 50-50.1 MHz remains CW only and repeaters are restricted to above 52 MHz. The ARRL is working with various 6m special interest groups to produce a voluntary band plan which is complicated by other countries' amateurs being restricted to a smaller band than in the USA. "DX windows" at 50-51.1 MHz and 52-52.1 MHz are suggested and above 50.5 MHz for FM and repeaters. ■

AMATEUR SATELLITES



R. C. Arnold VK3ZBB

Amateur satellite activity is on the increase in at least two States — VK4 and VK5 — and efforts are being made to recruit more operators to the ranks. Activity from VK4 is mostly on Mode A, a facility available to most amateurs and in the morning passes — must be a 25 hour week in Johland hi. (How to make friends up north!)

Arthur VK4AW reports that VK4AJA, AGL, PU, WS, WQ, KGE are participants in the OSCAR traffic and we continue to have the Mode B regulars 4TL and AJI (formerly P29ZFB and VK4ZJK) with us most nights.

VK8ZPG is active on Mode A and Peter H44PT in Solomon Islands performs well on Modes A and B. For the operators in the North there should be activity in the near future from Hawaii via WH6AMX (A, B and J) and AH6AP. Bob VK5ZRO reports working into JA on several occasions recently via Mode B at the end of passes with Ascending Nodes around 190-200 — good work, Bob; we in VK3 are looking for them also but the few kilometres extra distance makes it more difficult.

In response to the appeal, funds to support the AMSAT Phase 3 programme continue to pour in to AMSAT Headquarters. Harry JA1ANG tells me that 664 life members of AMSAT responded to a personal appeal from President Tom Clark W3IWI and contributed over $30,000 to Phase 3. Harry personally presented a cheque for $5,500 from Japanese amateurs. Whilst I have no figures from Australia I am sure the keen satellite operators are making their contribution to the world-wide effort. For a donation of $5 or more you can support the Phase 3 programme and receive a distinctive call sign badge. The badge is 75 x 45 mm and displays the AMSAT logo in red, the AMSAT name is in blue, and your name and call sign are engraved to show blue with a white background. Send your donation to *AMSAT HQ, PO Box 27, Washington, DC 20044, USA.* Specify your first name and call sign. Enclose $1 for post and packing and an extra $1 if you require airmail.

Many thanks to Dick VK3ARR for bulk handling applications in VK3 and for arranging an appeal via the Divisional broadcast and ATV segment (thanks to Ron VK3AHJ, my Indefatiguable ATV neighbour). Can other Divisions help likewise?

Would you like to join AMSAT? If so, let me know and I will send you an application form. The subscription is $20 per annum or $200 for life membership.

For those who wish to have advanced and detailed orbital predictions, the Project OSCAR orbital calendar is now available each three months. Send a SAE with at least $1.20 postage for each issue to Project OSCAR, PO Box 1136, Los Altos, CA 94022, USA.

There is s still some uncertainty on the launch date of Phase IIIB following the decision to cancel the Firewheel Project due to budget problems. However, there is a strong possibility that Phase IIIB will be on board "ARIANE" rocket No. L7 due for launch during 1982 — firm news should be available in the near future.

AMSAT-Germany, builders of Phase IIIB, have requested opinions on the frequencies they propose to use. The following bands have been suggested and as they fall within the WARC 79 allocation for satellite operation, they would seem to be acceptable (and a challenge).

1. U-Transponder:
   Uplink: 435,300-435,150 MHz.
   Downlink: 145,820-145,970 MHz. Engineering Beacon: 145,990 MHz.
   General Beacon: 145,8125 MHz.
2. L-Transponder:
   Uplink: 1269,950-1269,150 MHz.
   Downlink: 436,150-436,950 MHz. Engineering Beacon: 436,020 MHz.
   General Beacon: 436,040 MHz.

Both AMSAT OSCARS 7 and 8 continue to operate effectively with AO7 Mode B being the most popular. We still have problems with mode switching on AO7 but the general opinion is that this makes satellite operating the more interesting.

The spin rate of AO8 is slowing down. Normally, the rate is 1 rev. per 5 mins., but this has now become 1 rev. per 17 to 22 mins. Why? Can you help by monitoring Channel 1 of the telemetry information and forwarding your report to Bernie Glassmeyer W9KDR/1 at ARRL HQ? AO8 is getting hotter due to the low spin rate and the orbital drift and from time to time modes are switched to increase battery drain and hence keep the battery cool.

ACKNOWLEDGEMENTS

To Charlie VK3ACR for writing last month's notes while I was otherwise occupied, thanks to Qantas.

For this edition: Bob VK5ZRO, Peter VK4PJ, Orbit Magazine and AMSAT.

PREDICTED EQUATOR CROSSINGS FOR MAY 1981

	OSCAR 7			OSCAR 8		
Date	Orb. No.	Eqx Z	Eqx °W	Orb. No.	Eqx Z	Eqx °W
3	29570	0043	89	16104	0022	67
10	29658	0118	98	16202	0055	74
17	29746	0153	107	16300	0128	83
24	29833	0033	87	16397	0018	65
31	29921	0108	96	16495	0051	74

Av. Orbit Period (mins.):
OSCAR 7: 114.9147.
OSCAR 8: 103.1948.
Av. Longitudinal Increment (degs.):
OSCAR 7: 28.7373.
OSCAR 8: 25.8002.

Taken from Orbit Magazine (free to AMSAT members) is an authentic article on the Causes of Launch Failure of Ariane L02 which carried Phase IIIA satellite. ■

* * *

THE CAUSES OF LAUNCH FAILURE AT KOUROU

Alexander Schoening DC7AS
Ludolfingerweg, 52, 1 Berlin 28, West Germany

Many reports about the failure of the ARIANE L02 launch have been published by the ESA (European Space Agency) since the 23rd of May, 1980.

Even shortly after the failure of the launch a record was made public about the events that happened in the span of time between the ignition of the engines and the destruction of the vehicle 108 seconds later. This record has been published (1) and was later supplemented in ESA publications in more detail and by the events observed (3).

The D engine which plunged into the sea with the rest of the rocket from an altitude of about 25 kms, was found about 5 kms to the south of the *Iles du Salut* on the the 16th of June, 1980, and retrieved from the sea. The remains of this engine were taken to Messrs. SEP in Vernon (France).

ESA gave an account of the first preliminary results of the examination of the engine D in a press release (2) in June, 1980. Therein it is stated that many assumptions regarding the cause of the failure of the launch could be rejected and that only three hypotheses should be taken into consideration.

1. A first examination revealed in particular the presence of an identification label in the engine in the vicinity of the N_2O_4 Injection orifices. ESA declared later (3) that it was clearly proved that the plastic tag in question had never come Into contact with nitrogen tetroxide. Obviously it was flushed there only after the destruction of the engine. Furthermore, an engine test reproducing this circumstance was caarried out with satisfactory results. The tag was probably torn off and then sucked into the injector on splashdown.
2. Detailed analysis of the noise produced by the engines seems to show some difference compared with the results recorded during various ground tests In Europe. ESA rejects any hypothesis which may have appeared in the press that the stages of technical design of the exhaust-jet deflector located beneath the launcher may have been influenced by economic considerations. On the contrary, the design was a result of thorough studies and tests on an engine-fitted mock-up carried out in Europe.

3. Certain characteristics parameters of the D engine start-up, such as the combuston-pressure built-up, show tolerances slightly greater than normal.

During the summer 1980, six working groups were busy trying to confirm or to eliminate the abovementioned hypotheses. They presented a detailed report (1) following additional studies, the contents of which is summarised in the ESA/*CNES* press release No. 24 dated October 16, 1980. The following extracts are from this release:

1. "The failure of the ARIANE L02 launch on the 23rd of Mal, 1980, was due to combustion instability of a high frequency (above 2000 Hz) that occurred on one of the four first-stage engines 5.75 seconds after ignition."
2. "This extreme violent phenomena, lasting only 3/10ths of a second, abruptly altered the characteristics of the injector whose degradation led to the destruction of the engine 64 seconds after ignition. The fire that broke out after this In the propulsion bay caused the vehicle to be destroyed 108 seconds after lift-off."

The examination results (especially recent experiences concerning manufacturing tolerances of the injection nozzles) are to be considered on the occasion of the next test launch (L03 with METEOSAT) in the second part of March 1981. The last test launch (L04) is scheduled for June 1981.

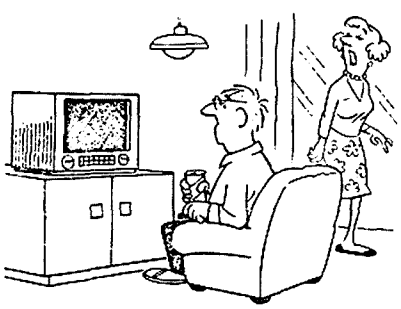
REFERENCES

(1) Werner Budeler, *"ARIANE L02 — Explosion und Absturz nach 108 Sekunden"*, issue 2/1980, *Luft und Raumfahrt*, pages 56-57.

(2) "ESA/*CNES* Press Release" No. 17, dated June 24, 1980.

(3) "Third Report on the L02 launch", ESA, Paris, October 15, 1980.

■



"You cant get ATV anymore Dear - the Authorities removed Foot Note 59".

From SEQATV Group

IC-22S on Marine Frequencies

Following the construction of an outrigger for selection in 25 kHz steps, between 146 and 148 MHz, problems with my transmission became obvious.

Something amiss was first noticed by Bob VK5ZHR, who commented on my noisy, unstable carrier, and later that same night Colin VK5HI broke in to politely inform me that I had been guilty of tripping his Albany Repeater Monitor Recorder (VK6RTW 144.5 MHz) and also confirmed Bob's previous observations.

Then came the ultimate embarrassment. The phone call from P. and T. Department informing me that VK5ZDD had been heard on a Marine Frequency at Outer Harbour (156 MHz).

Following the checking of my outrigger and power supply the problem was isolated to the 22S at the top end of the band only.

With Bob's help, the first place we checked was the logic of the duplex control circuit. Here the circuit diagram supplied was no use at all. Firstly the circuit diagram supplied could not work anyway and IC7 in the 22S was entirely different to IC7 on circuit diagram.

I have included a circuit diagram of the duplex control circuit obtained from tracing out the printed circuit board. Basically, at Simplex and Duplex "A" operation the frequency programmed from the diode matrix is the same as the output which is fed to the divided IC, but on Ouplex "B" transmit, the logic code output is 600 kHz higher.

With this task and with use of a logic probe a faulty IC (IC7) was located and replaced, but the fault did not end here.

With low power setting, and by observing the RF meter on the 22S, it was noted that at frequencies of 146.75 MHz and greater, a reduced power output was occurring and this was displayed by squegging on a CRO. Bob's immediate comment was alignment problems.

Following a visit to Steve's VK5ZNJ QTH, to make use of a newly acquired frequency counter, the problem was overcome when we started adjusting the trimmers around the output stage of the pre-driver. C100 (circuit diagram ident, but unmarked on the board), made all the difference. The reduced power output resulted from a low supply voltage on collector of pre-driver Q19, caused by excessive collector current from an incorrectly tuned driver stage.

Bob then checked his 22S and found that he could be heard at least 200 kHz either side at 147.6 MHz. By peaking all trimmers in final stage of approximately 156.9 MHz resulted in reducing bandwidth within spec. A similar adjustment on my 22S was also needed.

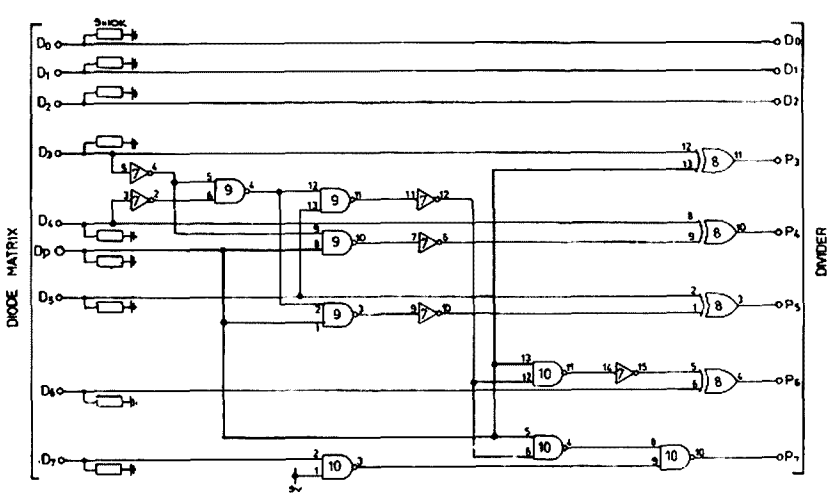
It appeared that both our 22S had been aligned at the bottom of the band (probably since this is where pre-programmed channels are) instead of the centre of the whole band. With all this done and an on-air check with P. and T. Department, I was again smiling.

All these problems highlighted the following points:—

1. Do not assume that all commercial equipment is correctly aligned.
2. On-air criticism given in the right attitude can be very valuable.
3. P. and T. authorities are not the nasty men often portrayed, their attitude and co-operation was most appreciated.

Many thanks for the advice and support freely given by Bob and Steve, and I trust that publication of this experience may help other ICOM 22S owners.

From SA WI Journal, February 1981. ■



IC 22S
DUPLEX CONTROL CIRCUIT

YOU and DX

G. (Nick) Nichols VK6XI
6 Brier Place, Ferndale, WA 6155.

This is the tenth column I've scratched together. When I took on the job I promised both myself and more particularly the XYL that I'd give it a serious "bash" for 12 months. Why? For several reasons, mostly though because no one else had offered but also because I felt I was (with sufficient time spent on air coupled with assistance by way of brief notes, on air contacts, etc.) capable of doing a reasonable job. So the lawns, painting, paving, fencing, etc., were neglected and still are come to that. I've expressed ideas, gripes, ridiculous on air practices, etc., however the twelve months are now rapidly drawing to a close and I fully intend the forthcoming July column to be my last.

Will someone else be prepared to have a shot? I hope so, I also hope the offer to take over is from well east of here. You've had two years of the DX scene through a VK6's eyes, Mike 6HD with his lean toward the lower bands without doubt made many of us realise the "rag-chew" bands were capable of much by way of DX; similarly my leaning (or should I say fanaticism) for 10 metres has I hope at least generated a bit more interest in the band.

It's really quite simple; Australia is one awfully big country, propagation even between Perth and the north-west of the State is totally different, for Perth DXers the South American continent, particularly on 10, poses real problems; we seldom get a good opening and when we do we join the queue behind what at times seems to be a thousand or more VK3s, 2s, etc., most of whom seem to be working the guy for the umpteenth time — please don't take offence — (though a bit of help would be nice). I believe we over here do much the same when working across the "pond" into the African continent — the point I'm trying to make is that what's DX to a Sydneysider could well be in our eyes QRM.

So there you are, if you'd like to give it a try put pen to paper now as printing deadlines cut down the time left considerably — how about it? Any offers?

FACT AND FICTION

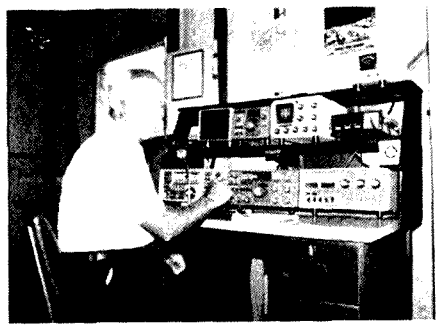
Rumour has it that Dave K6LPL has set his sights on Kermadec for his next trip (following a successful Juan Fernandez operation); have been unable to catch up with Dave to confirm but here's hoping.

OY-land has been the subject of intense pirate activity — save your time, trouble and IRCs and ignore the following "stations", all prefixed of course with OY: 0A, 1KRQ, 2BEH, 2MA, 5BFA, 5CP, 5JA, 5OQ, 8BK and 9AGM.

For those still needing OY (including me) listen for him around 28.450 on weekends around 07-0800Z working into Japan or if propagation permits 1300Z most Thursdays on 28.770 — wish you luck! He's never very strong.

Still no news on 4W and the many rumours of 70 have all checked out to be false — don't give up hope but we could be waiting for a while yet. I've been supplied with a list of past and present VK0 and VK9 QSL information — if you're still chasing a QSL route drop me a line and I'll be pleased to assist where possible. Thanks to Neil VK6NE for compiling the data.

For those of you who one time or another check into the ANZA net (21.203 check in just prior to 0500Z daily), Percy VK3PA would undoubtedly be familiar. Ken 3AH has been good enough to send a photo of the co-ordinator and originator of the net, which I hope will be printed in this column soon. Thanks, Ken, for snapping the rather reluctant gentleman, and thanks Percy from the DXers around Australia for your time and dedication.



ON THE BANDS

10 Metres

Who said the cycle is dropping off for us here on VK6 and, from what I can gather, the rest of VK? This band has been the centre of DX activity with several 24 hour openings. Crazy crooked, long and short propagation has had many wearing rotors out in rapid time.

On phone the following stations all generated plenty of interest: 3D6AO, OH3XT/OH0, EL2AK, EL2AV, YS3CG, VP2ED, JA1JWP/JD1, TL8WH, J28JL, 8Q7AZ, ST2FF, C21BS, TL8CN, 5Z2YV, 5Z4NQ, KG6SL/KH0, KB5RY/KX6, HI8LC, 3B8DB, 6Y5AA, 3B8AE/3B9, CE3GN, VP1MK, J88AQ, A22ED, A22BX, C5ABS, FO8GW, ZF2UE, F9UW/3A, J73PP, 5N0DOG. Sorry I've indulged myself, but there hasn't been a better month in a long while hi.

On CW (not that I went down there very often) H44BP and VU2WP plus a never ending supply of Europeans were easily workable.

15 Metres

Somewhat lost in the shadow of its higher neighbour on phone within the novice segment, YJ8NPS, CE3YF, EA6CF, J73PP, EL2AV, EA8YG, FO8DF and F9UW/3A were available and were worked by many.

On CW things were quite active with CO7FM, DU6RE, HZ1AB, H44M and 3D2VU.

20 Metres

Sorry I neglected this band completely apart from one contact on phone with TL8CN. On CW though a whole feast of DX was available with 3D2VU, 3D2NB, 5Z4YV, TI2MWH, PJ2HR, OE2VEL/KH8, J28CM, FM0FOL, FH8CO, FG0FOK, FC2CC, EA9EU, EA6HH and W4PRO/CE0.

40 Metres

A CW report again — for the patient (and tone deaf, those commercial stations drive me mad before I even get started) EA6FZ, EA8PS, UG6SW and 5Z4YV (he sure gets around), plus Europe and USA were all workable.

80 Metres

Boy, do I get disheartened; climb out of bed at ridiculous hours, not a whisper of a signal day after day here in the west, but workable CW from the Eastern Seaboard, DL8AN, H44MM, UK2RDX, YU4FRS and UB5ZE.

That's it for the month; trust you've enjoyed it as much as I. Particular thanks to Eric L3-0042 for the comprehensive CW report and Bill VK3VYP, especially for the information on 15.

QSL INFORMATION

F9UW/3A — via Home Call.
KH3AB — via KB7MO.
5N0DOG — via W4FRU.
C5ADS — via DL1LO.
HZ1AB — Via K8PYD.
ZF2EU — via K5HFT.
VS6CT — via KB9N.
CR9C — via DL2RM.
9K2AH — via JA8BI.
H44MM — via K1MM.
KV4AB — via PO Box 7055, St. Thomas, Virgin Islands.
JA1JWP/JD1 — via JA1RJR.
3D6AO — via PO Box 1, Mhlume, Swaziland.
5Z4YV — via JA2KLT.
ST2FF — via YU2DX.
TL8CN — via W5RU.
VP2MLB — via W2IRS.
VP8WA — via WA4JQS.
KH0AC — via K7ZA.
VO2CW — via New Manager VE3ICR.
VP1MK — via N0BNY.
J88AO — via W2MIG.
J28CM — via Box 215, Djibouti.
3D2NB — via Box 2722, Auckland, NZ.
FH8CO — via BP76, Dzaoudzi, Mayotte Island. ■

QSP

FREQUENCY SPECTRUM

According to Richard Kirby, director of the CCIR of the ITU, not enough work is being put into finding better ways of utilizing the radio spectrum. Continuing his speech at a recent IEE conference in London he said that studies of spectrum utilization ought to be better recognised as a legitimate and challenging discipline of communication science and many university faculties and research budgets did not recognise this fact. Mr. Kirby outlined the work of the CCIR in this field along five main areas: bandwidth — efficient modulation (interference-resistant modulation — spread spectrum), frequency re-use, domestic and regional satellite systems, the role of HF and improvement of equipment standards from the point of view of spurious emissions, and unwanted responses.—From IARU R3 News, February 1981. ■

A La Mode

The following is an extract from the Royal Naval Amateur Radio Society Newsletter for summer 1980.

"You may like to print the following story which may raise a smile or two among the membership. I was reminded of it upon reading G4CDZ's story of a transmitter in a boat many years ago.

This story concerns an exercise dreamed up for the Med. Fleet in the 50s in which a squadron consisting of one carrier, several cruisers and a multitude of destroyers and frigates were supposed to effect a landing in Malta. As a precursor, a secret agent was to be landed in Sliema Creek from Instructions passed to him from another spy in the bay. Having landed, the intention was for the main spy to direct the Fleet to a close position whereupon Naval Forces would be landed and the island taken.

Thus, early one forenoon, a young telegraphist armed with a new type of walky-talky found himself being pulled in a standard pussers whaler from Grand Harbour around to Sliema. He was there landed upon a rocky promontory and told to call from time to time, using a special call sign, so as to direct the main spy to the rocky promontory.

Apart from the special portable transceiver, he had been detached to his position armed with a packet of sandwiches and two or three bottles of blue. (A special Maltese brew much loved by Maltese.)

Now It was a hot day, and having set up the equipment and tested it, the young telegraphist found he was both thirsty and hungry. Consequently a few sandwiches disappeared (herrings-in), quickly followed by one of the bottles of blue. Despite the heat and the effects of the bottles of blue, our young operator checked the gear from time to time, and time quickly passed. The forenoon ended, the afternoon watch progressed and the supply of herrings-in and beer quickly disappeared.

It must have been towards the end of the afternoon watch when a boat appeared in the distance and quickly drew near to the rock on which our young telegraphist had been placed. An Irate PO Tel leapt out of the boat, rushed up to the operator and said, 'What the hell have you been doing?'

'What's up Potts?' said the operator.

'What's up!" said the PO Tel, 'Where've you been all day?'

'I've been here Potts, using the call sign I was given, nobody came back to me though'

'You are in the rattle,' said the PO Tel, 'the whole exercise has been loused up because of you.'

'It wasn't my fault Potts,' said the young operator, 'I've been calling like mad every 15 minutes and no one has come back to me.'

'Well we didn't hear you,' said the PO Tel.

'Hey, what's that rig you're using there?'

'Oh, it's a new one Potts, we've got several of them aboard in Neon.'

'I've never seen one of those," said the PO Tel.

'What type is it? Hey, wait a minute, that is an FM rig you have there.'

'Oh yes, It's an FM rig. What are you using?'

'Oh, no wonder, the modulation is different,' said the PO Tel.

Yes, one half of the Mediterranean Fleet had put to sea in readiness for the landing, using AM equipment, whilst the spy located at Sliema Creek had been issued with a, what was then new, transceiver using Frequency Modulation.

How many thousands of pounds had been expended that day on fuel oil apart from anything else, goodness only knows. Certainly that was one landing that was never made and all because of a simple mistake, the difference between AM and FM. I had never heard a word from the Fleet and they in turn had not heard my transmissions. If there was a court of enquiry I was not present. I can only assume that my CCO at the time took the can back."

This contribution, culled from the RNARS Newsletter, was contribued to that publication by Derek G3NTB.

From SA Journal, December 1980. ■

At Liverpool and Districts Amateur Radio Club Field Day 22 March 1981

Start of the "Find the Beeper" hunt.

Athol VK2BAD and Lloyd VK2YOU/VCF.

Doug VK2ZYM with his doppler scan antenna.

John VK2VUK selling gear.

Hounds lined up for the mobile foxhunt.

TAREE AMATEUR RADIO CLUB

Meetings: SES HQ, Victoria Street, Taree, on second Tuesday of the month at 7.30 p.m.

Club net: Mondays on 28.480 MHz at 8 p.m.

Controller: Bruce VK2NCK.

Classes for NAOCP and AOCP held at Chatham High School, Davis Street, Chatham, on Wednesdays at 6.30 p.m.

Correspondence to Secretary, PO Box 712, Taree, NSW 2430. ■

VHF-UHF

An expanding world

Eric Jamieson, VK5LP
Forreston, S.A. 5233

MAY 1981

VHF/UHF BEACONS

Freq.	Call Sign	Location
28.335	VK2WI	Sydney
50.005	H44HIR	Honiara
50.100	KH6EQI	Pearl Harbour
51.022	ZL1UHF	Auckland
51.999	YJ8PV	Vanuata
52.013	P29SIX	New Guinea
52.150	VK5KK	Arthurton
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.320	VK6RTT	Carnarvon
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.400	VK7RNT	Launceston
52.425	VK2RAB	Gunnedah
52.435	VK3RMV	Hamilton
52.440	VK4RTL	Townsville
52.450	VK2WI	Sydney
52.500	JA2IGY	Mie
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
53.000	VK5VF	Mt. Lofty
144.010	VK2WI	Sydney
144.162	VK3RGI	Gippsland
144.400	VK4RTT	Mt. Mowbullan
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.800	VK5VF	Mt. Lofty
144.900	VK7RTX	Carnarvon
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.400	VK4RBB	Brisbane
432.450	VK3RMB	Mt. Bunningyong

No changes to the beacon list but the need to continue to list the Hawaiin beacon has been again proved with it indicating openings to KH6 during the month.

Last month I asked the various custodians of the beacons to furnish me with information about their particular beacon, as I am continually being asked for such information. Please don't forget to let me know soon.

NEWS FROM TASMANIA

Ian VK7ZZ sends information of a general nature of the type of activity being pursued by various stations, particularly in southern VK7. Overall, 6 metre DX has been good, starting 18/11/80 when Hobart stations worked ZL2, 3 and 4, to be followed on 20/11 with VK8GB after hearing the Darwin beacon for a couple of hours. 23/11 produced a good opening to JA with call areas JA1 to 7, many contacts on CW due to local noise. As time and days progressed contacts were again made to ZL plus P29 and H44.

13/3/81, whilst being Friday 13th, was not unlucky for the Hobart boys when VK7ZTA, VK7ZIF and VK7ZZ worked KH6IAA, and VK7ZZ also worked KH6FQ. Signals came in from slightly south of east, which was rather unusual. The KH6EQI beacon was S9+ for over an hour. Also heard were two W6 stations, but they could not be worked as they were operating on the KH6EQI frequency and their attention could not be attracted!

The Hobart 6 metre beacon is being widely heard, and reports have come in from VK, ZL, JA, P29 and G-land!

On other bands Ian reports a number of contacts to VK3 on 144.1 from Hobart area but overall 2 metre activity down there is not great. Seven stations are now on 432 MHz, and four stations have indicated interest in going up to 1296 MHz. Thanks for writing, Ian.

MELBOURNE ACTIVITY

Gil VK3AUI reports a drying up of JA contacts during February, one late opening at 1400Z to VK3NM.

Contacts to Hawaii were made on 13/3 at 1014Z to KH6IAA, and again on 15/3 when KH6 was available from 0700Z, and KH6IAA again on 16/3 about 0930Z.

Gil reports 15/3 a classic example of signals not making it to 52 MHz. At 1039Z heard JA8AQ on 50.099 559, 0145Z JA8JSG 5 x 9 on 50.105, 0150Z JA8EJH 5 x 9, 0145Z JH8BLJ 5 x 9, both on 50.105. A very big JA dogpile on this frequency. Almost no signals on 52 MHz only a couple of weak contacts in Melbourne with everyone trying very hard. Same day at 0916Z heard VK4RO working KH6, with the signal from Ross coming in from north-east, indicating some form of scatter signal. From 1030 to 1125Z an opening to JA with JA1, 2, 3, 6 and 7.

On 16/3 starting 0032Z JAs on 50 MHz observed calling LU in Spanish, but nothing on 52 MHz. Thanks, Gil.

THE VK5 REPORT

As I have been tied up somewhat during March working for a big local community project which fortunately has now successfully been and gone, I rely on my old friend **John VK5ZBU** for those interesting snippets of news which show how March treated us and some other places.

3/3: Es to VK2. 5/3: Auroral propagation VK2 and VK3 to VK5RO. 11/3: VK TV into California at 40 dB over S9 during the morning according to W7KMA. 15/3: JA7NAM to VK5ZBU 5 x 9. 16/3: KH6IAA to various VK5s peaking 5 x 9 at VK5LP. W6XJ to ZL.

17/3: 1250 to 1430Z "wall to wall" JAs 5 x 9, all districts including a number of new ones, an incredible opening. 1440Z KG6DX to VK5ZBU and VK5AVQ during another CW dogpile on low end of 52 MHz. 18/3: VP2VGR Virgin Islands crossband to VK2 and VK3. Initial tries to get them up to 52 MHz unsuccessful, MUF apparently only to 51 MHz. 19/3: DL3ZM/YV5 Caracas, advised via 28.885 trying on 52.020, only weak blips heard.

21/3: WA4TNV/KL7 on 52.044 around 2345Z (actually 20/3 GMT day) worked by VK5RO and VK5ZPW, and just missed by VK5LP due to fading out at 005ZI When Peter worked him about 0001Z he was 5 x 7 here! Last trace of Clay was at 0018Z. He showed up again between 0235 and 0310Z when I am told VK5AGM worked him. WA4TNV/KL7 also noted worked in VK2 and VK3. His signals here had very heavy QSB on them, seeming to indicate a rather low angle path. I was not surprised at something like this happening as various signals from the USA had been noted for days previously around 42 to 43 MHz in the mornings up to S9, and they were still being heard by VK5LP on 22/3 and 23/3. Also received a report that Bob VKE1AVX had heard a VK5 during the contacts on 21/3.

LONG DISTANCE TO NEW ZEALAND

John VK5ZBU passed on the mouth watering news that at least ZL1QM, possibly others, on 28/3 between 2000 and 2200Z (our local morning of 29/3) had worked the following: ZF2GR Grand Cayman Is., near Cuba; VP2VGR British Virgin Islands; KV4FZ American Virgin Islands; VP1A possibly Belize area; C6ADV Bahamas; KP2A and NP2AE areas unknown; all contacts in Caribbean areas, which is a very long haul even from New Zealand. To give some idea of the spread of signals FO8DR was also worked; the Tahiti station also heard or worked in VK7 to S9+. I did hear some of these signals had been heard in VK2 and VK4 but this is unconfirmed. Altogether a very worthwhile effort, and hopefully one which might lead to something good for VK stations.

Also noted on 30/3 that KH6 was working H44 and VK4 about 1000Z. Going back

to the New Zealand contacts on 28/3 here is further proof of what you can do if you have that segment on the low end of 50 MHz. The stations were all worked between 50.095 and 50.100, so what hope do we have in VK to break In on something like this? By the time the overseas stations have worked out what is available on those frequencies there is no hope for any worthwhile signals appearing on 52 MHz.

APPRENTICE OF THE YEAR

Congratulations to **Lewis VK6ZGO** of Kalgoorlie, who has been presented with the Electrical Apprentice of the Year Award for 1980. He is in his final year and is apprenticed to the WA School of Mines.

He won a grant of $1000 and will travel to Sydney to compete with other State finalists for a $5000 prize which will be awarded to the National Apprentice of the Year.

Many have worked Lewis on 6 metres and we all hope he does well in the future. Thanks to the WA VHF Group Bulletin for that news.

NEW HOME FOR SERG

The South-East Radio Group at Mt. Gambier now have a new home at Olympic Park, Mt. Gambier, which, after some renovations, would be occupied by the time you read this.

Members have also found the Club is not quite as old as originally thought, only 20 years instead of 21, so the special 21st birthday dinner has been deferred until a date to be announced in 1982.

I note also from the "SERG Bulletin" that the Annual Convention Registrar, Mike VK5AMT, has been transferred to Port Augusta, and the Co-ordinator, Peter VK5ZBF, now does shift work, so there are two positions which need filling in order for the Convention to go ahead. I am sure I speak for all those who have attended Mt. Gambier Conventions that the loss of the Convention would be a great blow to amateur radio — let us hope the remaining members close ranks and keep it going.

SIX METRES TO G-LAND

I suppose it is a matter of perspective or something, but I note in the January 1981 issue of "The Short Wave Magazine", published in the UK, that the world startling contact between Andy VK6OX and G4BPY, G3COJ and G5KW on 27/11/80, 52 MHz to 28 MHz respectively, rated only 14 lines of column width, three lines of which were devoted to mentioning the Carnarvon beacon!

NEW ZEALAND AGAIN

There hasn't been much reported about just what the 50.0 to 50.150 MHz segment has meant to the ZL operators, but the following is a summary of what has been happening recently according to the January/February issue of "Break-In".

"Cliff ZL1MQ writes with an interesting summary of 6m openings so far this season: Six metres first opened to the Northern Hemisphere on 10/10/80 when W6YDF worked ZL1MQ on CW and ZL1AUM on phone. 23/10 opened to W6 with W6BYA, W6YDF, K6HHJ, WA6JRA, K6RMJ, K6QQN, WB6BMB and WA6PZL being worked by the locals. 25/10 saw W6XJ, K7KV, W7FN, W7FLD, WA7BAC and other W7 stations. 10/11 and 11/11 open to W6 and W7, while on 11/11 ZL1MQ worked VE1ASJ. 15/11 W6 and N5ARS worked. 17/11 KL7WE and VK3 on 52 MHz. 18/11 W5UWB and XE1GE worked. 20/11 ZL1QS worked XE1GE. 25/11 a super day for W stations, all districts worked by some ZL stations. 21/11 and 23/11 saw JA worked by ZL1. 29/11 and 3D2JT worked five ZL1s.

"1/12 ZL1 to ZL4 open. 6/12 ZL1 to ZL2. 13/12 open to ZL4. 27/12 ZL4, VK2 and VK4. Band open to VK all call districts 28/12 to 31/12. 2/1/81 ZL1MQ to FK8CR, FK8AB, later YJ8PD. Cliff concludes with comment that W openings have been above average, VK openings the best in 22 years. He has now worked 16 countries on 6 metres and notes 22 per cent of Northern Hemisphere contacts were on CW — a thought tor the antl-CW brigade!"

Additional to the above, and still from New Zealand, Brian ZL2BFC reports:

"Bob ZL3NE in Christchurch enjoyed good DX in November. On 17/11 at 0800Z Bob worked VE1ASJ and VE1AVX with signals 5 x 7 to 5 x 9. Graham ZL3AAD quotes the distance to VE1AVX as 15,555 km and VE1ASJ as 15,478 km which should give Bob the ZL 6 metre DX record unless someone further south worked him. Bob reports that at the time he had Ws 1, 2, 3, 8 and 9 and VE1s coming in at once up to S9+ on the FT200 S meter. To quote Bob 'you will be able to imagine the pile up calling me, which has been borne out by the QSL cards received, all kW stations with big antenna on 12m beams and 30m high. I really only touched the top of it working 24 Ws in all the above call areas. A VE3 was heard in the pile-up but I could not identify him.' Bob goes on to say the band was in and out until 1230Z, when the VKs hit, followed by JA to 1300Z. By 1400Z they were all S9, fading around 1500Z only to return at 1645Z and staying until 2000Z. Early evening saw KH6IAA, W6HTH/KH6 and KH6FQ worked amongst the JA and VK stations. KG6DX heard Bob that night but due to local QRM was not heard in Christchurch. He finally pulled the switch at 2140Z, having QSOed 102 stations outside ZL: 2 VE, 24 W, 3 KH6 ,60 JA and 13 VK.

"Over the following eight days Bob ZL3NE worked a total of 170 DX QSOs, including XE1GE. He wonders whether anyone has bettered 102 outside ZL contacts in one day or is this a record too? His equipment on 6 metres consists of an FT200 driving an FTV650B transverter to a 5 element beam on a 9 metre mast. On receive he has a low noise pre-amp with 25 dB gain, making operation on 6 metres just like 80 metres!"

If that report doesn't serve to indicate firstly that being a bit closer to North America as New Zealand is has a lot in its favour, and secondly that having 50 to 50.150 MHz as well, then we in VK are only now really beginning to realise what we have missed out on through not having an opportunity of operating near the 50 MHz end of the band. Congratulations to the New Zealand amateurs who have been making the most of the opportunities presented to them by a sympathetic administration.

TWO METRES

Largely quiet this month at my location — several contacts with Jeff VK5YU at Tallem Bend near Murray Bridge but as mentioned earlier, March has been a busy month in other ways here.

TECHNICAL TIP

Have you ever wanted to tune up a piece of solid state 432 MHz equipment and not had a source of weak signal with which to do it? You need something which is stable, low in output and free from spurious signals.

If you have a good 1 MHz crystal calibrater rich in harmonics which go right up to 432 MHz and beyond then you have something with which to start. The one I use is built from a circuit published in "6 UP" some years ago by Rod VK2BQJ, which was actually capable of giving some output right up to 1296 MHz. I feed the output through a tuned cavity filter tuned to 432 MHz, which then eliminates signals other than those I need, thus removing any high amplitude broadband signals, so that I finish up with a low output stable 432 MHz signal with which to tune up a preamplifier, front end or other stages of the receiving part of the transverter, etc.

Doing the job this way will get the various tuned stages working pretty well; you can subsequently give things a tweak up if you want to when you can get someone on the air to provide the necessary weak signal, but if you have everything well shielded from the calibrator in a metal box, coupled to the filter through coax cable and then on to the converter the same way, you won't be far out for most purposes.

Closing with the thought for the month: "We are not primarily put on this earth to see through one another, but to see one another through."

73. The Voice in the Hills. ■

CLUBS

The 1981 WIA CALLBOOK will contain a Club Listing.

●

Please send Club Details direct to:
WIA, Box 150, Toorak, 3142
as soon as possible.

●

Same data required as In the 1979 WIA Call Book.

AROUND THE TRADE

ANTENNA FARM

For some time, there has been an absence of information published in amateur radio magazines regarding antenna towers of Australian origin, although in Victoria, at least, they have been available. As far as can be ascertained, only one model of a crank-up, tilt-over self-supporting tower is available. Because of this apparent lack of options for the buyer, A. G. Wilkey decided to offer initially two basic models, one of 32 feet in two sections, and the other of 45 feet in three sections.

The use of short telescoping sections results in advantages in manufacture, transportation and, most importantly, in handling the tower with antenna attached, because of the shorter radii in the tilt-over position.

These towers are designed to withstand 144 k.m.h. (90 m.p.h.) winds with the equivalent of a TH6DXX and heavy duty rotator on top, and will pass local government inspection. Drawings and engineering computations will be supplied to purchasers for the purpose of gaining an erection permit.

All ferrous components are hot-dip galvanized to very high standards. The winches for telescoping and tilting are provided with a "load brake" for maximum safety. Each tower section has a positive locking arrangement, not relying on the winch and cable for permanent support. Antenna support pipes and weatherproof thrust bearings at the option of the purchaser, to suit rotators and antenna mast brackets, be they large or small, can be supplied. Should there be a demand, the company can also supply extra sections of tower for either free-standing or guyed arrangements.

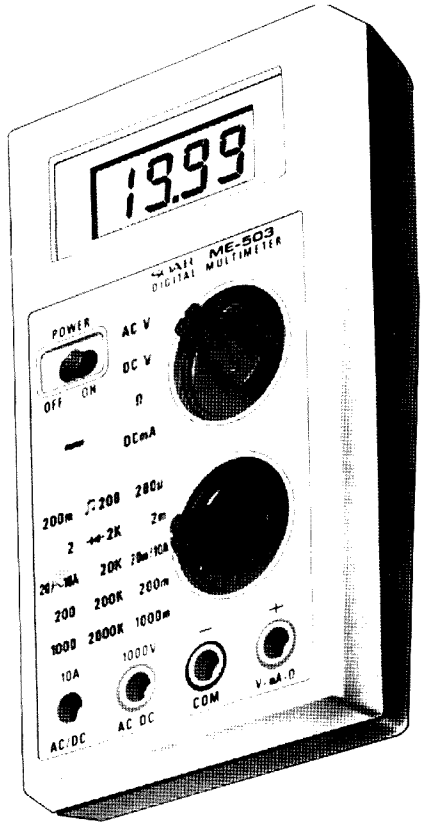
Installation will be arranged and the type of ground support system can be varied to suit soil conditions.

For inspection of complete towers and further information, contact Arnold Wilkey VK3AGW on (03) 56 4465, or after hours 754 4111, or write to Antenna Farm, P.O. Box 106, Oakleigh, Vic. 3166 ■

NEW HAND HELD DIGITAL MULTIMETERS AVAILABLE SOON IN AUSTRALIA

GFS Electronic Imports of Mitcham, Victoria, should soon have available two new low cost hand-held digital multimeters manufactured in Japan by a well established electronic instrument maker, Soar Corporation.

These new 3½ digit DMMs are the models ME-501 and ME-502. Both have liquid crystal displays and use large scale integration (LSI) solid state techniques, consequently they are highly durable and have a battery life extending up to 200 hours. Both low battery and automatic polarity indication is provided for in their



displays. All ranges are fully overload protected and zero adjustment is automatic.

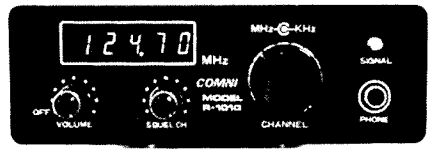
The ME-503 (shown in photograph) reads DC and AC voltage up to 1000 volts, DC and AC current up to 10 amps, as well as resistance. A handy feature when in the resistance mode is a built-in buzzer for use during circuit continuity checks. Input impedance on the AC and DV voltage ranges is 10 megohms.

Soar's ME-501 is similar in many respects to the ME-503 but has only two AC voltage ranges, 200 volts and 1000 volts, although provision has been made in its design for transsistor hFe measurement over a range of 0 to 1000.

The expected selling prices of the ME-503 and ME-501 are $135 plus ST and $99 plus ST respectively.

For further information about these two new digital multimeters contact the distributors, GFS Electronic Imports, 15 McKeon Road, Mitcham, Victoria 3132. Phone (03) 873 3939, Telex AA 38053 GFS. ■

NEW UPDATED SYNTHESISED VHF AERONAUTICAL AM RECEIVER



An updated version of the already well known Synthesised Airband Receiver, the Comni Model-R1010 was recently released.

The R-1010 is intended for use in a wide range of applications from airlines, Department of Transport, to flying clubs and home use. It is designed for operation on both 240 volts AC and 12 volts DC. All vehicle mounting hardware is supplied.

A phase locked loop frequency synthesiser is utilized, giving full frequency coverage with 25 kHz channel spacing from 108 to 136.975 MHz, the entire VHF navigation and communication aeronautical band. Highly effective impulse noise reduction is achieved by using multi-stage Active IF Noise Blanker circuitry. A sensitivity of less than 1 microvolt for 20 dB signal to noise ratio is boosted by making use of a double conversion superhetrodyne receiving system.

Frequency readout is provided by a red LED 5 digit display. Easy selection of the 1120 channels being achieved by use of a coaxial type channel selector switch and a front panel mounted LED gives the R-1010 user a received signal indication.

The unit weighs 3 kg and measures a compact 160 mm wide by 56 mm high by 250 mm deep (less knobs, feet and connectors). It is supplied complete with a detachable telescopic antenna for situations where desk top operation is required.

Further information on the Comni R-1010 can be obtained from GFS Electronic Imports, 15 McKeon Road, Mitcham, Victoria 3132. Telex GFS AA 38053. Phone (03) 873 3939. ■

NEW RANGE OF 15-45 MHz OSCILLOSCOPES DUE FOR RELEASE

Also from GFS Electronic Imports of Victoria comes word of a new range of Japanese oscilloscopes to be released in this country soon.

The new range of five models, including one portable, is manufactured by Soar Corporation, a well known and long established Japanese instrument manufacturer.

All models use rectangular CRO tubes, having a built-in graticule which gives high resolution and brightness with a minimum of parallax error, are all dual trace and supplied with dual x1 and x10 probes. A front panel mounted trace rotation control is fitted to allow easy compensation for variation in terrestrial magnetism.

Starting at the bottom of the range (frequency wise) is the model MS-3015, a 15 MHz portable oscilloscope, which features a 95 mm CRT, sensitivity of 2 mV/DIV over a frequency range DC to 15 MHz, add, subtract, chop and alternate trace modes as well as X-Y. Power sources may be 180 to 260 volts AC, 11 to 30 volts DC or an optional nicad battery.

Next comes the model MS-6020, DC to 20 MHz, 5 mV/DIV, 140 mm CRT. Operating modes include single channel, dual subtract or add. Power requirements are 180 to 260 volts AC, 11 to 30 volts DC.

Very similar in specifications to the MS-6020 is the MS-6021, but it features in addition a built-in delay line for variable delay triggering.

Moving up to a 40 MHz oscilloscope, Soar have the model MS-6040, a CRO that uses a 150 mm CRT with metal-back-post-deflection-accelerator and internal graticule,, acceleration potential on the CRT is 15 kV. The 3 dB bandwidth is DC to 40 MHz with a rise time of less than 7.7 nSec. Vertical amplifier modes include single channel, dual, add, subtract, chop and alternate. As with the MS-6021 a trigger delay line is included for up to 120 nSec delay, allowing its user close analysis of waveform rise times. Power requirements are 240 volts AC ± 10 per cent.

For those requiring a CRO with a 3 dB bandwidth DC to 45 MHz, Soar have the MS-6045. It is essentially the same as the model MS-6040, but with extra bandwidth.

GFS claim that the price range of the new Soar oscilloscope makes owning a high frequency CRO much more economical than it used to be.

If more information is required on the Soar range of oscilloscopes, contact the Australian Distributors, GFS Electronic Imports, 15 McKeon Road, Mitcham, Victoria 3132. Phone (03) 873 3939. Telex AA 38053 GFS. ■

VICOM MODEL IC-M1 2m 10W BOOSTER AMPLIFIER

Icom Osaka, Japan, through their representative Vicom International, announce the release of a booster amplifier for connection to hand-held transceivers such as the model IC-2A, which increases the output from 2.4W to 10W.

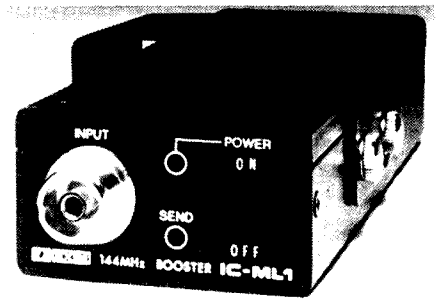
Because of its small size and light weight the amplifier can be mounted In a small space in the car. The amplifier can be controlled through a DC voltage superimposed on the interconnecting coax cable.

When the power switch of the amplifier is turned to the "off" position, the amplifier circuit is bypassed and the 2.3W output from the IC-2A is fed directly to the antenna. The amplifier covers the frequency range of 144 to 148 MHz and operates from 13.8V DC with a power requirement of 3 amps maximum. The drive requirements are 2.3W for a power output of 10W.

The size of the unit is extremely small having a weight of 320 gms and dimensions of 35 mm high, 63 mm wide and 160 mm deep. It comes complete with power cord, coaxial cable, screws and other hardware. The unit contains a total of 6 transistors, 10 diodes and 1 integrated circuit, and further information and details can be obtained from Vicom International in Melbourne, phone 699 6700 or their Sydney office, phone 436 2766. ■

IC-ML1

Icom has announced the release of their power booster for the IC2A hand-held. The IC-ML1 is a ten watt power booster designed to facilitate mobile operation of the IC2A. Because of Its small size and light weight the amplifier can easily be mounted in a small space permitted in modern motor cars.



The DC voltage for transmit/receive switching is superimposed on the RF coaxial cable, this permits the amplifier to be controlled by a single coaxial cable connection. It also has the added benefit that, unlike carrier control methods, there are no initial transmission cut-offs occurring. in addition to this, the IC-ML1 has APC circuit. When the collector current drain is over that specified, the APC circuit functions to deactivate the booster to protect the final transistor from damage.

The package contains 17 semi-conductors and its performance is bound to be a winner with amateurs who already have the popular IC2A hand-held.

There are a limited number of these power boosters in stock at Vicom International Pty. Limited, 68 Eastern Road, South Melbourne, phone 699 6700, or at their Sydney office, 339 Pacific Highway, Crows Nest, NSW, phone 436 2766. ■

AWARDS COLUMN

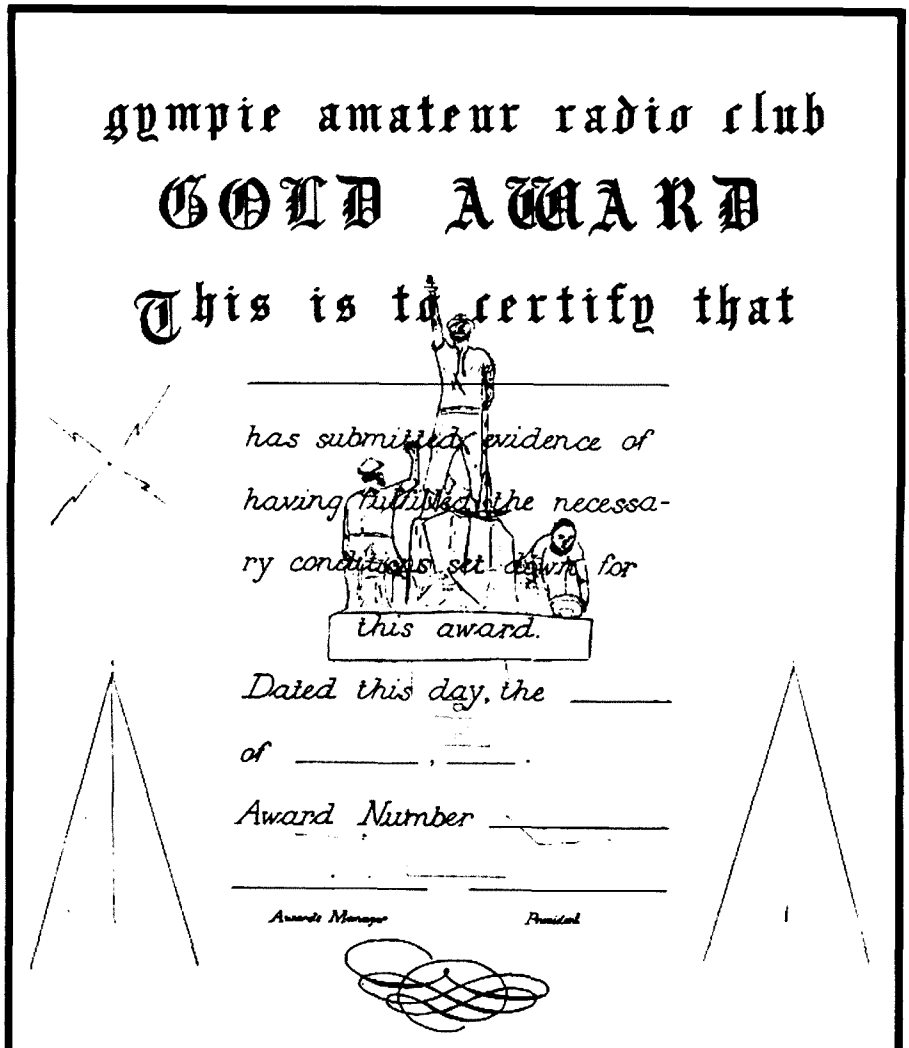
Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

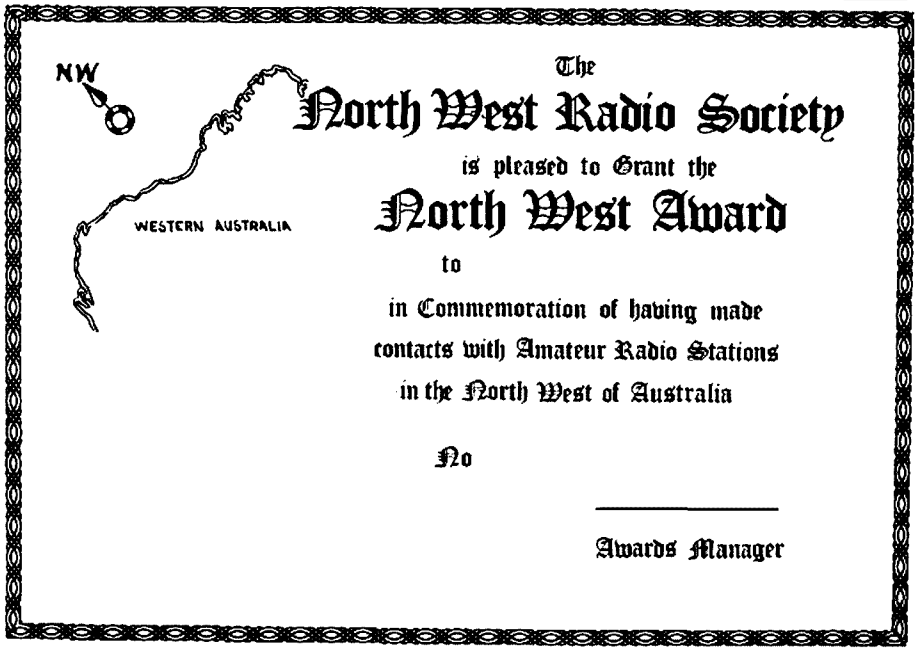
"GOLD AWARD"

1. This award is available from the Gympie Amateur Radio Club to all licensed amateur radio stations and shortwave listeners.
2. Stations must obtain ten (10) points by working Gympie Amateur Radio Club members. Overseas stations need only obtain five (5) points for qualification.
3. Stations can be worked on any band using any mode. Active modes are SSB, CW, FM, AM, RTTY.
4. Contacts on HF count as one (1) point each. Contacts on VHF (52 MHz and up) are worth two (2) points each.
5. A contact with the club station (VK4WIH) count as two (2) points on any band.
6. Contacts via repeaters are not eligible.
7. Stations can be worked once on each band.
8. QSL cards are not required. Applicants must send a log extract containing all relevant informations (date, time, frequency, mode, signal report, call sign).
9. Cost of the award is $1 or three (3) IRCs. Overseas stations $2 or five (5) IRCs.
10. Contacts after the 13th October, 1980, are eligible.
11. Address all applications to Awards Manager, Gympie Amateur Radio Club, PO Bor 384, Gympie, Qld., Australia 4570.
12. **Description**
    The award is printed on gold card with the motif and antennae towers in sliver and all other printing in black. It measures 225 mm x 265 mm.

NORTH WEST AWARD

1. **Purpose**
   To promote interest by Australian and overseas amateurs and SWLs in contacting amateurs in the North West Region of Western Australia and to promote radio activity within the area. The North West Region is defined as that area north of the 26th South Parallel.
2. **Rules and Conditions**
   Only contacts made from outside the North West area after 1st January, 1980, will count and an extract from the log countersigned by two other licensed operators is to be provided. The Committee reserves the right to alter the rules governing the granting of the award should future circumstances or changes require that action. However, in any event the first one hundred awards shall be granted on the basis of these rules. Should any dispute arise





regarding eligibility of applicants, or interpretation of these rules the awards manager's decision or that of the NWRS Committee shall be final.

For the purposes of the awards different locations shall be taken to mean two areas 40 km *or more* apart. Contacts must take place with both stations transmitting within 500 kHz of each other. On VHF, terrestrial repeaters cannot be used. Contacts can take place once only per station using any satellite recognised as one used primarily for amateur radio. Contacts can take place with the same station twice only providing that that station has operated from two different locations and 30 days has elapsed between contacts. Contacts may be made with portable or mobile "North West" stations so long as the area of the portable or mobile operation is stated. The operator applying for the award must have made all the qualifying contacts from inside an area of 50 km diameter, except that if all contacts are made while operating mobile then all contacts must be made from within one call prefix area.

3. **HF Award**
   The applicant must contact at least one of the club stations, VK6MN in Newman or VK6ANW at Port Hedland, plus any other amateur operator within the designated North West area according to the following:

No. of Contacts Required	No. of Different Bands Used
6	Three or More
8	2
10	1

Contacts must be with operators from at least three different areas within the North West, and over a minimum period of 48 hours from first to last contact.

4. **VHF Award**
   The applicant must contact three North West stations in at least two different locations over a minimum period of 24 hours on any authorised band over 30 MHz. Contacts must occur within the terms of the operator's licence.
5. **SWL Award**
   The applicant must submit a countersigned extract from their log for either HF or VHF contacts made according to the conditions detailed above.
6. **Cost of Award**
   (a) VK Operators, $1.50.
   (b) Overseas Operators, $A2.50.
7. **Applications**
   Applications shall be forwarded to Awards Manager, North West Radio Society, PO Box 282, Port Hedland, Western Australia, Australia 6721.
8. **Description**
   The award is printed in black on cream and measures 295 mm x 210 mm

ERRATA IN MARCH LISTINGS —
DXCC top listings should read:
Phone: VK3OT, 288/289.
Open: VK3NDY, 233/234. ■

TRY THIS

WITH THE
TECHNICAL EDITORS

CURING TVI

Here is an easy way to solve your neighbour's TVI problems. Yours, too, providing the TVI is caused by HF fundamental overload, not by VHF parasitics or harmonics radiated on the TV channels. Essentially it is a quick and simple high-pass filter, made as follows.

Cut the 300 ohm ribbon between the TV set and the wall socket, twist and soldier as in Fig. 1. Now switch the TV set to Channel 2, and overlap the two ends. Carefully adjust the amount of overlap until noise-free reception is just achieved, i.e. less overlap produces visible snow. Now tape the ends together as in Fig. 2.

If coax is used, no problems! Just use two 300/75 ohm TV baluns and a short length of ribbon, as in Fig. 3.

I was causing severe TVI on all channels to three of my neighbours. Two of them had very corroded antennas which had been up for over 20 years. Use of the method described completely cured all traces of TVI, and I do run 400W PEP on 20 metres.

The overlap of the feedline provides enough coupling for VHF TV signals to pass, but not *enough for HF to* get to the TV set.

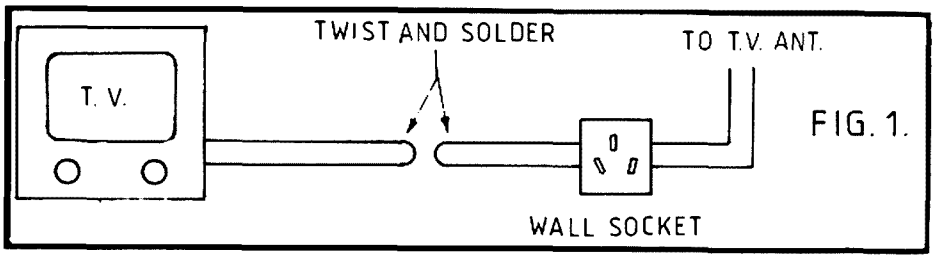


FIG. 1.

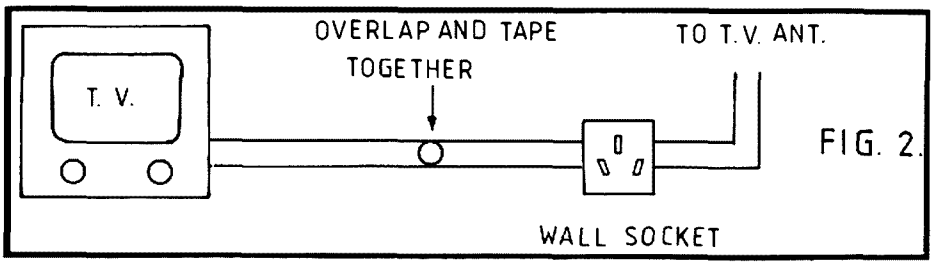


FIG. 2.

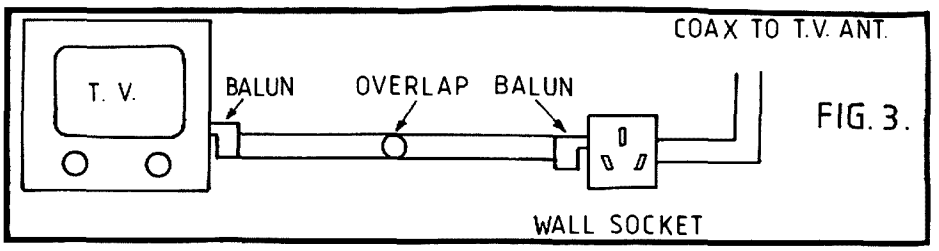
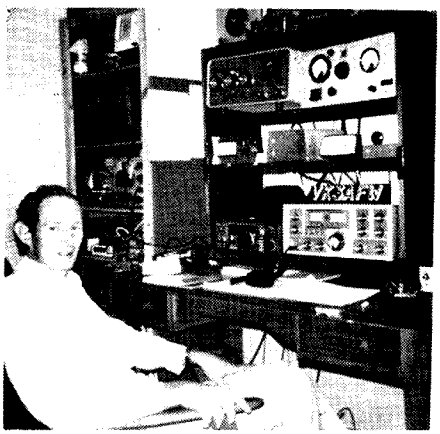


FIG. 3.

I must point out that, while this *method* is excellent in normal signal areas, it may *not* be too successful in TV *fringe areas.*
Lionel Curling VK3NM. ■

NOVICE NOTES



Edited by Ron Cook VK3AFW

In his regular column, "Technical Topics" (TT), Pat Hawker G3VA recently asked the question are all capacitors just capacitors? He then discussed the difference between the various types of resistors and capacitors available over the counter. Because this is an important topic for the novice and because Pat presents the story so well, I have reproduced his article here, with acknowledgements to Pat and the RSGB. The article was published in TT in the October 1980 issue of Radio Communication.

RESISTORS

The once-ubiquitous *carbon-composition* resistor is today almost obsolete, having been largely superseded by the *carbon-film* resistor. The film type tends to be smaller, more stable and more readily manufactured to rather closer tolerance. The old high-value carbon-composition resistor, though reliable, when expected to carry a continuous direct current had a tendency for the resistance to increase greatly in use, bringing about gradual deterioration in performance of the equipment.

Carbon-film resistors still retain some of the problems associated with the use of carbon: they have significant negative temperature coefficient (about —300 parts per million/°C); they can be "noisy", particularly when of high ohmic value; and they are subject to flash-over where there are high voltages across the component. Carbon-film resistors with ohmic values up to hundreds of megohms are available.

So, in turn, carbon-film resistors are tending to give way to *metal-film* types, particularly where higher wattage dissipation is involved. Their use has become normal for wattage ratings of 0.5W to 3W. Temperature-coefficient is positive, about 300 ppm/°C. In low-wattage applications, they offer little real advantage over carbon-film types, but may be specified where it is felt more convenient to use a single type of component. Generally it will be safe to use carbon-film or even carbon-composition types provided that they are of correct wattage rating and of suitable physical size.

For high-wattage, *wire-wound* types are still often necessary; it should be appreciated that unless of a specially-wound form, such resistors are very inductive.

An earlier form of carbon-film resistor was the *cracked-carbon;* these used to be described as *high-stab* resistors. Metal-*oxide* (e.g. tin oxide) resistors are often used In professional equipment.

FIXED CAPACITORS

Capacitors present an altogether more difficult problem than resistors; there now seem to be umpteen types, some intended for specific requirements. The suitability of a capacitor for any given application needs to be judged both on basic characteristics and its physical construction: the material separating the plates governs not only the value of the capacitance (dielectric constant) but also its efficiency at different frequencies (power factor); together with the surrounding package it will also affect the DC insulation resistance. The form of construction and the length of the leads govern its "self-inductance", and hence the way the capacitor performs at high frequency. Because of all these variations, basic types of capacitors cannot usually be readily classified as being suitable up to some specific frequency. For example, a capacitor plus a given length of lead may form a series- resonant arrangement which can make it very effective as a bypass capacitor at a frequency higher than might otherwise be the case (see, for example, *VHF-UHF Manual*). Certain forms of construction enable components to cope well with heavy pulses of RF current and thus make them more suitable for use in electrical-interference suppression applications, etc. Then again, it must always be remembered that the DC voltage rating of a capacitor represents some three times or so the corresponding AC rating (a minimum DC rating of about 1,000V DC is needed for use with 240V AC mains, although it Is preferable to use a capacitor rated for AC).

So in practice many different types are now offered: some may be required to provide a very high capacitance in a small volume; others to form effective bypass capacitors up to the microwave region; still others to maintain stability of capacitance over a long period, or alternatively to change value according to a specific temperature coefficient in order to permit them to be used as temperature compensators in tuned circuits, etc.

Then there are the confusingly large number of plastics materials, some known by trade names. The following notes are therefore far from complete, and it will often be advisable to check catalogues, etc., to discover the characteristics of particular types.

Electrolytic capacitors are now available up to extremely high values (the Americans have even marketed 100F units!) but still tend to permit significant DC leakage current to flow through them. They have a pronounced dislike for high temperatures or high ripple currents, and have limited shelf-life (after being out of service for a considerable period they may need to be "reformed" by initially connecting them across their nominal voltage via a series resistor); they are "polarized" and must therefore always be connected with regard to polarity. Miniature etched-foil electrolytics are today the most widely used form. They are often very inefficient at RF, and suitable RF bypass capacitors may need to be connected across them. Computer-grade electrolytics tend to have lower leakage current and will permit larger pulses of current to flow In and out of the unit.

Tantalum electrolytics tend to cost more but can be much smaller, usually last longer, have much lower leakage currents, and work better at higher frequencies. If a tantalum type is specified it is advisable to use one. Values are often colour-coded, using the standard colour code and reading downwards from the top of the compact package. Large numbers of tantalum electrolytics are now in use for domestic equipment, etc.

The old general-purpose AF and low RF *waxed-paper* tubular packages, which often lost much of their initial DC insulation resistance after a few months' use, have been superseded by *metallized-foil* or, for more critical applications, *metallized-film*

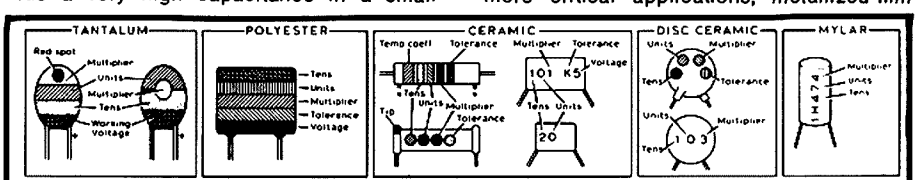


Fig 1. Some of the many colour coding systems found on UK, American and Japanese fixed capacitors. Unfortunately other (or no) markings may also be encountered.

Colour	Significant figure (1st, 2nd)	Decimal multiplier (M)	Tolerance (T) (per cent)	Temp coeff (TC) (parts/10⁶/°C)	Voltage (V) (tantalum cap)	Voltage (V) (polyester cap)
Black	0	1	±20	0	10	–
Brown	1	10	±1	-30	–	100
Red	2	100	±2	-80	–	250
Orange	3	1,000	±3	-150	–	–
Yellow	4	10,000	+100, -0	-220	6·3	400
Green	5	100,000	±5	-330	16	–
Blue	6	1,000,000	±6	-470	20	–
Violet	7	10,000,000	–	-750	–	–
Grey	8	100,000,000	–	+30	25	–
White	9	1,000,000,000	±10	+100 to -750	3	–
Gold	–	–	±5	–	–	–
Silver	–	–	±10	–	–	–
Pink	–	–	–	–	35	–
No colour	–	–	±20	–	–	–

Units used are ohms for resistors, picofarads for ceramic and polyester capacitors, and microfarads for tantalum capacitors.

capacitors. Paper containers have given way to plastics, i.e. *polyester* sealed packages, including polyethylene terephythalate (PETP) and polycarbonate. Plastic-film PETP capacitors are generally satisfactory for standard applications, polycarbonate types for high-voltage applications. Both foil and paper capacitors may be housed in tough thermosetting resins in the general category of polyester units. Metallized-film polyester types are of smaller size than foil or paper types. Polystyrene capacitors are often used where good stability is required at medium frequencies (e.g. for IF transformers, oscillator circuits, filters, etc.). Metallized paper capacitors are used where high values need to be combined with stability, and are available up to tens of microfads. It should be noted that thermoplastic materials and polyester foil capacitors should not be expected to withstand excessive heat during soldering (polystyrene types may be changed downwards in value). Heat-induced faults can appear as "intermittents". The common Mullard C280 polyester capacitors are metallized PETP foil capacitors with standard colour coding.

Plastic film capacitors have very thin layers of metal deposited on the dielectric film. They can be self-healing after an insulation breakdown, and can be significantly smaller in size than foil types of equivalent rating.

Polystyrene is one of the relatively few plastics used as a dielectric and needs to be hermetically sealed. Larger values may be in rectangular metal boxes, while smaller values are in metal tubes with PTFE insulators. Polystyrene capacitors have low temperature coefficients and may be specified where good temperature stability is needed at high frequencies.

An increasing problem is the many different ways of indicating the values: Fig. 1 shows some British and Japanese codings.

For high-stability applications at HF and VHF (e.g. where the capacitor forms part of a tuned circuit but is not required to provide temperature compensation), *silver-mica* capacitors are generally specified, and these are available to fairly precise tolerances. There are also various *disc* types of mica capacitors useful for interference suppression, decoupling, etc. Mica capacitors are also still useful where high RF currents are involved in transmitting applications.

For many RF applications *ceramic* dielectric capacitors are very widely used, available as "High-K" or more often as "low-K" devices with specific temperature coefficients. Tolerances are usually greater than for silver-mica units. Low-K types are used for temperature compensation of tuned circuits. High-K units are useful for RF bypassing, are available in various disc, tubular, feedthrough forms, and can generally be used up to about 1 GHz since they can have low series inductance. But always remember that a straight 1 in. length of 23 SWG wire used as a connecting wire represents a reactance of about 16 ohms at 100 MHz! Ceramic capacitors suitable for use to above 10 GHz are available.

Finally one must have some sympathy for the chap who complained that none of his suppliers stocks "nF" values: so a reminder that it will not make much difference to use a 0.001 uF or even a 1,000 pF value instead of 1 nF, or 0.1 uF instead of 100 nF — or vice versa! But note that some designers tend, if only subconsciously, to link a "1,000 pF" capacitor with its RF capabilities, but 0.001 uF or 1 nF types with their performance at AF.

From these notes it will be seen that the question of whether it is safe to substitute a different type of capacitor, if one is available of roughly the same value, can only be decided with reference to the actual circuit application of the component: does this call for a precise value and close tolerance? How important is stability and/or its temperature coefficient? Is the voltage rating adequate? Does it have to cope with signals at 50 Hz, AF, IF, HF, VHF or UHF? Is it physically the right size? Very often in such applications as bypassing, Inter-stage coupling, etc., *is* permissible to use substitutes: the key factor, as in so many things, is to know what you are doing!

Thank you, Pat, for a timely article. ■

NOVICE NOTES

THE ACTIVE ANTENNA

T. W. Barnes VK2ABI
74 Cabbagetree Lane, Fairymeadow 2519

Some time ago, in "Amateur Radio", R. R. Cook VK3AFW, published two articles on an "Active DX Receiving Antenna".

These articles impressed the writer very much, because of his interest in general coverage high-frequency reception. This article describes a circuit devised for this purpose.

The articles proposed an active antenna be erected outside, for example, on the house guttering. The active antenna is aperiodic in the sense that it is no more than 0.1 of a wavelength long at its greatest frequency of use and it is directly coupled to a wide band pre-amplifier, whose output is fed to the antenna terminal of the receiver, in this case by low impedance coaxial cable.

A counterpoise earth was suggested, the advantage of this is obvious.

However, if the risk of coupling line interference into reception were taken, the house wiring earthing system could be made to act as counterpoise and if at the same time a neat metal box were made to house the pre-amplifier and on this the antenna mounted, then the box could be attached to the back of the receiver, giving a very versatile arrangement, in which the antenna goes with the receiver.

The antenna was made from a one metre length of 2.4 mm diameter bare stainless steel welding rod. The power supply came from the receiver and because of this, two radio frequency chokes used in the original project could be done without — a significant saving in cost.

Two of these active antennas have been made, one for a Trio 9R 59DS valve-operated receiver, the other for an FRG7. The power supply for the former was obtained from the 6.3 volt filament supply by rectified/doubler, via the remote operation socket and for the latter, via a small plug and socket specially fitted, from the filter choke in the power supply. See Figs. 2A and B.

The total consumption of the pre-amplifier is approximately 9.0 milliamps.

In connecting the pre-amplifier to the receiver, coaxial cable is not used; direct, short, wire connections are used made to the earth terminal, to the antenna and to

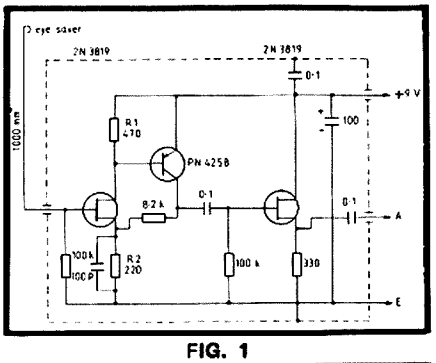
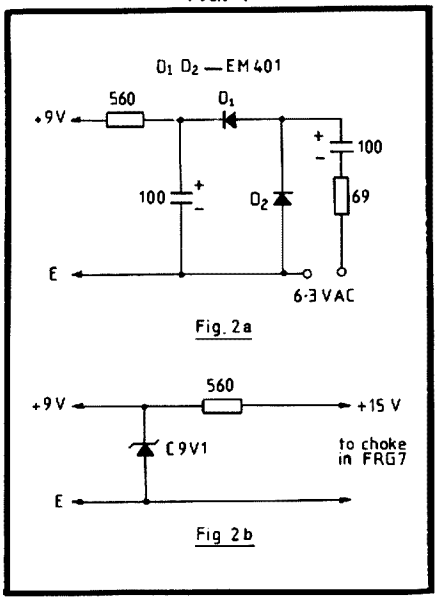


FIG. 1



the power supply for the pre-amplifier. In the case of the FRG7, a short jumper connects the short wave antenna terminal to the broadcast antenna terminal.

The results for each are outstanding, quiet and sensitive from 550 kHz to 30 MHz, and the writer's gratitude to Mr. Cook is acknowledged — reference to the original articles is recommended.

CIRCUIT DETAILS

The circuit of the pre-amplifier is shown in Fig. 1, Figs 2A and B show the power supplies. Resistors R1 and 2 in Fig. 1 may need minor adjustment for greatest output and quieting; in particular the voltage across R1 should be about 0.7 volts and the EcE on the transistor about 2.5 volts. The 100 pF condenser lifts the output in the upper range of frequency.

The transistor PN 4258 is specified as a saturated switch; it has an FT of 700 MHz, works well, but has a Vceo of only 12 volts. It was the only suitable PNP transistor readily available.

The 560 ohm resistors in Figs. 2A and B also give protection against short circuits or reversed connection to the receiver.

REFERENCES

1. Cook, R.R. Amateur Radio, November 1978, Vol. 46, No. 11, pp. 15, 16.
2. Cook, R. R. Amateur Radio, February 1979, Vol. 47, No. 2, p. 31.

■

WICEN

CYCLONE MAX

The following is a summary of events seen from the Darwin end.

On Tuesday, 10th March, a Cyclone Watch was announced and contact was established with Alice Springs and Gove.

On Wednesday morning it was changed to a Cyclone Warning and WICEN members were put on stand-by. By midday most Government departments and large shopping centres had closed down so we had all afternoon to prepare.

Local skeds on 80 and 2 metres and interstate on 20 were conducted at intervals during the afternoon and into the evening. By 2200 IK most members had dismantled normal antenna systems and were operating off emergency antennae.

Contact was maintained both locally and interstate the whole evening up until the all-clear was given Thursday morning. Having checked that there was no requirement WICEN was stood down. Interstate contact was kept up to midday.

We are appreciative of the assistance given by interstate WICEN operators who maintained contact all night at the expense of many hours of lost sleep.

It was reassuring to observe the efficiency of VK5 WICEN as they organised rosters, etc.

The cyclone was fortunately not serious. To the SES and WICEN it was an invaluable test of procedures and I am confident that in the future they will be sufficient. My thanks to you all.

There are three points I should like to make in conclusion.

1. The Net Control Station should (and did) maintain strict control of the net even to the point of being ruthless. As conditions deteriorate this job will become more difficult.
2. The best way other stations can assist is to report into the net and then maintain radio silence unless needed. The NCS will decide when you are needed.
2. Standard (SES/Military type) voice procedure should be used as amateur procedure is too long-winded.

73s. T. J. Connell VK8CO,
WICEN Co-ordinator, Darwin. ■

EMC

(ELECTROMAGNETIC COMPATIBILITY)

If radio frequency interference is causing you a problem, your are reminded that "Advice on all types and aspects of interference (PLI, TVI, AFI, etc.) is available from the National EMC Advisory Service".

SEND DETAILS TO
VK3QQ,
Federal EMC Co-ordinator, QTHR.

LISTENING AROUND

With Joe VK2BJX, Buronga, NSW.

AR's recent story about an elderly amateur who, because of his age, was unable to raise the finance to buy himself a rig, and of how a well known Sydney businessman who sells rigs came to his aid, was a beaut story, and shows that there are yet some kindly folk around. The story prompts me to tell you of the difficulties I also have had, for it seems that when one is over the age of 60 one is regarded as a financial risk. You might kick the bucket before you can repay the loan shark.

For economic reasons the Kraco CB rig I bought in 1977 for 27 MHz was converted to give me the 28 MHz band, and I use it via a DS high-powered transverter (K3134) to get on to 80 metres. An AWA carphone (old valve type) gives me Mildura's channel 8 on two metres, and apart from this, despite my full call, I have nothing to operate on the other bands.

So with hopes of getting going on other bands, I called up a Mildura finance firm to raise the wind, as it were. "There'll be no problem," said the managerial voice on the other end of the phone. Just call in and see us, and when we get the OK from our Melbourne office HQ, you should have the money within a day or two, and we'll be happy to do business." *("COME INTO MY PARLOR* said the Spider to the Fly" (me).)

So in I went and was welcomed with blossoming smiles all around, and was ushered into that Holy of Holies — the Manager's Office. There was the usual cordial handshake and toothy, artificial business-like smile. He bid me sit opposite him at his desk, and there began some apparently casual questioning, Name, address, how long had I been there, etc., and all went well until he suddenly asked "What age are you?" "Sixty-three," I replied, as honestly as I had done to the earlier parts of the inquisition. Then his attitude suddenly changed from one of good-neighbourliness to being quite abrupt. "Sorry," he said coldly, "we can't do business with you . . . we'd be BREAKING THE LAW if we did" . . . a cock and bull story if ever I heard one . . . and I was shunted out the office door with now no smiles from anyone on my departure.

So here I am, many months later, still battling along with the faithful Kraco which has served me so well these last four years or so, and the DS transverter which still puts out very good quality RF and audio. Maybe if I wasn't so truthful and lied about my age to Mr. Moneybags, I just might have better gear by now.

So all you "Oldies" who have worked so hard after a lifetime of labour at some other occupation and bringing up your family, to get the ticket at your age (and it isn't easy in middle age), remember the lesson that has been related here by VK2BJX, when you go to see your local Mr. Moneybags to get the dough for your rig — even though he may charge 36 per cent interest — don't tell Mr. Big (no relation to Ronald) your right age if you think you don't look it. And, incidentally, would my Mr. Moneybags have BROKEN THE LAW as he said by granting me a loan? Or was he just fibbing?

Have you heard all the interlopers who are slowly but surely creeping into the 80 metre band? Especially around midnight and early morning, there's commercial BC, high speed CW, RTTY and a lot of other rubbish; and there's the Nips with their fishing boats. I read a story recently of how when Middle East intruders crept in on other bands, somebody wrote to a Middle Eastern Potentate whose Princes were also hams, telling him what was cooking, and result was the Potentate swiped the intruders off the band. Wonder what would happen if we all wrote to that other Oriental Potentate, the Emperor, and asked him to remove his fishing boats off our band! They say they're inscrutable. Maybe he might even do it. At any rate, can anyone tell me if these JAs are Japanese radio amateurs on the fishing boats or are they just commercials? There seems to be a dearth of call signs floating around when I've been listening to the jargon. It looks as if they may not be only fishing boats but PIRATES as well.

And there's the ones that yabber on and play music. I've heard one mentioning "Bangkok" several times on the lower end of 80. One on the higher end was heard to be playing the identifying call of Peking Radio. If we don't do something about it, more of these interlopers will creep into that band and it won't be just in the early morning hours when most VKs are asleep either. It will be a case of "anything goes" if we don't watch out.

In recent weeks some of us working the 80 metre band have been annoyed by *carrier droppers* who follow us from one frequency to another. Let's hope the official monitoring stations are keeping tag of these birds.

And now for some news about amateurs that I hear or speak to. A German on 28 MHz was heard telling a Yank about his cubical quad on 160. Highest part was 400 feet above ground with feedpoint about 200 feet. What a monster! The German was an official of the German Telecommunications Authority.

Was pleased to have words recently in different QSOs with "Shep" VK5DC, of Heathpool, SA, and Harry VK3XI (near Warrnambool), Victoria. "Shep" came on the air in 1928 when I was just 11 years old learning readin', ritin' and arithmetic at St. Mel's School, Campsie (Sydney). What a marvellous story of the early history of amateur radio either of these two blokes could tell. Harry is famous for his antenna farm and "Shep" gets a mention in the book "A History of Radio in South Australia" (1897-1977) written by J. F. Ross 1978. I'm old enough to remember the days when the amateurs were allowed to play music on the HF end of the broadcast band each Sunday morning and doubtless both "Shep" and Harry have done just that. Harry has been on the air 50 years.

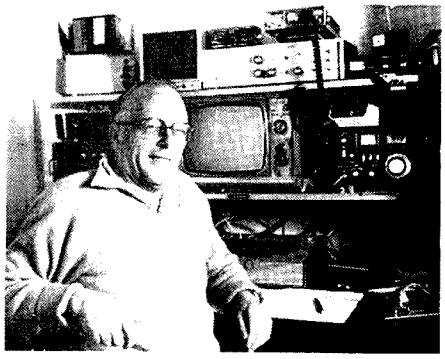
Received a letter recently from Owen VK1CC, of Downer, ACT. A letter which encourages and flatters me a bit. He writes: "Only read your column a few times but have enjoyed it every time. 'Listening Around' is a pleasant interlude in AR." He writes that he's very impressed with the social value of amateur radio, "for there are a considerable number of Old Timers who link up with their mates on a daily or weekly basis. *Breaks down the loneliness that so many old people suffer from*", and with that I can heartily agree. He continues: "Congratulations on getting your full call. Guess we will have to wait for the next column to find out what it is." Well, Owen, my brand new full call was written into the copy last time but somehow it was my Novice call that appeared under the photo.

"Of all people mentioned in your column, the only one I've worked is Des VK3BSB. Still hear him occasionally. Sure are a lot of interesting people out there. Frank 2AMI, probably the longest licensed amateur in Australia, can still handle the hand pump with ease at age 75. Col 2ASF has a recording of famous CW signals — the Titanic going down, Byrd over the South Pole, etc." Incidentally, Smokey Dawson, who recently was guest in the Rev Alex Kenworthy's talk-back on 3AW, mentiontd a Melbourne amateur whose QTH Smokey used to sing from when amateurs were allowed on the end of the BC bank in days of yore, who had also been in contact with Admiral Byrd. If I can find my notes, I'll include details in my next column. Owen ends his letter as follows: "Anyway, I hope a few people have written to you and given you some feedback . . ." Oh well, I asked for it!

Now before I sign off, does anyone know how to key a Kraco direct? I believe there is a method, but don't know the details. 73s to all from Joe VK2BJX. ■

CONTESTS

Wally Watkins VK2DEW
Box 1065, Orange 2800



CONTEST CALENDAR

May

2/ 3	Alexander Volta RTTY	CQ 5/81
9	World Telecommunication Day — Phone	CQ 5/81
10	"Corona" 10 Metre RTTY	CQ 5/81
16	World Telecommunication Day — CW	CQ 5/81
23/24	IV IBERO-American Contest	AR 5/81
30/31	CQ WW WPX CW Contest	CQ 2/81
30	Townsville Pacific Festival	AR 5081

June

20/21	All Asian Phone
27/28	ARRL Field Day

June

1	Canada Contest
4/ 5	Venezuelan Phone
25/26	Venezuelan CW

EXCHANGES

World Telecommunication Day — RS(T) plus your ITU zone number.

1980 All Asian Phone results:

Australia —

*VK5OU — 14 MHz	1127	points
*VK2XT — 21 MHz	42924	points
*VK6NAT — 28 MHz	18928	points
*VK6FS — M	90429	points
VK6AJW — M	49600	points
VK2BYX — M	29876	points
VK6JS — M	20304	points

* Denotes a JARL certificate winner.

RULES

The Townsville Pacific Festival Contest 1981.

This contest is promoted in conjunction with the Townsville Pacific Festival and aims to increase activity on all amateur bands of stations in all countries bordering the Pacific Ocean.

Date and hours: 30th May, 1981, 0830Z to 1330Z.

Sections:

(a) Tx Phone HF.
(b) Tx CW HF.
(c) Tx VHF.
(d) Rx.

Within each section there will be a subsection of area as per scoring table 3 (a), (b), (c) (d).

1. Except as specified below rules on cross band and mode, repeaters, log keeping and submission will be as per 1980 RD Contest.
2. Stations may be worked repeatedly on all bands and modes provided that one hour has elapsed since the previous contact on that band and mode.
3. Scoring for contacts with stations in countries:
   (a) Not bordering the Pacific Ocean — 1 point.
   (b) Bordering the Pacific Ocean (except (c) plus (d) below) — 2 points.
   (c) VK4 stations (except (d) below) — 5 points.
   (d) North Qld. stations (VK4 north of 22 deg. south lat.) — 10 points.
   (s) Club station VK4WIT.
   (f) VHF contacts over 100 km — 5 points bonus per contact.
4. Logs must be submitted before 25th July, 1981, to —

   The Contest Manager,
   Townsville Amateur Radio Club,
   P.O. Box 964,
   Townsville, Qld. 4810.
5. Awards: A perpetual trophy is held by the TARC and will be inscribed with the call sign of the operator with the best performance. The operator will receive a smaller trophy. Awards will be given for outstanding performance of stations in various areas.
6. The Contest Manager's decision will be final and no disputes will be entered into.
7. This is a friendly contest and participants could qualify for the Worked North Queensland Award and awards issued by the Cairns and Mackay Radio Clubs.

☆ ★ ☆

IV IBERO — AMERICAN CONTEST

Sponsored by the Union de Radioaficionados Espanoles (URE) Granollers and Mollet del Valles Delegations.

From 2000Z May 23rd until 2000Z May 24th, 1981.

80 to 10 metres, phone only.

Exchange signal report and serial number. Count one point per QSO and IBERO-American countries count as multiplier. Stations and multipliers may be worked once per band. Multiply QSO points by sum of all bands for final score.

Logs must contain band, date, time GMT, call sign, exchanges sent and received, points and multipliers.

An award is issued for more than 50 QSOs.

Logs should be received no later than July 15th, 1981, by URE, PO Box 62, Mollet del Valles, Spain.

IBERO-American countries valid are: CE, CO, CR, CT, CT2, CT3, CP, C9, CX, C31, EA, EA6, EA8, EA9, HC, HI, HK, HP, HR, KP4, LU, OA, PY, TG, TI, XE, YS, YV, ZP.

☆ ★ ☆

JOHN MOYLE MEMORIAL FIELD DAY CONTEST 1981 — RESULTS

SECTION (A)

Portable, Transmitting, Phone

24 Hour

3CGR	5095	4ADB	440
5QX	4158	4AHO	420
4NBW	2549	4KJV	390
5ABS	1484	4KAC	360
5AAJ	1209	4ZRQ	330
6NWA	844	4ZIP	290
4CDX	514	4VX	260
6YE	562	4NDW	260
4AG	450	4NLV	60
4KE	450		

6 Hour

3BRL	949	4VHY	605
3YSQ/NZM	949	2BQS	424
3BSP	855	4ABV	381
3ADW	647	7AL	335
3ZA	644	5YO	184

SECTION (B)

Portable, Transmitting, CW

24 Hour (No Entries)

6 Hour

2JM	322	5DL	114

SECTION (C)

Portable, Transmitting, Open

24 Hour

5OR	1461	2DBA	1076
2VUT	1268	2NWL	428

6 Hour

2EL	1300	3SP	323
5MX	1002		

SECTION (D)

Portable, Transmitting, Phone, Multi-op

24 Hour

3ATL	12437	5ACE	4459
4WIZ	12425	4FM	3732
3ANR	10798	3AWS	3006
3ATM	8005	5ARC	2592
3BML	7831	4WIT	2486
5SR	6349	4WIG	2211
3BGG	6275	8DA	2135
3SAS	6080	3BHD	1690
3XK	4846	2AGH	509

6 Hour

4WIN	3401	4YX	1198
3ATO	2069	3DIP	949
4AMA/MM	1528	2BOR	758
3BYY	1209	3RV	502

SECTION (E)

Portable, Transmitting, Open, Multi-op

24 Hour

2DBK	8389	3BVW	2965
2WG	8104	2BTZ	2578
4WII	6622	5LZ	2229
1WI	5262	5WC	1665
2AOA	3205		

6 Hour

3BWJ	2000	3AFW	1427

SECTION (F)

VHF, Transmitting, Portable/Mobile

24 Hour

3YBK	1621	3YTT	541
3YIW	1302	2YRP	425
2DFY	972	2ASY	82

6 Hour

3AVJ	744	7ZIE	297
3ZJS	740	7ZAT	260

SECTION (G)
Home Station, Transmitting
24 Hour

2DXG	1440	2BIP	340
3ZI	1335	3YCU	330
3AEW	1045	4ABY	95

6 Hour

1MH	735	1DN	375
2DCL	660	5RK	180
5NRN	630	7NBF	165
5NLC	490	2BSB	165
2VX	430	2PGU	112

SECTION (H)
Receiving of Portable and Mobile Stations
L40804, Nancy Heaton, 2900 points.
L30042, Eric Trebilcock, 300 points (CW only).
Check log from VK1CC. ■

VK/ZL DX Contest 1981

Neil Penfold VK6NE
VK/ZL/O Contest Manager

The WIA and NZART, the National Amateur Radio Associations in Australia and New Zealand, invite world-wide participation in this year's VK/ZL DX Contest.

WHEN?

Phone
24 hours from 1000 GMT, Saturday, 3rd October to 1000 GMT, Sunday, 4th October.

CW
24 hours from 1000 GMT, Saturday, 10th October, to 1000 GMT, Sunday, 11th October.

RULES

1. There shall be five main sections in this contest:
   (a) Transmitting Phone.
   (b) Transmitting CW.
   (c) Receiving — Phone and CW combined.

   For VK/ZL only
   (d) Transmitting Phone — 8 hour section.
   (e) Transmitting CW — 8 hour section.
2. All amateur bands may be used but no crossband operation is permitted.
3. VK/ZL stations, irrespective of the location, DO NOT contact each other for contest purpose EXCEPT on 80 and 160 metres.
4. Only one contact on CW and one contact on Phone per band is permitted with any one station for scoring purposes.
5. Only one amateur is to operate any one station under the owner'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 station.
6. **Cyphers.** Before points can be claimed for a contact, serial numbers must be exchanged and and *acknowledged*. The serial number of five or six figures will be made up of the RS (Phone) or RST (CW) report, plus three figures which begin with 001 and increase in value by one for each successive contact.
7. **Scoring:**
   (a) For the world: 2 points for each contact on each band with VK/ZL stations. *Single band* score will be QSO points for that band multiplied by total VK/ZL call areas worked on that band. *All Band* score will be total QSO points for all bands multiplied by total VK/ZL call areas worked on all bands.
   (b) For VK/ZL stations: points for each QSO on different bands as follows: 160m, 20 points; 80m, 10 points: 40m, 5 points; 20m, 1 point; 15m, 2 points; 10m, 3 points.

   Score for EACH BAND will be the total points score for that band multiplied by the TOTAL PREFIXES worked on that band. Final "All Band" score is the sum of the contact points from each band, multiplied by the sum of the multipliers on each band.

   Note W1, K1, WA1, WN1, A1, N1, are all separate prefixes and count as multipliers. W6AA/1 would count as "W1" not as "W6".

   80 metre section: for contacts on this band between VK and ZL, each VK and ZL call area is considered a "scoring area", with each contact counting 10 points. Each different call area will count as a multiplier.

   160 metres section: as for 80 metres except each contact counts as 20 points.
8. **Logs: Overseas Stations**
   (a) Logs to show date, time in GMT, call sign of station contacted, band, serial number sent, serial number received. Underline each new VK/ZL call area contacted. Separate logs must be submitted for each band.
   (b) Summary sheet to show call sign, name and address, equipment used, and for each band QSO points for that band, VK/ZL call areas worked on that band.

   VK/ZL Stations
   (a) Logs to show date, time in GMT, call sign of the station worked, band, serial number sent, serial number received.
   (b) Summary sheet to show call sign, name and address for each band, QSO points for that band, prefixes worked on that band, claimed score for that band. All band score computed from sum of points from each band, multiplied by the sum of the multipliers on each band.
9. A separate log for each band is required starting with 001 for each band.
10. Failure to remove duplicate contacts will incur heavy penalties and greater than 2 per cent duplicates will disqualify the entry.
11. Awards: Separate awards for Phone and CW.

    A — World:
    (a) Certificates to the top scorers in each country (call areas in W, J, U).
    (b) Depending on reasonable degree of activity, separate awards may be made for top scorers on different bands.

    B — VK/ZL:
    (a) Top scorers in each call area of VK/ZL.
    (b) Top scorers on individual bands.
    8 hour section:
    (a) and (b) as above.
12. Entries to:—
    WIA VK/ZL Contest Manager VK6NE,
    388 Huntriss Road,
    Woodlands 6018,
    Western Australia

    For VK/ZL, entries to arrive before December 31, 1981, and from overseas by 31 January, 1982.

SWL SECTION

1. The rules are similar to the transmitting section but it is open to all members of any SWL Society in the world. No transmitting station is permitted to enter this section.
2. The contest times and logging of stations on each band per weekend are as for the transmitting section except that the same station may be logged twice on any band — once on Phone and once on CW.
3. To count for points, the station heard must be in QSO exchanging cyphers in the VK/ZL DX contest and the following details noted — date, time In GMT, call of the station heard, call of the station he is working, RS(T) of the station heard, serial number sent by the station heard, band, points claimed.
4. Scoring is on the same basis as for the transmitting section and a summary sheet should be similarly set out.
5. Overseas stations may log only VK/ZL stations, but VK receiving stations may log overseas stations and ZL stations, while ZL receiving stations may log overseas stations and VK stations.
6. Certificates will be awarded as listed in the section under awards. ■

UNITY IS STRENGTH

Brisbane North Radio Club — John Moyle Field Day

Ken Elsworth VK4NPU

These photographs of the Brisbane North Radio Club's participation in the John Moyle Memorial Field Day on 7th February, 1981, were taken by Graham VK4NHM.

This year the function was held at Camp Mountain, which is about 15 km north-west of Brisbane.

All bands were operated and a high score was obtained under adverse weather conditions.

Open camp fire conditions were used for the exercise which covered a period 3 p.m. to 9 p.m. local time.

It was a good amateurs' day.

The club at Camp Mountain site.

The 10 metre quad antenna under heavy rain.

MAGAZINE REVIEW

Roy Hartkopf VK3AOH

(C) Constructional; (G) General; (P) Practical without detailed constructional information; (T) Theoretical; (N) Of particular interest to the Novice.

SHORTWAVE MAGAZINE Nov. 1980
QRP Operation (G) (N). Testing Transistors with a Multimeter (G) (N).

CQ Dec. 1980
World-wide CW codes (G). Antennas (G) (N). The W6WQC Keyer (P).

BREAK-IN Dec. 1980
Crowbars and SCRs (G) (P). SSB Transceiver (P). Week on Wallis Island (G). Botanist Contaminated (Humour WARO).

QST Dec. 1980
Terminal for RTTY (P). 80 Metre Antenna (G). Push to Talk Circuit (P). Wheelchair Mobile (G).

HAM RADIO Nov. 1980
7-28 MHz Super Quad (P). RTTY CQer (P). Transmission Line Circuit Design (T). AFSK Generator (P).

Dec. 1980
Yagi Antenna Design (T). ■

INTERNATIONAL NEWS

ITU
Arising partly out of the work of WARC 79 a number of special purpose ITU Conferences have been announced. There is a mobile telecommunications WARC scheduled for March 1982, a WARC for planning HF bands allocated to the broadcasting service lor January 1983 and October 1984, continuation of planning conference for Sound Broadcasting 87.5 to 108 MHz in two parts, September 1982 and October 1983, WARC on the use of the geostationary-satellite orbit and the planning of space services utilising it in March and October 1985, and a conference to establish criteria for the shared use of VHF and UHF bands allocated to fixed, braodcasting and mobile services in Region 3 scheduled for March 1986.

IARU REGION 3 ASSOCIATION
Amongst other matters discussed at the meetings of IARU R3 Association Directors in June 1980 it was affirmed that the Intruder Watch is a worthwhite activity and despite the problems involved it requires support.

10.1-10.15 MHz BAND
The Directors agreed that the best strategy regarding the new band at 10.1-10.15 MHz is for societies to obtain their administration's consent to release the band on 1/1/1982 and then after such agreement is reached, each society then determine how the band should be broken up by mode. As an aside, it is noted that the IARU R2 Conference in Lima last October adopted a policy that CW and RTTY only be used on this band.

NEXT IARU R3 CONFERENCE
Is scheduled to be held in Manila from 2nd to 5th April, 1982.

PRESENTATIONS OF EQUIPMENT
As mentioned in the last paragraph of International News in AR December 1980, it has now been announced in IARU R3 News, February 1981, that the JARL has presented, through the Pacific Society, items of amateur gear to the New Hebrides Amateur Radio Society, YJ8DX, in July 1980, in commemoration of the independence of the Republic of Vanuatau, and to the South Pacific University Amateur Radio Club, 3D2UR, in Suva, to commemorate the 10th anniversary of Fiji's indepedence. YJ8DX received an FT-101ZD and two FT-207R transceivers. 3D2UR received a TS-830S and two TR-2400 transceivers. It is also expected that an HF transceiver and two 144 MHz transceivers will soon be presented to the Solomon Islands Radio Society.

PARLIAMENTARIANS
In Japan a club station, JG1ZQU, came into being with Japanese Dietmen, their Secretaries and other Diet Secretariat Staff as members. At least five Dietmen hold amateur licences as well as 20 others. JI1KIT, a member of the House of Representatives, was elected President of the new club, and JA5FBH, also a member of the House of Representatives, as General Secretary.

JARL HAMFEST
Direct from JARL comes news o fthe 5th JARL Annual Hamfest to be held in Tokyo from 21st-23rd August, 1981. Amongst the many attractive and exciting events will be displays by manufacturers of their latest equipment, computer and microprocessor group and club displays relating to amateur radio and booths for disabled and blind amateur activities. Some 30,000 visitors attended the 1980 Festival, and more are expected this year.

NEW BANDS
An IARU R3 circular, which has been copied to Divisional Federal Councillors, sets out the latest known news about the new bands. Much of this information was included in the Federal tapes during April. If any member requires further information please refer to your Division. ■

CUSTODIAN
Phyllis Shanks W2GLB is custodian, however Gill Weaver VK6YL, 23 Corbel Street, Shelley 6155, Western Australia, has been appointed sub-custodian and may verify your QSL cards prior to the application being forwarded to America.

FEES
Sufficient postage or IRCs must be sent with QSL cards and application to enable the following:—

1. Safe return of cards by first class mail.
2. Certified application to be forwarded from Australia to America.
3. Certificate to be mailed from America to you.

ALARA Awards Manager Mavis VK3KS, QTHR. Please apply direct to Mavis for your ALARA award. Queries on joining to Geraldine VK2NQI or Mavis VK3BIR, or to myself. Please note new QTHR is 28 Lawrence Street, Castlemaine 3450.

Until next month.

73/33. Margaret VK3DML. ■

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

The NSW Branch call sign VK2DYL is now used on the ALARA skeds Monday nights, 2000 EAST, 3.565-3.570 MHz. Geraldine VK2NQI is net controller. All new girls are very welcome. If you don't have your own call yet, get your OM to call in for you.

Congratulations to Heather VK3AZU — a daughter. Maggie VK3NQQ — a son. Neeta VK3NMM — a son.

New calls: Sandra VK4VCJ now VK4ACJ; Marilyn VK3VUA now VK4DMS; Rae VK3VUK now VK3AYL; Daphne VK2NXD now K2K?? (call pending).

Jill VK6YL has been appointed as sub-custodian of DX-YLCC Certificate Awards.

REQUIREMENTS
Work and confirm 100 licensed DX-YLs with not more than 2 (two) from each country.

Each girl must be DIFFERENT, e.g. you may only claim Elizabeth YB0ADT from one of her locations, not all of them.

Contacts must be made from the same location or community not exceeding 25 miles from base station.

Any band or mode may be used, no cross-band contacts, no repeaters.

Present ARRL countries list is used to determine valid countries, currently H5, T4 and S8 do not count.

APPLICATIONS
Applications must be accompanied by QSLs *or* photo copies of *both* sides of each QSL card, together with a list in alphabetical order by COUNTRIES of call, name, band and mode.

BOOK REVIEW

By VK3ABP

"Amateur Radio Techniques" (7th edition), by Pat Hawker G3VA. Published by RSGB. £6.08 by post world-wide. (Approximately $12, probably less from Magpubs.)

It is with some diffidence that one attempts to do justice to this classic in its field. After all, a previous reviewer in this magazine (AR September 1978), writing of the 6th edition, has had the honour of his complimentary words being quoted on the cover of the 7th!

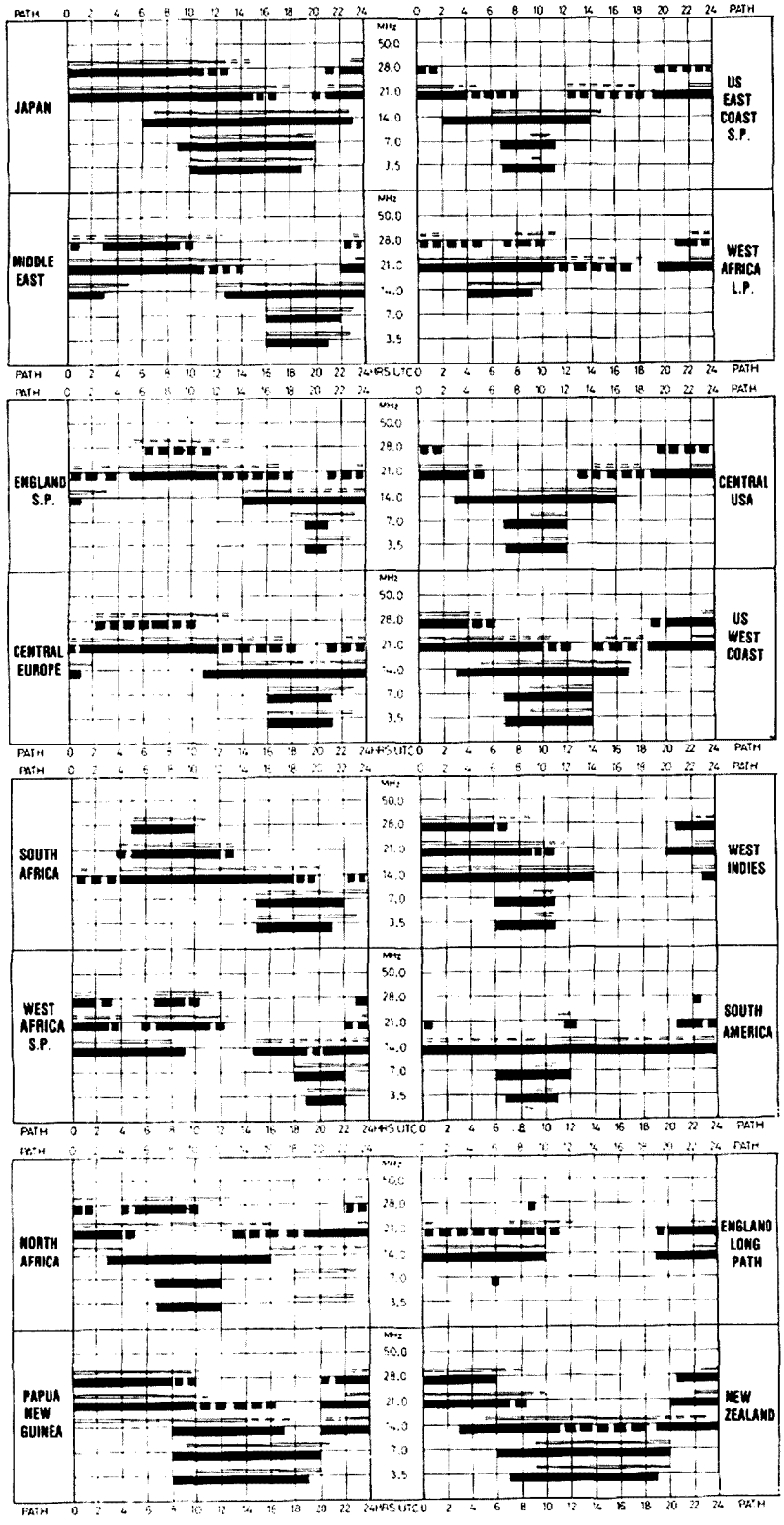
Nevertheless, one must risk an anticlimax, and compliment again. The 7th edition comprises 368 pages, of which about 50 are new or revised material. Some of the older pages still describe circuits using valves, but the new amateur need not be dismayed. Principles do not change, and what is a valve but an efficient oversized FET anyway?

As Pat Hawker states in the preface to the 7th edition, "This book does not aim at competing with the standard handbooks — rather at supplementing them". And what a supplement! Ideas, circuits, advice, suggestions; not only from the author's own wide experience, but from hundreds of other amateurs and engineers, writing in dozens of amateur and professional publications over a period of 22 years. Truly an editorial masterpiece for those who still like to build their own equipment. If the system you need is not described in this book, your requirement must be very unusual or, like G3VA, you too are at the forefront of amateur practice.

VK3ABP. ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

SUNSPOT NUMBERS

MONTHLY MEANS

6/80 — 157.2	7/80 — 135	8/80 — 135.4
9/80 — 154.5	10/80 — 162.9	11/80 — 146.5
12/80 — 176.1	1/81 — 114.4	

PRODUCING SMOOTHED MEANS

12/79 — 165.3 (Peak cycle 21)

1/80 — 164.6	2/80 — 163.3	3/80 — 161.8
4/80 — 159.2	5/80 — 156.7	6/80 — 155.2
7/80 — 153.2		

PREDICTED SMOOTHED MEANS

1/81 — 141	2/81 — 138	3/81 — 136
4/81 — 133	5/81 — 131	6/81 — 129
7/81 — 127		

SUNSPOT DATA COURTESY

Sunspot Index Data Center, Brussels ■

RAOTC

The Radio Amateurs Old Timers Club, led by its founder and Patron, Bob Cunningham VK3ML, held their 8th Annual Dinner at the Science Club, Melbourne, on Thursday, March 5th. This was attended by some 100 members drawn from VK States, Netherlands, UK and ZL. Included in the guests was the WIA Federal President, Peter Wolfenden VK3KAU, who was made very welcome by the members.

The guest speaker was Peter Warrilow, from the OTC Sydney. He spoke on the advent of satellites in relation to communications and TV in Australia in years to come. He was introduced by the President of the RAOTC, Max Hull VK3ZS. Before and after the talk by Peter many old-timer's stories were swapped at the tables. It was not before 2300 hours that the gathering broke up. Max Hull invited all amateurs who had held lincences for 25 years or more to become members of the Club. A handsome members' certificate is provided to members plus an attractive lapel badge. For those with 50 years service a sticker is available for incorporation in the certificate.

Application for membership should be made with a SAE to Harry Cliff VK3HC at PO Box 50, Point Lonsdale 3225, Vic. Membership is free after the initial payment of a joining fee of $5 which covers the cost of the certificate, badge and postage.

Members may nominate overseas amateurs to join the RAOTC who qualify under the 25 year licence requirement. Overseas subscription is $7 for the same privileges as for VK members. A complete membership list is provided to members with amendments from time to time.

Item submitted by VK3ML as Publicity Officer. ■

QSP

INTERNATIONAL YEAR OF THE DISABLED

From Radio Communications February 1981 comes news that a special call sign GB2IYD may be in use during the International Sports for the Disabled to be held during the first week of August in Exeter. A suggestion was also received that an International "Weekend on the Air" for disabled persons be held on 1st-3rd August. ■

LETTERS TO THE EDITOR

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

3 Katrina Ave., Windsor Gardens, SA 5087

The Editor,
Dear Sir,
This is a plea in reference to some "Letters to the Editor" published in AR lately.

Firstly I have been licensed for two and a half years but a member of the WIA for only about four months, I hold a novice call and hope to upgrade to a "Z" in February 1981. Morse for full call comes later, one exam at a time.

Now for my plea:—In the copies of AR I have received since joining the WIA I am appalled to read letters, which remind me of the type published in the "CB Action" magazine, on the context of full call versus novice, CW v. phone, or some other mode v. something else. Now fellows, please!

In the "ARRL Handbook" just after the index you will find a page containing "The Amateur Code". I wonder how many have read it. I think two parts refer to all this and I will quote these two parts or parts of them pertaining.

Quote —

"Part two. The amateur is loyal . . . He offers the loyalty, encouragement and support to his fellow radio amateurs, etc.

"Part four. The amateur is friendly . . . slow and patient sending, when requested, friendly advice and counsel to the beginner, kindly assistance, co-operation and consideration for the interest of others; these are the marks of the amature spirit." Unquote.

The letters mentioned above show a breakdown in the application of the code.

I hope this is not taken as a lecture, but I thought that we as amateurs were above the bickering, etc., which is commonplace in the band known as CB.

Now just one thought on the subject of novices in the field of the self-teaching hobby of amateur radio. Novice means beginner, and we are all beginners sometime, so please give us a go. I think we all wish to obtain a full call, but some of us, through other commitments such as family, jobs, etc., may take longer than others, and didn't the WIA push for the novice class licence to raise the numbers, so what do you want? Someone to communicate or fight with!

I know I will make it to full call some time, it is just when I am not sure about.

Here's hoping this will put an end to the infighting going on in the amateur ranks.

73s. I. E. Coulter (Ian VK5NCI). ■

The Editor,
Dear Sir,

I would like to comment about a certain letter by one full call, and all the comments from full calls and novices. About this one letter, there are always a few rotten apples in any barrel. I think that we should take up a collection from the novice amateurs, and no doubt some full calls, and I am sure that we could get enough to have this person bronzed and put up on a pedestal and then placed in the most popular park in his area, and leave the pigeons do their best on him for a change, instead of pulling it on us novices.

On the 24/1/81 at 2200 GMT on 28.540 was a desperate call from WB6EMS to VK, because he had received a telegram to say his daughter had been badly injured in an accident, with very little more, but there wasn't any propagation to VK, so AH2E called VK for some help. VK4VCP, VK4NIM, VK4NHD, VK6N mobile and VK3KF answered. The call VK4VCP rang Sydney and got all the information which was required, which by the way, WB6EMS daughter is now in a satisfactory condition, so we must be worth just a little.

Fine job.

Phil Morrison VK4NUM. ■

24 Dulconghl Street,
Crescent Head, NSW 2440
February 18th, 1981

The Editor,
Dear Sir,

When the WIA has, as members, say 90 per cent of all licensed amateurs in Australia, it will then be competent to speak for amateurs. At the present time it can only speak for its members — a minority of the licensed mateur population. If the publicity it gives Mr. Voron, for instance, is any criterion, it only speaks for a minority of a minority!

A letter in AR from a Novice said, inter alia, "the Novices saved Amateur Radio".

Let it be clearly understood by that author and any others of like thought, that Amateur Radio has never required saving at any time. Amateur Radio has grown steadily over the years without any outside help. (It may require salvation in the future from its self-nominated saviours, however!)

Had he written that the influx of Novice licensees saved the WIA he may have been nearer the mark, for the increase in membership did give the organisation a much needed shot in the arm — but that did nothing for Amateur Radio. The WIA is still a moribund invalid, with only one chance of lasting recovery and that is to direct its appeal to the serious amateur and not to the "Johnny Come Latelys", whose enthusiasm will wane as mercurially as it waxed, despite frequent titillation through the WIA magazine and the attention-seeking antics of Mr. Voron. There just is no valid argument for going out into the market place to artificially stimulate interest (in amateur radio) at the expense of dignity and decorum.

The WIA has its hands full at present getting, as members, all those already licensed and this will not be achieved by wooing CBers with ostentatious exhibitionism.

The WIA, AND PERHAPS some larger Radio Clubs, may believe that they require more and more members if their ambition to have greater bargaining "muscle", like our Trade Unions and the Teachers' Federation, for example, is to be realised.

Industrial or Political "muscle" is not required and in any case it has connotations, at the time of writing this, which makes it a dirty word!

What is needed is a constant directive to improve standards and an inflexible abhorrence of lowering them, in any manner whatsoever.

We are not recruiting an expeditionary force. We should be striving to make a hobby well respected for its standards of excellence.

Yours faithfully,

Ron Andrews VK2ARN. ■

43 Boyana Crescent,
Croydon 3136
11th February 1981

The Editor,
Dear Sir,

The circuit presented by Mr. Rechner in the February issue of AR is certainly very simple. So simple in fact that I am prompted to place myself in the position of a newly-qualified amateur, and ask the following questions:

"(i) That's a Pierce crystal oscillator isn't it? Won't it over-excite my crystal (just purchased at great expense), cause healing, and perhaps damage it?

(ii) When I was studying for my licence, I read that it was good practice to have a buffer stage between any oscillator and the keyed stage to prevent chirp. How does your circuit overcome this problem?

(iii) How is the keying shaped to prevent clicks? I cannot see any capacitors or inductors in your circuit that are large enough to do this.

(iv) What is the harmonic output like? Shouldn't there be some sort of filtering of the output?

(v) You say that your circuit can accommodate high SWRs. How is this done when there appears to be no loading control?

(vi) What is the globe in series with the output for? Won't this cause some loss of precious output power?"

It is agreed that receivers and transmitters can be built at very low cost using old TV and radio parts, and this certainly provides great enjoyment for the builder and operator. It must be remembered however that any signal that we put to air should be of the highest quality practicable so as not to cause unnecessary interference or annoyance. Therefore, transmitter designs, whether solid-state or valve, should include all components necessary to achieve this goal.

Yours fraternally,

Drew Diamond VK3XU. ■

17 Chrystobel Crescent,
Hawthorn 3122

The Editor,
Dear Sir,

Further to Mr. Maxwell Hull's letter to Amateur Radio February 1981:

Since Nick Rozakeas has evinced a desire to build his own transmitter will the agents for Yaesu, Kenwood, Icom, etc., rush into print in horror at the impending "day of doom", or are we out to kill all "home brew" enthusiasts with their "hose fitting" ingenuity before they get out of hand?

Seriously, surely the issue is the right of anyone to design and build a key, or any piece of equipment, be it different from the norm; such enthusiasm and ingenuity should be encouraged rather than denigrated.

Yours faithfully,

Ron Cannon VK3BRC. ■

Lot 92, Russell Avenue,
Woodend, Vic., 3442
1st March, 1981

The Editor,
Dear Sir,

It has become impossible to listen to frequencies above 14 mc/s. Many, many times I have been listening to some choice DX when suddenly the Russian "woodpecker" comes in and completely ruins things. He also plays merry hell with any RTTY I may be copying at the time. And he is not confined to just one band of frequencies, as I guess many people know. I was wondering, therefore, if there is not something we as wireless amateurs can do. What about a complete ban on QSOs with Soviet bloc stations, followed by a complete severing of all relations with the USSR. If enough countries did this then something should happen and once again our bands would be free from this continous menace.

On another matter, I do wish that amateurs would learn the proper phonetic alphabet! Many, many times I have misheard a call sign because no phonetics were used. What about it, chaps? You may know with whom you are in contact but does a casual listener know? As well, what about identifying a little more often. Sometimes I hear a QSO between two or three stations that rambles on for 20 minutes before an identification. Surely this is against Government regulations as well as being extremely thoughtless to any SWLs.

Yours faithfully,

Terry Robinson L31105.

(For action on the "Woodpeckers" please see Intruder Watch and International News in April issue.—Ed.) ■

86 Miscamble Street,
PO Box 99, Roma 4455

The Editor,
Dear Sir,

I would be very interested to know if many readers of AR share my irritation with one aspect applicable to virtually all transceivers currently available for purchase.

That is the practice of including in the Tx specs the PEP input power only and making no reference to the RF output power.

It seems to me that the real "nitty gritty" is the power one can reasonably expect to feed to an antenna which presents a 50 ohm non-reactive load to the equipment. In this regard surely manufacturers could publish the output obtained under 2 tone input with a non-reactive dummy load with the output measured under non-flat topping conditions.

At least these figures would give prospective purchasers a fairly good guide as to the efficiency of the equipment, or could it be the lack of reasonable efficiency which inhibits these figures being published.

Perhaps other amateurs and one or more of the Technical Editors may care to comment on my "grouch".

73. Cliff Jenkins VK4QJ. ■

8 Aird Street,
Camberwell, Victoria 3124
13th February, 1981

The Editor,
Dear Sir,

While relishing a British Rail Pass on a recent UK trip, a chance selection of my destination for the day found me at one of the most northern parts of Scotland. As the train neared the station at Wick, I noticed a vast array of antennae; fifteen minutes walking revealed that this impressive spectacle belonged to the official post office receiving and transmitting station for all vessels and oil platforms in the North Sea.

The two main transmitting antennae were broad band devices; one horizontally polarised (3 wire centre fed) and the other vertically polarised with six elements. Each was connected to its respective transmitter by a combining network to enable 3 transmitters to work into each antennae simultaneously; the frequencies used being 1792, 2182 2625 kC into one, and 1827, 2705, 3610 into the other. The receiving antennae were approximately ¼ mile away. Power used varied from 300W to 5 kW — to avoid QRM to others lower power is used where possible. Three modes of transmission, AM phone, radioteletype, and CW are used, handling approximately 300 messages daily. While the five operators had to be qualified at 40 w.p.m. on CW, their normal CW speed is between 25-30 w.p.m., using standard keys. As half their daily contacts (150) are made on CW, I asked why and was told all operators considered it faster and more accurate than phone or RTTY, and generally preferred it!

Hoping this will not stir up "that" recent controversy.

Yours faithfully,

Peter Lord VK3NPL. ■

18 Albion Ave., Glandore 5037
13th March, 1981

The Editor,
Dear Sir,

I refer to the item on page 7 of the March issue concerning the possible issue of a commemorative stamp issue.

Those of us with memories long enough will recollect that a few years ago a submission was made to the Postal Authorities for the issue of a stamp to celebrate the birth of Marconi 100 years past.

This request was turned down "because notice was required at least three years in advance to make the necessary arrangements".

The suggestion emanated from the fertile mind of Mr. Rob Wilson VK5WA.

Not to be outdone, Rob came up with a fresh suggestion, to wit the Marconi commemorative QSL card, which was produced by the VK5 Division.

This really "took off" and many thousands were distributed, greatly to the surprise of those handling the distribution.

The only strange thing about the whole activity was a query to Rob in the course of his dealings about the printing when he was asked, in all seriousness, "Who was Marconi?". Such is fame, if you don't know.

I feel a much better purpose would have been served if a commemorative stamp for the occasion had been issued, instead of the stamp to record the 50th year. Certainly it could have been a great improvement on the present issue of 22 cent stamps, which I do not view with any favour.

Yours faithfully,

Tom Laidler VK5TL. ■

SILENT KEYS

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

Mr. M. G. O. NIELSEN VK3AGN
Mr. G. F. POOLEY P29DJ

OBITUARY

Mr. M. COLLETT VK2RU

Major Collett VK2RU passed away suddenly on February 8, 1981, whilst visiting Springwood. Major was not an army title but his Christian name. He came to NSW in 1926 from UK, where he had shown much interest in radio. He was licensed as VK2RU in the early thirties and for many years was the HMV agent for radio and television in Mann Street, Gosford. He was very keen to discover colour TV when this became possible. In the post-war years he was extremely active on 51 megs and worked Japan on that band. 166 megs was the two metre band in those days, and he used that frequently.

With Reg Brook VK2AI he formed and guided the Central Coast branch of the WIA for a number of years from 1956. The Gosford Field Day was held at first at the Sailing Club then later at the racecourse, and now every February at the Showground. He had much to do with its success.

Major and Ruth were most hospitable, and WIA members and delegates remember their home at 42 Bent Street with its terns and palm trees. Major was made a life member of the WIA for his work on behalf of the institute. He was a Rotarian, member of the Sailing Club, the Anglican Church, and technical advisor to Broadcasting Station 2GO at its commencement.

To his son Edwin and daughter Linda and their families we offer our sincere condolence.

Lindsay Douglas VK2ON ■

OBITUARY

GRAHAM FRANCIS POOLEY, P29DJ

Graham Francis Pooley P29DJ passed away in Port Moresby on January 31st, 1981, after a short illness.

Born at Warwick, Queensland, in 1936, graham was educated at Warwick Technical College and completed his fitting and turning apprenticeship at Walkers Shipbuilding, Maryborough. He served on the M.V. Sarawak as an engineer for a while before coming to Port Moresby in 1960 to join the marine workshops of Steamships Trading Co.

After five years enginering work around the country he entered the sawmilling business at Era, about 20 miles inland from Baimuru in the Gulf region of Papua. He was still operating the mill at the time he passed away.

Interested in radio from early childhood, Graham gained his AOCP in 1956 and was licensed as VK4DJ, Maryborough. He was a great experimenter and "home-brew" artist with a lean towards antennas. He even built a 95 feet high timber tower to hold up some of his creations which ranged from helicals for 432 MHz to long wires disappearing into the jungle. Most of the 9DJ equipment was home-brew and was built in spite of supply problems that would have driven most people to other pastimes. He had an abundance of Australian ingenuity.

Few contests passed without Graham's signal being in there with the best of them. His operating interests also included OSCAR contacts, rag chewing and DX. Goodness only knows how many DX stations he gave a "new country" from Papua over the years.

He was also a gentleman and it is my pleasure to have known him as my friend during his 20 years here in Papua New Guinea. May he rest in peace. The PNG Amateur Radio Society extends its condolences and sincere wishes for the future to Graham's mother, sister Heather, wife Seia and their seven children.

R. A. Sutherland P29BS,
Radio Inspector. ■

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

Kenwood TS180(S) Service Manual, $7; IRC coupons, 30 cents each, SASE with order please; Bird wattmeter, model 4360, 1.8-30 MHz, made exclusively for Henry Radio, $105; Tx by CSE, 1.75-2.0 MHz, A3 and A1 mod., 10 watts, solid state, $40. VK6NE, QTHR. Ph. (09) 446 3232.

3 El. Yagi for 10m, by Boomerang, beams very good cond., anodised elements and boom gamma match, guaranteed low VSWR, $50. Ph. Strathpine 205 3238, ask for Bernie VK4NSB.

Icom IC-22A, with repairs. 2, 3, 4, 5, 6, 7, 8 and 40, 50 simplex, 1/10 watt output, and matched ETI 40 watt PA for mobile use and circuit sheets, mic., cables, handbook, all exc. cond., $195; Trio 9R-59DS communications Rx, valve type, 0.5-30 MHz in 4 bands, AM (wide/narrow), SSB, CW, via BFO, bandspread, antenna trim, handbook, in good cond., $125. VK2ZET, QTHR. Ph. (02) 85 4640.

TS520S, as new, orig. packing, manual, etc., $550. also D65 dgital display, mavel and leads, $150. VK2LX, QTHR. Ph. (043) 92 2390.

FT-101Z, with mic. and fan, $600; FRG-7 Rx, as new, $225; Ken KP-12 RF speech orocessor, $90. VK3OM, QTHR. Ph. (03) 560 9215.

10m Txcvr. (converted CB), 40 channels upper and lower SSB, goes extra well, mobile or base, 12V, $150; with mic. VK2AXZ, QTHR. Ph. (049) 54-0893 AH.

Icom IC211, as new, in orig. carton, also ARX2 Ringo, total price, $600. VK2DBJ, QTHR. Ph. (02) 634 2451.

10m Crystals: The VK2 Division has for sale miniature style pair of crystals, 28.345 and 27.890 MHz, suit 10m hand-helds, $1 a pair plus 60 cents P. and P. Limits 5 per order. Write Disposals, WIA (NSW Div.), PO Box 123, St. Leonards 2065. Offer closes end May.)

ALBANY

LOCKYER LAUNDRETTE
32 SOUTH COAST HIGHWAY
(Off the Roundabout)
7 WASHERS and 4 DRYERS
Support a Local Amateur
VK6NQ

Yaesu FRG7 Rx, exc. cond., complete with read-out and manual, $275. Dr. K. A. McGarrity VK2MW, 231 Macquarie Street, Sydney 2000, NSW. Ph. 232 6261 9 a.m.-1 p.m. week days.

Collins S-line 75S-3 Rx, noise blanker, full set Skytec tubslers, $600; 32S-1 Tx with 516F2 power supply and speaker, spare valve, $600. Gene VK4AJ, QTHR. Ph. (076) 32 4383.

RTTY HAL Communications ST500 Demodulator, suitable VHF and HF, 170 and 850 shift, model 15 page printer and 14 tape printer and punch, g.c., $100; Hustler mobile antennas, complete set 11 through 80 and ball mount, gc., $80; Novice Hy-Gain 5, 23 ch., 28.310-28.600 and ant., gc., $80; Midland SWR dual meter, $6; Cabena tow pass filter 3-30 mcs., $3; G8KW dipole traps, $6; MR6 2m, ch. 2, 8, receive 5, $30. VK3CR, QTHR. Ph. 772-4570.

Kenwood TS-820 Tx, CW filter, DC-DC converter, owner and service manuals, MC-355 mic., little use, exc. cond., $760; Scott VK2VUT. Ph. (048) 21 1732, or QTHR 1890

Kenwood Rx 2820 and filtered speaker, $650; or consider swap 4 el quad TH6 or TH5 for 10, 15, 20m with cash adjustment. VK3VJO. Ph. 560 5611 bus., 846 1792 AH

Have a number of magnetic line starters and electric motors to sell or swap, oilers please; I require 80m Rx to assist home-brew Tx, DC-DC converter for TS520S, 70 cm, 2m or 6m equipment. Elliot Greenfield VK6NIE, 11 Antares Street, Southern Cross 6426. Ph. (090) 49 1213.

Quad, 3 el duo band, 10-15m, alum. construction and hollow f/glass spreaders, gamma matched for easy VSWR tuning, with 2 x 25m RG58 balanced feedlines, if required will arrange shipment, $150; converted 27 MHz CB, contact Airhawk as per ARA Vol. 2, mods., full 10m coverage in 5 kC steps, exc. QRP rig, 12W PEP, four SPST switching for freq. changing, will answer all mail enquiries if interstate or country, $150. Bob VK3VDI, QTHR. Ph. (03) 314 2027.

Trio TS510 HF Txcvr., good cond., all bands, ext. VFO and handbook, spares include set of tubes except finals, $310; Johnson Viking CB Txcvr, converted to 10m, not going, problem with PLL conversion, details and circuit diagram provided, $40. BK3BUS, Macedon. Ph. (054) 26 1233.

FT-227RB, 2m FM 800 ch. PLL, no mods, exc. cond., $270, ONO. Ken Taylor VK3YOS, QTHR. Ph. (056) 23 1039 week-days. 359 9499 BH (leave message).

Kokusai 455 kHz mechanical filters, complete with US and LS xtals, two sets available, $25 each set, ONO. VK2BDD, QTHR. Ph. (02) 529 7221.

Kenwood TS-520S(approx. 18 mths. old, in exc. cond., unmodified, in orig. packing, $560, ONO; also quad antenna kit, complete with fibreglass spreaders and two piece hub by VK3ASC, $80. VK3ABS, QTHR. Ph. (07) 351 3298.

Kenwood 2200 hand-held 2m FM Tcvr., as new, xtals for repeaters 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, simplex 40-50 nicads, charger and case. $175. VK2BQO. QTHR. Ph. (02) 328 7892.

Icom IC710 (701), showroom cond., 3 months use, c/w Icom SM2 Electret mic., TH3JR beam, used same period, c/w balun, both units extremely well priced. VK2AAM. Ph. (049) 63 2009 Bus. and AH.

FT101E, ex. cond., c/w DC inverter, fan, mic., full instruction manual and circuit, DGM and orig. packing, selling due to move, $650. Ph. (03) 528 5976 after 5 p.m.

Swan 350 Txcvr, with 12V power supply, PTT mic., 3 helical whip ant., 40, 20, 15m and balun, $350. Jim VK4AJG. Ph. (075) 38 0270.

FT620, AM, CW, SSB, 100 kHz cal., 50-54 MHz, worked 16 countries, inc. 2 State records, $300, ONO; TS520S, DC power supply, service manual, MC355 mic., $550, ONO. Phil VK4AYX. Ph. (076) 30 8122.

Exchange Trio-Kenwood twins, RX-599S, SSB, CW, AM, FM, 1.8-30 MHz and 144 MHz, TX-599B, SSB, CW, AM, 3.5-30 MHz, S-599 speaker, for Atlas 215X txcvr., p/s, etc., or will sell; EK-26 electronic keyer, new; KW-108 monitorscope and manual; all enquiries answered. VK2AKE, QTHR. Ph. (048) 71 2113.

Vinten BTR10R 2m FM console cabinet base station, 50-70 watts, 240V AC, 6 ch., fitted with chans. R42, R44, R48, S40, S50, desk mic., 600 ohm line remote control unit, handbook, maintained to factory standard, $150; **Vinten BTR12X** 6m FM rack MTG or table top base station, 240V AC, 52.525 MHz, fist mic., handbook, maintained to factory standard, $70. VK3AOM, QTHR. Ph. (03) 592 2168 after 6 p.m.

Collins KWM-2 Txcvr., orig. cond., with 240V AC power supply, manual, mic., and spare finals, $675; freight paid. VK4OY, 17 Blackwood Road, Manly West, Old. 4179. Ph. (07) 396 0886.

TS120S, late model, no drift, $650, ONO; Datong D7S processor, $140; FL2100Z linear, WARC freq., never used, $500; Daiwa CN418 cross needle ATU, 500 watts, only $170; Electraphone 40 ch. CB with narrow crystal filter and matching 300 watt linear, never used, $350, ONO. VK2DNP, QTHR. Ph. (049) 43 4220.

Txcvr. TS520, 13.8V DC and 240V AC power supply, complete with fan, SSB and CW filters, new valves, S2001 (2) and 12BY7A (1), professionally overhauled, with operating manual and orig. packing, $520, ONO; VFO520 external VFO to suit above txcvr., with operating manual and orig. packing, the lot for $625, ONO. VK2WE, QTHR. Ph. (02) 487 1273.

Yaesu FT224 2m FM mobile 10W txcvr., exc. cond., serial No. 308117, with instruction manual, mounting bracket, crystals for rpts. 2, 3, 4, 5, 6, 7, 8, simplex 40, 49, 50, 51, 52, 53, $200. Dale VK3AAE, QTHR. Ph. (03) 397 5578 home, (03) 391 1333 work.

FT101 with blower, only used portable now and again, $495; FT620 6m txcvr., exc. cond., $350. VK3BH, QTHR. Ph. (03) 80 1204.

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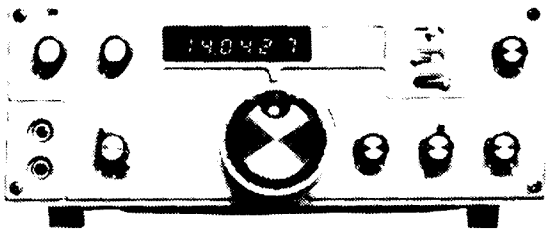

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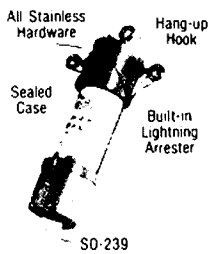

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1:1, or 4:1

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Dipole Baluns
3-40 MHz
1 KW DC

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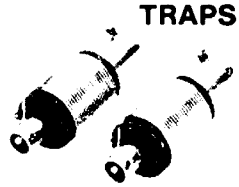

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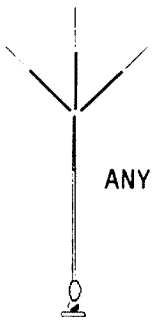

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ANY THREE BANDS AT ONCE

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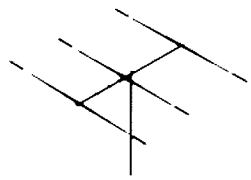
Self supporting
light weight
1 KW PEP



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10-15-10 Metres
no bandswitching
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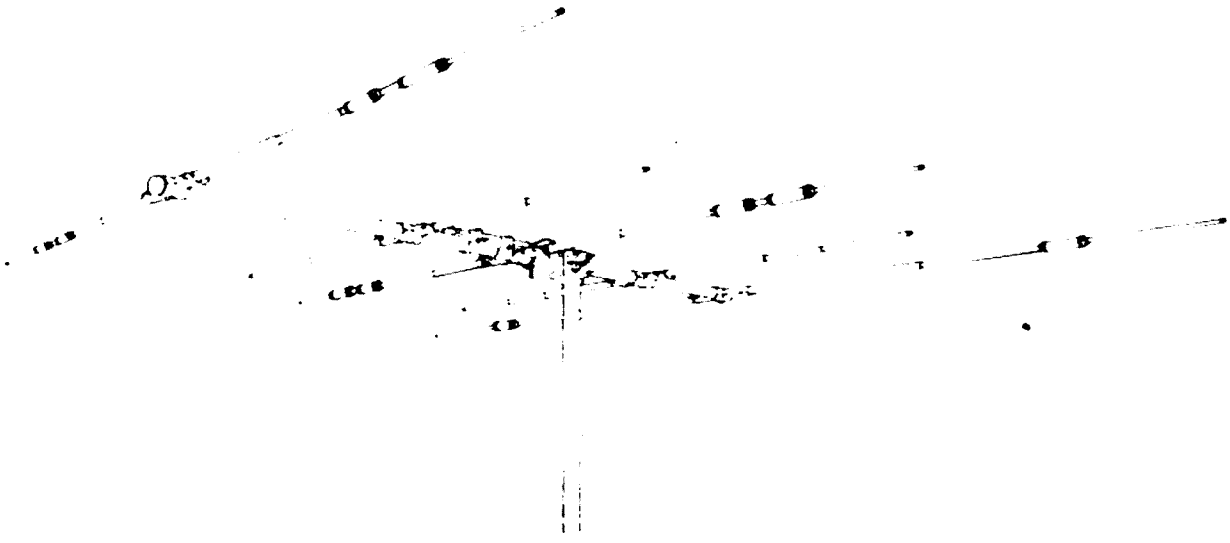

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amateur radio

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VOL. 49, No. 6 JUNE 1981

FEATURED IN THIS ISSUE:

- ★ A MORE COMPLETE ANTENNA TEST — BELIEFS AND FACTS
- ★ CROWBARS AND SCRs
- ★ VK2TTY NEWS
- ★ OPERATION WHITESTICK

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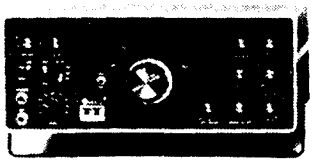

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5 watt P.E.P. QRP
SSB/CW transceiver

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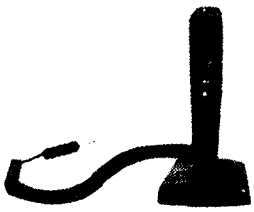
1 kw oil filled
Dummy load



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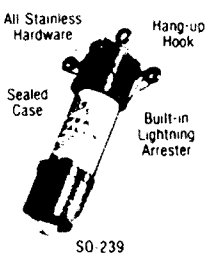

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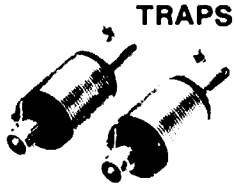

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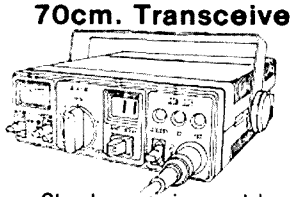

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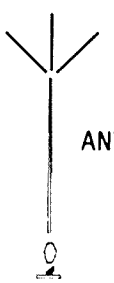

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ANY THREE BANDS AT ONCE

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5-BAND TRAPPED VERTICAL
Self supporting
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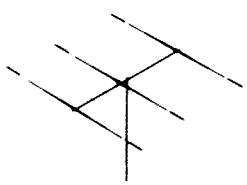

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10-15-10 Metres
no bandswitching
8 dBd Gain
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CONTENTS

ARTICLES

10 MHz BAND EXPECTED TO BE AVAILABLE FROM JANUARY 1, 1982 — ROSS RAMSAY AT 1981 WIA FEDERAL CONVENTION.

DEPARTMENTS

Cover Photo

Mr. Ross Ramsay, First Assistant Secretary ot the Department of Communications, officially hands the Remembrance Day Contest trophy to Jenny Warrington VK5ANW, representing the VK5 Division which won the trophy in 1980. The ceremony took place at the WIA Federal Convention dinner in Melbourne in May. David Wardlaw VK3ADW, Immediate Past President, looks on.

WIANEWS

Australia-Wide Amateur Radio Issues Discussed

The Annual General Meeting (the Federal Convention) of the WIA is the main forum where Divisional Representatives (the Federal Councillors) meet to discuss and formulate policies on current amateur radio subjects which are of interest to all amateurs throughout Australia.

The 1981 Federal Convention (the 45th such Annual Convention) in Melbourne on 2nd, 3rd and 4th May did exactly this. A more detailed report will follow in next month's AR but some items will be of general interest.

The proposed Australian Table of Frequency Allocations update elicited the fact that the omission of the footnote relating to the temporary use of the 576-585 MHz band had occurred through an oversight. The use of 50-52 MHz (or, at least, 50-50.15 MHz) continues to pose problems for the central office planners. This was reported in March AR, page 7. A WIA band plan for FM on 6 metres was formulated.

In debate it was agreed that pressure be continued for the use of the segment 3.7 to 3.9 MHz of the 80m band. The policy of exerting pressure for the very early allocation of the 10 MHz band (secondary user) as well as the 18 and 24 MHz bands was endorsed and must be maintained. The need was foreseen to get as many amateurs as possible to operate on these bands when they are released for amateur use. In relation to the narrow 10 MHz band (10.1-10.15 MHz) it was resolved to apply a gentleman's agreement to limit this band to AOCP holders. It should be split CW/Phone (SSB) similarly to the 14 MHz band, i.e. 15 kHz CW only and the remainder (35 kHz) for Phone and CW, with a power limitation to be resolved internationally through the IARU R3 Association. Contests and awards being banned appeared sensible but is a wider issue.

On 10 metres it was agreed to represent to the International Beacon Project Co-ordinator that the upper and lower limits of the beacon segment be limited to 28.3 MHz and 28.2 MHz respectively. It was also agreed to ask for an Australian beacon segment of 28.26 to 28.272 MHz inclusive.

The Institute does not support any extensions of privileges to NAOCP and LAOCP operators upon obtaining a combination K suffix or equivalent. Equally there was no support to extend Novice privileges as no compelling evidence for this has come forward.

In addition to the WICEN net frequencies on various bands, it was agreed that 21190 and 28450 kHz should be reserved for all properly identified WICEN communications purposes when so required.

We now have AMSAT AUSTRALIA replacing Project Australia and a WIA $US500 donations to AMSAT to help towards the replacement of Ph. III satellite lost last year. More publicity should be given that WICEN is an Amateur Radio Service commitment. A Federal Technical Advisory Committee (FETAC) is to be set up to absorb the existing VHFAC, repeater and other technical committees. The 1981 WIA Call Book is to be an updated and expanded version of the 1979 Call Book and to include such extras as Club Awards. No change for slow morse frequency on 80m. Budget for 1982 was prepared envisaging a small inflation-ratio increase in the Federal element of subscriptions which must be supplemented by increased new membership recruiting drives. The Institute supports the concept of affiliation to the Federal WIA of nationwide societies and the Executive was directed to re-draft the proposals on how this is to be achieved. More next month.

The Institute sent a letter to the Minister during April expressing concern about harmful interference in the amateur bands and reporting procedures.

WIANEWS SPECIAL

Mr. Ross Ramsay addresses Federal Delegates

INTRUDER WATCHERS PLEASE GET BUSY

(see May AR).

During the 1981 Federal Convention Mr. Ross Ramsay, First Assistant Secretary of the Department of Communications responsible for the Radio Frequency Management Division, attended as a guest and spoke as well as answering questions on many matters of amateur interest, including this:—

"Now the Russian Woodpecker has been around for a few years. Perhaps he's getting bigger and stronger as he grows up and pecking more loudly because we've been hearing a lot more from him lately. We've been listening hard at our monitoring stations and in fact we've heard him pecking away on 27.880 MHz. We don't like this very much as that is the safety frequency for harbour mobiles and we are going to send off a message to our Russion friends.

However at this stage we are not aware of any unfortunate mariner who's met his doom through the Woodpecker's activities. Incidentally, the Russians do have an assignment through the IFRB on this particular frequency.

Now we've not complained to them about the other parts of the band at this stage because what we need is really more solid information about what degree it's really upsetting people in Australia. That means we need far harder and more detailed information. Certainly there is a campaign going on against the Woodpecker but we need these statistics as to date time frequency problems caused so that we can go to the Russians with something really solid. You don't make international complaints lightly in RFM or in any other field. I am not suggesting the matter is trivial but what I am suggesting is that you don't complain to your neighbour unless he's really making a nuisance of himself. So we would be very pleased to have more hard information from you."

Amongst many other things and in relation to the proposed new Radio Telecommunications Act. Mr. Ramsay emphasised that licence and other fees from spectrum users would be expected to cover the cost of the Department. This might have minimal effects however because both Crown and Statutory bodies would thenceforward become subject to licensing but inflation must be allowed for dispite increased efficiency and the application of improved legislation. He did think however that examination fees would rise.

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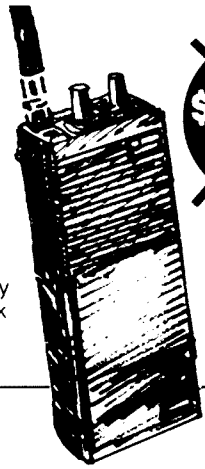

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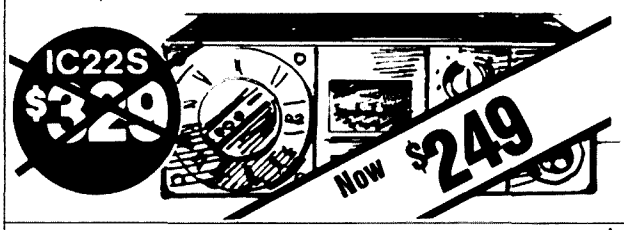

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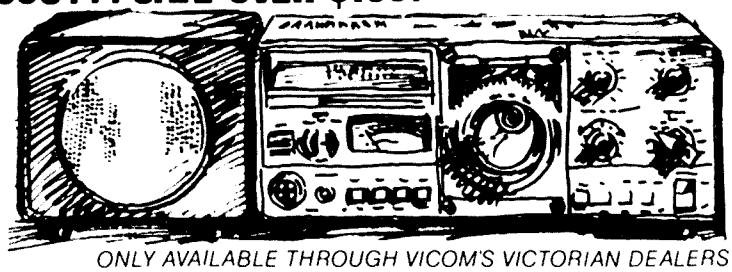

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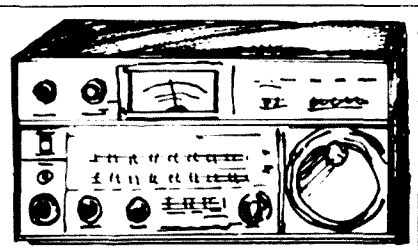

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VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 417 3535 Weekdays 10.00-15.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton.
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
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VK3 — Inwards QSL Bureau, Mrs. B. Gray VK3BYK, 1 Amery Street, Ashburton, Vic. 3147.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse VK3XY, 83 Brewer Road, Bentleigh, Vic. 3204.
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VK9, 0 — Federal QSL Bureau, Mr. N. R. Penfold VK6NE, 388 Huntriss Rd., Woodlands, W.A. 6018.

URGENT WARNING

DUE TO A DRAFTING ERROR, A POTENTIAL HAZARD EXISTS IN FIGS. 1, 2 AND 3 ON PAGE 42 OF THE MAY EDITION OF AMATEUR RADIO.

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A More Complete Antenna Test — Beliefs and Facts

H. F. Ruckert VK2AOU
25 Berrille Road, Beverly Hills 3209

There was a time when we radio amateurs put up a new antenna, and if we worked a few countries within two weeks, we considered the new antenna as being good. These days antennas have become more complicated and more costly. Regardless of whether we build it ourselves or if we purchase one of the many manufactured types, we like to compare the gain, F/B ratio and SWR of antennas before we start with the construction or purchase.

TEST FIGURES

One problem shows up if we look for an honest consumer test report on antennas. We consult "QST" and find that the antennas advertisements don't list the gain figure. The ARRL explains that they found such wild performance claims by some manufacturers that the gain figure had to be omitted until all manufacturers measure according to international standard method. W6SAI writes in his Beam Antenna Handbook (5th edition, page 31): "Extreme caution should be exercised in accepting such claims, especially if the performance characteristics of the antenna in question seem to have been generated in the advertising department rather than the engineering department of the manufacturer!" Forward gain figures which do not state the following conditions of the test are useless and misleading:

1. Was the reference antenna and isotropic radiator (theoretical value) or a dipole? dBi or dBd respectively should indicate this, not dB.
2. Height above ground of both antennas: The test antenna has to be in such a position (considering the ground conditions) that it stands in a uniformly supplied field of the transmitting antenna and is hit by the lowest main lobe of the radiation to receive the maximum signal.
3. Was the gain figure found at the frequency which gave (for the tested antenna) the best result, and was the receiving test antenna sufficiently broadbanded not to affect the result?
4. How far did the measurement deviate from the to be expected performance? Carl Greenblum of Telrex writes in QST August 1956, page 11: "To improve the gain of a 3 element full size yagi by 3 dB one has to add 3 more elements, and the boom has to be lengthened too." See Fig. 11. W6SAI shows a similar relationship on page 74 of his Beam Antenna Handbook. DL6WU (with the PMG, Germany), says in CQ-DL 5/80, page 219: "The maximum gain of a yagi type of antenna is fixed by the boom length. Doubling the boom length will only increase the max. gain by 2.2 dB." See Fig. 12.
5. It is a belief and not a fact that some antennas intrinsically have a lower vertical radiation angle than others (W6SAI and others). As long as the antenna is only a few wavelengths above the ground, the topography of the ground in front of the beam controls the vertical radiation angle, which can be lowered if the antenna stands at a hill top and the ground slopes downward. More on this subject can be found in the articles in QST november 1974 by W2IMU, and Ham Radio August 1979 by W2PY.

A COMPLETE ANTENNA TEST

Now having pointed out the shortcomings of many "specified" performance figures for antennas it is fair for you to ask for an example of an acceptable and reasonably complete antenna test. Perhaps the best example I can give is the work of Guenter Schwarzbek DL1BU, when testing the HB35C or Periodic-5 antenna.

The writer described the Periodic-5 antenna (also known as VK2AOU-DJ2UT beam) in Amateur Radio April 1978. I may repeat, that no patent cover was obtained when the writer developed a new form of tri-band tuning of dipole elements used in this beam, because the manufacturers approached did not show any interest in 1958. DJ2UT added his improvements and has manufactured the P-5 beam during the

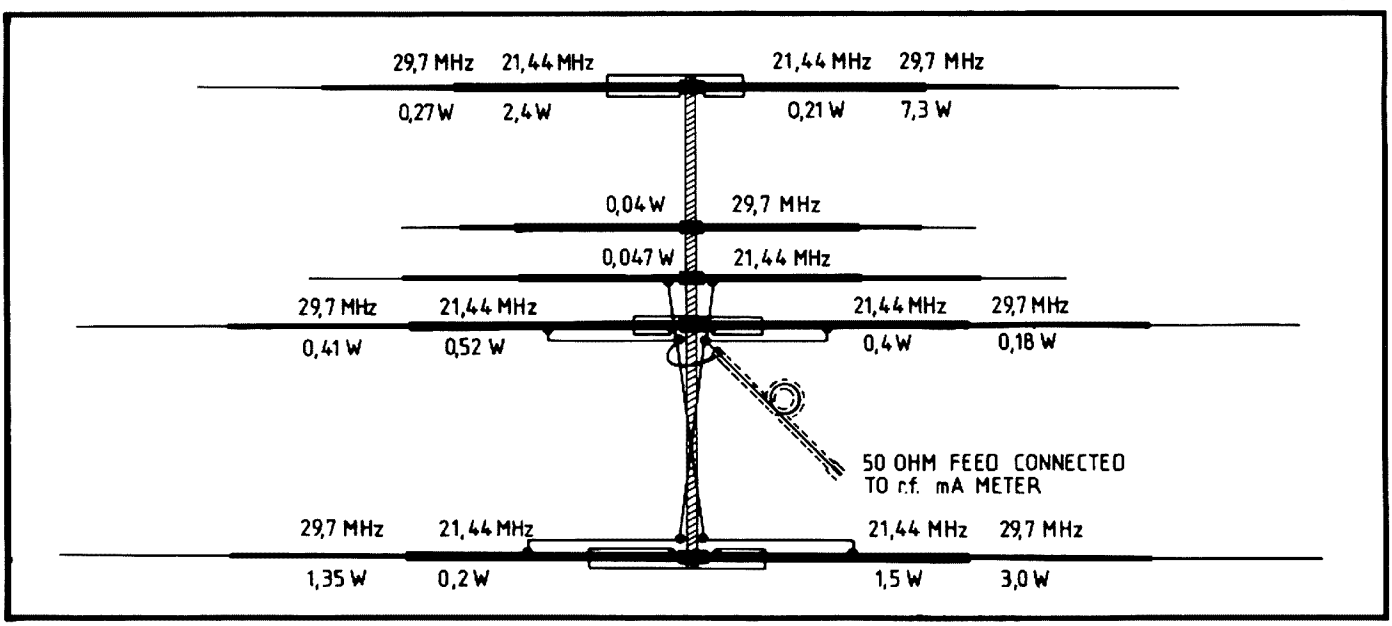


FIG. 1: The HB35C triband beam. See text for power levels and test frequencies.

last 15 or so years, selling them to well over 40 countries, including VK-land. Also the DJ2UT design was not covered by a patent. A Japanese version of the P-5 triband beam has been advertised by the Taniguchi Engineering Traders Co., of Japan, in "CQ-Ham Radio" for over a year. There was no need for TET to obtain manufacturing rights, and the writer has no business connections with either DJ2UT nor TET. Mr. Mac Y. Taniguchi replied to the writer's letter: "It was a great big job what you did 22 years ago, much faster than we did, we therefore no doubt send our admiration." It may be mentioned that patents are very costly to maintain and to defend, and they last only for 16 years.

THE TET TRIBAND BEAM MODEL HB-35C

Fig. 1 shows the layout of the elements, the boom length and the element length, all of which are nearly identical to those of the P-5 beam.

Director length: 8.3 m.
28 MHz radiator: 4.9 m.
21 MHz radiator: 6.4 m.
Triband radiator: 10.35 m.
Reflector: 10.7 m.
Radiator T-match: 2 x 1.2 m.
Reflector T-match: 2 x 1.41 m.

Hairpin length:
Director: 0.7 m and 0.2245 m.
Radiator: 0.54 m and 0.70 m.
Reflector: 0.9 m and 0.45 m.

Element spacing:
Triband elements: 1.95 m and 1.99 m.
Radiators (from main rad.): 0.39 m.

The only construction difference between the P-5 and the HB35C consists of the use of tubular coaxial air capacitors (HB35C) and coaxial cable capacitors (DJ2UT, P-5).

DL1BU measured the resonance frequencies at the hairpins after removing the element ends, which shows again that the triband (VK2AOU) method is not using traps on the band centre frequencies but L and C phasing components. After removing the hairpin loops also the coaxial capacitor values were determined, and the loop inductance was measured as well.

The capacitor C value is to some degree affected by the unavoidable inductance of the long tubular capacitors.

Fig. 1. shows the power levels at the test frequencies of 21.44 MHz and 19.7 MHz, which are necessary at the coaxial cable choke feeder end (matched for 50 ohms) to cause 50 mA of RF current at the current lobe of the triband elements. Large power required at the feeder, means small element RF current. This indicates a degree of lack of symmetry, which does not affect the horizontal radiation pattern. The shorter two elements carry a substantial amount of current, which could reduce the collinear effect and gain at 21 MHz and 28 MHz. DL1BU observed the same features also on P-5 antennas he tested.

Fig. 2 and Fig. 3 demonstrate how the VSWR changes when the height of the beam above ground is varied. (The original graphs were in colour.) Test runs were conducted at 5.5 m, 6.5 m, 8 m, 10 m, 14 m and 17 m height above ground. The SWR meter head was connected between cable choke and feeder at the aerial, not at the transmitter end of the feeder. This gives the true SWR values unsuppressed by the

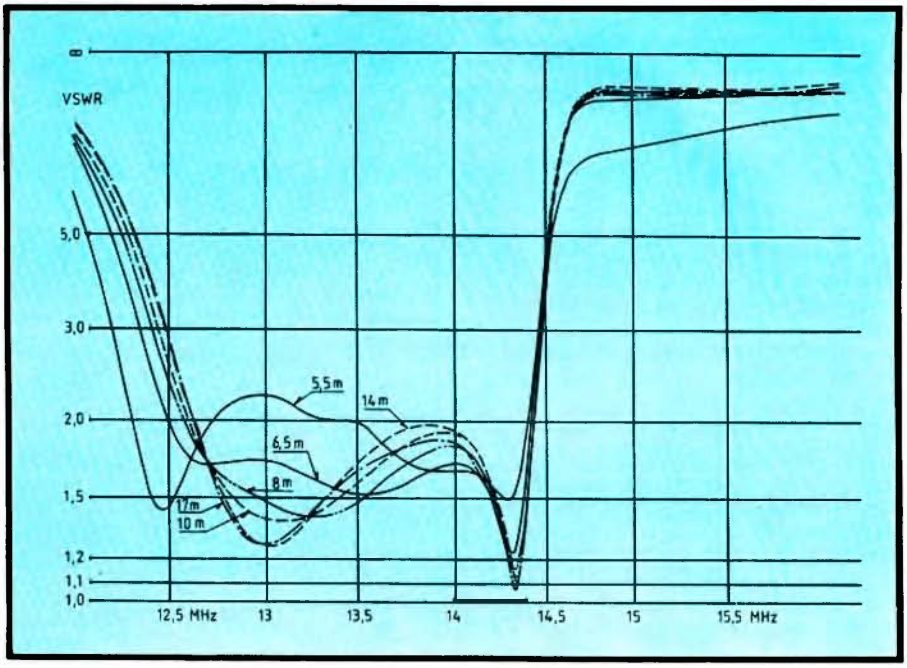


FIG. 2: VSWR of HB53C beam 12-16 MHz at various heights.

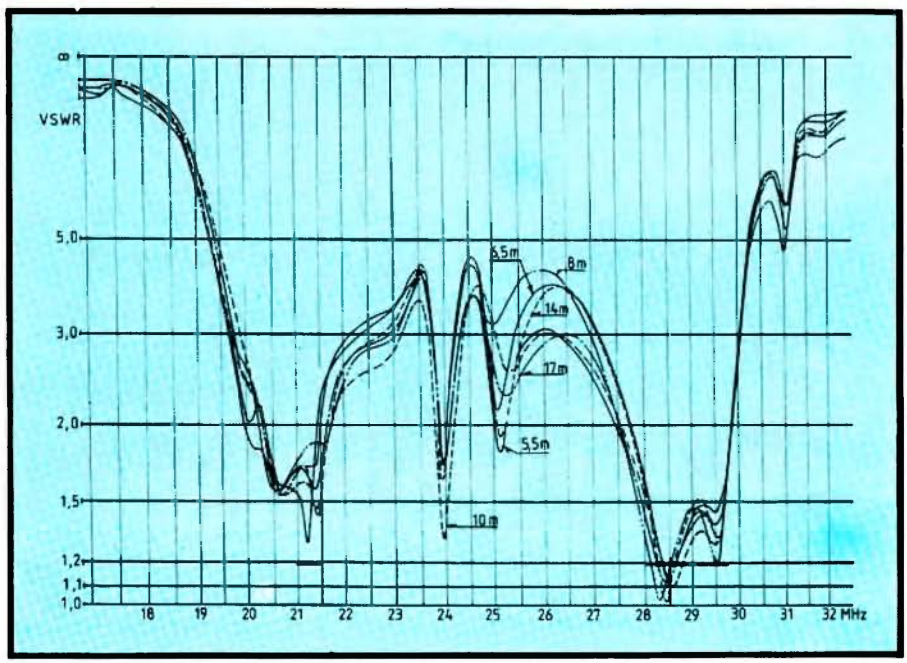


FIG. 3: VSWR of HB35C beam 17-32 MHz at various heights.

Test Resonance	Reflector	Radiator	Director	Operating Band
Loop Resonance (MHz)	17.5	20.0	20.3	15m
Loop Resonance (MHz)	24.0	26.6	28.85	10m
Loop-L	0.95	0.75	0.7	15m
uH	0.65	0.55	0.5	10m
Loop-C	55.6	53.2	53.5	15m
pF	42.7	42.1	41.5	10m

feeder cable losses. Thick lines Indicate the 14 MHz, 21 MHz and 28 MHz bands. We can see already that this type of antenna has a very much wider SWR bandwidth thad other yagi beams which have to be tuned to either the CW, phone or satellite 29.5 MHz band portion. It was also found that even transistor finals will not need a matchbox if 25 m of feeder cable or so is used, because the mismatch is very small over the whole bands. Avoiding a mismatch has not much effect on the transmitted signal strength, because 1 S point less would require a 75 per cent power loss. SWR values of less than 1.5 are only of academic value, but higher SWR values could cause insufficient loading of the final amplifier and resulting in distortion even at moderate drive levels.

Fig. 4 shows the resonances, forward gain and front to back ratio of the HB35C antenna between 12 and 31 MHz. The antenna was 15 m above the ground. The test antenna was an active broadband dipole. Both antennas were so adjusted that the lowest main radiation lobe was used. The distance was 70 m. The dB values on the right-hand side of the graph are the power loss values between the antennas 70 m apart. Reference ½ wave dipoles were used too and tuned to the amateur band centres, and mounted in the same position the beam was before. The solid line represents the forward gain data, and the dashed line the backward radiated value (the difference is the f/b-ratio). It is interesting to see how the gain and the f/b-ratio vary over the 14 MHz, 21 MHz and 28 MHz bands. This demonstrates that one single gain figure for all bands or even for each band just can't be correct, and the same goes for the f/b-ratio. This applies to all other directional antennas!

Figs. 5, 6 and 7 show in more detail the frequency dependence of the SWR of the HB35C antenna. At the transmitter end of the feeder coaxial cable of about 30 m length the SWR is usually under 1.5 over all three amateur bands. This degree of wide band low SWR is usually only obtainable if one is prepared to sacrifice some gain. The 10 m graph of Fig. 7 shows the double resonances (low SWR) caused by the coupling of the triband 10 m tuning and the 10 m short radiator.

Figs. 8, 9 and 10 show in more detail the forward gain (solid lines) and the front to back ratio as backward radiation (dashed lines). Especially in the case of the 10 m and 15 m graphs we see that the shape and frequency dependence of the gain, SWR and backward radiation curves are all different. It is typical for all beams that the best f/b ratio is sharper than the gain resonance.

The energy loss the reference dipole caused when placed on the test mat, replacing the beam, can again be seen from the graphs.

The tested HB35C beam was correctly made, so that no changes were required after the beam was assembled following

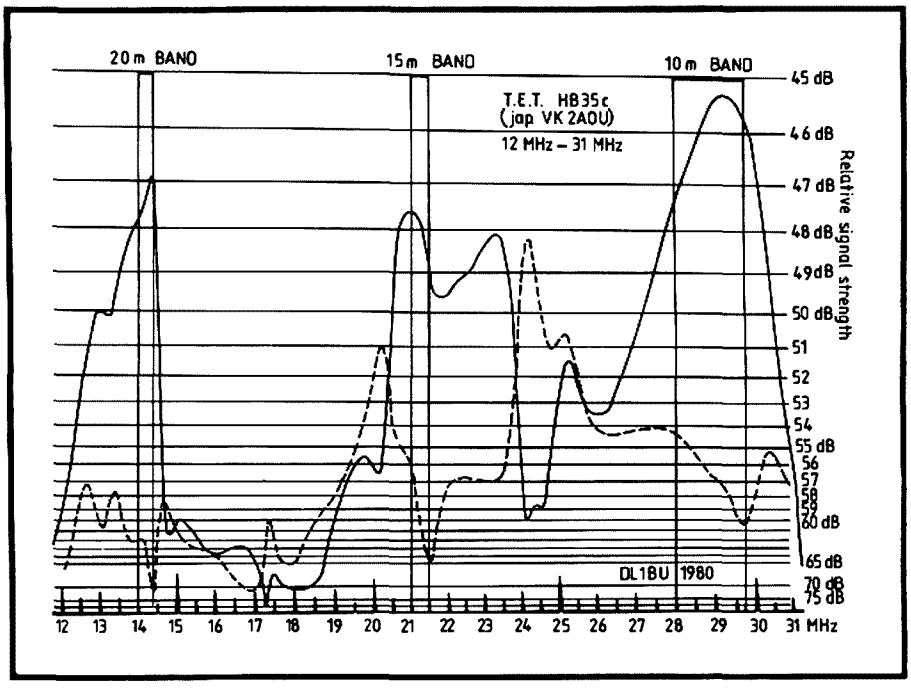


FIG. 4: Front to back tests. Full line forward signal, broken line reverse signal, HB35C antenna 15m above ground.

the instruction. This beam behaved identically to the one VK2AVA tried. Many DX tests were made between VK and DL and other countries in recent months. There was on 20 m no clear difference between correctly aligned P-5 antennas (like the one at VK2AOU or DF3FS, etc.), full size 4 element 20 m yagis (DL1KB) and 5 element log periodic yagis. The difference in received signal on 21 MHz and 28 MHz depended more on the antenna location and transmitter power. Under similar conditions, especially on 10 m, the gain was down by about 2 to 3 dB compared with other 3 element antennas. 2-3 dB can be had by adding 2-3 more elements, doubling the length of the antenna boom, or by doubling the transmitter power. With the SSB signal going through a 14 dB fluctuation from average to voice peaks, and adding several 6 dB S-units of fading, and the inaccurate mini S meters most receivers have these days, it becomes just about impossible to observe a 3 dB gain reduction between several antennas during DX communication. Most of us have to accept several times

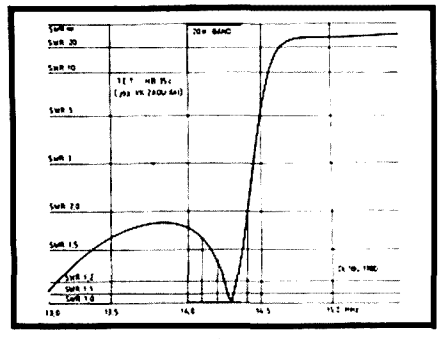


FIG. 5

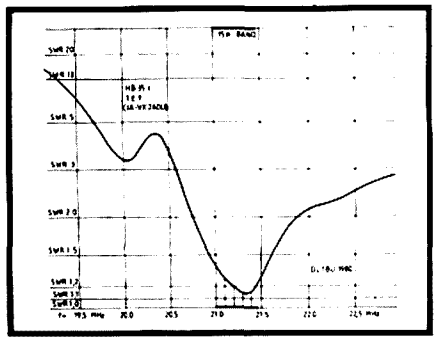


FIG. 6

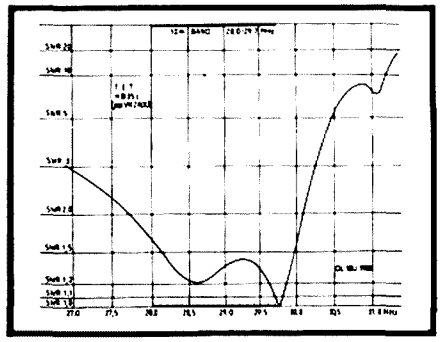


FIG. 7

this gain loss due to an unfavourable antenna location. Having no free hill top position costs several S-points of true 6 dB. Buildings with horizontal metal structures (mains wires, gutters and power lines along the street) are responsible for the fact that not "the antenna is the best RF-amplifier — often stated — but the antenna mast location deserves this No. 1 title. Antenna gain and PA power may be

rated about equal as No. 2 and No 3. The ionosphere and the operator's voice frequency range are other important factors we have to accept.

It will be appreciated that the test results DL1BU published did perhaps not surprise professional antenna experts, but many hams have not been brought up on a diet of truth in this field, and they found it hard to swallow the facts and to give up cherished beliefs.

APPENDIX

Owners of a receiver, which has a 10 or 20 dB RF attenuator, can quickly test whether the S-meter is correctly indicating 6 dB S-units (2 to 1 voltage changes). One tunes in a stable signal of S-5, S-9 and S-9 plus 20 dB indicated. Next, one switches the attenuator in at each signal level. One will most likely find that at S-5 indicated the S-units have only 1 to 3 dB and at S-9 plus the S-units may have 10 or more dB. Therefore this sort of receiver and S-meter is quite unsuitable to compare signals and antenna performance. The Technical Department of the DARC (DL1BU) tested a number of receivers and transceivers, and the uV values which correspond to the indicated S-meter reading are listed in Table 1. The results deviate greatly from the IARU recommendation (proposed by VERON and RSGB), which were also published recently in AR-VK.

The following two graphs (Fig. 11 and Fig. 12) show what any yagi type beam will have to look like for the desired forward gain:

ACKNOWLEDGEMENT

The honorary Technical Officer of the DARC, Dipl. Ing. Guenter Schwarzbeck DL1BU, who is a manufacturer and recognized expert on field strength equipment and a home brewing ham since his early schoolboy days, conducted during the last two years an antenna testing programme. The results were published in the German CQ-DL magazine under the heading "A walk through the antenna forest!" His equipment comprises: SWR measuring apparatus HP 778-D, network analyser ELKOM NA 900A, calibrated SWR test resistors, vector voltmeter HP and other valuable gear a ham can only dream of. There is a large atenna test field which is very level, on which stand five masts of various heights for DX antenna work. A second test range goes across a steeply sided valley over a distance of 225 m, and further 3 masts (some hydraulic) are to be found here. In addition DL1BU made so far 30 435 MHz model antennas which can be tested under free space conditions (no earth reflection effects). The writer appreciates very much the permission from DL1BU to use his test results for this test report in "AR". ■

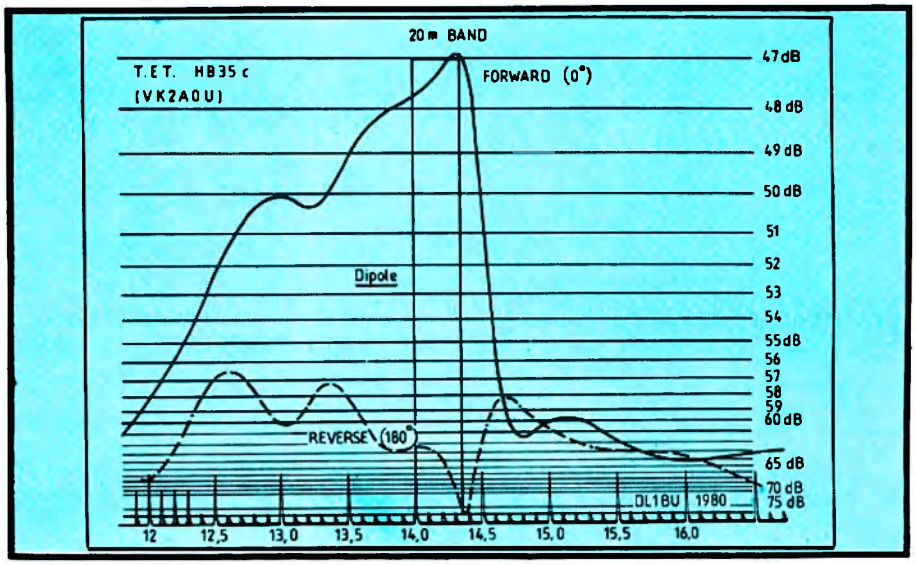


FIG. 8

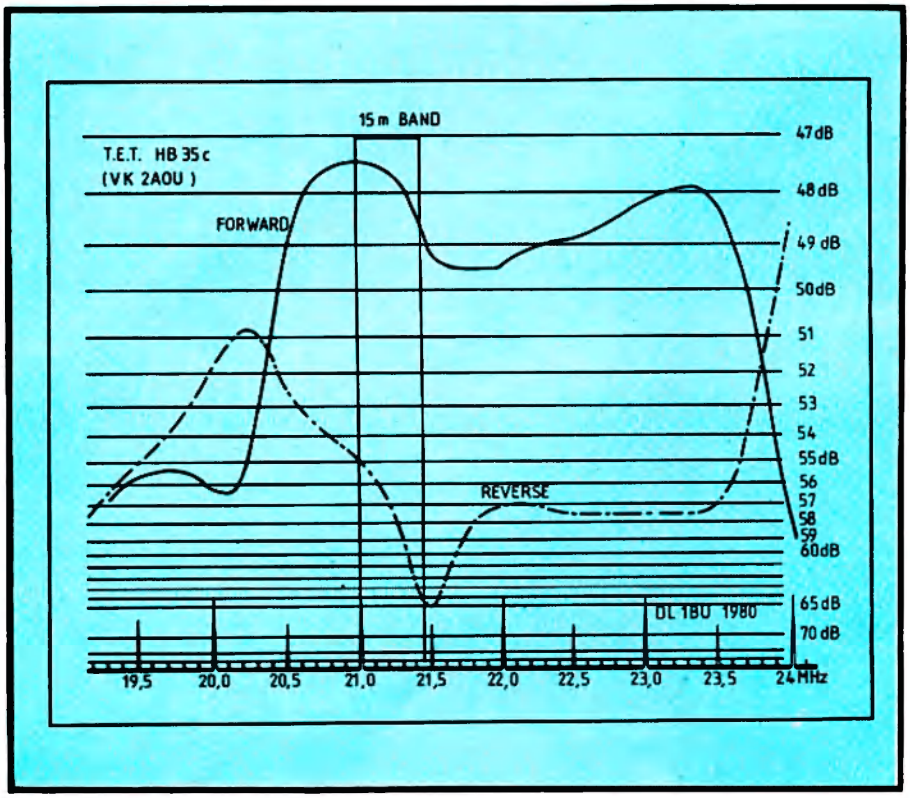


FIG. 9

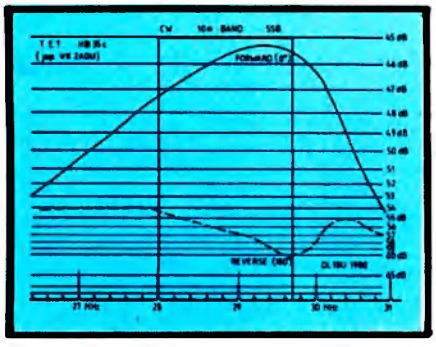


FIG. 10

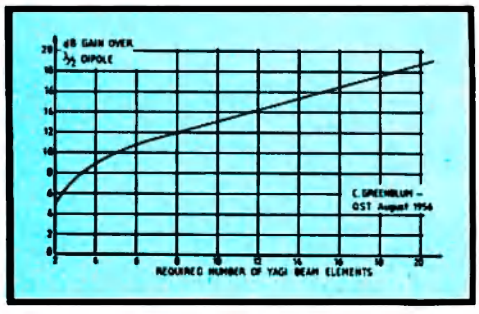


FIG. 11

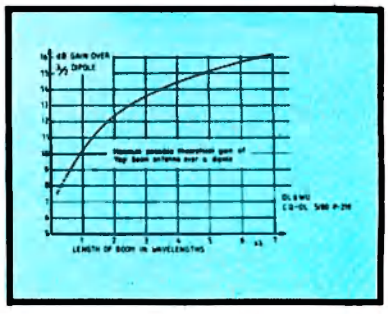


FIG. 12

TABLE 1

Summary of various S meter calibrations. Note that variations in sensitivity occur from one receiver to another even if they are of the same model. The shown values must not be construed as representing any other set apart from the one tested.

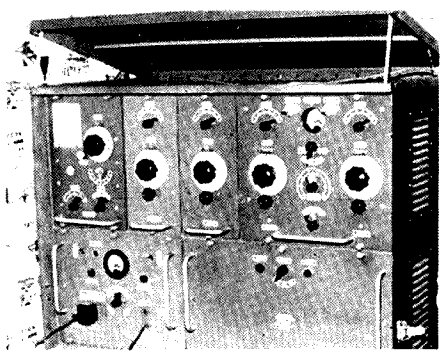
	S meter readings												
Receiver Type	**S 1**	**S 2**	**S 3**	**S 4**	**S 5**	**S 6**	**S 7**	**S 8**	**S 9**	**S-9 +10 dB**	**S-9 +20 dB**	**S-9 +40 dB**	**Test MHz**
FT-901	0.8	0.9	1	1.2	1.4	2	3.3	6	11	50	200	1700	3.5
TS-820	0.5	0.7	1.1	1.7	3.4	6	12.5	25	50	200	1000	2200	14
IC-701	1.9	2.3	2.7	3.3	5	8	12	20	30	—	120	930	14
SB-104	10	18	2.8	40	52	68	95	125	170	265	460	1000	7.05
TS-520-S	0.55	0.7	0.92	1.25	1.9	3	5.6	12	25	110	500	1500	3.5
FT-301	1.4	2.4	4	7	10	13	18	24	30	95	450	2700	3.5
FR-101	—	0.4	0.48	0.63	0.9	1.4	2.4	5	15	150	1500	65000	—
IC-245-E	0.26	0.37	0.5	0.68	1	1.6	3.2	7	13	—	130	1000	144
IC-211-E	0.33	0.56	0.73	0.87	1	1.2	1.45	1.9	2.5	—	8.5	50	144
Sony CRF-320	0.6	0.95	1.4	2.3	3.9	10	42	1000	>20000	—	—	—	3.5
FT-220	0.8	0.9	1	1.1	1.2	1.35	1.6	9.3	5	—	—	—	—
FT-221	0.75	1.2	1.65	2.15	2.7	3.5	4.4	5.9	8.2	17	43	160	—
IC-201	0.36	0.53	0.66	0.85	1.1	1.4	1.7	2.4	3.5	—	19	140	—
Multi-2700	0.29	0.37	0.41	0.44	0.47	0.51	0.55	0.64	0.8	—	—	250	—
TS-700-G	0.62	0.7	0.76	0.86	1	1.3	1.8	2.8	6	—	600	2000	—
FT-7	1.5	3	4	6.5	11	15	21	28	40	—	180	1800	7
IC-280-E	0.9	1.7	2.1	2.4	2.8	3.2	3.6	4	4.5	—	7.2	24	144
IARU Recommendation	0.21	0.4	0.8	1.6	3.2	6.3	12.6	25	50	160	500	5000	up to 30 MHz
IARU Recommendation	0.02	0.04	0.08	0.16	0.32	0.63	1.26	2.5	5	16	50	500	above 30 MHz

A larger War-Time Transmitter

A. R. Dexter VK5DL
37 Adelaide Terrace, St. Marys 5042

This Philips type SVC 100L/110 is my main transmitter. These transmitters were built in Australia for the US Navy towards the end of World War 2. It is described in the manual as "semi-portable" with a weight of 525 pounds! The cabinet size is 25 inches high x 35 inches wide x 21 inches deep. In addition, tubular steel legs were provided.

The frequency coverage is continuous from 1.9-21.5 MHz in six switched ranges. The unit is completely self-contained from its AC mains power supply right through to its Z-match antenna tuning circuit. The valve line-up is — oscillator, 6V6; doubler, 6V6; keyer, 6V6; doubler, 807; driver, 807; PA 813. Although CW is the principal mode of operation, provision is made for MCW or AM using grid modulation of the 813 by a 6V6 which acts either as an audio oscillator or as a microphone amplifier respectively. There are three switched powers giving inputs to the 813 of about 75, 175 and 250 watts on CW. Of course the drive can be reduced to give the desired 150 watts for amateur use.



Philips type SVC 100L/110.

The transmitter is constructed to extremely high standards. All RF components are silver plated and have ceramic insulation. The tuned circuits are very high Q having massive coils. A calibration chart dated 1947 is still correct in 1981. Servicing is easy as the transmitetr is constructed as 6 plug-in modules. The steel front panels are engraved. It is said that these transmitter cost £1200 to make — a lot of money in the 1940s!

It is not known how many of these magnificent transmitters were built or what they were used for. This particular example has serial number 27 on the case and serial number 21 on the power supply. Philips Telecommunications Ltd. at Clayton, Victoria, made a valiant effort to trace this model through their old files, retired personnel, etc. However, they could find no record of it ever having existed. I would be most interested to hear from any other owner of an SVC 100L/110 or from anyone else who knows anything about the history of the classic transmitter. ■

SUPPORT OUR ADVERTISERS

Crowbars and SCRs

Denzil Roden VK2BXF
7/169 Herring Road, North Ryde, N.S.W. 2113

Correspondence received, following publication of the "Even Simpler Regulator", in the January 1980 issue of AR, apart from indicating a high degree of interest, also highlights a need for more information, on SCR principles and their application as crowbar overvoltage protectors.

Silicon controlled rectifiers, otherwise known as Reverse-Blocking-Triode Thyristors, are more commonly used in power control applications, such as: motor speed regulators and light dimmers. The "reverse-blocking" refers to its inability to conduct during the negative half cycle of the AC mains supply.

First things first, a crowbar is a protective device and normally does nothing, apart from draining a few milliamps from the supply. In the unlikely event of the regulator suffering a catastrophic failure, the SCR turns ON very fast, short circuiting the power source. This has the result of pulling the voltage, applied to the equipment, down to a safe level very quickly and then after a few hundred milliseconds, of disconnecting the power source completely by blowing the fuse. Rather the same effect as placing a crowbar across the supply terminals — hence the name.

Use of SCRs in crowbar circuits is a very elementary application and I do not intend to delve more deeply into theory, than is necessary, to provide a working knowledge for amateur constructors.

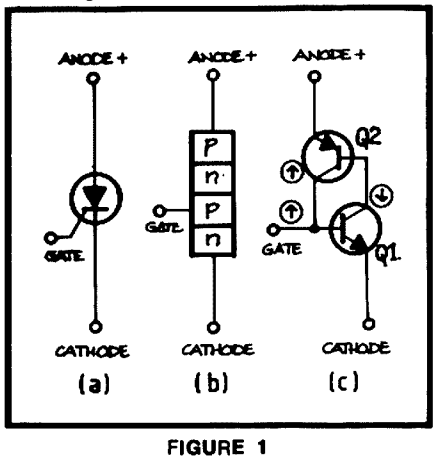


FIGURE 1

PRINCIPLES

The graphic symbol of the SCR is shown in Figure 1a, where the "diode" symbol indicates the reverse blocking characteristic and the gate suggests a controlling influence.

For crowbars, we are only concerned with forward conduction, with positive potential applied to the anode and zero volts, to the cathode.

A hypothetical representation of the inner junction structure is given in Figure 1b, showing the three p-n junctions and the reason for its general classification as a four-layer semiconductor device.

Since most of us are familiar with bipolar transistors, it makes operation of the SCR easier to understand by relating Figure 1b to its equivalent circuit, made up of Interconnected p-n-p and n-p-n transistors, shown in Figure 1c. Where the cathode n-region is the emitter of Q1, the gate p-region is the base of Q1 and collector of Q2 and so on.

With the gate open circuit, Q1 Is turned OFF and Q2 base current will be restricted to leakage, so Q2 will also be OFF. Under these conditions, with the anode-cathode voltage equal to 13 8V, the SCR leakage current Is much less than a microamp.

For the SCR to "fire", the gate voltage must be increased until the gate-cathode junction is forward biased.

The gate parameters, of which *VGT* is the minimum gate-cathode voltage which will produce the gate trigger current and *IGT* is the minimum gate current necessary to switch the SCR ON, are usually specified as maximum values which guarantee turn-on of any device. For individual devices, *VGT* can be anywhere between 0.2V and 5V in extreme cases. Since we will be "calibrating" each crowbar, we are not concerned with what the exact trigger levels are.

However, with reference to Figure 1c, as the gate-cathode voltage Is increased, a point is reached where Q1 turns ON. The interconnection of Q1 and Q2 producing positive feedback and regeneration as indicated by the polarity arrows, as follows:

As Q1 base goes positive, Its collector goes negative, causing increased base current flow in Q2. The phase inversion of Q2 causes its collector to go positive, boosting the original rise in trigger current.

The result being that Q1 and Q2 turn each other ON, to saturation point, very quickly and will remain turned-on, even after the triggering voltage has ben removed.

With the triggering voltage removed, the only way to turn the SCR OFF Is to either remove the anode voltage or to reduce the anode current to below the specified "holding current", *IH*, which ranges from 20 to over 100 miliamps for various types of SCR. So long as not less than *IH* is allowed to flow, the SCR will be "held" in the ON state.

So an SCR is really just a semiconductor switch, which may be likened to an electrically latching relay, in that, it will remain ON for as long as the supply voltage is applied.

RATINGS

In our crowbar application, the SCR will remain turned-on only for as long as it takes to "Pop" the fuse, just a couple of hundred milliseconds, during which time the anode-cathode voltage will be only a volt or less. Since this voltage was the source of triggering current, that influence is, of course, removed.

The forward ON current is the only SCR parameter for concern in our application and is specified in two forms:

ITM(RMS) is the current the device can pass continually with suitable heatsinking together with due regard for the maximum power rating of the particular device. The figure is 16A for type C164D and 35A for C228.

ITSM, the peak surge current, is a momentary rating and is usually specified for a time duration of one cycle at 60 Hz. For C164s it Is 160A and 350A for C228s

The form of specification of the latter is hardly relevant to crowbars and in fact the fusing current may be less than *ITM(RMS)* but it could sit somewhere between the two parameters.

In practice, type C164s work well for power supplies of up to 10A capacity, while C228s will accommodate regulators up to 30A.

MOUNTING CONSIDERATIONS

Power dissipation is no real problem because normally (we hope) the regulator will be functioning correctly and the crowbar will have nothing at all to do, so the SCR will be cold. Only in the event of a component failure will the SCR turn-ON and momentarily, will generate heat, even then not enough to warrant more than a very small heatsink, not more than two square inches in surface area.

On the subject of heat, a major disadvantage of the SCR is that its gate sensitivity, or triggering level, is affected by temperature variations. For this reason the device should be mounted away from energetic heat sinks.

The mounting stud of the type C164 forms the anode terminal and is connected to supply positive, therefore must be insulated from other metal work, connected to supply common. Insulators are not easy to obtain, not being supplied by the more common vendors, but can be had from more professional sources such as George Brown in Sydney.

To save a lot of hassle, I prefer to use the type C228E(3), available from Silicon Valley, to name one source. The "3" suffix indicates that the mounting stud is isolated electrically, thus eliminating the need for insulation. (The additional cost of insulators equalises the cost difference of the two types anyway.)

Isolated stud devices are recognisable by a third solder lug at the top, connected to the shell (anode).

The "E" suffix can be any letter and indicates the maximum working voltage and ranges from 60 Vto 800V, so is not relevant in our 13.8V application.

Some trouble has been experienced with some SCRs showing various "In-house" markings with the occasional intermittent gate terminals.

So, for those two reasons, the type C228E(3) could be the best choice, In addition, it has a higher rating.

Wiring to the anode and to the cathode should be sufficiently heavy to carry the fusing current as was explained In the original article.

CALIBRATION

Because of the wide spread of actual triggering voltage levels between particular devices, together with the tolerance spreads In 12V zener diodes, it is necessary to select a value for resistor R9 such that the crowbar will "fire" if the regulator output exceeds 15V.

The 15V threshold is chosen since it is the plus ten percent tolerance, normally specified for "mobile" amateur equipment, but any other "firing" level may be chosen to suit a particular need

Variation of the value of R10 has almost no effect on the triggering level, since SCRs are current operated devices and at the point of triggering the current in R10 does not change to any significant extent. At that point the gate-cathode voltage is about one volt.

The gate bypass capacitor C5 absorbs voltage transients which might otherwise cause false triggering, such as might occur at normal switch-on, one or two microfarads will do as the value is not critical.

The test circuit is shown in Figure 2 and can be built up In its final form, with the exception of R9. The actual regulator can be used as the variable voltage source, if a variable resistor of a couple of hundred ohms is connected in the common lead of the regulator IC. When set to minimum resistance, the voltage will be the design value (13V) which can then be increased to test the crowbar, a 10MFD capacitor across the pot will reduce ripple on the output.

It is not necessary to have a high current power supply in order to set-up a crowbar, nor is it necessary to expend a bag of fuses to achieve that end!

All that is required is a voltage source, variable between 13V or less, up to about 16V and capable of supplying 30 milliamps or more. A unit having adjustable current limiting is suitable, but not Indispensable.

Where only a high current supply is available, it can be used with the inclusion of RL (1 k-ohm, ½W), which will limit the SCR current to about 20 milliamps.

The meter (M1) indicates the triggering voltage and if RL is used meter (M2) indicates when the SCR has fired. Alternatively, the LED lamp may be connected in series with RL, making M2 unnecessary.

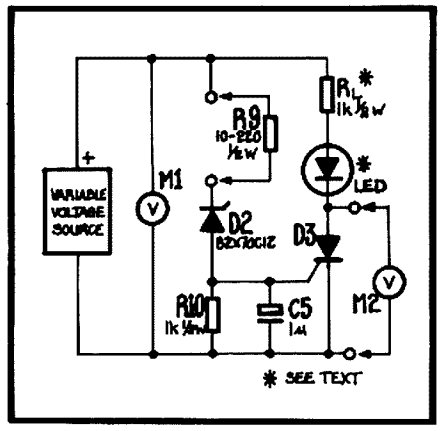


FIGURE 2

Another way, shown in Figure 3, is not to connect the SCR anode to the supply at all, but to use an ohmmeter to measure the change in SCR resistance, which, in the OFF state, will be several hundred k-ohms, or a couple of hundred ohms or less when turned ON. Be sure to connect the "Black" meter lead (battery positive) to the SCR anode. Depending on which ohms range is selected, IH may, or may not be exceeded, but It is the change In SCR resistance indication that matters.

So that is all there is to it, increasing R9 will raise the triggering level. The normally available value increments . . . 68, 82, 100, 120, etc . . . will allow precise enough adjustment, the actual value can be between 10 and 220 ohms.

Be sure to omit RL In the finished assembly!

The circuit shown in the original article was suggested to allow ease of inclusion in existing power supplies. The preferable connection point for the SCR anode is immediately after the fuse, FS1, as shown in Figure 4. Connection after the regulator Is satisfactory, since regulators do not fail by half measures, so the failed components will not impose significant Impedance on the fusing current.

TESTING SCRs

The state of serviceability of an SCR can be tested quite easily, using an ohmmeter.

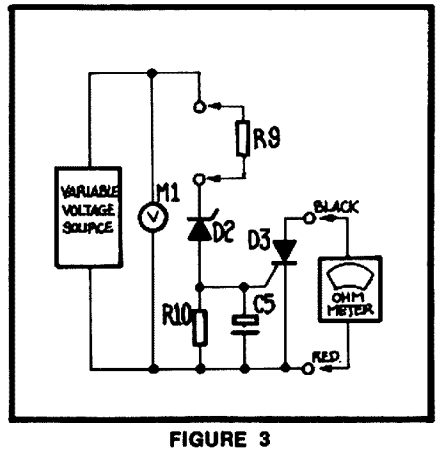


FIGURE 3

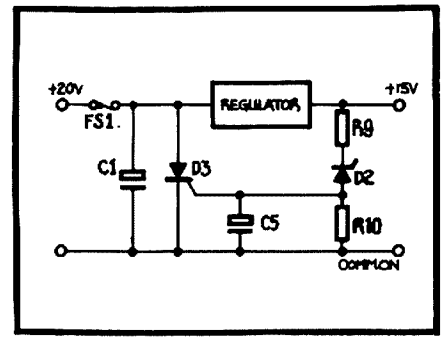


FIGURE 4

With the gate disconnected, the anode cathode resistance, in both directions, is several hundred k-ohms. With the ohmmeter battery positive, connected as in Figure 3, the SCR resistance will drop to a hundred ohms, more or less, when a resistor of around 100 ohms is connected between anode and gate. The SCR will remain In the ON state if the ohmmeter internal resistance can support IH. ■

EDITORIAL IN AUTUMN '81 ISSUE OF "LYREBIRD"

Does anyone honestly believe that the privileges and facilities enjoyed by Australian Amateurs could have been won by individual and unorganised efforts of single amateurs or separate clubs? The WIA has, without question, contributed tremendously in presenting our cause to the highest authorities and achieving official recognition which has enhanced our hobby and kept at bay, thirsty frequency-grabbing claim-jumpers. Our Government Departments, like their counterparts in other countires, are accustomed to dealing with recognised representative bodies. They certainly will not deal with individuals in matters of general policy. It is regrettable that there are some who rightly or wrongly are critical of, and won't support, the WIA for a variety of reasons. These people, however, are quite content to enjoy Amateur benefits which some seem to imagine are god-given rights. Younger and less experienced Amateurs do not fully realise what they owe to the WIA on their behalf. Surely it devolves upon us, who have enjoyed our hobby for many years, to set the example and do what we can to back the only authoritative association which can fight for us. ■

QSP

AR GOING PLACES

AR is certainly going world-wide — a typical example was the reprinting by reciprocal arrangement in "Radio ZS" (Journal of South Africa Radio League) of the article by Ralph Holland VK2ZZB, "Audio Activated Saturating Switch" which appeared in our August 1980 issue.

We have also agreed to requests for various article reprints from Ham Radio and 73 magazines. Radio Communication, QST and Break-in have reciprocal reprinting rights also.

You never know where "your" article may show up next. ■

VK2TTY News — An Insight

S. E Molen VK2SG
13 Pendle Way, Pendle Hill 2145

Have you ever wondered how the VK2TTY news started, or even who started it and why? Well let me tell you some of the history of the news broadcasts, and how they arrived at what they are today.

About four or five years ago there were only three RTTY stations in Sydney, VK2EG, VK2KM and VK2SG. There were others in other States, especially VK3 and VK6 as well as VK5. At this time there was a shortage of machinery. But fortunately some machines became available, and as there seemed to be little interest in them they were grabbed by the above three, cleaned, made to work, and put in the shack for future use.

Some visitors to these shacks were fascinated by machines printing overseas stations as well as various press stations. A few people were seen leaving various shacks with model 15s under their arms, and bits of paper in their pockets with circuits drawn on them! After weeks of sweating over hot soldering irons, noises started to appear on the air, and phone calls were made asking for test signals to be transmitted. VK2SG happened to be one of the chaps who had time on Sundays to radiate signals, and so most Sundays RYRYRYs appeared on the air from his place. But after many weeks he became bored with sending RYRYRYRYs! One week he had received a good signal from the States with some information about a convention at the statue of the "Wounded Boot". That may seem to be a little odd, but it appears that in the US, there is a statue to Paul Revere's boot, which was wounded when he was a colonel in the American army. So the next time VK2SG was asked to send RYRYs, he finished up with the story of the "Wounded Boot". That went down well!

About this time some of us decided to see how many were really interested in RTTY and if it would be possible to start an RTTY group. So the next week after the RYRYRYs an announcement was made that there would be a meeting of those who were interested in RTTY. If my memory is correct, 143 people turned up at the meeting. That decided us to form the VK2 RTTY group. Also it was suggested that a broadcast be made every Sunday at 0030Z. Originally the call VK2SG was used, but after some problems about the use of VK2SG for broadcast purposes, the call VK2TTY was obtained from the Department, with permission to do the broadcast. And so the broadcasts started; one might say from a small start big things have happened. We think that the coverage that the news gets at the present is a big thing. It certainly seems to have a large viewing audience, and we try to present a good general coverage of news, both Australian and overseas Of course, we are always looking for news from anywhere.

After three years or more of transmitting the news, one begins to feel that it is getting terribly automatic. Some people take it all for granted, and really don't think much about the gathering of the news. They possibly think that it all happens with ease. All the news is supplied, and all the news editor has to do is to put it together into some kind of form and present it. But I can assure you that it is not quite as easy as that (I wish it was). A fair amount of work goes into the gathering of information for the Sunday broadcast. Let me tell you how it all happens.

Firstly, approximately eleven news broadcasts are printed during the week, such as GB2ATG, W1AW, VK4TTY and DL2TX. W1AW is the main news service that is watched, as they broadcast every day and change their news items from time to time. There may be some items in their broadcasts that would be of interest to Australian amateurs. At times, of course, even they have interesting news, so we look further for items. This entails looking at the bands and seeing what the chaps are talking about, maybe that can be used, who knows? We watch several bands, usually 14, 21 and 28 MHz with 7 MHz for local news.

Don't imagine we prefer overseas news, we are very interested in local news as well, but we receive very little so have to depend on the overseas items. After all, overseas doings affect us here as well, and so could be of interest to Australians. One point here is that happenings in VK2 could be of very little interest for example to VK6. What we want is news of Australian general interest. Then, of course, we have the DX news. Here again we watch W1AW for the phone and CW DX news, and use it because we feel some of our members appreciate DX information. Then there are the RTTY DX notes. At the moment VK2TTY is the only station in the world (as far as we know) that sends out RTTY DX information. This information is gathered off air from various parts of the world, from stations such as ON4BX, I8AA, DK3CU, K7BV, JA1ABC, JA1DSI and several others, all of whom are keen DX men and know who is doing what in the DX world. We, of course, return the compiment by telling them of activity in this part of the world, or news which they may have missed. In this way we keep up with the latest DX doings, again because we feel that some members are interested in this side of RTTY.

Having gathered what news we can, we read it through to make sure that it is still interesting, then we edit it to fit without taking three pages to tell a one paragraph story.

After the news has been read and edited, it is put on tape. This is usually done about 2000 hours local time on Saturday so that if there is anything interesting from Europe on Saturday afternoon, it can be included as the latest news for the Sunday broadcast. Cutting the tape and correcting the spelling usually takes about two hours. It is then run through completely to check running time. Further editing may take place at this point, so that the tape will occupy 30 minutes. Usually the finished tape is fairly close to time and sent as originally typed. Then another look around the bands. If anything special is heard, a further bit of

The new generation of ICOM gear continues with the Mobile IC-730 HF All Mode Transceiver able to transmit 100 watts of RF continuously. The design of every detail has been carefully considered. Notice how all the major controls are located conveniently for mobile operation!

- Choice of 1KHz, 100Hz or 10Hz tuning speed for quick and precise QSY.
- One memory per band for storage of your netting frequencies.
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Your new ICOM IC-730 comes with all these features but only measures 9.4cm H x 24.1cm W x 27.5cm D. Ideally suited to mobile use or with the addition of power supply ICPS15, the 730 makes a base statio.. :ull of wizardary.

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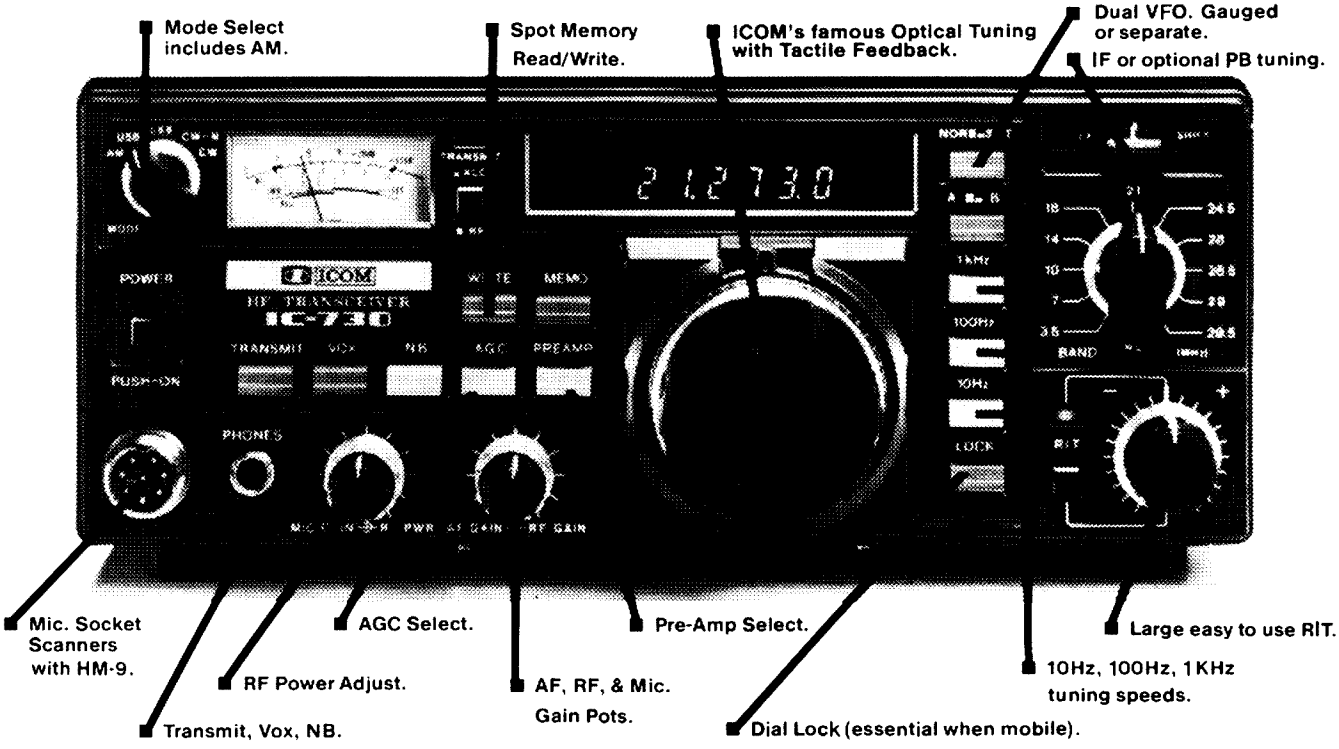


Typical Performance

General

Frequency Coverage: All WARC bands.
Frequency Control: CPU based 10Hz steps with dual VFO's.
Frequency Readout: 6 digit 7 segment displays.
Power Requirements: DC 1.8V ± 15% neg. ground, 20 Amps on tx. Weight: 6.4Kg.

Transmitter

RF Power o/p:
SSB = 200 watts PEP input
CW = 200 watts input.
AM = 40 watts output.
Adjustable 10 watts to max o/p
Harmonic output: 50dBC.
Spurious output: 50dBC.
Unwanted side band: 55dBC.

Receiver

System: quad conversion superhet. Complete with IF shift control.
Sensitivity: (pre-Amp enabled).
SSB, CW: Less than 0.15uV tor 10dB S+N/N.
AM: Less than 0.3uV lor 10dB S+N/N.
Selectivity:
SSB,CW: 2.4KHz at −6dB; 4.8 KHz at −60dB.
AM: 6.0KHz at −6dB; 18.0KHz at −60dB.
Spurious Response Rejection: > 60dB.

Vicom International Pty Ltd
68 Eastern Road,
South Melbourne, Vic. 3205.
Phone (03) 699 6700

339 Pacific Highway,
Crows Nest, N.S.W. 2065.
Phone (02) 436 2766

VICOM

*** As at time of publication.**

tape may become a stop press item on the Sunday broadcast.

So we have assembled the news, cut the tape, and we are ready for the broadcast. But what about the equipment? None of the equipment used by VK2TTY is owned by ANARTS but is all privately owned by one of our members. For instance, the usual operator of VK2TTY, VK2SG, radiates on 14090 and 7045 kHz simultaneously. This requires two transmitters and aerials. For 20 metres we use a Drake TR4C driving a Dentron MLA2500B linear, for 40 metres a FT107 driving a Henry 1KD-5. Yes, both are big linears, but considering that we are running 400 watts output on both bands *for the* broadcast period, one needs a linear that will run that output for the period without issuing smoke! I can assure you that they do not get too hot during the broadcasts (well, not *too* hot!). The two metre broadcast is picked up from 20 metres and re-transmitted by VK2ZXL, who has a very good signal. After the 20 metre broadcast, VK2TTY then transfers to 21095 kHz to broadcast the DX news for those interested. Even some overseas stations look for this broadcast. The aerials used on 20 metres are the quad at 65 feet, and for the 40 metre broadcast the G5RV at about 50 feet. The broadcast is repeated *on* 3545 kHz at 0930Z in the evening, again using the FT107 and the Henry linear to the G5RV and running 400 watts. With this equipment we are apparently getting a god coverage around Australia. There are times, of course, when conditions are against us, and the coverage may not be as good as it should be. We have yet to work out how to beat these circumstances. By the way, the quad is usually pointed about Darwin, as it has been found over a long period to be the best direction, but we are always open to suggestions, provided that all stations now receiving the news will still receive it *from* the suggested beam heading.

"THIS IS VK2TTY. AS FROM SUNDAY 16th JANUARY 1981, FOR A TRIAL PERIOD, VK2TTY WILL BE RADIATING ON TWO FREQUENCIES IN THE 20 METRE BAND, THE SECOND TRANSMISSION WILL TAKE PLACE ON 14095 kHz WITH A BEAM HEADING WEST. WHILE THE NORMAL TRANSMISSION ON 14090 kHz WLL MAINTAIN ITS NORMAL NORTHERLY BEAM HEADING. THE 14095 kHz TRANSMISSION WILL BE RADIATED (FOR THE PRESENT TESTS) BY VK2DGA, WHILE THE 14090 kHz TRANSMISSION WILL BE DONE BY VK2SG. THE TIME OF THE BROADCAST WILL BE AS USUAL — 0030 GMT.

YOUR REPORTS AND COMPARISON OF THE TWO TRANSMISSIONS WOULD BE APPRECIATED, ESPECIALLY FROM VK5 AND VK6.

IF THE TESTS ARE SUCCESSFUL AND COME UP TO EXPECTATIONS, WE HOPE TO MAKE THESE DUAL TRANSMISSIONS A PERMANENT FEATURE, FOR THE BENEFIT OF OUR MEMBERS IN VK5 AND VK6. THIS IS VK2TTY."

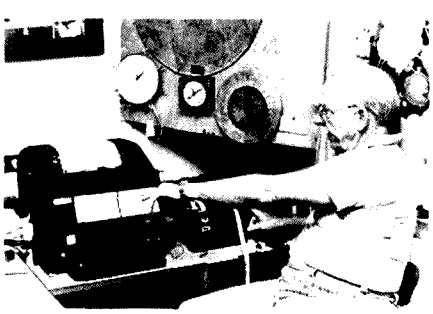
At VK2TTY's present location, it is possible to change bands by operating the necessary switch. Any transmitter can be switched on or off without affecting any other transmitter level, nor is there any inter-action between transmitters. The audio from any one of four receivers can be directed to the demodulator and printed on either the VDU, model 15, or the model 14 tape perforator if required. This again is just a matter of selecting the correct switch associated with that receiver. The VK2TTY CW identification is sent from one head of the model 14 tape distributor (which has three heads). This head has been modified to send CW at 15 w.p.m. The other two heads of the model 14TD are wired in such a way that it is not possible to run two heads at the same time, but on stopping one head the next selected *head will* immediately start and continue without any break in the continuity.

So, that is how the news is gathered, asesmbled, typed and transmitted. From one week to another about twelve hours are spent watching the various signals on the air to see what is interesting and what is happening around the world as well as in Australia. Maybe we miss things at times, but we try to do the best we can!

One last thought. We are always looking for news from anywhere. If you have sent us some, and we have not used it, you may not have addressed it to the broadcast officer, or it may be that it was of purely local interest, or it could mean that for that week we had a lot of news and we just could not use your effort at that time. We may use it later, if it still applies. It is not that we are not interested, we would be very happy if the news were all Australian, but with no news arriving we have to use what we consider the best available. Not all the happenings in the world get into the newspapers. Some, less important than others, may still be good news and we hope to use them before they are "dated".

So, please send us what you can to help us present an Australian news service, not VK2, or overseas. We have always strived, and will continue to present Australian news, but it is only with *your* help that we can present *your* news.

We hope that this has been interesting to you and has given you some idea of how the news arrives at your place on Sundays. ■



Two views of author and shack.

RFI — EMC — EMI — EMP — EME

Tony Tregale VK3QQ
Federal EMC Co-ordinator

Radio Frequency Interference — Electromagnetic Compatibility: Call it what you will! World-wide it is one of the biggest problems for everyone connected with radio and electronics.

Unlike big industry, the Amateur Radio Service is a non-profit making organisation and does not have large finance available with which to protect its interests. The main assets of the Amateur Service are: technical knowledge, responsibility, enthusiasm and a great interest in the continued well-being of the service.

In this, the year of the review of the Wireless Telegraphy Act, the WIA are taking a responsible attitude to the EMC problem by co-ordinating a response to the proposed new RFI legislation, as well as setting up an EMC Advisory Service, under the direction of the Federal EMC Co-ordinator.

The high-powered legal angle of basic legislation is perhaps, beyond the scope of the average amateur operator — we have to leave most of this to the legal "boffins"! However, I'm sure they will require lots of assistance with the "nuts and bolts". This is the area where all amateurs can help by sending constructive comments and suggestions through the National EMC Advisory Service.

EMC advice of a down-to-earth nature is available to all Australian amateurs through the National EMC Advisory Service. The main aim of the service is to ensure that all Australian amateurs have access to the best national and international EMC advice and technical information, at the lowest cost. It is intended that the service should complement and assist any existing RFI groups — not clash with them. Main direction is towards: the newly licensed amateurs and those who have worked hard for their licence, but on the first press of the key are in trouble with RFI.

The service operates on a central data-bank principle, together with a pool of RFI specialist advisors. In order to maintain a large selection of the best available data, the central file must be fed through the co-operation of all amateurs, in sending details and reports of any RFI problems or answers, suggestions, ideas and any general information in connection with EMC.

An information exchange will benefit *all* amateurs for: "United we Stand and Divided we Fall". ■

Around Australia with Amateur Radio

Ron Jones VK2VND
6 Curtis Court, Carlingford, NSW 2118

Early in 1980, nine of us decided to do a trip around Australia by road from Sydney, north and return. The party consisted of four wives and five males. Considerable planning was done by Dick Millers VK2NRM and his wife, Barbara. The vehicles to be used were a Ford F100 (Dick and Barbara), a Chrysler Galant Station Wagon (Dot and Norm Williams) and the balance of us (Patricia and Ron Prudarnes, John Armstrong and Joy and myself, Ron Jones VK2ND) in a Toyota Land Cruiser. A lot of work was done on the vehicles to get them ready, the F100 was set up with two radios, TS120V, and CB unit for communication with the road trains we would encounter, the Chrysler Galant CB only, and the Land Cruiser was set up with TS120V and CB unit.

A date was set, and Dick VK2NRM took off with his party of four on Sunday, 20th September, and made for Lightning Ridge, where contact was made with the rest of us back home on 80m that night, reporting that everything was OK.

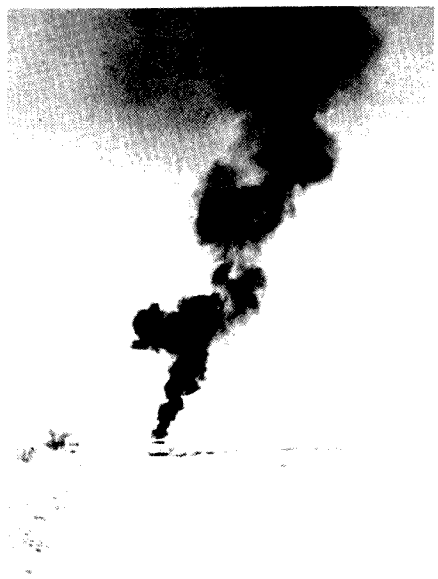
I might add that five of us could only get six weeks leave for the trip, whereas Dick VK2NRM and his party had eight weeks leave.

A sked had been lined up for us back home to contact Dick and his group in two days time but to no avail. We received news by land line that approximately 60 km south of Kynuna (Old.), with a temperature of 42 degrees, Dick met with disaster, a slow combustion fire started in the back of the F100 and Dick and Barbara only had time to get out of the vehicle before it was completely engulfled in flames — the only warning being that Dick couldn't see out of his rear vision mirrors and after walking to the rear of the van found it completely in flames. Dick shouted at Barbara to jump and all they saved from the fully equipped F100 was a cooler with two cans of soft drink and what they stood up in — thongs, tee shirt and shorts. The heat was so intense they could only watch the $20,000 bonfire and do nothing about it.

Dot and Norm had been travelling some way ahead due to the horrendous dirt road and stopped at Kynuna to wait for Dick and Barbara, not knowing of their terrible plight. In the meantime a transport vehicle picked up Dick and Barbara and brought them into Kynuna. Here they got a lift into Cloncurry where the people of this town took them under their wings and showered them with good old Australian hospitality.

And now we find out what Amateur Radio is all about.

Thanks to Richard VK4NOD — he contacted us back home with further news that everyone was safe and sound and that the four of them would be continuing



Dick and Barbara meet with disaster between Kynuna and Cloncurry.

on the trip around Australia and would wait for our group in the Toyota to catch up with them in Mt. Isa.

We arrived in Mt. Isa and met Dick and his group who were full of praise for what the local VK chaps had done in arranging matters. Dick at this stage had purchased a new Falcon Station Wagon for the balance of the trip but no radio.

So now we only had one radio, the TS120 in our Land Cruiser, to try and keep in touch with George Millers VK2VVO and Alf Barns VK2CE, back home in Sydney. Contacts were made regularly either on 10 or 15 metres which cheered everyone up immensely. We continued on to Camooweal, then on to the Three Ways just north of Tennant Creek, and viewed the John Flynn Memorial. From there on to Katherine and Kunnunurra, south to Lake Argyle, which has a capacity nine times that of Sydney Harbour and is a fisherman's delight, then on to Halls Creek. Contact was made back home to Sydney again, to VK2VVO and VK2CE.

Local information was given to us after we had contacted Keith VK6KC at Kuri Bay and Jack VK6RJ at Broome, regarding the road condition to Fitzroy Crossing; and so on to Broome.

The people we met through Keith VK6KC in Broome were wonderful to us. I might add that he is stationed in Kuri Bay as radio operator there for the company he works for, and it's a pretty lonely spot. Thanks Keith!

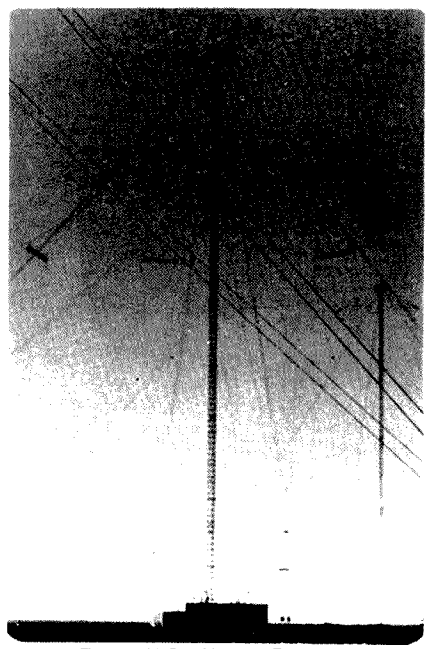
We then continued on to Port Hedland, a very lonely trip, 600 km of nothing but open spaces and only one place halfway in between called Sandfire Flats, which has petrol and a cool drink and accommodation if required. At Port Hedland we made contact with Brian VK6NBX, who we had spoken to from home in Sydney, so it was nice to hear a familiar voice.

Our next stop was to travel inland to Wittenoom and on to Tom Price. Now the country changes again, hills and hills of iron ore as far as one can see. Tom Price is a wonder — to think that a whole town can be built so far inland and look like any Sydney garden suburb. Throughout the whole of the open cut iron ore field radio is used exclusively by all the vehicles to control all operations. We then followed the railway line to Dampier, where the iron ore is taken by trains that have over 160 trucks on them, each carrying around 150 tons of ore.

At Dampier we were lucky to get in touch with Brian VK6NBX again, and also Wally VK6NCL and Jack VK6NXL, who are all in the Geraldton area, but more of these chaps in a moment.

Our next stop was to get to Exmouth and to contact a good friend Marty VK6FO, who is based there.

Again, this is what Amateur Radio is all about. To arrive on a chap's front door at 8.30 p.m. with a party of nine people in all, and to be welcomed in the way we were, and the following day to be given the VIP treatment that was extended to us — Marty, on behalf of everyone, thanks!

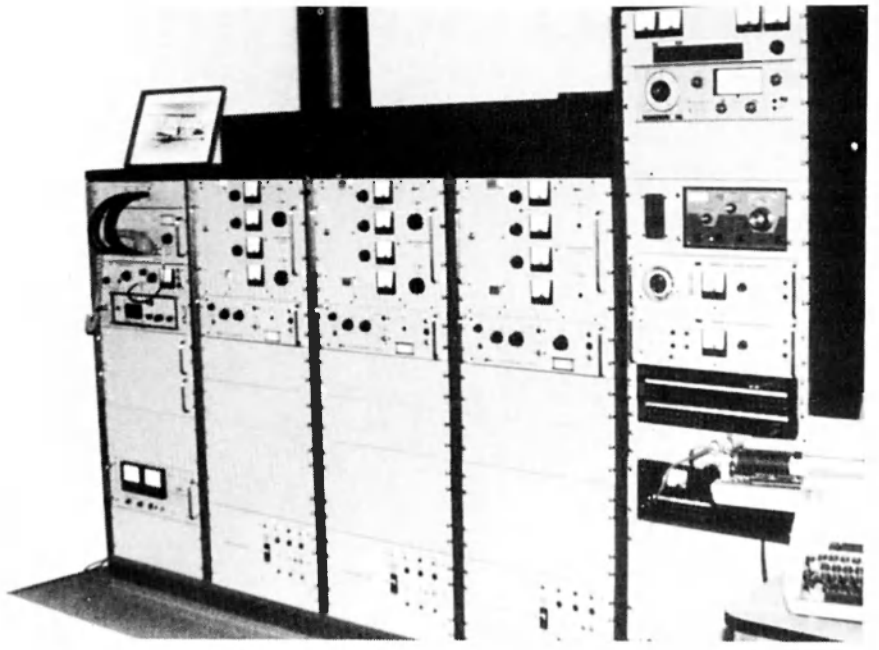


Tower Zero, U.S. Naval Base, Exmouth. 1274 ft. high, it has lift for two people inside. Centrepoint for all the rhombics.

Carnarvon was next on our list to see; one couldn't miss that large communications dish operated by OTC and tthrough their generosity an inspection was arranged. One more for the books.

OTC dish at Carnarvon.

On to Geraldton, to be brought into town on 10 metres by our good friends Jack VK6NXL and Wally VK6NCL. Jack, we all thank you for that morning tea; you and your good lady. But Wally wasn't to be outdone; we met him at the airport and Wally, having the use of a Cessna 182, took everyone in our party for a flight over Geraldton district and coastline — absolutely the only way to travel, but one can't stop when one wants to.



Flying Doctor base at Kalgoorlie. Transmitter and receiver.

Then everyone finished up at Brian's VK6NBX and his wife Rhonda's property for dinner. What hospitality!

On to Perth. Five days of rest here and everyone wishes we could have more time but we are only halfway around. Contacts still being made on 15 metres back home to Sydney, to VK2VVO and VK2CE.

Down to Augusta, Albany and Esperance, and very little radio contact until we move north to Kalgoorlie and make contact with some VK6 and VK5 chaps. We visited the Flying Doctor base where I met Lorraine Winchombe, who does a wonderful job, being the operator both for the base and

Lorraine Winchcombe (left) with nursing sister. Lorraine operates base and conducts the School of the Air.

the School of the Air — keep up the good work, Lorraine.

We had been told that if we operated on the border of VK6 and VK5 an award was available from the VK6 radio club in Perth, so we set up camp just past Eucla and made contact on 80 metres with Bert VK6NPM, Con VK6PM, Bob VK6GD, while we were right on the border. Thanks chaps. (Award received.)

Continuing across the Nullabor Plain, you find you are only a few kilometres from the ocean and the scenery is wonderful. From here we travelled down to Port Lincoln, around the Eyre Peninsular to Adelaide, where we saw the city at night from the hills. From there on to Victor Harbour, up to Renmark, down the Murray River to Mildura on to Hay, Narrandera and back home to Sydney.

The total trip took six weeks (for five of us) and eight weeks (for four of us), we travelled 16,842 kms in that time and we saw some wonderful things in this country of ours and met some wonderful people, through Amateur Radio. ■

The author (left) and Wally VK6NCL with his Cessna 182.

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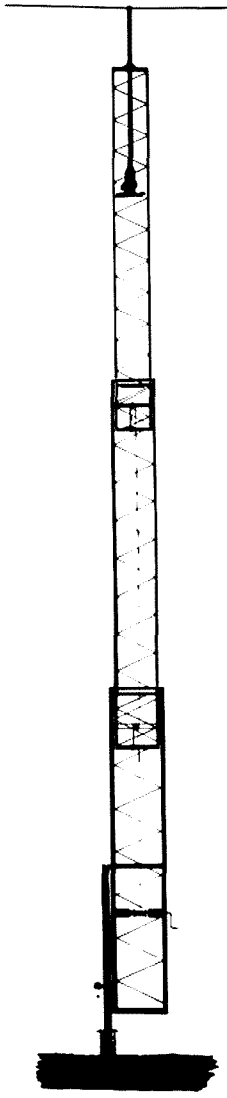

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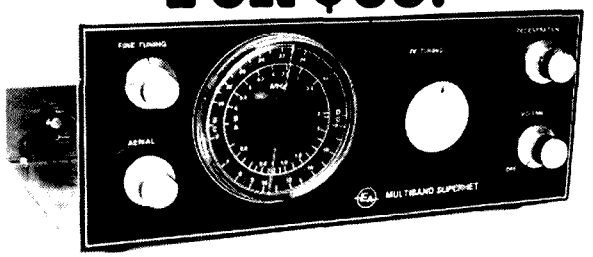

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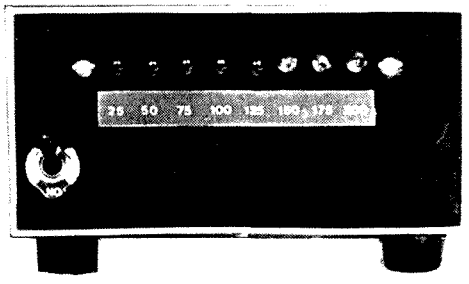

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Operation Whitestick

Len Childs VK3AKU
5 Trends St., Dandenong 3175

1981 is the Year of the Disabled and we have invited disabled amateurs to contribute articles. — This is the first:

Often, during a QSO with a new contact, I am placed in the position of having to say, "Sorry, but I am a blind operator". This invariably brings forth the comment: "Ah, you are a whitestick operator", together with a number of questions such as, "How do you cope, how do you find your frequencies, how did you get your licence"; and so on.

This contribution will, I hope, help other hams understand just how we do cope.

My first contact with radio was in the early 1930s when, as a schoolboy, with the aid of an older friend, I managed to make my first radio gear, a crystal set, and acquired a little knowledge about radio in general.

During World War 2 I had some contact with radio used on aircraft and, after the war, owned and operated my own radio and electrical business for a short while. At this time I also attempted to get a ham radio licence but failed the CW. I therefore shelved the idea for the moment.

The reader may have gathered that I was not born blind but lost my sight late in life at the age of 55 and, as I'd spent a lifetime in electrical engineering, it was natural that when I reached sixty, the retiring age for my profession, I turned to radio to fill in my leisure hours.

The first thing, of course, was to obtain a licence. This was done by following the same general course as a sighted person. With the aid of a friend who was already a licensed operator, I attended night classes conducted by the local radio club. Not being able to read textbooks, it was necessary to have tape recordings for home study. Some of these tapes were already available while others were kindly produced by my friend. In all I used some sixty hours of tape in order to obtain the knowledge required to pass the examinations.

I learned CW in much the same way as a sighted person would with the exception that I had to start and journalise everything, right from the beginning.

Thanks to the co-operation and understanding of the Telecom Department and to the courtesy and kindness of its officers, I was able to *undergo oral* examinations in my own locality.

I managed passes in all sections and my appreciation goes to the supervising RIs for their understanding in my most nerve wracking experience.

I now had a licence. The next problem was to get on the air. To do this I needed equipment. After much consideration my choice of equipment was a fully solid state rig which had the advantage of that, whenever the band-change switch was operated, the frequency zeroed back to the lower edge of the band. This, with an analog tuning knob, meant that I could find any frequency on any band. The rest of the functions of the rig were very simple to understand and operate so having an ear accustomed to audio effects, signal reports, etc., came fairly easily to me.

It wasn't long, however, before just successful operation on air didn't seem good enough, and I realised that if I wanted to be on par with sighted hams with full knowledge of such things as SWR reading, power up the pole, etc., I would need aids to help me achieve this.

Enquiries throughout VK3-land showed that there was no group or club who had ever made a concerted effort to help the disabled amateur or disabled person who wished to become an amateur. Therefore I contacted some friends in the US who, through their channels, provided project material of this nature.

Having the material in hand, I then enquired if there were amateurs in my area who would be willing to help. There certainly were. I'm happy to say that, with their help, I now have some of these aids in actual operation, with others to follow. My sincere thanks go to this small group, for without their help I might have given up long ago.

These aids include an antenna tuning unit INDICATING AUDIBLY when an acceptable SWR reading has been achieved.

A talking frequency readout which consists of the voice board from a talking calculator Interfaced with the visual digital readout. At the push of a button this device QUOTES VOCALLY the frequency appearing on the display.

An audio meter reader which can be interfaced with any meter or multimeter, giving an audible indication of the percentage of full scale deflection which the meter reads.

A 24 hour braille clock, in my case kept on GMT.

Audio light probe which gives an audible signal when LEDs, etc., are being checked and found glowing.

Other items which could be classed as standard have been manufactured for me.

The Author

These include power supplies, dummy load, etc.

As well as the above I also have literature on CW sounding frequency readout, audible multimeter and others which have not yet been evaluated. Information on any of the items mentioned is available to any interested person.

All other equipment used in my station is of a standard nature with the exception of a braille writer which I use for keeping my log and the antenna rotator indicator which has had its front removed so that I may follow the pointer by touch. QSL cards I write out with the aid of a slotted masking plate, made for me by another one of those helpful hams without whose combined help I could not have reached my goal.

I often wonder how much easier it might have been if we had in Australia an organisation similar to the Handi Ham organisation in the USA.

And for my final final may I say that I am not truly a white-stick operator but more likely could be termed a Guide Dog mobile.

Good DXing. 73s.

VK3AKU signing, clear. ■

QSP

OX LISTENERS

April 1981 issue of the DX Post received from the Southorn Cross DX Club Inc. of G.P.O. Box 336, Adelaide, S.A. 5001. A very well presented magazine for the broadcast station listeners and packed full of useful information and frequencies. Definitely a "must" for listeners interested in this field. ■

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C. T. Vidler VK1KV
Hon. Sec. and Publicity Officer

REPEATER NOTES

The Mount Ginini and Black Hill Repeaters continue to provide very good service, and this was particularly evident during the Easter weekend with a considerable amount of traffic being generated by mobile stations on the Hume and Monaro Highways as well as a large number of visitors to Canberra.

It is expected that these two repeaters will also provide their usual sterling service to travellers passing through Canberra on their way to the Snowy Mountain snow resorts.

Input frequencies to these repeaters are as follows:—

Mount Ginini: Channel 6350 (47) — 146.350 MHz.

Black Hill: Channel 6300 (46) — 146.300 MHz.

The Ginini repeater is located about 40 km south-west of Canberra at about 5800 feet above sea level and Black Hill is about 15 km west at 2800 feet.

Max VK2ZLX has advised VK1 members that it is hoped that the new Nowra area 2m FM repeater, Channel 7200 (76) will be placed in service on the Cambewarra Mountain, near Nowra, in about one month's time. Max reports that it is probable that with 36 watts out of an omni-directional antenna this repeater will be usable by VK1 2m addicts.

It is hoped that this Division's UHF repeater will be installed and operational before the onset of winter in the high country closes the road to Mount Ginini.

AMATEUR RADIO CLASSES

Classes conducted by this Division are continuing at Melba High School.

While the number of students at the AOCP classes remains constant there has, fortunately, been a fall off in the number of students at the NAOCP classes. Maybe this only proves that it is difficult to conduct a "crash" course for the May exam in conjunction with a full course for the November exam. Anyway we wish the ongoing students good luck.

DIVISIONAL PROPERTY REGISTER

The Division's Committee is anxious to compile an up-to-date list of Divisional assets. The Property Officer, Fred VK1MM, has had a similar lack of success in locating a number of items, includin:—

Several CW practice oscillators,
Books, and
A chassis punch set, etc.

One of the missing items is of particular historic interest. This device, constructed mainly of brass, outputs CW by means of a rotating drum, pins and a punched paper tape.

If you have, or have seen, any of these items please notify Fred on 58 1354 (AH) or 72 2224 (BH).

It is not intended to recover all of these items but merely to record their locations.

NEW MEMBERS

The President, Committee and members of the VK1 Division are pleased to note the considerable number of new members who have joined the Division recently.

MONTHLY MEETINGS

The monthly meetings of the VK1 Division are held on the fourth Monday of each month in Room 1 (downstairs) in the Griffen Centre, Bunda Street, Civic. Doors open at 7.30 p.m. for QSL business, book sales and the usual technical talk.

These meetings are kept completely informal. Most evenings we have a speaker to address us on some topic related to radio.

Scheduled for an early date is a talk by one of the staff of the Air Traffic Control Tower at Canberra Airport. This talk will be, we hope, a preliminary to a visit to the Air Traffic Control Centre. (Sorry, fellas, but no "hands on" experience during this visit. Hi Hi.) ■

VK2 MINIBULLETIN

COUNCIL REPORT

At its April meeting, Council welcomed Castle Hill RSL Amateur Radio Club to affiliation with the Division. Letters were received from three members complaining about interference from the Sydney Channel 0 TV test pattern. Council decided to write to SBS requesting that the Channel 0 test pattern transmissions be curtailed to allow daytime amateur operations on 6m. Two members in the Sydney area have volunteered as Intruder Watch reporters. Volunteers are still needed in country areas of NSW to ensure Statewide monitoring of commercial intrusions into our amateur frequencies. If you want to help preserve our bands and can send in reports on intruders, please write now to the Divisional Secretary, Box 123, St. Leonards 2065.

Many thanks for recent donations to the Division's Tower Fund from A. Tilley $20, Castle Hill RSL ARC $5, anonymous $5, Hornsby ADARC $30, Blue Mountains ARC $20, J. Spencer $10, T. Mills $25, S. Pall $20, J. Pages $20, R. Fookes $25, A. May $30, Wagga ARC $32 and N. Turner $10. The fund now (1/5/81) stands at $592 with a target of $2,000. If you would like to donate to this fund, please send cheques made out to the WIA to Box 123, St. Leonards 2065.

The seven Divisional Councillors will hold the following positions on Council for 1981/82: **Athol Tilley VK2BAD,** President, Affiliated Clubs Liaison; **Susan Brown VK2BSB,** Secretary, AR sub-editor, publications; **David Thompson VK2BDT,** *Treasurer*, 2nd Vice-President; **Tim Mills VK2ZTM,** 1st Vice-President, WICEN, Repeaters and Beacons; **Stephen Pall VK2VHP,** Education, New Membership; **Henry Lundell VK2ZHE,** Technical and Property Atchison Street; **Jeff Pages VK2BYY,** Broadcasts, Property Dural. In addition to Council positions, the following people were also appointed: Correspondence Course Supervisor, **Cec Bardwell VK2IR;** Technical Dural, **Roger Henley VK2ZIG;** Slow Morse Supervisor, **Mark Salmon VK2DI;** Library Officer, **Bill Hayes VK2AJL;** Education Service Supervisor, **Ken Hargreaves VK2AKH;** WICEN State Supervisor, **Howard Freeman VK2NL,** WICEN Committee, **Michael Richter VK2BMM, David MacKay VK2ZMZ, Neville Wilde VK2DR, Arthur Giles VK2ZGA, Christo Simeonoff VK2ZAX, Sidney Griffiths VK2AHF,** and **Eric van de Weyer VK2ZUR;** Dural Committee, **Doug Morison VK2ZYM, David Walters VK2AYO, Phil Cole VK2BQC, Charlie Walker VK2BXX.**

Volunteers are still needed for the Repeater Committee, Intruder Watch and AR Publicity Officer. If you can assist, please write to the Divisional Office.

At the April Council meeting, Stephen Pall presented ideas on proposed activities to celebrate the 75th anniversary of the

WIA in 1985. If you, as a member, have any ideas on how the oldest amateur radio society in the world should celebrate its 75th anniversary, why not jot them down and send them in to Council?

As cracker night is a week earlier this year, the original date chosen for the next Divisional auction clashed with the VK2WI fireworks night at Dural. The auction has been postponed to Saturday, 27th June, at 1 p.m., 14 Atchison Street, Crows Nest. Items from members for auction will be accepted between 10 a.m. and 12 noon on the day of the auction.

As from the AGM of 28th March, Articles 82 and 48c of the NSW Division's Memorandum and Articles of Association have been deleted and replaced with the following:—

82. Any club whose membership includes in part or whole five (5) or more Ordinary Members of the Division having a common bond, either by reason of geographical affinity, or mutual purpose or interest, or otherwise, may affiliate and operate within the framework of the Division.

48c. Be forwarded to the Office of the Division at least thirty (30) days prior to the date of the Annual General Meeting.

DURAL REPORT

The new studio facilities are nearing completion thanks to the efforts of Doug VK2ZYM and Reg VK2ZCK. By the time you read this, the broadcast should be originating from Dural on a full time basis. If you would like to volunteer as an engineer or news reader for the Sunday broadcasts, contact the Divisional Secretary. Volunteers would be rostered on a two/three monthly basis.

Tranmissions are now provided from Dural on 6 and 2m SSB, the frequencies being 52.12 and 144.12 MHz. The transmitters used on these frequencies, which were built by Jeff VK2BYY, have a common exciter and feed approximately 10W PEP into the beacon antennas. Consequently, the Dural beacons will be off air on Sundays between 10.45 a.m. to 12 noon and 7.15 p.m. to 8.20 p.. The 10m beacon is now operating on its permanent frequency of 28.262 MHz using A1 (CW) identification. The 2m beacon will be moving to its assigned frequency later this year.

VHF MOBILE TRANSCEIVERS

The NSW Division has for sale to NSW members a quantity of the following units:

1. AWA MRT 25As, complete, less crystals.
2. AWA MRT 25As, incomplete, less crystals.
3. Pye MVF 516s, complete, less crystals.
4. Pye MVF 516s, incomplete, less crystals.
5. TCA Type 1675s, complete, less crystals.
6. TCA Type 1675s, incomplete, less crystals.

Complete units are $10 each, incomplete $6 each. This price includes packing and rail freight to nearest railway station. Goods are for sale to members **ONLY**, for amateur use **ONLY** and are not for resale. When placing your order, please specify first, second and third preferences in case your first choice is not available. Send cheques made out to WIA Disposals with your order. The offer closes on Saturday, 27th June. If there are more orders than units, a ballot will be conducted. Any units left over will be auctioned on June 27th.

Details of three Clubs affiliated with the NSW Division:—

☆

CASTLE HILL RSL AMATEUR RADIO CLUB

C/- 16 Mills Road, Glenhaven 2154.

Meetings: 1st Mondays at Castle Hill RSL, Castle Street, Castle Hill.

Classes: Novice, Tuesdays, 7.30 p.m., at Castle Hill RSL Club.

President: R. Hudson VK2YVO/VKP; Secretary: C. MacKinnon; Publicity: I. O'Toole VK2ZIO, phone 680 2112 AH.

Club call sign: VK2DCB.

☆

TUMUT AND DISTRICT AMATEUR RADIO CLUB

93 Lockhart Street, Adelong 2729.

Meetings: Wednesdays, 7.30 p.m., Tumut High School.

Club is solely for tuition of persons wishing to learn radio theory and CW.

President: K. Dodd VK2DLZ; Vice-Presidents: R. Weeden VK2PN (phone (069) 47 1026 Bus.), V. Nugent VK2ALZ; Secretary: E. Dean.

Tumut Club will be hosting the 1981 SWARS Convention in October.

☆

BLUE MOUNTAINS AMATEUR RADIO CLUB

PO Box 54, Springwood 2777.

Net: Tuesdays at 8 p.m. on 3540 kHz using VK2AUX/NCM club call signs.

Meetings: 1st Mondays, 8 p.m., at club room, Springwood High School, Chapman Parade, Faulconbridge. (If public holiday 2nd Monday.)

Classes: Mondays except club meeting night, Springwood High School.

President: P. Willis VK2DAV; Vice-President: J. Dunn VK2VJD; Secretary: J. Belshaw VK2VPG; Other Committee: T. Ryeland VK2BRQ, E. Milne VK2ZRI, N. Walker VK2ZNH, D. St. Ruth VK2NQN.

Repeater: VHF VK2RBM channel 7050.

COMING EVENTS

6th, 7th, 8th June, Oxley Region Field Day at Port Macquarie. Write to PO Box 712, Port Macquarie, 2444, for a programme.

27th June (Saturday), 1 p.m., Divisional Auction at 14 Atchison Street, Crows Nest. Items for auction in before 12 noon.

Copy for inclusion in the VK2 Minibulletin must reach Box 123, St. Leonards 2065, two days before the end of the month prior to publication, e.g. by 28th June for August AR.

Susan Brown VK2BSB. ■

QRK5

A monthly transmission from the Victorian Division WIA.

A small disadvantage of this column is that it lags by 28 days, that is, I have to have my copy in to the Editor about a month before the magazine reaches you. Most times we can tolerate this, or else study the crystal ball more carefully. For example, as I write this there is still about a fortnight before the Annual General Meeting of the WIA Victorian Division. I've got a very good idea of WHO will be on your new Council — so have the other nine victims, but who will be what? . . . now there's a question.

I did say victims, and I mean it! Outwardly there may be some status in saying "I am a Councillor of WIA Vic. Division", but I can assure you that the the pleasure is often masked by the punishment. Let's face it — Councillors are fair game no matter what the organisation, and we amateurs are no exception to that game. Even the most apathetic amateur becomes a vociferous vigilante bent on his own trail of vengeance when he finds himself a Councillor to browbeat.

If one retains normal sensitivities then one term in office is enough and someone else can have the job. At the other extreme you can become so "shellbacked" and insensitive that you are of no use to the system. There are very special exceptions — dedicated men like Al Noble VK3BBM, Keith Scott VK3SS and John Adcock VK3ACA, who keep on coming back for more despite the knocks because they care for you and your hobby. There are many more like these, but faceless and nameless heroes — the Broadcast group, the Repeater group, and all the other quiet people who dedicate their time and skills to improving the lot of Amateur Radio. All of their work is voluntary, undoubtedly some advanced and insidious form of sadomasochism! This is the International Year of the Disabled — in line with that may I humbly suggest that within our fraternity YOU make it the Year of the Volunteer and **GIVE** them your **SUPPORT.**

CRYSTAL BALL DEPARTMENT

I rather suspect that the general meetings of Vic. Division might undergo a change of character for the better. Contrary to the outspoken belief of an ill-informed few, the WIA is not in competition with the various clubs — there's an entirely different purpose in one compared with the other, although **all** share a common aim to enhance the hobby. Nevertheless it is quite difficult to formulate a GM that doesn't appear to be competitive with the clubs. Whispers I have heard suggest that future monthly meetings will be far more interesting in both Social and Technical aspects, and it is hoped to see a better attendance from the Novice ranks. Watch this space and the Sunday broadcast for further details.

Apropos of the above: I never fail to be astounded at the range of ideas which one hears expressed over the air, many in the form of, "If I was . . ." or "Why don't they . . .". Many of these thoughts have a good base and are capable of good results. Too many of these ideas cease to exist, once spoken. On paper it doesn't take much effort to change "whinger" into "writer" (especially if you misspelt whinger to start with!). If you hear, or have, a good suggestion why not write it down and send it in to us — we'll sort the "wheat from the chaff" and will even correct your spelling mistakes. Come to think of it, the better ideas could even be presented in this column.

Is apathy one of the biggest threats to the amateur service in Australia?

The recent fight against Channels 0 and 5A and the submissions to the Committee on the Table of Frequency Allocations only received the positive action of a small percentage of amateurs. In both of the above cases there were even standard letters printed for your use — all you had to do was sign and send. Seems like even that was beyond the ability or interest of the average apathetic amateur.

The present anti-Woodpecker campaign needs the fullest support from all amateurs.

Many amateurs seem convinced that if anything is to be done about the Woodpecker, it will most probably be as a result of lobbying by CB operators. After all, CBers fought for legalization and won, then fought for retention of 27 MHz and won. In the 1980s the CBers seem to have the respect of the authoritories because of their tenacious approach to serious matters.

Who knows, in the years to come they could successfully lobby to annex our 10 metre band — and they'd win because we're so complacent that we'd sit back and do nothing as usual.

Isn't it about time for us to "bite the bullet" and get off our collective seats to do something to show our government, and anyone else, that we do care? Most of us earned our amateur licence the hard way. Are you now content to sit back and see your facilities and privileges whittled away, or prostituted? If not, **DO SOME THING NOW.** Get stuck into that Woodpecker campaign for starters.

Seems like we really stirred up a hornet's nest with that comment in the April issue about the use (misuse???) of phonetics on 2 metres FM. One call holder even suggested that I change my name as a result, but I do prefer Peter to Richard . . . thanks all the same. I will admit to three situations where phonetics are justified; marginal operating conditions where copy is poor: to overcome a speech defect, perhaps, and finally that situation where the call sign could be mistaken for another because of similarity in sound, e.g. suffixes such as DMN and BNM. Having allowed for these areas, where does that leave the rest of my critics? For the most part I suspect that many didn't read the item properly as I specified "on 2 metres FM under ideal communication and quality conditions". As a parting shot on the subject might I suggest that some of the "rapid but not readable" proponents of persistent phonetics should use their phonetics first, and then say the word or name clearly afterwards — this way we'll be able to work out what you said.

Back in the April issue you may also recall a letter from VK3KBA. One reader has been prompted to reply as follows:—
Dear Peter,

In April's issue of AR you published a letter from VK3KBA. Does this mean that the correspondence between VK3NWO and VK3ZFA will cease? Or that VK3KBA has become a multi (media) personality instead of a schizophrenic?

73. Ian VK3YIP.

While yet another reader came forth with:
Dear Sir,

I wish to complain about the excessive number of letters which have recently appeared in your columns regarding the Novice/Half-call controversy.

There is nothing wrong with half-calls; they are licensed amateur operators after all, but would you really like your sister to marry one?

There is a place in the system for the novice operator, too. True it hasn't been dug yet, but it is rumoured that the Institute is acquiring land in the country for that purpose.

At the risk of being hung, drawn and quartered, may I suggest that we close this quadrophonic subject at last.

Yours faithfully,

VK3XS.

Really Ian, what can I say? It's all been too much!

And on that note, dear readers, I'll wish you all 73 until next month.

Peter VK3JN. ■

QRM

THE MONTHLY BULLETIN FROM THE TASMANIAN DIVISION WIA

NORTHERN NOTES

Meeting held at Bourke Street Club Rooms, 31 persons in attendance, including three new members. During the evening an auction was held. VHF gear to be auctioned was purchased from TNT9, the local TV station. Total takings were $208.70 with a profit of $21.70, which was forwarded to the Handicapped Aid Programme.

A major canvassing for recruits to amateur radio is being conducted by VK7Z through all forms of media.

SOUTHERN NOTES

None received as yet. Perhaps there may still be a postal strike in progress?

NORTH WESTERN

Congratulations on your recent exposition of amateur radio's many facets and history through your local newspaper "The Advocate". At the last meeting the guest speaker, Mr. Matchpole of "The Advocate" newspaper, lectured on amateur radio and the media.

Jim VK7KOW has returned from New Zealand and I believe some experience with an old "Geyser" Romanticism perhaps!

Gentlemen, young and old, you are welcome on the Sewing Circle net each evening, 80m, (0700Z), 3590 LSB. Personally I have found many interesting discussions on this net regarding antennas, the G5RV being number one on the checklist.

VK7AE, world-wide DXer and international net controller, is now back in action, minus many amputated fingers, but the VFOs still turn. A new 8 a.m. to 5 p.m. curfew has been Imposed, plus overtime. Welcome back Andre.

AOCP class instructions on entering and obtaining a certificate are now in progress at the King's Meadow High School, Launceston. Late students are welcome. Contact Brian VK7ZBY at 44 1466.

Until next month.

P.S.: Tasmanian Devils are plentiful, extinction of this rare species is forecast, so keep trying for those rare certificates and check all net frequencies weekly.

The Japanese amateur magazine "Mobile Ham" has recently exposed our efficient repeater system in Tasmania. Thanks for the report in March "Mobile Ham", page 157, De Ara VK1IBM. ■

BOOK REVIEWS

QSO JA NOW

An introductory text on Japanese Conversation tor Radio Amateurs.

Congratulations to VK2AHB, Paul Rodenhuis, for compiling the material in the book, and to Westlakes Amateur Radio Club for making the results of Paul's studies available to Australian amateur radio operators.

Many people recoil from the suggestion that the Japanese language is a learnable language, yet students of the language soon appreciate the logic of the structure once the initial jaw-breaking pronunciation drills have been mastered.

Success in any foreign language would surely depend upon the ability to *speak* the language, and in order to speak the language an important component is confidence. A confidence gained by trying, making mistakes, modifying, then trying again.

There Is no better way than being face to face with a teacher who can show by example the correct shaping of mouth for various sounds, and demonstrate the vital subtle differences of pronunciation which otherwise may be undetectable to the untrained ear.

If the book is to achieve the stated aim of encouraging communication between JA and English speaking amateurs, and if the communication is to be in part Japanese, then the hurdle of basic pronunciation must be overcome, probably by enrolling in a course of Japanese conversation.

Australian operators may be "spirit willing" but usually are "language lazy".

If the book does no more than create an interest in learning Japanese conversation, then it is worthwhile. It is an attempt to do something positive and constructive for those whose particular interest is in that facet of amateur radio.

VK3BWX ■

SHORT WAVE PROPAGATION HANDBOOK

Edited by George Jacobs W3ASK and Theodore J. Cohen N4XX.

Cowan Publishing Corp., 14 Vanderventu Avenue, Port Washington, NY 11050 USA.

This handbook discusses the principles of ionospheric propagation, sunspots and the sunspot cycle, sunspot cycle predictions, ionospheric forecasts and unusual HF and VHF ionospheric propagation. Quite useful information for the old and new amateur.

Jacobs and Cohen are well known for their contributions to CQ Magazine and quite a few years' study has gone into the preparation of this handbook. Their original articles on short term forecasting gave me an insight into the vagaries of ionosphere propagation.

For those interested in acquirign a working knowledge of this little known area of communication technique, then this handbook is a good start. Some of the information applies purely to the USA, but most of its contents have a universal application and It is a useful addition to your reference library.

Available from Magpubs, $7.50 plus postage.

VK3BYE ■

QSP

USE OF 52.050 MHz

Unfortunately several VK 6m operators still persist in using 52 050 (the national calling frequency) for non-DX contacts (i.e. across town) and effectively masking any International stations which now recognise this as the frequency to call on when looking towards VK. With recent conditions to Interstate, it has been noted that several QSOs appear at the same time on 52 050 MHz. Best is to call CQ on 52.050 and advise that you are going to QSY to 52.075 or so, well away from .050.

— GARC Newsletter, Jan. '81 ■

VHF-UHF
AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston, S.A. 5233

JUNE 1981

VHF/UHF BEACONS

Freq.	Call Sign	Location
50.005	H44HIR	Honiara
50.100	KH6EQI	Pearl Harbour
51.022	ZL1UHF	Auckland
51.999	YJ8PV	Vanuata
52.013	P29SIX	New Guinea
52.150	VK5KK	Arthurton
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.320	VK6RTT	Carnarvon
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.400	VK7RNT	Launceston
52.425	VK2RAB	Gunnedah
52.435	VK3RMV	Hamilton
52.440	VK4RTL	Townsville
52.450	VK2WI	Sydney
52.500	JA2IGY	Mie
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
53.000	VK5VF	Mt. Lofty
144.010	VK2WI	Sydney
144.162	VK3RGI	Gippsland
144.400	VK4RTT	Mt. Mowbullan
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.800	VK5VF	Mt. Lofty
144.900	VK7RTX	Carnarvon
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.400	VK4RBB	Brisbane
432.450	VK3RMB	Mt. Bunningyong

No changes to the beacon list, but the Solomon Islands beacon on 50.005 has certainly been confirmed during April as being operational, having been heard on numerous occasions with signals at times over S9.

Beacon custodians are reminded of my requests over the past two months for information on your beacons please. So far nothing to hand.

SIX METRES

Well, the band certainly had everyone fooled! Following the rather poor showing during September/October last year, everyone hoped it would be in better shape during March/April 1981. March gave some hope for improvement, and early in April ZL TV was available from 2200Z onwards for at least a couple of hours most days, with signals good enough to provide pictures in colour most times, but without sound; the sound channel being higher in frequency the MUF often did not reach that high at that hour. The TV stations (often more than one) were watchable on at least 11 occasions here, and noted to be there on a further 5 occasions, and confirmed on the PRC10 receiver on 45.250.

6/4: JA7 and JA8 0500 to 0530Z. On 10/4 the magnetic flux was 273, A index 11, K index 2. 12/4 it was 271, 29 and 5. 13/4: 257, 55 and 8. 14/4: 257, 105, 3 with JA and H44 being worked. 15/4: 258, 19, 1 with KG6JDX 5 x 6 on 52.017 at 2336Z. Incidentally, on 14/4 Bob VK5ZRO, having little else to do, worked more than 40 JAs. On 15/4 noted VK2ZAY 1044Z. JA 1128 to 1402Z up to S8. VK1 worked KG6JDX, KG6DX.

AFRICA WORKED FROM VK5

After all these years at last 6 metre signals have been coming out of South Africa and reaching Australia. On 18/4/81 at 0712Z Gerry VK5AGM on 28.885 worked Dave ZS6DN on 50.108. Gerry's report to Dave was 529, and about S5 on 28885. Distance 6188 miles. SZ6DN was using a yagi antenna, he tried a rhombic with signals 519! This contact was followed by one with Dick VK5ARZ with similar reports. These contacts, although crossband, are as far as is known the first VK to ZS6 contacts using 6 metres.

Since those first contacts there have been quite a number of contacts from VK5 to ZS6 crossband. So far signals have not been good enough for propagation to extend to 52 MHz (once again showing just what we are losing by not being able to work on 50 MHz). Jack ZS6LN has been involved in some of the contacts and also the ZS2E beacon has been copied from Prince Edward Island (south-east of South Africa) on at least two occasions on 50.047. The ZS6 stations have been copied at the VK5LP QTH on four occasions (on tape for proof!). Apparently the path is not a good one to the west, or actually 225°, as the signals from South Africa have never ever been really strong — maybe the time of the year is not quite right, perhaps September/October may be better that way. Time can only prove if this is so.

BACK TO SIX METRES

After the South African episode and our congratulations to Gerry for being the first to make it, it seemed 28885 got very cluttered — there seemed to be signals from everywhere! Also on 18/4 noted VK2 were working into W during our morning hours. WA8KLH/KH6 on 50.1 was 5 x 9. He tried 52.005 but not a sign of signal. VK2 and VK4 working KH3 Johnson Island.

Talking to Ross VK4RO on 19/4 he mentioned he had two contacts on 11/4 to KH3AB on Johnson Island, at /752 and /922Z, also to WH3ABB same island and same rig! VK4AFC and VK4RR in Cairns believed also worked them. Tom W7KMA a regular worker into New Zealand around 2100Z.

Ross VK4RO further reported ZS2SS had been heard in Townsville during the week. The KH6 beacon is not always operating when contacts are made with Hawaii, possibly due to looking for Africa. ZLs have been working to USA almost daily throughout April.

On 19/4 flux 227, A 13, K5. Jack ZS6LN 519 at 0720Z 50.108. VK5RO worked crossband to ZS6LN at 0710Z. VK9NS and VK9NL heard weakly on backscatter at 2240Z. At 2300Z H44HIR beacon S9. H44RW on 50.108 S9+ at 2310Z. KG6DX working VK7. W6SMS Zip heard on 52.005 at 2330Z S6 by VK5ZPW working VK4PU and VK4ZNC. VK3AMQ 2349Z S2 on backscatter. Also VK1ZBJ and VK3AQR. VK3AQR worked AH8A on American Samoa at 2242Z 5 x 4, four other VK3s and VK2 also. W5UWB 5 x 9 to VK3AQR (but no sign on 52 MHz). Looks like something is brewing!

EASTER BRINGS A REWARD

Next morning it's up bright and early even if Easter Monday. It's still 19/4 by the Z day, but 20/4 local time. At 2236Z VK1FT and VK1VP noted working AH8A on 52.029 5 x 9. VK1FT reported OA4AWD was running a beacon on 50.095 and was looking for it. Runs 15 watts to a 6 element beam. At last VK6 can have a share. VK6KZ and VK6WD and many others work YJ8PD at 2354Z and H44PT at 2342Z. Signals from ZL1 and ZL2 reasonable copy in VK5 at 2300Z.

From that period onwards it was really on for VK5, the "Cinderella State" when it comes to exotic contacts. My own (VK5LP) log book takes up the story, but it was being repeated in various shacks throughout the VK5 area. At 2305Z KG6DX on 52.018 5 x 9 both ways. 2321Z H44PT 52.038 5 x 9. 2341Z VK3OT 5 x 9 backscatter. 2354Z VK1ZBJ and VK3AMQ 5 x 5 backscatter. 0044Z VK6KZ b/s 5 x 3. 0107Z split frequency contact with Lyall VS6BE Hong Kong 50.110 to 52.050 — what a split! Just as well I could use another receiver and separate 6 metre antenna! 0421Z JH8HWL 5 x 9, plus others. 0750Z KH6IIA 5 x 9 on 52.050. From 0752Z a string of VK4s, VK2DUX (formerly VK6OX), and a good contact with VK4XZ/M, who was mobile at Surfers Paradise and using his handbag. 0710Z tried with ZS6LN but no contact. That's the log book, but it's only part of the story.

The notebook now takes up the narrative. For the first time ever heard an FM station on 49.995 at S9 + 30 dB at 0056Z, playing music and talking in foreign language, apparently from Singapore area. At 0107Z VS6BE who also worked VK3OT at least, VK5ZPS, VK5RO and VK5AGM. VS6BE beacon heard by VK3AWY and VK6WD, and this still going strong at 0207Z. It disappeared for 7 minutes a minute later, then came back at 0215Z at S2 and was soon S9 again. 0358Z many JA areas at S9. At 0420Z Garry VK5ZK worked VS5DX in Brunei crossband 28 to 50 MHz, signals not strong. At 0650Z KH6EQI S5, and VK2DUX and VK4PU observed working W6HTH/KH6 and others. ZS6DN made an appearance on 50.105 at 0650Z. At 0740Z KH6IAA again 5 x 9. P29SIX beacon S3 same time.

I could keep going on like that. But to summarize, VK5 stations worked at some time, sometimes more than once, the following: **KG6, H44, VS6, JA, VS5, KH6, VK, ZL and heard on 50 MHz FO8DR, AH8A, VK9NL, VK9NS, ZS6LN, P29SIX, AH5 and KH3.** Other VK States were working or heard additionally N6CT, YJ8PD, and many contacts to W6 area. So on a count up it appears VK5 worked 8 countries, 7 of which were outside Australia, and heard another 7 at least on 50 MHz. The total count of countries into Australia for the Easter Monday seems to be at least 17, which would be rather outstanding by the standards of the Northern Hemisphere, let alone Australia. As far as can be gathered most if not all the 50 MHz hearings can be authenticated as several operators have reported in with their tallies, and times and call signs have been verified. So it was a really great day for Australia, again spoilt because so many promising signals were only heard on 50 MHz.

QUEENSLAND

John VK4ZJB called in to say that on 20/4 he and several other VK stations, including VK4PU, VK4ZMI, VK4WQ, etc., had done well by working to USA, e.g. 0829Z AH8A Samoa, 0845Z WA6DYA, 0920Z W6SMS 5 x 9 (also to VK2DUX), 0940Z K6KUQ 5 x 9, 0943Z W6AJ 5 x 6, 0948Z AA6S 5 x 7, and at 0330Z VK5WQ worked VS5DX 5 x 9. The previous day John had worked W6XJ and WA6KLH, and just for good measure on 18/4 contented himself working 35 JAs.

THE NEXT DAY

Of course the band still had some sting in it on the Tuesday after Easter Monday. At 2253Z KG6DX was 5 x 7 on 52.025, KG6JDX 5 x 6 on 52.065, the latter having been observed at S9+ on CW on 50.110 at 2218Z. At 2320Z H44HIR S9, from 2300Z onwards past 0000Z AH8A beacon was S9 on 50.104, and was worked by VK5ZBU and others at S8 and better — I couldn't hear him here, that's how selective things get at times! At 2336Z FO8DR beacon S1 on 50.096. At 2342Z JH60FX beacon or keyer S3 to S5 on 50.109. At 0730Z ZS6 again!

22/4: ZS6 observed working to KH6 during afternoon. VS6BE weak to somewhere during the morning. The sting has gone out of the band. On 23/4 Jim VK9NS Norfolk Island worked at 2330Z. At 2340Z FO8DR and W7KMA both observed on 52.010 for 5 minutes and rather weak; Dick VK5ARZ tried to work them. At 0014Z KG6DX keyer good. VS6BE keyer good signals between 0030 and 0145Z. On 24/4 around 0000Z VS5LH crossband 50 to 28 MHz, then at 0029Z peaking S9 on 52.020. Les runs 25 watts to a 6 element beam, and advises they have been granted a special dispensation to work on 6 metres until July. Half their luck! H44HIR and KG6DX beacons available from time to time. VK2 noted working XE1GE.

25/4: 0050Z KG6DX keyer S2 on 50.100. At 0112Z VS5DX S2 on 52.006 at 5 LP but very strong in Adelaide. At 0120Z VS5DX S8 on 50.100. 25/4: 2325Z H44PT observed working stations on 50.108 at 5 x 9, with H44HIR beacon S5 at same time. At 2330Z Peter moved up to 52.010 and worked several VK3s, including VK3AKK and VK3NM, plus VK5ZK, VKLP, etc. At 0120Z VS5DX heard 5 x 7 on 28885, but nothing heard at all on 50.105 and 52.020. At 2245Z W6XJ heard for a short burst on 50.100, a bit weak but workable if on 52. P29ZFS observed working a number of stations across the top end during the morning. To finish off the otherwise quiet day around 0715Z ZS6LN was worked crossband 50 to 28 by VK5ZK, VK5AGM and VK5RO, but again too weak here, thansk to that hill!

HEARD WHILE ON THE BAND

When conditions are so good one tends to spend a lot of time in front of the receiver and always being on the lookout for news. Here are a few bits which may interest you.

Firstly, congratulations to Steve VK3OT, who appears to have set a new Australian distance record for six metres with a contact to VP2VGR in the British Virgin Islands on 17/3/81, a distance of 16,620 km or 10,327 miles, using CW on 52.005 MHz at 2310Z. Tim VP2VGR used an Icom 551D to a 5 element beam and Steve 8 elements also to a 551D.

The Queensland record also tumbled when Phil VK4AYX worked DL3ZM/YV5 on 19/3/81 at 2220Z on CW and SSB, with reports up to S7. The great circle distance appears to be about 15,500 km or 9,600 miles. Good work Phil.

Tom VK2DDG at Byron Bay reported he too worked DL3ZM/YV5 in Caracas, Venezuela, on 18/3/81 for a possible NSW 6 metre record, distance being calculated to 15,223 km. Time 2218Z, first two-way on CW then same on SSB. That's a good effort, Tom, and congratulations. On 17/3 Tom reported working KG6JDX, then he heard the EL2FY beacon at 2340Z weakly, but able to identify. KH6 was also available at the time. During March signals had been heard from the Caribbean area. Byron Bay is about as far east as you can go in Australia so Tom has a good take-off and not much in the way looking out over the water.

On 18/3 Tom also worked JA, W6TYX at 2130Z, W6BYA, a WA7, then at 2148Z WA6BYA 5 x 3 first SS contact 52.002. Heard XE1GE, 6YRC beacon. On 21/3 heard TI2NA beacon 2355Z. On 10/4 copied ZS3SS whilst he was working KH6IAA. See what you can do with a good location!

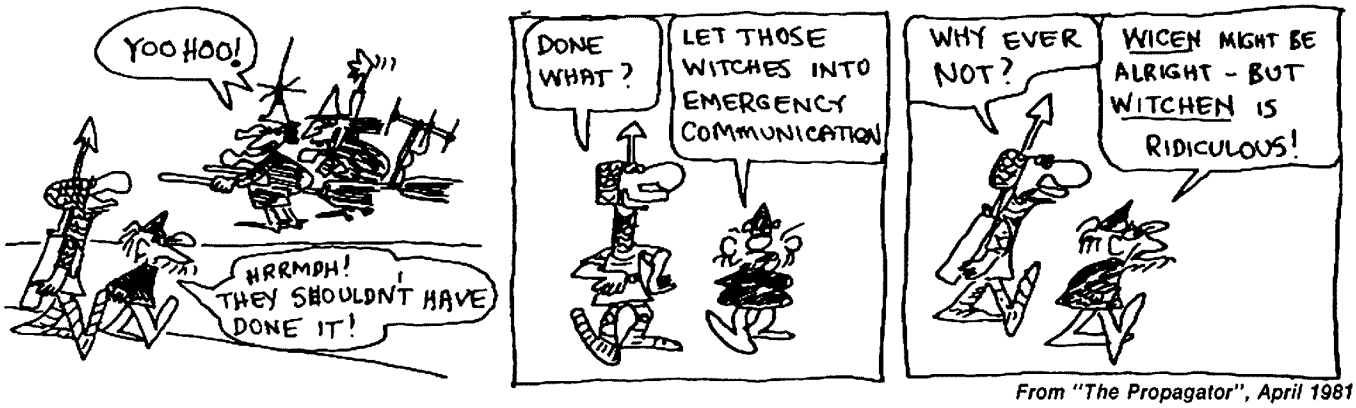
Also heard on the air of possible beacons for Bundaberg on 52, 144 and 432 MHz. Noted also that Rohl VU2YK now has a TS600 and is likely to operate on 50.100. Has already heard VK8VF. Possibility of activity from 8Q7 from 25/4 to 2/5.

During the extensive Easter Monday openings, a look across the band from 38 to 50 MHz produced a mass of unusual signals, FM stations of all kinds, including military stations, paging systems, taxi services, TV services, music of various types, and this would change from hour to hour as conditions swung around to produce signals from another area. Quite fascinating.

SIX METRES IN NETHERLANDS

Peter VK5PS has written advising of a QSO with Charles PA0BDC in West Haarlem, Netherlands, recently. Charles is a keen VHF/UHF operator and asked that the following information be passed along to 6 metre operators here:

The authorities have approved 3 spot (crystal controlled) frequencies on 53.875, 53.925 and 53.975. The 53.875 spot is a beacon frequency for PA0RYS which operates with an ERP of 25 watts. The other two frequencies are for calling/working on CW and FM only. The approval is for an initial one year period, to 14th February, 1982.



From "The Propagator", April 1981

i guess that's a start, and certainly better than nothing, its main drawback is that the frequencies are almost a further 2 MHz higher than our 52 MHz band, and we have enough trouble now with a 2 MHz split from the 50 MHz end, let alone a 4 MHz split; I would think a USA antenna cut for 50 MHz would be a rather inefficient device if trying to operate 4 MHz higher. Thanks for writing Peter.

NEWS FROM KYOGLE

One of my most constant correspondents used to be Andy VK6OX from Carnarvon, and we all know how much he got out of six metres from there. All things seem to come to an end, now I don't get any news from Carnarvon, but the news has started to come in from Kyogle, nearly 2,000 miles further east and from the same correspondent Andy, this time sporting the call sign VK2DUX! He hasn't been there long, but six metres has been treating him rather well, thank you!

Andy reports quite a number of eastern coast stations have been enjoying contacts to the Caribbean, Central and North America. These include David VK2BA, Bob VK2ASZ, VK3AQR, VK3OT, VK4RO, VK4PU, VK4AYX, plus others.

Stations worked so far by Andy include W6XJ, KH6IAA, W6HTH/KH6, YJ8PD, KG6JDX and many JAs. Stations heard include ZF2DN, Cayman Is.; KP4AAN, K6FV, N6CT and numerous backscatter signals from VK2, 3 and 4, plus ZL.

MICROWAVES

From "Break-In" March 1981: *To stimulate more activity on the 10 and 24 GHz band, the RSGB has been sponsored by Microwave Associates Ltd. to introduce two new microwave awards. These are open to amateurs world-wide and are to be given to those achieving the first ever contacts exceeding 1000 km on 10 GHz and 250 km on 24 GHz. The only rules are that the participants must operate within the terms of their licence. Claims should be submitted to RSGB headquarters together with a written statement from a senior member of the participant's national society, confirming the contact has taken place. To put these awards into perspective, contacts approaching these distances have already been made, so they are certainly not far out of reach.*

On 10 GHz the most likely mode of propagation to yield success is superrefraction, as used for the current world record contact. It can be shown that the path loss on 10 GHz in a perfect superrefraction duct is 143 dB. A near minimum size of equipment to cope with this path loss would typically be a 5 mW transmitter, wideband FM in 250 kHz bandwidth, a 15 dB noise figure receiver and 0.3m dishes. UK experience suggests that ducts are usually less than perfect so something in larger equipment would normally be necessary.

Ot the non-enhanced conditions necessary to cover this distance on 10 GHz, moonbounce offers a better chance than troposcatter. Even so, calculations show that narrow band techniques, transmitters with several tens of watts output, GaAs FETs, pre-amplifiers and dishes at least 3m in diameter would be needed — perhaps out of the question for our style of amateur budget.

Since reporting last month on the Italian 10 GHz distance record, some further information has come to hand. The 757 km record was established on 12/7/80 between I0SNY/7 in Brindisi, Southern Italy, and IW3EHQ/3 and I3SOY/3 at Col Viscenti in the Italian Alps. Reports indicate that the QSOs were made just after sunset (1921 and 1927 GMT), after the operators had waited the entire day. The enhanced propagation (over-water ducting) coincided with a deep fade in their 2 metre liaison channel and lasted for about 10 minutes. The path chosen was interesting in that one end was high altitude (1650m) and inland, but had a line-of-sight path at grazing incidence, to the sea. This presumably allowed the 10 GHz signal to fire into the northern end of the duct at sea level. The other end of the path was right at sea level, on the coast. The equipment used was not particularly exotic. Wideband FM Gunnplexers with output of 10 mW to 1m dishes were used at both ends. Signals were Q5 and S5-8.

It is a little surprising to find that most overseas practice still uses wideband techniques. Wideband refers to the IF bandwidth of the receiver, typically 200 kHz. While this used to be common with (and still is) klystron transmitters, the trend in this country (NZ) has been to use 30 MHz IFs with 50 kHz or narrower bandwidths for use with gunn devices.

NEW ZEALAND REPEATERS

Interesting to note that at last the New Zealand repeaters on 2 metres are to have a 600 kHz split in line with the Australian arrangement, and all must be changed to the new frequency and split by 28/2/1982 or go off the air! This arrangement will certainly assist contacts across the Tasman when conditions permit. I can still remember the problems in VK2 when the first large opening occurred into New Zealand and means had to be found to achieve a 700 kHz split!

TWO METRES

The poor old 2 metre band has certainly been neglected this month. I wonder what we missed there whilst everyone was congregated on six metres? I did notice, however, that on 9/4 a reasonable set of conditions prevailed across the Great Australian Bight to produce signals between Adelaide and Albany. VK6XY, VK6ZSP and VK6WG were all on 144.1 with signals to S9+, but VK5RO was not really content with this, he wanted to try 6 metres, and found he could work Aub VK6XY on 52.050 at the late hour of 1500Z! What an hour for Es to be around!

The only other startling event that I can recall was to hear my friend of many years standing, Al VK5EK who runs a bank at Willunga, operating on Channel 51 FM loud enough for me to hear him.

THE MELBOURNE SCENE

With all the activity *around* Australia which one hears about by various means, either on six metres, ten metres or the grape vine, it's nice to receive an informative letter detailing what has been happening elsewhere. Such a letter comes from Gil VK3AUI and I find it interesting to compare what has been worked from Melbourne with other places. Gil writes:

"16/3: JA1, 2, 3, 4 and 8 from 0852 to 0910Z. Then at 0937Z KH6IAA and at 1018Z W6HTH5KH6. Then more JAs, finishing around 1310Z. 17/3: Good opening to JA, all districts except JA8 from early afternoon until 1423Z. At one stage JAs could be heard dog-piling on YB1CS on 52.058, but we could not hear the YB. The JAs stood by whilst YB1CS tried for VKs, which says something for their operating manners! Not a peep, but *many* thanks to JA3EGE who contacted YB1CS and asked him to look and got the JA dog-pile to keep silent during the trial. This was around 1250-1300Z. VK3AZY worked a KG6 also.

20/3: WA4TNV/KL around 0300Z to VK3AUI, VK3NM, VK3AMK, VK3AQR, VK3AKK as far as is known. Frequency used 52.010. Some split frequency 52/50 as tried around 0100Z when Clay's keyer was strong on 50.110. Quiet until 28/3, when things started to hum to the Pacific and Caribbean. FO8DR and XE1GE both heard on 50 MHz around 2000Z, also snippets of VP2VGR. Then VP1A on 50.097 and ZF2DN on 50.110. Both were 599 and in for half an hour or more before 0000Z to 0030Z. Everyone trying to get them on the air to work them but they weren't on 28885 and no ISD *numbers* available! FO8DR was alerted but by the time he got on 52 MHz it was too late. (That 2 MHz difference once again.—5LP.) An 8P6 came up on 52 MHz but no luck. The signals from the Caribbean were so strong that when I first heard ZF2DN I thought a local had got the MHz switch in the wrong position!

Nothing until 6/4 when KG6DX was on at 0010Z. Some daytime openings between 29/3 and 6/4, but one has to work some of the time. Heard on 10 metres of one JA who worked over 150 Ws during one opening in November. 14/4 worked VK4ZJB and VK4KJL around 1047Z. JA in from 1130 to 1200Z, worked JA2, 4 and 9. 15/4: More JAs around 1050Z. On 16/4 at 2199Z to 2200Z heard H44PT working ZLs on 50.105, also snatches of YJ8PD. H44PT tried 52 MHz but signals not getting that high. At 2321Z on 50.109 whilst beaming NE heard a very brief burst of signal which sounded like the Woodpecker. Very watery with that fluttery modulated noise quality but it sounded like the Woodpecker. Maybe a harmonic and maybe by a very indirect path. Didn't stay long enough to be taped.

On 19/4 weak signals from W6XJ around 0200Z when VK4 working W6. At 2241Z worked AH8A and heard H44PT. At 0036Z (20/4 Z day) worked KG6DX, heard VS6BE but no contact. VK4 later, then JA. VK3 stations to work AH8A were VK3BOB, VK3BQS, VK3AQR and VK3AUI. VS6BE

worked by VK3AMQ, VK3NM, VK3AQR and possibly others. JA1, 2, 7 and 8 during evening. Quite a day. 21/4: 2250 to 2310Z (20/4) AH8A worked by many with signals to 5 x 9 on 52.011 with the P29SIX beacon in at the same time and on top of the other one. At 2220Z KG6JDX 559 on 50.111. H44HIR 50.005 569 at 2244Z to 2359Z; P29SIX 599 from 2238 to 2315Z right on top of AH8A contacts but luckily about 70° off in beam heading.

The level of spurious signals from CRUDO (Channel 0) varies from tolerable to terrible but never gets down to the level the old ATVO did, it is always worse. An intermittent arc on the station from switch on for several hours can be seen on picture and heard on 10, 6 and 2 metres, which is bad. Doubtful if it would have been possible to work the ZS6 even if available in Melbourne due to the residual S5 noise created by CRUDO! Such is life.99

Thanks for writing Gil, at least for April it looks like VK5 might have had the cream of contacts for once!

GARC VHF FIELD WEEKEND

Results have come to hand for the 1980 National VHF Field Weekend held last December, and are as follows:—

Victoria: 1st VK3ATI, 5844 points; 2nd VK3ASQ, 5364; 3rd VK3BH, 4024 points.

South Australia: 1st VK5LP, 1245 points.

Tasmania: 1st VK7JG, 514 points.

Check log: VK3YRP.

A very nice letter accompanied the results table thanking me for my participation and prior publicity, sent by Mike VK3ASQ. Also advice that the Field Weekend will be conducted again this year, probably about the same time. Details later.

SIX METRE DX STANDINGS

Bill Tynan W3XO is seeking lists from VK stations on countries worked for inclusion in his QST 6 Metres Standings Box, and has sent me a prepared form for reporting. Copies of this can be obtained from me by sending a SASE or you may complete the information in tabulated form using the following headings: Your call sign, date of application, country, station worked, 6 metre 2-way/crossband 6 : 10, date worked, QSL received yes/no, propagation mode, e.g. F1, Es, tropo, EME, MS, aurora, etc., transmission mode, e.g. SSB, CW, AM, FM, any remarks, your latitude and longitude, and address.

Please mail this information to Bill Tynan W3XO, PO Box 117, Burtonsville, Maryland, 20730, USA, to reach him by 1st September, 1981. Alternatively, if you wish to save on cost of air mail to the US, send your list to me before 20th August, 1981, and I will send it across with one of my frequent communications I have with Bill. Whatever way you do, take up the challenge and at least let the rest of the world know what countries have been worked from Australia with the handicap of only 52 to 54 MHz and geographically so isolated. The next move is yours.

70 CM TO NEW ZEALAND

Further to the information in the April issue re the 70 cm opening to New Zealand on 26/1 and 27/1, it seems the contact between John ZL1BVA at Mt. Maunganui and Barry VK2AHE at Newcastle over a distance of 2268.5 km would represent an increase in the previous record held by ZL1TAB and VK2BQJ by 110.5 km. The distance is subject to confirmation. Frequency was 432.190 MHz and signals were very weak, around 1233Z on 26/1/81. This was made possible due to an inversion layer developing at 700m at 0000Z and four hours later at 0400Z the inversion was evident at longitude 160° East at a height of 800m with a gradient of between 3 and 5 degrees. Temperature and pressure were reported as stable.

BRAZIL BEACON

From "Break-In" comes news that LABRE, the IARU society in Brazil, has announced a new 6 metre beacon for propagation research purposes. Call sign PY2AA, output of 25 watts to a ground plane on 50.055 MHz. Reception reports to PY2AA Beacon Project, PO Box 22, Sao Paulo, Brazil.

ENDING

It's been a good month, enough DX to satisfy most. This month's thought is: "The rising cost of car insurance is only by accident."

73. The Voice in the Hills. ■

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
5 Helen St., Launceston, Tasmania 7250

There has been quite a lot of discussion lately about "Woodpeckers" following the efforts of some individuals in Australia, supported by a magazine in Melbourne, that is putting pressure on Members of Parliament, Cabinet Ministers and the Embassy of one particular nation, for its curtailment. While I do not sanction the publication of confidential telephone numbers of certain diplomatic personnel, I do feel strongly that action needs to be taken to reduce or modify these world-wide backscatter pulse transmissions.

In my opinion, the correct way of bringing attention to the effects of these pulse signals that cover a wide spectrum of high frequency bands with severe disruption to broadcasting and telecommunication services, is through the WIA Intruder Watch. The Intruder Watch does pass its observations to the DOC, as well as liaise with other IW organizations overseas. They have been successful in removing and reporting several interlopers in exclusive amateur allocations, and are in the best position to document the disruption and effects of these backscatter pulse experiments.

However, these "Woodpeckers" are not confined to the Eastern Bloc nations, as I believe that some beam headings of these pulses are coming from North American locations, and possibly Western Europe. Australia has also been experimenting with backscatter or over the horizon radar over the past couple of years, but I don't know if the Jindalee Project, as it is known, is contributing to the proliferation of these annoying pulses.

Yet another theory behind these transmissions has been advanced. My attention was recently drawn to an article on the changing climatic conditions during 1980 with regard to drought, famines or floods increasing in many areas of the world. While the writer was concentrating on the religious significance to him of these events, he does infer that one Super Power has been experimenting with low frequency very high power transmissions to alter the earth's natural magnetic field, with the object of altering prevailing weather patterns. If such experimentation has been, or is still being carried out, there could be manipulation of, and alteration to, prevailing weather patterns. This could give a strategic advantage to a potential aggressor; the alteration of meteorological patterns to cause natural calamities could then disrupt the communications of an adversary, or cause social and economic chaos.

These experiments are said to be based on the work of Nicola Tesla, a Yugoslavian physicist who emigrated to the USA. He certainly did investigate the effects of electromagnetic energy on physical matter.

Whether or not these "Woodpecker" pulses are really experiments in the above, or just backscatter radar pulses, the effects of these emissions will have to be minimised in order that HF users can utilize their frequencies without disruption.

Have you also noticed that solar flares and auroral disturbances cause weather patterns to change? In late April we experienced several solar flares and auroral flutter on HF signals. It caused some disruption and dropouts on communication circuits. At the same time Britain experienced unseasonal weather, with heavy snowfalls and blizzards, something which has not occurred since meteorological records have been kept since the 17th century.

Here in the southern states, our autumn was delayed up to mid-April. When the solar activity commenced, the pattern altered from being mild and pleasant to cold with very strong gale force winds. So it does appear to correlate. Keeping a record of your local weather conditions, together with your on-air observations, could be an interesting exercise. One DXer I know of maintains that the 28 day Lunar cycle can also affect propagation.

I have received a letter from Mr. Llew Riley, of Chadstone (Vic.). He queried if there are stations operational between 24.89 to 24.99 MHz. Well, from my observations, I have heard only a few FSK or multichannel signals within this proposed new exclusive WARC allocation to the Amateur Service.

Llew also forwarded details of the Yaesu FRG 7700 S/W. I was unaware that there was another version of the Yaesu answer to the Kenwood R1000. This FRG 7700 S/W covers from 2 to 30 MHz, compared to 200 kHz to 30 MHz on the standard model. The price quoted was about $100 below that of the standard FRG 7700. In all other respects, the Yaesu FRG 7700 S/W seems to be identical with the standard model.

Recently I was fortunate in being able to test the Sony ICF 2001 Microprocessor controlled receiver. This push button model operates from 150 through to 29,999 kHz, and from 76 to 108 MHz on FM. I do not intend to go to any depth reviewing this handy little receiver, as several reviews have been published recently.

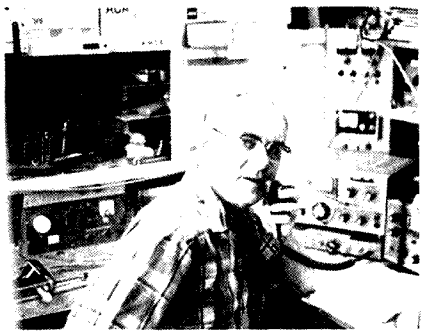
Basically, if you want to listen on a certain frequency, all you have to do is to punch in the required channel, much like a computer signal. For example, if I want to hear a station on 17795 kHz, all I need do is punch up 1-7-7-9-5 together with the red execute button and presto, there is the station on that channel! It couldn't be more simple, with no bands to change, no preselector to be peaked, or knobs to twiddle. It is only under 4 pounds in weight, and is 12¼ x 2¼ x 6¾ inches in size. (Portable enough to slip into a suitcase.)

It requires 4.5 volts DC and utilizes three "D" size batteries in the radio section, and the processor section requires 3 volts DC from two "AA" size batteries. However, there is an optional AC adaptor that is almost mandatory, for the radio draws a current consumption of 700 mA. The adaptor does not power the processor, which will last about a year with the two "AA" cells.

This model Is ideal for the handicapped who have limited limb mobility, or are visually impaired. There are no protruding knobs, and it certainly does not take up any room. Its sensitivity is good, even with its own telescopic whip. Its selectivity is not as good as the more conventional receivers, such as the FRG-7 or the R1000, but its portability and cost compensate for this, making an ideal second receiver.

In next month's column we will be looking at the Volmet stations, together with their frequencies and times. Until then, the best of DXing and 73s! ■

AMATEUR SATELLITES



R. C. Arnold VK3ZBB

It was a pleasant surprise when Les VK3BKF brought Graham ZL3AAD and Peter ZE5JJ to see me recently. The three friends are EME fanatics and it was most interesting to hear accounts of the problems of working the "big satellite" without a transponder. Graham comes down to earth from time to time to work the OSCAR satellies and he is one of the very few overseas operators with whom I have had a contact via the Russian satellite RS1.

Amsat OSCAR 7 will be on its 30,000th orbit on June 6th and will be roughly overhead Melbourne at 10.11Z. At that time AO7 will have travelled some 1,477,500,000 kilometres since its launch, a quite outstanding performance and a great credit to all those dedicated amateurs involved in its construction and control.

Orbit predictions for June 1981:

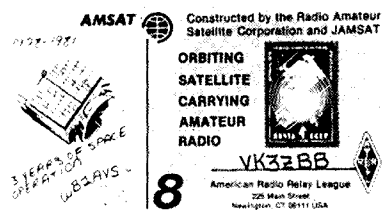
JUNE 1981

	OSCAR 7			OSCAR 8		
Date	Orb. No.	Eqx Z	Eqx W	Orb. No.	Eqx Z	Eqx °W
1	29933	0007	80	16509	0056	75
6	29996	0048	91	16579	0120	81
8	30021	0042	89	16607	0129	83
15	30109	0117	98	16704	0019	66
22	30197	0152	107	16802	0052	74
29	30284	0031	87	16900	0125	83

Congratulations to Rod VK4ZRO, who is now member No. 167 of the Mode J. Club.

OSCAR 8 has settled down and its temperature is now normal. However, operating is not straightforward and I have received several reports of its complete disappearance from time to time. This is possibly due to the attitude of the satellite as it passes northwards. Despite these reports I have not yet failed to locate the beacon on passes within sight of and to the south of Melbourne.

The photograph on this page is of a "QSL" card issued by ARRL to commemorate three years of operation of Amsat OSCAR 8. The card was received following submission of details of contacts through OSCAR 8 made during the week of this anniversary. The card is printed in red and it will be noticed that a USSR spacecraft stamp has been attached. The spacecraft are the Russian amateur satellites RS 1 and RS 2, launched in October 1978.



PHASE IIB NEWS

- Still cheduled for launch on 24th February 1981 on LO7.
- Construction on schedule despite problems of parts procurement.
- No further news on input and output frequencies.
- Students of the University of Berlin are working on the antennas under the supervision of DJ4JC.

As the launch of UOSAT, scheduled for 15th September 1981, is rapidly approaching, the following article, reprinted from "Radio Communication" by courtesy of RSGB, will bring you up to date.

UOSAT — THE AMSAT SCIENTIFIC AND EDUCATIONAL AMATEUR SPACECRAFT

By M. Sweeting, B.Sc., Ph.D., F.B.I.S., G3YJO

Department of Electronic Engineering, University of Surrey, Guildford, Surrey GU2 5XH

INTRODUCTION

The amateur satellite programme, born in 1961, has witnessed a total of 10 amateur spacecraft launched into earth orbit — of which five may be considered experimental (Phase 1) and five developmental (Phase 2) The first amateur spacecraft to be considered fully operational emerged from the AMSAT Phase 3 programme early last year; however, a failure of the European Ariane launch vehicle has delayed the realization of this operational stage until, probably, mid-1982.

Although the amateur satellite programme has reflected a substantial educational flavour, the emphasis during Phases 2 and 3 has been on producing amateur communications satellites primarily intended for increasing VHF and UHF communication range between amateur radio operators. Amateur radio is very much a self-learning and training activity even in its simplest manifestation and, as with other amateur offshoots of professional activities (such as amateur astronomy), has by its peculiar resources contributed much to the overall understanding of its field. In recent years amateur radio has perhaps developed stronger communication skills at the expense of experimental skills, largely due to the impact of relatively cheap, mass-produced, high-technology equipment, and has in turn limited its appeal away from the broader audience of amateur scientists, technicians and dabblers who could so enrich the fraternity.

In an attempt to redress this imbalance, AMSAT-UK is constructing an amateur scientific and educational spacecraft (UOSAT) specifically aimed at generating interest among a wide range of imaginative individuals in an important but now largely neglected aspect of amateur radio.

UOSAT is being constructed at the University of Surrey (UK) and is supported by AMSAT, RSGB, British industry and research organizations.

MISSION OBJECTIVES

The mission objectives may be summarized as follows:

1. To provide radio amateurs with a readily available tool for the study of the propagating medium through which they communicate from HF to microwave frequencies.
2. To stimulate a greater degree of interest in space sciences among schools, colleges and universities by active participation.
3. To broaden the scope of the amateur satellite programme and to encourage the interests of amateur scientists.
4. To establish an active body in the UK with the necessary resources to contribute flight hardware to the amateur satellite programme.
5. To study and evaluate the suitability of novel methods and new frequencies for use in subsequent amateur spacecraft.

SPACECRAFT SYSTEMS

The spacecraft systems may be considered as three components — service modules, experiment modules and the mechanical structure.

The service modules comprise all the functions fundamental to the basic operation of the spacecraft, such as the power sources, power conditioning, telemetry system, telecommand system, the general data beacon and the engineering data beacon.

POWER SOURCE

Four body-mounted solar array panels will each provide 27 WDC when fully illuminated. The average power available from the arrays per orbit will be approximately 17W DC, allowing for sun angle and eclipse.

BATTERY CHARGE REGULATOR AND POWER CONDITIONING MODULE

The BCR regulates the solar array power supplied to the 6Ah 14V DC nicad battery pack with an efficiency around 90 per cent. The PCM delivers regulated power supplies at +10V, —10V and +5V for the spacecraft's electronics systems with an overall efficiency of around 87 per cent.

The average power available to the spacecraft electronic systems per orbit is around 11.5W DC.

GENERAL DATA BEACON

A 450 mW beacon operating on 145.825 MHz will provide the prime interface from the spacecraft to the outside world. This beacon has been specifically designed to provide a healthy satellite-to-ground transmission link, enabling reliable reception by the simplest of amateur ground stations. The modulation form will be NBFM and, in order to minimize doppler tracking, data will be transmitted by AFSK. The trans-

missions will be compatible with standard, unmodified, amateur NBFM receivers, and only a small, fixed, cross-dipole antenna should suffice for all but the lowest-elevation orbits. A low-cost audio data demodulator will be required to interface with the printer/display, details of which will be published. The beacon will also be modulated by speech from the synthesized speech telemetry experiment and data from the earth-pointing camera.

The data sources available to his beacon are: 1,200 baud ASCII telemetry; 300 baud ASCII telemetry; 110 baud ASCII telemetry; 45.5 baud RTTY telemetry; 12/20 w.p.m. morse code telemetry; synthesized speech telemetry; spacecraft computer asynchronous interface; and earth imaging system data.

ENGINEERING DATA BEACON

A 400 mW beacon operating on 435.025 MHz is the primary spacecraft engineering data and high speed experimental data channel intended for advanced amateur ground stations, advanced scientific experimenters and the ground command station network. The modulation form will be biphase PSK with the following data sources available: 1,200 baud ASCII telemetry; 300 baud ASCII telemetry; 110 baud ASCII telemetry; 45.5 baud ASCII telemetry; spacecraft computer synchronous interface; spacecraft computer asynchronous interface; spacecraft computer output port; earth imaging system data; direct magnetometer data; and direct radiation counter data.

TELECOMMAND SYSTEM

Direct and positive control over the spacecraft's on-board systems is essential for efficient mission management and to minimize potential interference both within the spacecraft and to external services. The complexity of the space craft and its operating modes are such that manual real-time control alone would present an irksome chore for telecommand station operators, and necessitate a comprehensive network of stations for maintaining day-to-day schedules. Two modes of control over the spacecraft are therefore available:—

1. Direct, real-time control by the ground station network for: unscheduled command status changes; command status initialization; loading initial and modified soft ware into the on-board microcomputer; positive control of the spacecraft when in a partial failure mode; and simple command changes.
2. Indirect, stored-programme control of the spacecraft executed by an on-board microcomputer upon predetermined schedules or telemetry performance analysis for: day-to-day scheduled operation; spacecraft mode changes out of range of ground telecommand stations; and surveillance of on-board telemetry and executive control in event of spacecraft emergency.

Positive control over the spacecraft is assured by allowing over-riding precedence to control data emanating from direct ground telecommand. This includes total shut-down of the on-board microcomputer.

The spacecraft computer will employ the same command decoding and distribution system as the direct command mechanism and will behave as a local "ghost" telecommand station feeding scheduled commands into the command decoder according to a programmed "diary".

TELEMETRY SYSTEM

Knowledge of the status and performance of the spacecraft systems is similarly essential for efficient mission management and to ensure longevity of the spacecraft's operation. Sensors located around the spacecraft will monitor parameters such as temperature, voltage and current, which are then encoded and made available, in addition to various other processed data, to a downlink beacon via a telemetry module. The basic philosophy of the telemetry system is to provide both a comprehensive surveillance of the on-board systems for engineering purposes and a wide selection of data formats to cater for differing ground station facilities.

Telemetry will be available at the following data rates:

1,200 baud ASCII, 600 baud ASCII, 300 baud ASCII, 110 baud ASCII (asynchronops, seven-bit code); 45.5 baud RTTY (asynchronous, five-bit code); 12/20 w.p.m. CW (morse); synthesized voice.

Any combination pair may be transmitted by the two data beacons upon command.

The telemetry frame comprises 60 uniquely addressed analogue channels with 40 status flags and an identifier. The analogue channels have a range from 000 to 999 thus giving a maximum data resolution of 0.1 per cent. At the highest data rate (1,200 baud) each telemetry frame takes some 8s to be transmitted, which is somewhat less than the experimental instrument sample rate, thus instrument data is time-averaged and presented within the telemetry frame. (High time-resolution experimental data is available via the spacecraft computer for more detailed analysis.)

In line with the mission objectives, UOSAT will have the following experiment complement:

PROPAGATION STUDIES EXPERIMENTS

1. Phase referenced HF beacons on 7.001, 14.001, 21.001 and 28.001 MHz, enabling simple AOS observation to indicate ionospheric paths or more complex calculations yieding ionospheric electron densities.

2. A three-axis, wide-range, flux-gate magnetometer for the examination of the fine structure of the earth's magnetic field and any disturbances to it and their relationship to radio wave propagation. This data will be available on the general data beacon (145.9 MHz) and with higher resolution on the engineering data becon (435 MHz).

3. Two particle radiation detectors and counters (detecting particles with energies >20 keV and >60 keV) providing real-time information on solar activity and auroral events. This data will be available on the general data beacon (145.9 MHz) and with higher resolution on the engineering data beacon (435 MHz).

4. To microwave beacons on 2.4 and 10.47 GHz to study SHF propagation and the problems associated with inexpensive microwave satellite ground equipment.

EDUCATION EXPERIMENTS

1. An earth-pointing, solid-state, charge-coupled-device (CCD) camera will provide land and sea image data for transmission to simple and inexpensive ground stations via the general data beacon (146 MHz) using FM synchronous AFSK at 1,200 BPS — line synchronous. The image format will be presented as a 256 by 256 pixcel digital array with each pixcel having 16 possible digital grey levels. The entire image will be transmitted to the ground in around 3.5 min., stored in a solid-state memory and displayed on a domestic television. The ground image area will be approximately 500 by 500 km, providing a resolution of some 2 km on the earth's surface. The cost of the data demodulator, image memory and display electronics is around £100 and it is anticipated that modules and kits will be made commercially available.

Format:

It may be possible to use this visual display experiment to present processed telemetry and experimental data in a graphical format.

2. Telemetered data from the spacecraft and its experiments will be available at a variety of speeds and formats to cater for a wide range of ground-station complexity.

3. A limited repertoire of telemetry will also be available in synthesized speech for transmission on the general data beacon (145 MHz FM) intended for direct reception by the simplest standard NBFM equipment employing no more than a crossed dipole antenna.

The telemetry frame format will be as follows:

AMSAT	00000	00000	00000	00000	00000	00000	00000	00000	00000
AMSAT	00000	00000	00000	00000	00000	00000	00000	00000	00000
00000	01000	02000	03000	04000	05000	06000	07000	08000	09000
10000	11000	12000	13000	14000	15000	16000	17000	18000	19000
20000	21000	22000	23000	24000	25000	26000	27000	28000	29000
30000	31000	32000	33000	34000	35000	36000	37000	38000	39000
40000	41000	42000	43000	44000	45000	46000	47000	48000	49000
50000	51000	52000	53000	54000	55000	56000	57000	58000	59000

FUTURE SYSTEMS EXPERIMENTS

1. A combination of active and passive attitude control mechanisms based on gravity gradient stabilization and two-axis electromagnetic (magnetorquer) attitude adjustment will be evaluated. The spacecraft is designed to "fly" with the —Z facet (bottom) always pointing towards the geocentre. This facet will support the camera and the CHF, UHF and microwave antennas.

2. The 2.4 and 10.47 GHz beacons will be used to evaluate the usefulness of these frequencies for future amateur spacecraft in conjunction with relatively simple and inexpensive ground stations.

3. A powerful on-board CMOS microcomputer will have access to the S/C experiments, telemetry and command systems enabling: telemetry surveillance; command and status management; experimental data store and processing (e.g. image processing, data reduction); orbit data, operational schedules and general news dissemination; and attitude control.

The spacecraft computer is based around the RCA CMOS CDP 1802 microprocessor and has direct data links with the magnetometer and radiation detectors' experiments. This enables fast sampling of experimental data yielding fine time-resolution structure of these fields. The S/C computer also interfaces directly with the speech synthesizer experiment which can be fed with processed telemetry, experiment data or plain text. Analysis of navigation information from the magnometer (using it as a coarse sensor) and correlating with an existing model of the earth's magnetic field will allow closed-loop attitude control employing the two-axis mognetorquers.

The spacecraft computer will have access to the telecommand decoder input in parallel with, but on a secondary basis to, the direct ground command receiver. Control data emanating from ground command stations will have priority over locally generated control data at all times, and the S/C computer will have positive shut-down upon ground command in the event of computer malfunction. The S/C computer will be capable of generating the appropriate command repertoire locally as directed by software resident in its memory. This software is loaded from the ground by command stations using the telecommand uplink channel. The entire software library *resident* in the spacecraft *computer can* be modified or replaced during flight by ground telecommand stations, in order to accommodate changes in the mission profile and to allow for the rectification of possible software or hardware failures.

ORBIT

UOSAT is currently scheduled for launch by NASA into a sun-synchronous, polar, earth orbit *in* September 1981 as a secondary payload upon a Delta 2310 launch vehicle accompanying the Solar Mesosphere Explorer spacecraft. The programmed orbital elements are as follows:—

Altitude, 530 km; Period, 95 min.; Inclination, 97.5° sun-synchronous, 3 p.m. descending node.

The expected orbital life-time of the spacecraft at this altitude is around 4-5 years before re-entry. ■

QSP

SYDNEY-RIO YACHT RACE 1982

News has been received that the Hornsby and District ARC and the Manly Warringah RC have undertaken to arrange for the radio amateur involvement concerning this yatch race in 1982. In connection with this event Barry White VK2AAB writes:—

"We wish to recruit two amateurs to take part in the race aboard two of the larger yachts in the fleet. The operators selected would need to be available from Mid-January to about the end of March.

Operators will need to hold an AOCP and be able to copy at least ten w.p.m. without error. As a member of the crew they will be expected to contribute to the chew expenses for lood, etc., of about $10 per day. They should be in *good* health and hold a *valid* passport.

The race will take about forty days for the slowest yachts and on arrival in Rio the operators will be able to live on board until their return. It is anticipated that two air tickets will be available for return to Sydney.

Ocean racing or cruising experience would be an advantage but is not necessary. Operators interested in taking part should write in the first instance to Hornsby and District Amateur Radio Club, Box 362, PO Hornsby, NSW 2007."

All previous responses received by the Executive office have been forwarded to VK2AAB. ■

NEW PREFIXES

The call sign series J8A-J8Z has been allocated by the ITU to Saint Vincent and the Grenadines according to the April 1981 issue of Radio Communication. ■

AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

IYDP NATURAL HISTORY AWARD

This prestigious innovative Natural History Award is sponsored by the Radio Amateurs Group of the Victorian Disabled Citizens Association, The Jaycees of Victoria. It promotes **"Amateur Radio for the Disabled" (International Year of the Disabled Person, 1981)** and features fauna and flora in *full colour prints*. The six colour prints measure 7 cm x 5.5 cm and are mounted on each award with a place for endorsement seals. Green, 70 points; blue, 70 points; red 75 points; silver 90 points; gold, 110 points; **Total 500 points.**

The award will be issued to all applicants including SWLs attaining the **first plateau of 70 points.** There is no time limit. Basic award donation, $A4.00. Application for the additional points endorsement seals will be issued at no cost to the applicants. Self addressed envelope, size 14.5 cm x 9 cm is required for endorsement seals. Each award will be individually numbered and signed by the award custodian and president of VDCA.

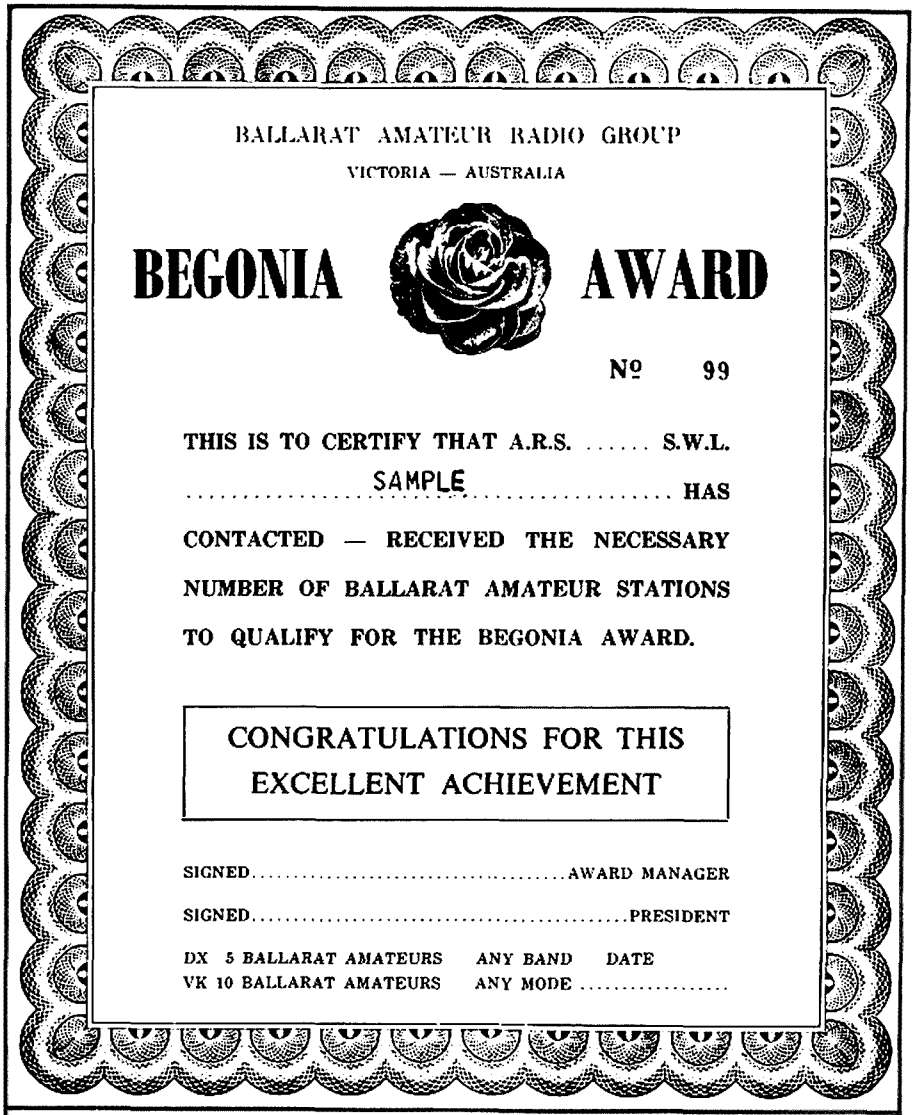
RULES

Verification/log entries must be clearly legible on a check log, counter signed by two licensed amateurs known to he applicant. QSL cards should not be sent to the awards custodian. Any legal type of emission may be used providing communication is established on or after January 1st, 1981. All bands from 160 to 144 MHz can be used. Cross band and the **VK3APU Monday/Thursday night 3575 MHz** net contacts will not be allowed.

Logs must include the following details: applicant's name and address, call sign, SWL's registration number if applicable, date, time GMT, type of emission, frequency, signal report, band(s) for which application is made and whether endorsement seals are involved. Applicant's location at the time of each contact if portable/mobile operation is involved. Log entries should indicate whether you are a physically disabled amateur, SWL, or a volunteer/supporter amateur (able bodied). SWL applications will be accepted and the IYDP Natural History Award issued with appropriate endorsement seals as applicable, when all conditions listed are complied with. SWLs, whether registered or not must include both call signs and names of licensed amateurs in submission of log extract to claim this award.

ALL FUNDS generated by this innovative award will be used to assist the visually disabled and the wheel chair mobiler amateur and SWL.

Address all correspondence to the Awards Custodian, 1 Balfour Street, Doncaster, 3108, Victoria, Australia.



BALLARAT AMATEUR RADIO GROUP

VICTORIA — AUSTRALIA

BEGONIA AWARD

Nº 99

THIS IS TO CERTIFY THAT A.R.S. ..... S.W.L.

SAMPLE ..... HAS

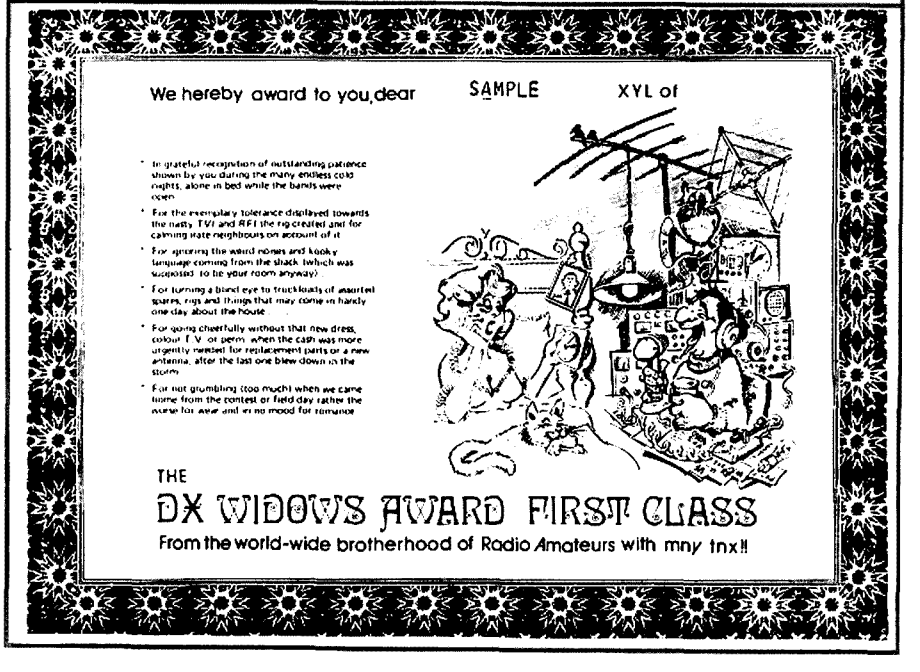
CONTACTED — RECEIVED THE NECESSARY NUMBER OF BALLARAT AMATEUR STATIONS TO QUALIFY FOR THE BEGONIA AWARD.

CONGRATULATIONS FOR THIS EXCELLENT ACHIEVEMENT

SIGNED.....AWARD MANAGER

SIGNED.....PRESIDENT

DX 5 BALLARAT AMATEURS ANY BAND DATE
VK 10 BALLARAT AMATEURS ANY MODE .....

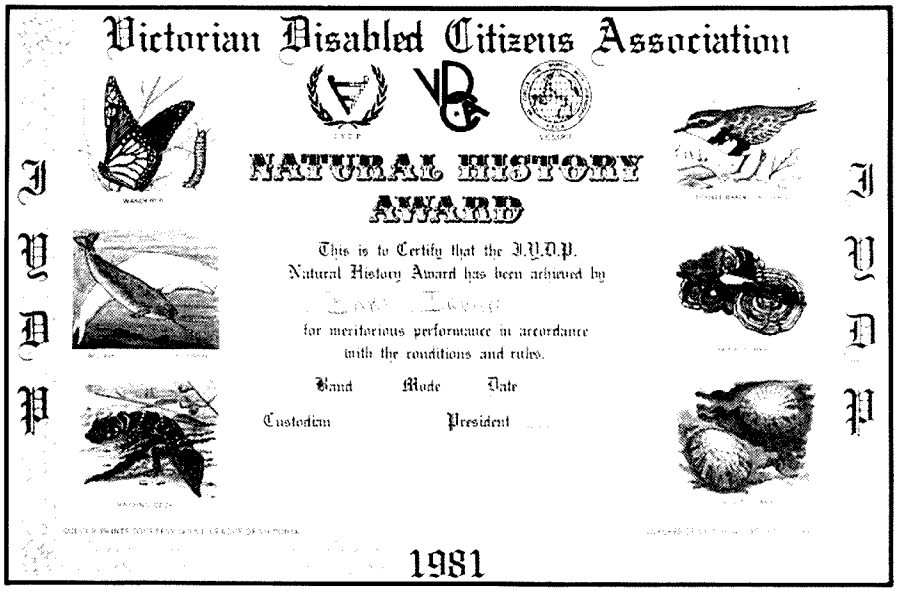


We hereby award to you,dear SAMPLE XYL of

- In grateful recognition of outstanding patience shown by you during the many endless cold nights, alone in bed while the bands were open
- For the exemplary tolerance displayed towards the nasty TVI and RFI the rig created and for calming irate neighbours on account of it
- For ignoring the weird noises and kooky language coming from the shack (which was supposed to be your room anyway)
- For turning a blind eye to truckloads of assorted spares, rigs and things that may come in handy one day about the house
- For going cheerfully without that new dress, colour T.V. or perm, when the cash was more urgently needed for replacement parts or a new antenna, after the last one blew down in the storm
- For not grumbling (too much) when we came home from the contest or field day rather the worse for wear and in no mood for romance

THE DX WIDOWS AWARD FIRST CLASS

From the world-wide brotherhood of Radio Amateurs with mny tnx!!



Points scoring system

Almost all log entries after 1st January 1981 will count towards this award in accordance with the following formulae:

1. Contacts with your own VK call area = 1 point.
2. Contacts with other VK call areas = 2 points.
3. All DX contacts = 3 points.

The only exceptions to this rule are: All DX contacts made by VK0 operators count as 4 points and **no VK to VK amateur station shall be worked more than once on any band.**

VK3APU must be worked for award qualification — no points score.

VK disabled amateur to any DX disabled amateur = 10 points.

VK disabled amateur to any VK disabled amateur = 5 points.

For SWLs, any VK to VK QSO logged counts as 1 point and VK to DX = 3 points.

Description

This award will be a most impressive addition to the shack wall. It is printed in thre colours on buff board. The Victorian Disabled Citizens Association and logos are in blue and the award mauve and most other printing in red. The surround is light brown.

The basic award will contain six multi-coloured stickers. There are several stickers available (approx. 180) featuring Australian flora and fauna, too numerous to mention in this column. With the combination of stickers available, no two awards will be the same. Applicants can then apply progressively for the coloured endorsement seals as they accumulate more points. This award measures 350 x 240 mm.

N.B.: **A date to remember — The Victorian Disabled Citizens Association Appeal on 19th and 20th July, 1981.**

BEGONIA AWARD

This award is available from the Ballarat Amateur Radio Group (BARG) in Victoria for working amateur stations located in Ballarat.

VKs must work 10 Ballarat amateurs.

DX stations must work 5 Ballarat amateurs.

Any band, any mode, will qualify.

The cost of this award is $2.00 Aust. or equivalent and log details only are required.

The award is printed on white matt card in three colours, the flower is in red, all printing in dark blue and surround in tan; measures 250 x 300 mm.

DX WIDOWS AWARD

This is a rather novel and innovative certificate which may also be obtained from the Ballarat Amateur Radio Group. You do not require any QSOs for this award, just your XYL's name and your call sign! The cost of this certificate is $2.00 Aust. or equivalent.

I must admit that my XYL, Joan, has cheerfully suffered the traumas of being a DX widow at various times and she wholeheartedly agrees with the captions included on this certificate, although cans of beer in this ham shack (and in VK5!) are somewhat of a luxury! I am sure your XYL would appreciate the thoughts contained in this certificate and I commend it as an extra when applying for your Begonia Award.

However, with the enourmous increase in the numbers of licensed lady operators over the past two or three years, I often wonder how many DX widowers there are out there? (Sorry, ladies, I could not resist it).

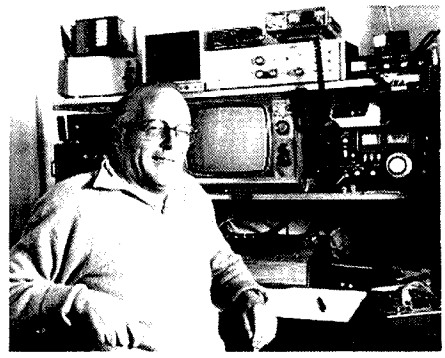
This award measures 295 x 225 mm, printed in red and black on yellow card. You may not be able to read the printing on the accompanying photo reduction. If not, I suggest you send $2.00 to Maurie Batt for a copy.

Both Ballarat awards may be obtained from Maurie Batt, RSD Rokewood Junction, Vic. 3351 or BARG, PO Box 216E, Ballarat East, Vic. 3350, Australia.

Good Hunting. ■

CONTESTS

Wally Watkins VK2DEW
Box 1065, Orange 2800



JUNE

19/21	SMIRK QSO Party	CQ 6/81
20/21	All Asian Phone Contest	FCM & CQ 6/81

JULY

1	Canada Contest	CQ 6/81
4/5	Venezuelan SSB Contest	CQ 6/81
11/12	IARU Radiosport Contest	
17/23	SWOT QSO Party	
18/19	Colombian Contest	
18/19	SEANET Contest CW	
25/26	Venezuelan CW Contest	
25/27	County Hunters CW Contest	

AUGUST

15/16	SEANET Phone Contest	
15/16	Remembrance Day Contest	

Exchanges: All Asian — OM, RS(T) plus age; YL, RS(T) plus 00. SMIRK — Call, State, province or country and SMIRK number.

The "Oops I Really Goofed It" department.

The gremlins got in again in the results of the Australian Novice Contest. The winner was in fact **Stu Bazley VK2NMB.** My apologies.

Results of the 1980 National VHF Field Weekend conducted by the Geelong Amateur Radio Club during the first weekend of the last Ross Hull Contest:—

Victoria: 1st VK3ATI, 5844 points; 2nd VK3ASQ, 5364 points; 3rd VK3BH, 4024 points:

South Australia: 1st VK5LP, 1245 points.

Tasmania: 1st VK7JG, 514 points.

Check Log: VK3YRP. ■

QSP

900 MHz

ARRL President is setting up an ad-hoc committee of amateurs knowledgeable in the 900 MHz region of the specrum to develop a detailed proposal and supporting rationale for the allocation of a new USA amateur band at 902-928 MHz.—March 1981 QST. ■

MORSE

The editorial in Ham Radio, Feb. '81 foreshadows Ham Radio's interest in arranging a contest in the USA for the world high-speed CW championship. The current record is Ted McElroy, ex W1JYN, who copied Morse code at a speed of 75.2 words per minute on 2nd July, 1939. ■

YOU and DX

G. (Nick) Nichols VK6XI
6 Briar Place, Ferndale, WA 6155.

VKland, Australia, a place regarded by many amateurs world-wide as the ultimate Utopia, a place they turn their beams toward. A chance for a bit of peace and quiet away from the kilowatts and bad-mannered dog piles, a guarantee of a good QSO, a friendly chat, a smile, a bit of warmth.

Really does sound idyllic doesn't it? Such a pity that of recent times it's just not true. What has come over this amateur community of ours? Have we lost all sense of good manners? Quite simply it is my belief the answer is YES.

My congratulations to the operator of a recent DXpedition for tearing strips off a VK6 using tail-ending tactics that really had to be heard to be believed. I sincerly hope that whilst he may have worked you he may have been absent-minded enough to omit you from the log, and whilst I may clearly have pointed the finger, many others were just as bad throughout VK. Certainly many are deaf or can't count. There may be a few Kiwis in this country but our prefix is VK not ZL, we aren't in the USA either, but to the VKs who got on a list by absent-mindedly omitting the first letter of their call (now don't tell me you all had slow VOX relays that day), I am tempted to say you win the raspberry of the year award — but even that would be too good for you.

No I haven't finished yet — in fact I'm only just getting started. For the novices in particular (but by no means limited to them), when a DX operator comes back with:—your call, 59 QSL, he is instantly dictating to you the way he expects you to reply, he certainly doesn't care a hoot if your name is Steven (spelt with a ph), that you live in Widgiemooltha some 897 kilometres (that's 557 miles), seven yards and 81 millimetres from Toonwatsitsname, are running 27.75 watts PEP from a super-duper block box into a three element tri-band lump of soggy sphagetti at 70 feet (that's 21.782 metres) above the ground! HAVE I MADE MY POINT? I SERIOUSLY DOUBT IT. Dozens upon dozens of times the DX stations were asked to repeat their calls — what are you doing in a pile up in the first place, if you're oblivious of whom you're calling? Don't bother to answer that; you're obviously on some sort of ego trip.

And what about the FH8 on 10 metres? Having apparently completed some work on his antenna installation he went and pointed it at VK, looking for some comparison reports. He got them all right. A screaming hoard of VKs all yelling 59 QSL. Would you blame him if he didn't point this way again?

Even nets run by VKs are much the same. Just how many net co-ordinators do we need on any one net? Certainly not 6 or 7 all doubling, waffling, repeating and generally messing it up. Oh, and while on the subject, If playing guessing games with your report from the DX station via a co-ordinator who carefully ensures that, after three or four tries (with a geneous amount of prompting) you get it correct is "DXing" then I for one Intend taking up a new hobby! If you can't get your report on the first or second attempt (allowing for deliberate QRM) without ANYONE'S help have the intestinal fortitude NOT to log the contact. You may not improve your country's count but at least what you have logged was not via the "quiz game method".

FACT AND FICTION

3 V activity has been rumoured for some months, a group of JA ops are said to be involved. Nothing heard on the bands yet so perhaps next month.

Kermadec — Dave K6LPL has shelved this one due to lack of finance.

KP4/D — many rumours on this one — some saying it will go off immediately a helicopter is available, whilst others state no licence has been granted. We will just have to wait and see.

TY — Benin to receive plenty of attention during late May/June in follow-up to the reactivation by TYA11 (funny call but it is legal).

5V7HL has been active but failure of a rotor control box has limited his beam headings severely; a replacement should have arrived by now which should save Reverend Ted the chore of ladder climbing. He's promised to look toward VK more often.

ON THE BANDS

10 metres

No doubt conditions will have severely deteriorated but for those of you who gave this one some attention over the last month the pickings to be had were exceptional. On Phone **VP8QG, J73PP, CP6EL, ZP5RG, 8R1J, HR1MZM, CE0AE, FY7AQ, FP0FSZ, 8P6PF, HK0FBF, HT7JML, HR3JJR, WH3AAB, AD0S/KH5K, 9M WB, VS5DG, DJ6SI/6W8, C5ADU/6W8, 5V7HL, 3C1MM, 9J2BO, A9XF, 7X2LS, 5X5FS??, FM8OM, 5N9GM, T32AB (Line Island), 9X5PP, TL8CN, 9GiAP, 5H3AA, 7Z2AP, C31UI, OY9R,** plus many other rare and semi-rare countries far too numerous to list. On CW things were pretty bright also, **CX4BA, FO8EW, T30AT, 4S7MX, VP8PK, JA8AON/JD1** and elusive Zone 40 was represented by **TF3JO.**

15 Metres

The only time I got down this far was to drag things up to 10, however for the novice I understand on Phone **A22AA, VK0AJ, ZK1CG, YS9RVE, GD3LSF, 6W8AR, 7P8AC** and **4N7NS** were available, whilst on CW a whole mess of activity kept the brass pounders happy with **EA6GG, E19Q, FG0FOO/FS, HI8JVF, T30AT, VP2EV, 9H1CH** and Nara **9M2LN** were in demand.

20 Metres

A CW report only this month (never could see the point of battling the kilowatts when the higher bands are wide open) — **CN8AT, CX6CW, FB8YH, FO8GM, OD5LX, HZ1HZ, TF3NA, ZB2EO, FM0FOL** and **TL8RC** were some of the more notable active stations.

40 Metres

On Phone if and when you could get through the northern QRM (not to mention the VKs rag-chewing in the prime DX window) **GW3AX, FK8CR, A35JE, ZP5AL** and **HR1RMG** were loud enough to hear through the "junk", whilst on CW **KH3AB, OA8CP, XT2AW, VP9BK** and **VP2EV** were much easier to hear but very much in demand.

80 Metres

On Phone, though openings were infrequent, **OA4AWD, ZS6BNS** and **JAs** were heard but CW remained as dead as a post.

My sincere thanks for the sudden and quite unexpected upsurge in contributions which enabled me to comment on the bands below 28 MHz, SWLs **Eric L3-0042, Maurie L3-13062** with written and on-air reports from VKs **6NLZ, 2DPI, 3NSR, 3VYP, 3NXX, 3VHA, 3AWY, 2VA**B and **3AKK.**

QSL INFORMATION

C5ADS — via DL1LD.
7P8AC — via PO Box 829, Maseru.
OY9R — via K2IJL.
4U1UN — via W2MZV.
9M6MH — via PO Box 678, Sabah.
9J2BO — via W6ORD.
HR1MZM — via PO Box 761, Tegucigalpa, Honduras.
J5AG — via SM3CXS.
9G1AP — via I0LCJ.
3C1MM — via EA1QF.
VK0AJ — via VK3AWY.
6W8AR — via DJ3AS.
8P6PF — via VE3IVE.
8Q7BF — via JA1ETE.
7Z2AP — via I8YCP.
WH3AAB — via Box 4, Johnston Island, APO, San Francisco 96305.
9M6WB — via PO Box 70, Tawau, Sabah, Malaysia.
HP1XOJ — via WB3KGY.
KG4KK — via N6AWD.
VP8PP — via PO Box 224, Stanely.
VP8WA — via PO Box 38, Stanely.
VP5TCI — via PO Box 78, Grand Turk.
FP0FSZ — via VO1FB.
9X5PP — via PO Box 863, Kigali.
TU2IJ — via PO Box 520, Abidjan.
VP2MGQ -- via N4MO.
OH3XT/OH0 — via Home Call.
ZP5PT — via W3HNK.
HC8GI — via W3HNK.
J28CC — via F6FGN.
TI9FAG — via T12VVR.
VP2MEA — via KP2A Home Call or NE4R/KB4QB.
DL2VK/ST3 — via DF9FM.
VP2VGR — via VE1ASJ.
CE0AE — via WA3HUP.
W4PRO/CE0 — via Home Call.
EA6GJ — via Box 2, Esporlas.
FB8YH — via F3KH.
KP4KK/DU2 — via WA3HUP.

FG0GDI/FS — via F6AXX.
EN3D — via UK3DAU.
FO8HA — via Box 11193, Mahina, Tahiti.
HI8JVF — via Box 1157, Santo Domingo, Dominican Republic.
H44DX — via Box 332, Guadalcanal, Solomon Islands.
H44M — via K1MM.
H44TA — via JJ1KEK.
JA8AQN/JD1 — via JA8JL.
KH3AB — via KB7MO.
OA8CP — via N4CQ.
OH0XZ/OJ0 — via OH2KI.
TL8RC — via F6EZV.
T30AC — via WB6FBN.
VP2EV — via K8ND.
VP2MFC — via K1ZZ.
VP8PK — via JA0BFZ.
VU2DX — via Box 725, Madras, India.
VU2UDO — via DJ3YX.
YC1BZ — via JA0YJA.
YZ9CRM — via YU2HDE.
ZS2CW — via W6RIA. ■

THE SEAVIEW EXPEDITION, 1981

From Len VK3LP

In 1492 Columbus sailed the ocean blue. That was a jingle learned at school and from that early voyage, someone or some group have taken up the challenge of the sea.

This time it is a foursome, Alphonso Oerlemans, 42 years, Marguerita Arens, 25, from Belgium, Bjorn Haltet, 25, and Frank Robinson, 24, from Norway, in a STEAM BOILER.

The vessel has taken three years to build. Dimensions are 45 ft. long, 7 ft. diameter with four compartments. Decking 4 ft. square with mast and 3 sails. A reversed conning tower extends 11 ft. below and acts as an observatory for filming marine life and as a stabiliser. Weight: 11 tons.

Phons ON4AXA, the skipper, uses a TS180 to a ground plane antenna. Charges the batteries by trailing a generator, allowing progress and sea currents to turn the propeller. Hence his operating time is limited each second day at 2100Z on 14.245 MHz.

THE JOURNEY

Out of Antwerp to Falmouth for extra fitting — over to Lisbon — across to the Canary Islands — down to Cape Verde Island heading for Fort Lauderdale, Florida via Barbados Rate of progress approximately 60 miles a day. Should be in American waters by the end of April.

Signals have been fairly good 53-57 since my first contact (31-1-81), Merv VK5AMY also keeps the sked.

QSL through Lolina Gonzales EA8XL, Box 123, Las Palmas, Grand Canaria, C.I.

In conclusion, Phons is not a newcomer to Atlantic crossing. He sailed from Morocco to Trinidad in 1976 on a raft using oil drums, naming it the LAST GENERATION. The Seaview may be classed as comfy by comparison. ■

NOVICE NOTES

Edited by Ron Cook VK3AFW

PEAK ENVELOPE POWER — WHAT IS IT? This article discusses that much misunderstood quantity Peak Envelope Power. Read this carefully and be one of the few to know what PEP means.

Peak Envelope Power (PEP) measurements are necessary for all amateurs as most transmitters are now limited by the Department of Communication's Regulations in terms of PEP output. Before we measure anything we ought to know clearly just what that thing is. Many among us, as the cartoon shows, do not understand PEP.

Good evening. Our new energy policy will include a Bill to change the charges for electricity tariffs onto a PEP basis, thus doubling the revenue now earned.

Consider a simple CW transmitter running, say, 10 watts DC input to the final amplifier. Now assume that it is an efficient amplifier and produces 7 watts RMS when connected to a 50 ohm resistive load. The load will heat up and will get just as hot with the 7 watts of RF as with 7 watts of DC. This is of course to be expected as by definition 1 watt RMS of RF produces exactly as much heat as 1 watt of DC.

Any RF power meter calibrated for RMS can be used to measure the output power of our CW transmitter if the key can be held down long enough for a steady reading to be obtained. It should read 7 watts for our example.

An oscilloscope (CRO) connected across the load would show a picture similar to the signal depicted in Fig. 1. We could measure the peak voltage, Vp, from the CRO and would expect to read 26.46 volts. For a sine wave signal without distortion (no harmonics) the RMS voltage, V, could be calculated from the formulae V = 0.7071 Vp = 18.71 volts. As power = V^2/R we would then find the power was 7.0 watts.

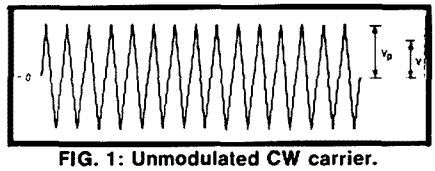


FIG. 1: Unmodulated CW carrier.
For 7 watts rms into 50.0 ohms, (R = 50.0)
peak voltage, Vp = 26.46 volts
rms voltage, V = 0.7071 x Vp
= 18.71 volts
power = V^2/R

Fig. 2 shows the envelope or outline of the peaks of the RF signal for an unmodulated CW carrier. The carrier has a power of 7 watts and as it is always at the peak it is easy to see that the envelope represents a power of 7 watts. The PEP output is in fact 7 watts. The peak and average powers are equal. Note that power is defined as the rate at which energy (e.g. heat) is produced. We are therefore concerned with RMS quantities, not some airy-fairy thing invented by audio amplifier salesmen.

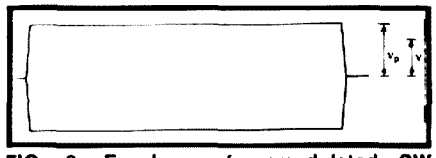


FIG. 2: Envelope of unmodulated CW carrier. The envelope is the outline joining the peaks of each RF cycle. If V = 18.71 volts, PEP = 7 watts.

Suppose we now key the transmitter and send a series of "As", with a space equal in duration to a dash as illustrated in Figs. 3 and 4. If we assume that the transmitter and its power supply operate in the same manner when the key is down for a short time as when it is down for several seconds (see later), then the RMS power during dots and dashes is still 7 watts. In between it is 0. The power during the peak of the envelope is 7 watts PEP out as Vp is the same as before. But, because the key is closed for half the time, an ordinary power meter would read only half the previous value, namely 3.5 watts. We have now discovered that for keyed CW signals the average power = PEP × duty cycle fatcor. Using our oscilloscope we can measure Vp as before and calculate PEP as before.

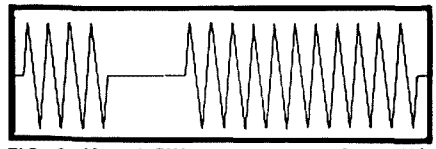


FIG. 3: Keyed CW carrier, morse letter 'A'.

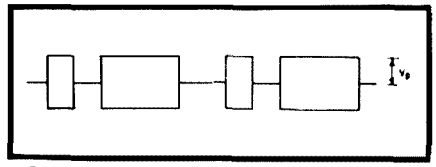


FIG. 4: Envelope of keyer CW carrier, part of morse sequence 'AAAA - - - A'. Peak envelope power = 7 watts rms. Average rms power = 3.5 watts if there is a space equal to a dash between successive A's.

Now, if our amplifier is a linear amplifier, class B operation perhaps, then we could apply an SSB signal. The envelope of a two-tone signal is shown in Fig. 5. The two tones may have any frequency provided they are not harmonically related (refer to the regulations). Suppose we increase the level of the two tones equally to the point just before clipping of the peaks of the envelope occurs. If our oscilloscope shows Vp = 26.46 volts we again have 7 watts PEP output. A true RMS wattmeter would show only 3.5 watts as once again the duty cycle factor is effectively 0.5.

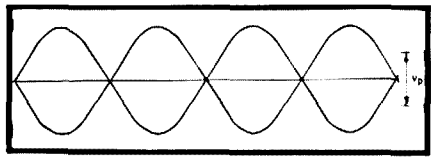


FIG. 5: Envelope of two-tone SSB signal. PEP = $Vp^2/2R$) = V^2R = $2I^2R$ where V = 0.7071 Vp and I = average rms current.

If we now switch to voice we may see an envelope similar to that in Fig. 6. If Vp is as before then the PEP output is still 7 watts although the duty cycle may be only 30 per cent.

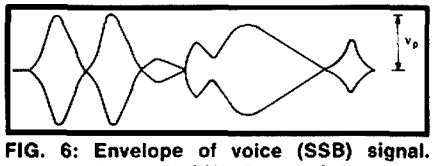


FIG. 6: Envelope of voice (SSB) signal. PEP = $Vp^2/(2\ R)$ = V^2/R where V = 0.7071 Vp.

SOURCES OF CONFUSION

There are many sources of confusion, for example here are three.

With some power supplies the voltage may remain steady under voice conditions but sag under key-down conditions. This is because of poor power supply regulation caused sometimes by insufficient filter capacitance. Fig. 7 illustrates the effect on a CW signal. If the peak voltage sags by 20 per cent then the PEP output sags by

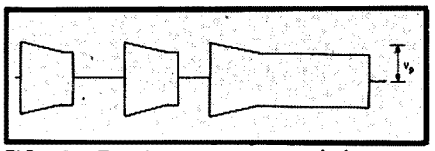


FIG. 7: Envelope sag caused by poor power supply regulation.

44 per cent! Some operators measure their CW output and multiply by a factor of up to 2 to estimate their PEP output. Modern equipment in good order is just not that bad.

Another source of confusion is the Regulations Handbook. It recommends the use of a two-tone signal adjusted for maximum undistorted RF output into a dummy load. The RF line current is then measured on an RF ammeter. (Just where, oh where, can you buy an accurate RF ammeter with 1A FSD, good to 30 MHz, for the novice?) Because of the duty cycle the power computed from I^2R is doubled to obtain PEP out. Some amateurs use the factor of two in conjunction with the DC input (measured while saying "ARRRH!" loudly into the microphone) to obtain PEP. The DC power is either doubled (to boost the ego) or halved (to pretend that the output is less than 400 watts) and if the desired answers are not obtained a further factor of 0.7 may be applied (while muttering about efficiency and peak-to-RMS conversion) to get the desired numbers.

A third source of confusion derives from AM transmissions. As hardly anyone uses AM I will not discuss the matter in any detail except to say that it may provide unwarranted justification for applying a factor of 4 to get an acceptable answer from a disagreeable set of measurements.

MEASURING PEP

This is a topic deserving a full column in itself, so I will save that for the future.

In brief, however, I prefer the oscilloscope as a measuring and monitoring instrument. Unfortunately the price of an oscilloscope with frequency response flat to within 5 per cent to even 30 MHz makes it uneconomic. I do possess an RF ammeter with 3A FSD. It was obtained many years ago from a disposal store and I have calibrated it on DC.

Several of our advertisers offer commercial PEP meters of good quality at reasonable prices. I would be pleased to publish details of any simple, effective home-brew PEP meters developed by readers.

There is another economic and cunning alternative. Harold Hepburn VK3 AFQ has designed a novel PEP meter using an LED display. It is available commercially for under $50 (I believe) and is advertised in this magazine. I have insufficient space this month to discuss its operation, but suffice to say that the DOC will accept the instrument as an alternative method of measuring PEP.

73 de VK3AFW. ■

Conversion Details for some AWA Carphones

Ray VK2BVO in "Smoke Signals", Jan. 1981, Central Coast ARC Newsletter

The conversion data presented here is to enable anyone with an AWA carphone to convert it from its commercial frequency range to the appropriate amateur band (6m or 2m). The crystal formula for 2m is (fMHz—2/14. At the time of writing, I couldn't locate the formula for 6m conversions. *(Perhaps a reader could supply this information for subsequent publication. —Ed.)*

High Band MR10B to 146 MHz

Tx Increase 1C14 to 82 pF, 1C12 to 47 pF, 1C21 to 15 pF.
Add 4.7 pF across secondary of 1T2 (pins 2 and 3).
Add 2.2 pF across primary and secondary of 1T3.
Close up 1L4 and 1T6A as required.

Rx Increase C15 and C16 to 33 pF, C31 to 22 pF.
Rewind primary and secondary of T9 with 6 turns.

High Band MR10C and MR20A to 146 MHz

Tx T8 increase C92 to 22 pF, C89 to 33 pF.
L9 add 2.2 pF across winding.
Close up L11, L12 and L16 as required.

Rx L1 L1 add 1.8 pF, L5 add 1.8 pF. Increase C54 to 15 pF, C6 and C7 to 39 pF, C58 to 22 pF.

High Band MR20B to 146 MHz

Tx Increase C117 to 39 pF, C118 to 22 pF.
L9 add 2.2 pF. Close up L11.

Rx L1, L3 and L6 add 1.8 pF. Increase C66 to 47 pF.
Add 4.7 pF across primary TR2 and secondary TR1.

High Band MR3 to 146 MHz

See October 1965 of "Amateur Radio" page 2 and 14 (photocopies available from most Division libraries, also public libraries in capital cities—*Ed).*

High Band Cyclephone to 146 MHz

Tx TR8 add 6.8 pF across both windings.
L9 add 1.8 pF, L11 rewind with 4 turns 16 SWG.
Remove C94, C115 and relay RL2.

Rx L4 add 1.8 pF.

Low Band MR10B to 52 MHz

Tx 1T4 add 15 pF across both windings.
Rewind 1T5A, 1T5B with 8 turns 16 SWG, 1T6A, 1T6B with 5 turns 16 SWG.

Rx L1 rewind with 18 turns 24B&S tap 3 turns from cold end.
T1 rewind wit h18 turns 24B&S.
T9 add 7 pF (resonate at 40 MHz).

Low Band MR10C and MR20A to 52 MHz

Tx T11 add 15 pF across both windings.
Rewind L11 and L12 with 8 turns 16 SWG 5/16 dia. x 3/4 long.
Rewind L13 with 6 turns 16 SWG 9/16 dia. x 7/8 long.
C125 increase to 100 pF.

Rx L1 add 4.7 pF, L2 and L3 add 3.3 pF, L4 and L5 add 10 pF.

Low Band MR20B to 52 MHz

Tx L8 and L9 add 15 pF, L11 rewind 6 turns, L12 rewind 18 turns, L15 rewind 10 turns.

Rx L1 and L2 add 4.7 pF, L3 add 3 3 pF, L5 and L6 add 10 pF.
C6 increase to 39 pF. N.B. This value is critical and may vary on some units to achieve neutralization.

NOTE: If narrow band filter type 5Q57975 is being removed and replaced with wide band filter type 3Q57975 the 2.2 pF across the input and output of the filter should be removed.

All coils should be wound on the same diameter and spacing as originals unless otherwise specified. ■

WICEN

QUEENSLAND WICEN

Considerable organisation has taken place within the past 12 months to make Queensland WICEN into an efficient State-wide group.

The State has been divided into five regions, each with a Regional Co-ordinator. Within each region are appointed WICEN officers and to date some 30 towns or cities have their own WICEN officer. These officers are charged with the responsibility of promoting an awareness of WICEN within their own club and area. They are also involved in forming local emergency nets and offering their services to the statutory authorities such as the State Emergency Service and Natural Disaster Organisation.

A weekly net of these WICEN officers and Co-ordinators is held to disseminate information and to answer queries.

The network operated successfully during the recent cyclone "CLIF", again during the Brighton storm near Brisbane and numerous smaller search and rescue operations.

As an exercise, communications were provided as a safety measure with the Brisbane to Galdstone Yacht Race. A continuous link with the yacht "Rustlac", on which our operator Frank VK4CFF was installed, was maintained throughout the race.

Forthcoming exercises are the Lutchwyche Car Rally in the Nambour area and a combined SES exercise in the MacPhehson Range involving a search and rescue operation.

Any Queensland operators requiring information on WICEN should contact the State WICEN Co-ordinator, Box 638, Brisbane, Queensland 4001.

Ken Ayers VK4KD,
Qld. WICEN Co-ordinator. ■

From Bob Tait VK3YSH we have four items.

1. ANTENNA HINT

Fig. 1 shows the method I used to lock the adjustable section of my skeleton slot. The tubing was split in four places and then crushed to form a collet which locks on the rod with the aid of a nut of suitable size.

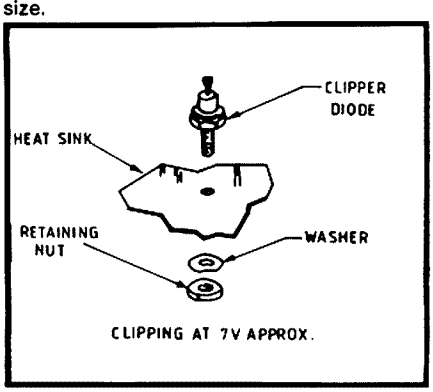


FIG. 1

2. LOW-COST DIODES

The other items which I feel will be of interest to amateurs is the Lucas 4DS5 rectifier which is a 3 phase device with a static rating of about 20 with a PIV of 100 watts or more. These packs are thrown out by auto-electricians if a single diode fails, however they are quite good for any single phase power supply. See Fig. 2.

I have included drawings and circuits to indicate how these can be used. The part numbers of suitable packs are 63166, 83185, 83192, 83062 and 83295. The difference between assemblies is the termination only. So I suggest you get friendly with the local auto-electrician and raid his rubbish tin.

3. SUPER ZENER

How about a 100W 14V zener, suitable for protection of that 6A power supply, details for Lucas part number 49345 as used to regulate motor cycle alternator output by loading at the battery is as follows:—

ZENER DIODE AND HEAT SINK

A stud-mounted Zener diode part number 49345, will be required. The diode must be mounted on a heat sink to prevent its working temperatures from rising above the designed operating range. The heat sink must be made of copper or aluminium sheet approximately 0.125 ni. (3 mm) thick, have a minimum area of 36 square Inches, and be as square as space limitations permit. In practice, it is found that an area of 6 in. (152 mm) x 6 in. (152 mm) (as shown in Fig. 4) can most readily be accommodated. The diode must be mounted as near to the centre of the heat sink as possible. Care must be taken to see that the metal of the heat sink is clean, free from enamel and flat around the diode

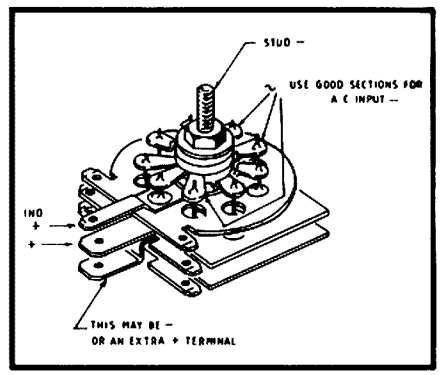


FIG. 2

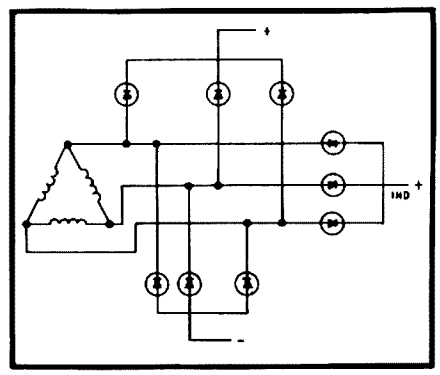


FIG. 3

fixing hole to ensure maximum heat conduction from the diode.

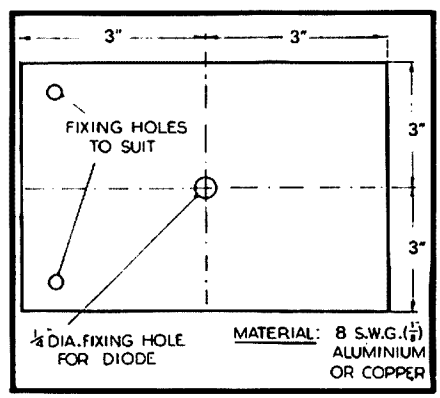


FIG. 4: Suitable heat sink dimensions.

4. SUPER CLIPPER
CLIPPER DIODE

Here are details of a Clipper diode which may be of interest.

A common fault experienced with machines equipped with direct lighting is the blowing of bulbs. This may be due to faulty dipper switches, causing momentary voltage surges, bad connections or intermittent earths. Whichever is the cause, the Clipper diode effectively protects bulbs against excessive voltage, but of course will not prevent failure caused by vibration, filament fractures or faulty bulb manufacture. The Clipper diode is available under Part No. 83137.

Installation

The diode is wired into the circuit so that when the lights are switched on, the generator also supplies the diode. This can be achieved by connecting either into the tail-lamp feed or the wire supplying the dipper switch. If no dipper switch is used the connection could be made directly to the headlamp bulb feed.

Either an aluminium or copper plate not less than 16 gauge in thickness and measuring 3 in. x 4 in. (76 x 102 mm) is required. Mount the diode on the plate by drilling a 0.1875 in. (4.77 mm) hole approximately in the centre of the plate, ensuring that all burrs are removed from round the edges of the hole so that the base of the diode bears flat on the plate.

Mount the plate on the machine in a convenient position so that air circulates around the diode and plate when the motor cycle is in motion. Do not position the unit too close to the ground or wheels since salt-contaminated mud and water may corrode the diode body. If the heat sink cannot be properly earthed, connect an earth lead between the heat sink and machine frame. The earth lead must not be soldered to the diode or connected between the diode base and heat sink.

Bob Tait VK3YSH ■

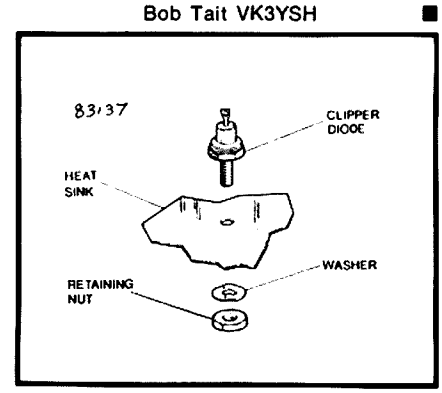


FIG. 5: Clipper diode mounting.

QSP

MOBILE TRANSMISSIONS

In Victoria Regulation 153(1) of the Motor Car Regulations 1966 (Statutory Rules No. 44/1966) states, inter alia, "that the driver of a motor car shall not while the motor car is in motion use any telephone, microphone or any other similar instrument or apparatus in such motor car". The only exemptions are drivers of motor omnibuses touring on charter in the metropolitan area who may use a fixed or throat microphone. "Motor car" includes almost everything (including motor cycles) registered for use on the roads. "Microphone" obviously would include a boom mike on a single headset. So far as is known there is nothing to prevent a passenger (other than the driver) from transmitting/receiving whilst the car is in motion. It is surmised that similar regulations apply in other States. ■

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Plus we have Rotators, Beams, Coax Cable, Connectors, Spare parts and Kenwood. We are an authorised Kenwood dealer. We have full Kenwood warranty (90 days). We are supplied direct by Kenwood Australia.

We still have a few TS 130 S Transceivers left at the fair price of $699. This model is now finished and replaced by woodpecker model.

All other Kenwood Transceivers will be sold at $10. on cost until further notice. Including the new TR 2 m FM Hand Held, TR9500, TR8400 and the TS530 S and don't forget that the TR 7850 replaces the TR7800.

If you want this stuff please call

VK/ZL/Oceania DX Contest 1980 — Overseas Results

PHONE SECTION

OCEANIA

W7LPF/DU2	1098
DU1EFZ	291
P29CH	12960
5W1BZ	18200
YJ8SS	57447

N. AMERICA

VE3EVK	705
VE1AVX	210
VE7DXU	75
VE7BS	16
WA4QMQ	3312
N4UH	468
W5OB	2440
N6AA	8
K5MM/7	5994
N7DF	2926
A19J8	10608
K8MWM	30636
AI9J	10608
W9RKP	check
AC0N	2860
W0CDC	1020
KD0B	check

S. AMERICA

LU8CW	119

ASIA

JA1ELY	20253
JA1IDY	15156
JK1OPL	13072
JF1JLW	6096
JE1CCD	4004
JR1JUR	3100
JA1AOD	2925
JA1AAT	1692
JA1DCO	1221
JL1QNG	920
JA1JGP	657
JA1IT	610
JE1PJR	468
JG1EZF	460
JA1FO	342
JA1BUN	342
JA1GYO	336
JM1CPA	232
JA1EOO	152
JA1RDP	84
JH1CQV	36
JA1ZSK	8
JM1LGL	4
JA2AYH	11672
JR2QUZ	5925
JE2IEQ	3146
JA2YEF	2832
JR2RAV	2112
JH2IJC	1488
JA2DI	1417
JA2JZA	1394
JA2ATE	1350
JA2CES	729
JA2XLV	639
JH2XTV	344
JA3HTT	10230
JF3ITR	3870
JA3BBG	1020
JR3CVJ	890
JA3UV	279
JR3WXA	270
JF3EGT	80
JR3SQZ	56
JA4YFH	13685
JA4VZX	5635
JA4DEI	3059
JA4KWU	1536
JA4AQR	590
JR4ISK	368
JH4XAE	224
JA4IDT	4
JA5PUL	9636
JA5CAX	7890
JA5AUC	5746
JA5CPO	5394
JH5GOW	4950
JH6DOG	10050
JA6BIF	9990
JA6ABG	7224
JA6CNL	4704
JA6CM	2266
JA6AKV	1764
JA6EFT	1220
JA6PL	315
JA7YAA	34221
JA7YAL	9870
JA7DLE	6336
JA7KM	1600
JA7BAL	1366
JA7JGD	1040
JA7FFY	840
JH7JGG	517
JR7HNF	350
JA7FMZ	84
JH7WKQ	27
JH8NYM	26226
JA8SW	1520
JA8CJY	check
JA9IGF	1406
JA9NLE	1309
JA9XBW	576
JA9BKW	168
JA0GCI	6150
JA0FMB	3100
JA0COL	3080
JA0JHA	2076
JA0AD	972
JA0BOB	230
JA0GZ	18
9M2KG	1564

EUROPE

OL8PC	16620
DJ9MT	5778
DJ3HJ	3648
DL8OS	2622
DL1SV	1680
DK1AF	1000
DL8XA	154
DF8MB	120
EA2QU	1815
EA3NA	544
EA2IA	360
EA2CR	30
EA3ARX	8
EA7ATE	6
F8WE	105
F6DRP	40
G3RRS	20008
G3OZF	17548
G3VPW	9296
G3UVZ	1748
G5MY	160
HA4XX	4344
HA4XH	3585
HA5NX	301
HA6KVD	40
HA0IG	24
HA3KNA	414
HA2KRZ	56
HB9AAA	9184
HB9IK	2247
HB9DX	440
I6NOA	1060
I4CSP	994
IS0ODV	156
IS0KNG	54
LA9PT	510
LA4M	112
LA5YV	12
LA4HH	check
LA4DM	check
LA5QK	check
LA8CJ	check
LZ2RF	2468
LZ2KKZ	606
LZ2KTS	1440

(Cont. next page)

VK PHONE

Call	160	80	40	20	15	10	Total
VK1FT	—	—	440	7072	17236	106502	133251
VK1LF	—	—	—	1110	—	—	1110
VK2NBA	—	—	—	—	—	315780	315780
VK2APK	—	—	—	111605	83284	30378	225267
VK2VAB	—	550	—	—	26964	146286	173800
VK2BAN	—	—	—	68992	—	—	68992
VK2BAM	—	600	—	4680	1092	20100	26472
VK2BQS	—	280	—	6120	4270	9486	20156
VK2ABC	—	—	—	13741	—	—	13741
VK2DEW	—	—	—	—	—	9108	9108
VK2WA	—	—	—	3408	8	168	3584
VK2VHP	—	1140	—	—	1380	1020	3540
VK3BQA	—	—	—	37696	61200	38640	137536
VK3ABH	—	—	45	77328	36314	1827	115514
VK3VHA	—	—	—	—	21730	31440	53170
VK3XB	7920	—	—	—	—	—	7920
VK3DAK	—	—	—	—	—	5265	5265
VK3SM	—	—	—	5244	—	—	5244
VK3NIH	—	—	—	—	2522	240	2792
VK3AMD	20	—	—	180	84	672	956
VK3VUP	—	—	—	—	3	748	751
VK4LT	—	—	—	11264	83212	492336	586812
VK4NHL	—	60	—	—	60514	517275	577849
VK4LX	720	240	1050	15392	137816	121212	276420
VK4NLL	—	—	—	—	53972	163296	217268
VK4NFU	—	80	—	—	55800	56322	112202
VK4SF	—	—	—	—	—	43470	43470
VK4NGU	—	—	—	—	—	19272	19272
VK4VBD	—	450	—	—	6076	8178	14704
VK4VHZ	—	—	—	—	10670	75	10745
VK4OX	—	—	—	740	—	—	740
VK4PJ	200	—	—	169	2	48	419
VK5MS	—	—	—	472384	105840	87246	665470
VK5NVW	—	—	—	—	33396	14352	47748
VK5NSD	—	—	—	—	17884	7200	25084
VK5RX	—	—	—	—	—	5320	5320
VK5RK	—	—	—	378	—	—	378
VK5OU	—	—	—	25	342	—	267
VK5NSN	—	—	—	—	152	72	224
VK6AJW	—	—	—	4648	15840	124425	144913
VK6NEN	—	—	—	—	—	107199	107199
VK6FS	—	—	450	78715	7462	13287	99914
VK6NID	—	1330	—	—	476	65266	67092
VK8NAT	—	—	—	—	45240	—	45240
VK6JS	—	—	—	1015	3854	16065	20934
VK5ZX*	—	—	—	3975	28060	30132	62167
VK7MC	280	320	—	—	—	—	600
VK8BE	—	—	—	567	9288	9288	19143
VK9NC Norfolk Is.	—	—	—	—	—	—	1580
VK9XW Christmas Is.	—	—	—	—	—	—	192228
VK2NDK/LH Lord Howe Is.	—	—	—	—	—	—	487088

VK CW

Call	160	80	40	20	15	10	Total
VK1FT	—	—	1668	5656	8000	8733	24255
VK2APK	—	—	—	63954	112230	32391	208575
VK2BQQ	—	—	12390	43216	70460	36108	162174
VK2AQF	—	1540	4725	15974	21868	36828	80935
VK3MR	—	—	—	—	169560	—	169560
VK3AEW	—	400	3625	16224	47124	20727	88100
VK3AZW	—	26520	—	—	15892	—	42412
VK3RJ	—	80	1955	—	70	24000	26105

* denotes QRP

(Cont. next page)

VK CW (continued)

Call	160	80	40	20	15	10	Total
VK3XB	360	14280	—	—	3430	—	18170
VK3PL	2240	1200	—	7676	798	4524	16438
VK3AMD	—	—	—	9840	40	2775	12655
VK3JI	—	90	1350	1376	6528	756	10100
VK3CM	4400	—	—	—	—	—	4400
VK3KS	240	1430	—	—	—	—	1670
VK3VEU*	—	10	—	—	1288	27	1325
VK3SV	100	80	—	—	—	—	180
VK3BLO	—	—	—	—	72	—	72
VK4XA	400	2210	70875	44092	81640	140352	339569
VK4LX	1080	1260	20580	25773	125756	59280	233729
VK4UR	—	—	—	40950	—	—	40950
VK4SF*	—	—	—	1890	3196	7659	12745
VK5VD*	—	—	—	195	2950	5856	9001
VK5RX	—	—	—	—	—	1026	1026
VK5KL	880	—	—	—	—	—	880
VK6AJ	—	—	—	—	106950	—	106950
VK6FS	—	60	8415	12600	13144	36216	70480
VK6RZ	—	—	36600	—	—	—	36600
VK7MC	1680	17630	—	—	—	—	19040
VK7RY	480	—	—	9882	1002	—	11364
VK4ZZ	80	—	—	6715	1584	612	8991
VK8BE	—	—	—	36	220	714	970
VK9NC Norfolk Is.	—	—	—	—	—	—	760
VK2NDK/LH Lord Howe Is.	—	—	—	—	—	—	6272

* denotes QRP

SWL

L30042	—	—	—	—	—	—	13790

ZL PHONE

ZL1BQD	—	26660	23310	—	112144	435744	597888
ZL1AKY	—	—	—	—	77520	449323	526752
ZL1AXB	—	—	—	523151	—	—	523151
ZL1AFK	—	—	—	—	—	235161	235161
ZL1ANH	—	—	24095	160312	49640	—	234047
ZL1MQ	1080	—	—	3008	12444	20762	37294
ZL1AFU	—	—	—	500	24472	3774	28746
ZL1AMM	—	—	—	—	—	22491	22491
ZL1NK	—	180	—	—	—	—	180
ZL2ACP	—	—	—	—	—	709866	709866
ZL2AH	—	—	—	18612	59857	139956	218425
ZL2BGJ	—	50600	—	—	—	—	50600
ZL2BHJ	5500	9400	—	—	—	—	14900
ZL2AKT	—	—	—	3	2	11703	11714
ZL2ADP	—	—	—	720	1248	336	2304
ZL2AQK							check
ZL3ABC	—	10	—	22261	—	27	22298
ZL4PX	1680	8280	—	—	—	—	9960
ZL4IJ							check

ZL CW

ZL1BJH	—	1440	—	—	85346	21594	108380
ZL1AFW	—	—	1020	12852	26128	39474	79474
ZL1AU	—	—	—	35000	—	—	35000
ZL1HV	—	—	—	6565	24112	3045	33722
ZL1MO	20	—	—	14790	242	2829	17881
ZL1AMM	—	—	—	—	—	15576	15576
ZL1BGT	—	1800	1120	520	2604	1656	7700
ZL1BQD	20	1100	4760	—	—	—	5880
ZL1NK	—	280	—	—	—	—	280
ZL2VS	—	2850	61215	—	74236	41811	180112
ZL2OM	—	—	—	—	149454	—	149454
ZL2AGY	—	118260	—	—	—	—	118260
ZL2BKK	160	39840	—	—	—	—	40000
ZL2AKT	—	—	—	525	14160	—	14685
ZL3AGI	—	—	—	26814	—	—	26814

EUROPE PH. (cont.)

OE3NPW	5902
OE5XBB	1206
OH1XX	5100
OH3WH	792
OH2BPE	460
OH6IU	238
OH3BX/2	96
OH3AA	60
OH2BMP	56
OH6DH	32
OR4XG	676
OX3ZM	check
OZ4PM	2880
OZ8BZ	1909
OZ5EV	1116
OK3CFA	5805
OK1TA	5157
OK3VSZ	3864
OK2ABU	1120
OK2BQL	850
OK2QX	756
OK1AGN	456
OK1JST	108
OK2BJR	80
OK1XC	50
OK2PDL	24
OK2BHM	18
OK1AZI	18
OK2PDE	14
OK2BNK	check
OK1ASQ	check
OK3KFO	2070
PI1ARS	407
PA0COR	270
PA0LVK	208
PA0CF	check
SM0AJU	8534
SM3DXC	2756
SM6CVT	4966
SM5HPB	1508
SM6LGW	780
SM5BDV	check
SM5ARL	check
SP5BT	741
SR7AWA	132
SP5ENA	27
SP3CMA	8
SP9AXA	8
SR9PDF	1470
Y37XJ	2475
Y57ZJ	1501
Y53YF	1140
Y43ZI	884
Y59UN	520
Y21PE	400
Y25HL	380
Y26LN	126
Y22WF	120
Y26DO	110
Y41ZH	84
Y39ZO	70
Y49UH	check
Y49UK	check
Y34RI	check
P44ZK	check
Y33TA	check
Y31PA	check
Y23QA	check
YO3QK	182
J03JW	138
JO6BJV	18
JU2CDS	9585
YU7ECD	4128
JU3DJK	1254
YU1NUF	996
YU10BA	666
YU7NZR	546
YU7AJD	132

No logs received from USSR

CW SECTION

OCEANIA

KP4KK/DU2	34920
W7LPF/DU2	2373
3D2FJ	20808
5W1BZ	17723

N. AMERICA

HP1AC	315
VE3MFT	885
XE2MX	826
W1EVT	3770
K1MEM	2553
WB1HIH	540
W1OPJ	32
K2SX	784
WB4RUA	1197
K5MA	5796
W5OB	1050
AA6EE	80
K5MM/7	10980
N7DF	400
K7WA	320
W7OK	168
W8UVZ	6105
AI9J	13110
K9VKY	144
W0KEA	8274

S. AMERICA

PY1OPL	8094

ASIA

JK1OPL	8094
JI1PCN	2392
JA1SJV	2070
JA1ODE	1740
JR1JUR	1558
JH1MTR	532
JH1BCY	340
JA1OP	280
JF1LKM	260
JL1QNG	90
JA1AAT	85
JK1LUY	8
JA2IU	7130
JA2DCN	4464
JA2YEF	4420
JA2BI	4228
JE2IEO	660
JA2KPV	175
JR2HTT	60
JH2XTV	48
JR3WXA	6474
JH3WKE	5340
JH3LPT	1176
JH3AIU	748
JH3FHR	162
JA3UV	8
JH4UYB	4495
JA4BFL	966
J4RCCG	759
JH4IFF	550
JA4FMS	336
JA4AQR	10
JA5AUC	10035
JA5CP	6479
JA6BIF	5576
JA6GU	1872
JA7YAA	13024
JH7WKQ	420
JR7DXE	175
JA7FMZ	128
JH8GEU	1376
JA8SW	690
JA9CWJ	7437
JA8ERG	351
JH9DCJ	4676
JH0BBA	9635
JA0GCI	8140
JA0BQB	728
JA0GZ	65
9M2KG	1691

EUROPE

DJ4SO	1444
OK1PF	156
EA21A	1840
EA7ALG	686
EA2CR	96
EA3AQS	84
EA4BV	40
G5MY	728
G3KSH	540
G3VW	360
G8OZ	8
HB9IK	2871
HA4XX	1104
HA7SQ	154
HA7SU	50
HA5NG	48
HA7PQ/2	18
HA0IG	check
HA1KSA	688

(Cont. next page)

EUROPE CW (cont.)

HA1KZZ	616	Y38ZB	2
HA5KHG	328	Y23BF	check
I5YDI	385	Y23CM	check
LA2KD	48	Y31SB	check
LA1VL	32	Y31XF/P	check
LA7XB	check	Y33VA	check
LA4DM	check	Y39QA	check
LA4XX	check	Y39ZG	check
LZ1XL	234	Y39ZL	check
LZ2DR	24	Y47XN	check
LZ2KKZ	15	Y48ZF	check
LZ1KSN	2040	YO3KSC	2
OE3NPW	2369	YU7NGO	840
OH2CZ	1302	YU1AST	210
OH7KJ	533	YU2RJZ	36
OH2BPE	410	YU7SF	10
OH1PY	242	YU7ORQ	8
OH7NW	132	ZB2EO	784
OH9TD	44		
OZ4PM	1680		
OZ1LO	1037	**SWL SECTION**	
OZ8AE	324	JA1-18277	6633
OZ2RH	146	JA4-4665/1	5768
OZ1EE	check	JA1-8132	3080
OK1PGN	1700	JA1-30223	2976
OK1AMI	660	JA1-19113	2070
OK2QX	572	JA1-22456	1680
OK2BMH	351	JA2-9482	416
OK3KYR	242	JA4-30124	11418
OK2BCI	234	JA4-33469	5403
OK3CAU	52	JA6-9330	12584
OK3FON	36	JA7-8552	1376
OK2ABU	36	JA8-3769	4784
OK1CIJ	21	BRS 25429	3125
OK1AZI	6	BRS 1066	1168
OK3KEU	3	DL-P40-1802206	140
OK1MAC	2	LZ1-O-64	1738
OK1MAC	2	OH6-145	2269
OK1ASQ	check	OK1-21672	530
OK3CEG	100	OK3-27106	396
PA0TA	40	OK3-26694	300
PA0CF	check	OK1-11861	288
SM6CVT	1596	OK1-21610	154
SM6EUZ	310	OK3-26694	120
SM7CZC	8	OK1-19973	90
SM6AYM	check	OE1-104079	294
SM5APS	check	SP-0046-K1	814
SM6KZW	check	SP-0023-SK	744
Y22JD	3100	SP-3003-LK	660
Y22JA	516	Y2-517/G	8208
Y22UB	344	Y2-10280/E	5876
Y21PE	320	Y2-7215/1	3200
Y55PL	224	YT-6405/N	1176
Y24EA	208	Y2-EA-17509/C1116	
Y21CF	120	Y2-5876/8	8
Y31XA	52	SP9-3354-KA	396
Y45SA	14	Y2-8887/G	check
Y64YG	8	Y2-9540/A	check

This 1981 contest was organised by NZART in New Zealand.

The 1981 contest will be organised by WIA in Australia. The dates are:—

Phone: 3/4 October.

CW: 10/11 October.

24 hours from 1000Z on each weekend.

Good DX and 73 from ZL . . . Jock ZL2GX, NZART Contest Manager.

FROM THE CONTEST MANAGER:

The scoring system used was an extension of that introduced in 1978 and the revised points allocation for various bands seems to have met with acceptance and approval. With changing conditions in the future, some variations might be necessary — but for the present, current points allocation could remain stable.

Use of prefixes as multipliers for VKs and ZLs has also proved interesting and workable. Contrary to some previously expressed opinion, the need to look for new prefix multipliers IS an important factor.

NZART cannot agree with the proposal to accept contestants' scores in place of a log — but the need to re-write a whole log is not accepted either. The use of carbon copies is quite acceptable and is suggested as a means of overcoming the log problem. There is no need for writer's cramp except during the contest.

While the suggestion of "contest Ire" areas on each band might sound "good", its practical application is doubtful.

The QRP section should be deleted as the interest displayed is minimal. Scores made by Novice stations are so high (in some cases) that it is doubtful whether a separate section is necessary for this group of operators. The question of a restricted time section (8 hours or so) is open to debate. It was not many years ago that each section of this contest was spread over two WHOLE weekends . . . THAT sure WAS a marathon . . . my memories of the 1948 contest (and others) is still very fresh.—ZL2GX.

VK AND ZL INDIVIDUAL BAND SCORES

Open — Phone		**Open — CW**	
VK5MS	665470	VK4XA	339569
VK4LT	586812	VK4LX	233729
VK4NHL	577849	VK2APK	208575
ZL2ACP	709866	ZL2VS	180112
ZL1BQD	597886	ZL2OM	149454
ZL1AKY	526752	ZL2AGY	118260
160 m — Phone		**160 m — CW**	
VK3XB	7920	VK3CM	4400
VK4LX	720	VK3PL	2240
VK7MC	280	VK7MC	1680
ZL2BHJ	5500	ZL2BKK	160
ZL4PX	1680	ZL1BQD	20
ZL1MQ	1080	ZL1MQ	20
80 m — Phone		**80 m — CW**	
VK6NID	1330	VK7MC	17630
VK2VHP	1140	VK3AZW	26520
VK2BAM	600	VK3XB	14280
ZL2BGJ	50600	ZL2AGY	118260
ZL1BOD	26660	ZL2BKK	39840
ZL2BHJ	9400	ZL2VS	2850
40 m — Phone		**40 m — CW**	
VK4LX	1050	VK4XA	70875
VK6FS	450	VK6RZ	36600
VK1FT	440	VK4LX	20580
ZL1ANH	24095	ZL2VS	61215
ZL1BQD	23310	ZL1BQD	4760
		ZL1BGT	1120
20 m — Phone		**20 m — CW**	
VK5MS	472384	VK2APK	63954
VK2APK	111605	VK4XA	44092
VK6FS	78715	VK2BQQ	43216
ZL1AXB	523151	ZL1AU	35000
ZL1AKY	449232	ZL3AGI	26814
ZL1ANH	160312	ZL1MQ	14790
15 m — Phone		**15 m — CW**	
VK4LX	137816	VK3MR	169560
VK5MS	105840	VK4LX	125756
VK2APK	83284	VK2APK	112230
ZL1BOD	112144	ZL20M	149454
ZL1AKL	77520	ZL1BJH	85346
ZL2AH	59857	ZL2VS	74236
10 m — Phone		**10 m — CW**	
VK4NHL	517275	VK4XA	140352
VK4LT	492336	VK4LX	59280
VK2NBA	315780	VK2AQF	36828
ZL2ACP	709866	ZL2VS	41811
ZL1BQD	435744	ZL1AFW	39474
ZL1AFK	235161	ZL1BJH	21594
QRP — Phone		**QRP — CW**	
VK6ZX	62167	VK4SF	12745
		VK5VD	9001
		VK3VEU	1325

CONTESTANTS' COMMENTS

Enjoyed contest, conditions good, plenty of action, but hate the paper work! (what about the Contest Manager!!) . . . Good to see the new scoring system (actually almost same as in 1978 but with more points for lower frequencies) . . . A bit disappointed in bands, conditions uneven, 80 metres noise unbearable . . . Sunday visitors cost points . . . Worked several new ones on 80 and 160 . . . Seemed to be less VKs and ZLs Dupe problem . . . One W0 called me at least six times . . . Thoroughly enjoyed even if one station on 160 took 35 minutes to establish call sign and serial number . . . Full marks for change in scoring system . . . Glad to see multi-band operation favoured by the rule change . . . Keep up the good work . . . My first VK/ZL . . . I have not worked out score as I would have made a mess of it! . . . Couldn't talk for two days after . . . Writer's cramp copying logs . . . Logs for each band should be for a four hour consecutive period only . . . Have a portion of each band out-bounds for contest purposes . . . Sorry about the mess but hope you can read the logs OK (yes I did!) . . . Any log is better than no log, I suppose (and the answer to that is YES) . . . Beams came down and three family emergencies . . . Propagation — what a shocker! . . . Had usual trouble with splatter from 10/20kc wide Russians.

FROM OVERSEAS LOOS

"I love VK/ZL contest" . . . "What is Oceania?" . . . "From Eu condx were terrible" . . . "Disappointed so little Oceania DX". In answer to THAT comment, this is a sample of what was available — KH6, 3D2, 5W1, VK2/LH, P2, VK9 Christmas, VK9 Norfolk, DU, YJ8, YC1, YC0, FO8, KX6, VK1, VK7, VK8, 9M2. Not too bad . . . surely!

(NOTE: Overseas results will be in "Amateur Radio" and "Break-In" and will not be posted to VK and ZL contestants.) ■

MAGAZINE REVIEW

Roy Hartkopf VK3AOH

Since this column is not merely a list of all the titles in every magazine listed, it may be helpful to occasionally give a short explanation as to how the titles mentioned are selected.

The first criterion is relevance to Australian interests and conditions. The second is originality. If for instance it is just another regulated power supply, it is not likely to rate a mention. Also articles with attractive titles and very little content are avoided. It is most disappointing to go to special trouble to get a magazine and then find the title is the best part of the article. Finally, some articles are missed simply because the magazine has not been available.

As usual, the articles are divided into one or more of the following categories: (C) Constructional; (G) General; (P) Practical without detailed constructional information; (T) Theoretical; (N) of particular interest to the Novice.

SHORT WAVE MAGAZINE Jan. 1981

Long Wire Antennas (G, N).

RADIO COMMUNICATIONS Feb. 1981

VFOs Investigated (G, N); Two Element Three Band Beam (C); LED Indicating Wavemeter (C).

CQ-TV Nov. 1980

ATV Up-Converter (P); Video Switch (P).

73 MAGAZINE Jan. 1981

Logic Probe — Unfortunately the use of "True" and "False" in the description of how the logic probe works makes the explanation unreadable even to the extent of confusing the writer himself. **Carefully** substitute H (high) and L (low) and the sequence will become clearer. The confusion is compounded by using "1" and "0" in the timing diagram — (P); Heat Sinks (T).

Feb. 1981

Caution: Solid State Finals (T).

QST Feb. 1981

Vertical Antenna Directivity (T).

HAM RADIO Feb. 1981

1296 Solid State Transmitter (C); Moonbounce (G); 80 Metre Receiver (N). ■

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

The next meeting of ALARA is to be held at Mavis's VK33KS, when a farewell Is to be tendered to Daurel VK3ANL, the Secretary of ALARA now for two years. Our thanks go to Daurel for her work and also best wishes as she and OM Art return to USA. Jessie VK3VAN has agreed to take on the secretarial matters for this year. Mavis VK3BIR is Treasurer, so please send subscriptions and badge orders direct to Mavis. Newsletter Editor is Geraldine VK2NQI.

ALARA Awards Manager Mavis VK3KS has distributed 24 ALARA awards to date. Please send your applications direct to Mavis, QTHR, for quicker return.

ALARA membership is now 125 (VK) and 35 (DX).

ALARA NET

Mondays at 1030 GMT on or about 3.570 MHz. A roster is now operating.

OPEN HOUSE NET

Tuesday and Thurdays, 1000-1200 GMT on 14.322 MHz, and look for Gill VK6YL.

VK/VE/ZL NET

Friday at 2300 GMT on 28450, and look for Bobbie VE7CBK.

ALARA CONTEST

The proposed date for the contest is 14th November, 1981. Watch this column for details closed to the date.

Best wishes to all and please advise me of any new call signs, awards, etc.

73/33. Margaret VK3DML. ■

AROUND THE TRADE

Dick Smith announces the release of his "Dick Smith Electronics Enthusiasts Catalogue 81-82".

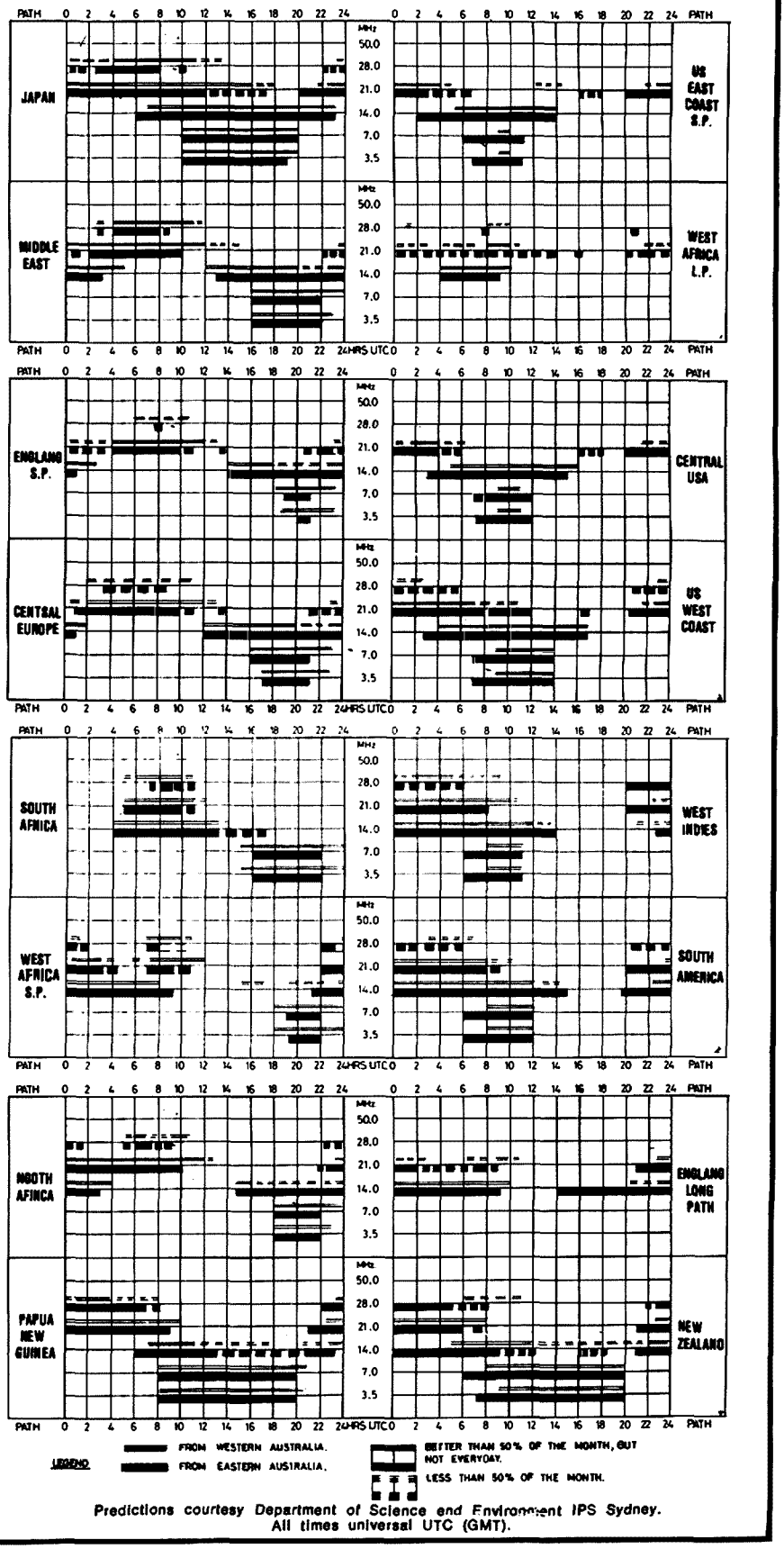
Produced in-house, this 11th edition of the catalogue is by far the biggest, most informative yet. It contains over 130 pages (some in full colour), packed with products and information for the electronic enthusiast.

A new feature is a 30 page Data information section including Broadcasting and TV Stations, Circuit Laws, DIN and Hi-Fi connections, Music Frequencies, Reactance/Frequency Chart, Transistor Data and lots more. There is also a chance for a lucky customer to win a free mail order whatever the value, just by being the 200,000th customer.

The "Dick Smith Enthusiasts Catalogue" can be obtained from any of Dick Smiths stores for 75c. ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

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.

Box 50, Sandgate, Qld. 4017
Phone (07) 269 5175
5/3/81

The Editor,
Dear Sir,

I am an active Intruder Watcher, but I do not have the equipment to copy many of the illegal transmissions. Many intruders use fast CW, RTTY, FAX and other modes.

This is a plea to amateurs and others who are able to get hard copy on these modes. Please help! I can supply cassette tapes of intruders, so it is not absolutely necessary for a helper to listen on the amateur bands.

Especially if someone can hard copy very fast Morse or RTTY at different speeds and shifts, I desperately need to hear from them.

For those who don't wish to write or phone, I can be contacted on the VK4KAL Qld. Intruder Watch Net each Saturday night at 8.15 p.m. on 3540 kHz.

73s. Bob McKernan VK4LG. ■

The Editor,
Dear Sir,

INTRUDER UMS

One of the strongest and most persistent intruders on the 15m band is the USSR intruder UMS. This station operates intermittently (20-40 per cent of daylight hours and early evening) on 21032.4 kHz. Modes used are F1-RTTY, F6-RTTY, A1-CW fast and slow speed.

This intruder sometimes moves 200 Hz to avoid amateur signals. 99.9 per cent of Australian amateurs do not report intruders, yet this is the only way that we stand any chance at all of eliminating this illegal and harmful interference from our once exclusive amateur bands. Participation in activities of the intruder Watch Service is the path of success. YOUR non-participation is NOW slowly depriving us all of the use of the amateur bands. I plead to my fellow amateurs for assistance. The following information is requested by the IWS: Date, Time, Frequency, Call Sign, Mode, RST, Bearing, Details of Traffic. The Federal IW net may be found Thursday 2030 EST on 3540 kHz. All are welcome to join.

UMS changed frequency to 21112 kHz on 14th April. He may change back to 21032 kHz.

VK4LG.

Comment by VK3LC:—

I thoroughly endorse the above.

For those members interested we can now translate most foreign languages to English.

If members hearing a foreign broadcast would put a read-out on tape we can identify the language and make appropriate reports. Go to it! ■

37 Second Avenue,
Sefton Park, SA 5083
April 8, 1981

The Editor,
Dear Sir,

I'd like to congratulate Chris Long on his excellent tribute to the late Gill Miles VK2KI featured in the April edition of Amateur Radio. The only time I have ever had a chance to see Low Definition Television (LDTV) was the night that Chris brought his gear to my QTH as reported in his article.

The two pictures printed with the said article are at once both better and worse than those seen live with the naked eye! BETTER in that the Picture Repetition Rate of 8 per second causes frightful flicker — bad enough to give one a migrain! (Actually LDTV offers substantially better random noise cancellation than SSTV because of the rapid PRR!) WORSE in that LDTV gives a moving picture quite capable of showing the rapidly changing moods of the live human face.

It occurred to me as I watched that modern digital video storage techniques could do for LDTV what it already has done for SSTV — that is, produce a picture which can be viewed in comfort on any standard TV set. But unlike SSTV the LDTV pictures moves! In this way we amateurs might once again make a significant contribution to the development of a useful telecommunications tool!

In fact an American amateur, Henry Ruh KB9FO, in January of this year announced continuing development of "Frequency Discrete Fast Scan Television, a method of transmitting live pictures worldwide on any frequency band available without a satellite" (A5 Television Magazine).

A 20 min. Umatic Videocassette is now available from me as WIA Videotape Co-ordinator in which Chris Long demonstrates his LDTV gear. Included are off-the-screen shots of the first live TV transmitted on HF between Melbourne and Adelaide as described in Chris' article.

73. John F. Ingham. ■

23/2/81

The Editor,
Dear Sir,

The anonymous piece at the bottom of page 26 of your November issue still gets hearty laughs.

It was written by Bob Manning K1YSD some ten years ago and the story appeared in 73.

Alas, Bob is now a silent key and we'll sure miss him. His articles were by far the funniest ever written for ham magazines.

73s. Wayne Green W2NSD/1,
Editor, 73 Magazine.

Thanks, Wayne, for the info. — (VK3UV, Ed.) ■

83 Brewer Road, Bentleigh, Vic. 3204
11/3/81

The Editor,
Dear Sir,

Listening around the bands reveals that there appears to be a low return of QSL cards from the USSR, other than cards from short wave listeners in that country.

The following extract from the VK3 Outwards QSL Bureau Records is provided, without prejudice, for the information of you and your readers. During 1980 8700 QSL cards in 54 packets of about 160 each were forwarded to the USSR for amateurs and SWLs in that country, the home of the "Woodpecker".

As an aside, let's all hope the "Woodpecker" strikes a particularly hard piece of wood such as jarrah or red gum and comes to grief.

Yours faithfully,

R. R. Prowse. ■

11 Mimosa Court, Murray 4814
7th April, 1981

The Editor,
Dear Sir,

Drew Diamond (March 1981 AR) suggests that Radio Amateurs should not have to pay tax on components. Out of fairness this would also mean that components used in all other hobbies contributing skills in the national interest should be tax free. Such a suggestion of course is not only narrow and one eyed but impractical.

On the wider scene, a government can only spend what it receives in income so if we want governments off our backs then we should also take our hands out of the treasury pockets.

Drew Diamond's letter touches another nerve in the radio amateur conscience. Just how many amateurs really do build anything significant any more? Those who do should be claiming a 15 per cent sales taxation rate (not 27.5 per cent) applying to all components for transmission equipment.

Finally the cost of construction projects is sometimes cheaper these days. How many remember buying OC44 transistors in the 1950s for £2/17/6? In real terms today the OC44 would cost about $9.66, but in fact better transistors are now available for only 6.3 cents each!

Yours faithfully,

Peter Lindsay VK4QD. ■

Teletramel Pty. Ltd.
38 Faithful Street
PO Box 506, Wangaratta, Vic. 3677
8th April, 1981

The Editor,
Dear Sir,

We have read technical notes (not in a recent AR) describing a method of reducing the power of the FT101Z to Novice requirements.

That method seems quite complicated and involves removing one of the 6146B tubes with a probable consequence of having to re-neutralise the PA stage.

We have used the following method with success. It may be noted that removal of covers on PA stage is unnecessary.

Remove the wire from the 320V tap on the power transformer and reconnect it to the 120V tap on the same winding (this is referred to as CT in the schematic). This reduces the HT to approximately half. Next locate the screen grid supply to the 6146Bs, which goes between the 210V point on PB 1968 (Rect. B unit) and the feed through capacitor (C44) on the side of the PA compartment. Remove wire from feed through and using a small tag strip for support insert a 22k 1W resistor between the wire and the C44, thus reducing the screen voltage. Finally, adjust the idle current to 50 mA by means of VR1 on PB 1968 as described in the Instruction Manual.

You may prefer to insert this as a technical note rather than a letter to the editor.

Yours sincerely,

S. B. Roberts VK3BSR. ■

PO Box 109, Mt. Druitt, NSW 2770
April 2nd, 1981

The Editor,
Dear Sir,

Through the medium of your column I would like to bring to the attention of your readers the following information. Mr. Kenji Takahashi JH8ADQ, well known to many in Australia, is interested in corresponding with blind people, specially radio operators. Ken is currently learning to read and write in braille and is reasonably proficient already, and has an excellent command of the English language. He is keen to write about radio and Japan or other subjects. His age is about 18 years and has recently completed senior high school and is studying for university entrance. He plans to study languages and hopes to become an interpreter eventually.

If anyone has a blind friend or knows of a blind operator would they please relay this information to them. Ken has asked that initially letters be short, because of his commitments. The address is as follows:

Mr. Kenji Takahashi,
2-8-24 Aoba, Chilose 066, Japan,

or care of myself at the above address (with postage please).

Yours sincerely,

Colin Stevenson VK2VVA. ■

25 Gosse Avenue,
Glenelg North, SA 5045
2/4/81

The Editor,
Dear Sir,

I would like to express my grateful thanks to the Australian Post-Tel Institute Amateur Radio Club, South Australia, in assisting me along the road to recovery following my heart attack on 19th March, 1981.

The day following my attack the Club purchased a Kenwood TR2400, base stand and extension microphone/speaker, which were loaned to me immediately I came out of intensive care. Club funds were insufficient at the time, but my brother (also a member of the Club) temporarily financed the purchase.

Many enjoyable QSOs were made during the week in general care, and also at home using the Kenwood when convalescing and relaxing around the house instead of being tied to the shack.

Many thanks to Darryl VK5IN (President), Ken (committee member) and other members of the Club.

Yours faithfully,

H. J. Townsend VK5HT. ■

SILENT KEYS

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

Mr. M. R. ROTHWELL	VK2AER
Mr. A. G. SMITH	VK3AN
Mr. J. R. WOOD	VK6ZN
Mr. A. CHISHOLM	VK3BLC
Mr. J. KNIGHT	VK1JK
Mr. L. DODGE	VK7LD
Mr. F. A. HAAS	VK5FH

OBITUARIES

ALAN GLEN SMITH **VK3AN**

Alan Glen Smith VK3AN passed away at the age of 60 very suddenly on the 29th March, 1981. Alan will be sadly missed by all; he made many friends in ham radio and his journey through life.

Alan was a retired member of the SEC, with which he was apprenticed at the age of fourteen. He worked his way up to become a Supervisor. He was held in high esteem by his workmates and all who knew him. Unfortunately Alan only enjoyed eighteen months of his retirement.

Alan became a Ham in February 1947 and was a member of the WIA from January 1945, a member of the Old Timers' Club, a constant supporter and visitor to as many conventions as was possible to attend, always entering into the spirit of these.

His everyday on-the-air companions would like me to say how much they have valued his friendship; my XYL and myself would like to add our deep appreciation and thanks for his companionship, his memory will ever be with us all.

The many who knew Alan would like me to tender their condolences to his wife, Nancy, and daughter, Glenys, on their sad loss.

A gentlemen at rest.

Len Sole VK3NZX. ■

FRED HAAS **VK5FH**

It is with deep regret we record the sudden passing of Fred Haas VK5FH on 15/4/81.

Fred had a call sign for over 50 years, and started with a UO prefix (in the days before Austria had the OE prefix), then became OE1FH prior to coming to Australia before the last war, when he joined the Wireless Institute as a VK2 for a short time before settling in VK5.

His enthusiasm was boundless, and he delighted in meeting visiting overseas amateurs and showing them around South Australia, of which he was terribly proud.

He made many friends over his 800 ft. long wire, and regaled all with tales of how his cows trampled through the delta loop he was building, and of watching the bushfires catch his masts alight.

He will be affectionately remembered for his cheerfulness, encouragement and happy nature.

We extend our condolences to Erika and family.

Amateur radio will be the poorer for his passing.

Vale Fred.

Brian Austin VK5CA. ■

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

Kyokuto 2m FM-2025A Mk. II, 2 months old, $300; also 8 el. 2m yagi, $35. Phone Don VK2DXH (049) 49 6952 or QTHR VK2VPN.

Icom IC22A, exc. cond., with inst. manual and cadle, xtals for rpts. 2 to 8, simplex 40, 49, 50, orig., no mods., $200 or offer. VK3YLN. Ph. (03) 842 2260.

Iccm IC225A 2m Txcvr., $350; universe 24 ch. 10m Txcvr., $80; McCulloch 1.5 KVA 240V generator, all just reconditioned, $280. Les VK1NBK, QTHR. Ph. (062) 88 9226.

Cobra 138 X LR AM SSB and channel walker, $250; ex-army C42, complete unit, goes from 23 MHz to 38 MHz, 24V unit, $120; Yaesu SSB Txcvr., FT101E, A1 cond., with 27 MHz, $450; power supply 14.7V 18A to 25V 20A, $140. International 244 Dez, PO Box 288, Sunshine, Vic. 3020. Ph. (03) 363 5009.

Yaesu FT101Z with desk mic., $600. David Boehm VK1UD, QTHR. Ph. (062) 54 8982 AH.

Kenwood TS-820S with VFO 820, 500 Hz CW filter and DC-DC converter, the lot $900, may negotiate. Tim VK3BCN, Ascot Vale. Ph. (03) 370 6092.

Kyokuto 2m Mobile, $265; Ken 2m HH 40, 50, R2, R8 rubber duck nicads and charger, $175; standard 2m HH, 40, R2, R8, Ch. 50, hand mic., carry case, $200; VK3 carphone, 2m 25W 40, R8, $195. Graeme Thomson VK7ZGT. Ph. (003) 44 4773.

Ham Shack Clear-out: Heathkit SB102 Txcvr., 80-10 with mic., processor, ACPS, DCPS and spares, $465; SSTV monitor, converter, camera, tripod, tapedeck, cables and tapes, compete set-up, $655; PT110 Txcvr., 26.9-29.1 MHz continuous tuning (VFO), 5 digit readout, SSB and AM, 35W PEP 12V, with mic. and acc., $275; linear amp. 20-11m, 300W PEP 12V solid state(match to PT1110 radio, very small, $155; antenna triband beam (10-15-20), 8 el. on 40 ft. boom, $475;; rotator, Ham III, with 100 ft. cable, $240; tower, 30 ft., $48; UR67, $1.35 m; R68, $0.35 m; also used cable cheaper; coax relay, 12V, 900 MHz, $13; dummy load, 1 kW PEP oil, $25; phone patch, $25; heatsinks, $2; 6146A RCA (new), $8; 6883B (12V 6146B), new, $5; 2N5591, $8; 2N5590, $4; all equip. and parts in exc. cond. Jim VK2CK, QTHR. Ph. (02) 78 2545.

RTTY Gear: Complete working system, but requires 240V/115V AC t/lormer, comprises 2 model 15 teletype printers with covers, 1 series governed motor on 45.45 baud. The other synchronous at 50 baud, ETI/mod/demod carefully built in attractive comm. box, HB 150V loop supply with 4 inputs, instruction manual, all working in exc. cond., $180 the lot — HF gear: Icom IC701 Txcvr. and PSU with RM3 external remote controller, manuals, mic., exc. cond., no mods., $1050; Aida 103 100W output, 80, 40, 20m Txcvr., fully solid state, suit as mobile or spare Txcvr., as new, 12 pole xtal filter included, mic., manual, $475 — VHF gear: Kenwood TS700A all mode 2m Txcvr., 144-148 continuous tuning in 4 x 1 MHz steps, 1 kHz analog readout, 100 kHz calib., mic., manual, 4 yrs. old, exc. cond., $570 — Receiver: Kenwood R1000, as new, no mods., /450. All above equipment can be seen operating, genuine reasons lor sale, may consider genuine offers. B. Bathols VK3UV, QTHR. Ph. (03) 90 6424 AH only.

FT101E Txcvr, with FV101 ext. VFO, mic., DC-DC lead, exc. cond., $700 the lot, ONO. Tom Allen VK7AL, QTHR. Ph. (002) 43 9192.

Yaesu FT-221R with YC-221 digital display and YD148 desk mic. and hand-held mic., $500, ONO; Ocom IC-22A repeaters 2-8 and 40, 50 simplex, v.g. cond., $185, ONO; 52-54 MHz linear amp., homebrew, 6-40 in output, built-in power supply, $60, ONO. VK3BIB, QTHR.. Ph. (055) 62 4630.

SHUTE HARBOUR

Kenwood TS520S with DG 5 digital readout, CW filter, novice/high power switch, new finals, exc. cond., $700. VK2IS, QTHR. Ph. (066) 52 3376.

Icom IC-502 52-53 MHz portable 6m SSB Txcvr., complete with mobile mounting bracket, nicads and charger, $220, ONO; 35W SS linear to suit also available. Paul VK2YKG. Ph. (02) 452 5996 AH.

Icom IC22S with mobile mount, mic., handbook, fitted with VOX, EA scanner, LED channel readout, PWC, $240, ONO; Icom IC502 50 MHz, SSB/CW, with 30W outboard SS linear PWC, $210, ONO. Noel VK4KTX. Ph. (074) 22 2533 BH (free call).

TS520S Txcvr. and DG5 digital readout, immaculate, not used very much, with manuals and in orig. container, big saving at $650 firm. Mike VK2VRB, QTHR. Ph. (043) 32 1760.

Shack Clearance: Icom IC701 with matching PS and mic., orig. cartons, $900; Heathkit linear SB200 v.g.c., $475; Icom IC22, rpt. 2, 4, 5, 6, 7, 8 and ch. 40, $160; Yaesu frequency counter YC350D, $150; Hygain TH Mark 3 beam, new, $215. Ian Ampt VK3CH. Ph. (03) 25 7886.

Macrotronics Interface, to suit TRS/80-M-800 and M-80, full instructions, soltware, etc., $275. VK4NKC, QTHR.

Yaesu FL2100B linear amplilier, exc. cond., with handbook, $380; Cushcraft 2m 20el. cross yagi beam, 12 dB gain, $55. Steve VK3JY, QTHR. Ph. (03) 836 3841.

Collins 30L1 Linear Amplifier, overhauled recently by former Collins Co. engineer, 4 x 572Bs replaced, immaculate cond., used less than 100 hours, $750. Roth Jones VK3BG. Ph. (03) 870 3333 Bus.

Galaxy V Mk. III, exc. cond., ext. VFO, CW filter, P/S, VOX op., 2 spare finals, new, spare valves, USB, LSB, good and clean, $320; Geloso Rx, SSB, filter, CW, AM, type R209, mint cond., orig. case with handbook, clean, works OK, no mods., beautiful museum piece, $120; Geloso Tnx, TR222, matches with above Tnx., clean, no mods., mint cond., AM only, 6146 out, 807s mods., museum piece, $120; BC348, good and clean, no mods., but with ext. PS, $65. VK4LN, QTHR. Ph. (071) 82 2675.

Yaesu FTDX560 with matching speaker and desk mic., spare valves, $400, ONO. VK4AWR, OTHR.

FT101, mint cond., linals never used, $450; FTV650 FETlsed lront end, 6883 final, $160; IC22, little used, repl. ch. 3, 5, 6, 8, ch. 40 simplex, $175. VK2ZHR, QTHR. Ph. (049) 45 9373.

FT200/FP200 Txcvr., with 27 MHz and some spare valves, RF/IF mods (6EH7S), $350, ONO. VK5RG, PO Box 35, Daw Park 5041, SA. Ph. (08) 276 4547.

IC245, $310; AR240 hand-held, with charger, case, $300; TRAM XL5 modified 10m, 2 antennae, $130; IC212 (215) nicads, ch. 1-8, 40, 50, $210; Siemens teleprinter (model 100), papertape reader/punch, no keyboard, $270. John VK2WW, QTHR. Ph. (02) 546 1927.

Wide Tyres, Goodyear 10 x 16.5 with heavy duly wheels, to suit Toyota Landcruiser, set of five, $250; also three Toyota wheels with Dunlop Road Trak major tyres fitted, $90. VK3NNX, 60 Elm Grove, North Kew. Ph. (03) 859 5913.

BWD 539C Oscilloscope, 2 ch., 20 MHz, exc. cond., $390; FRG7 Yaesu HF Rx, brand new, will guarantee, $275; Hiokl digital multi-meter, auto ranging, auto zero, auto polarity, large LED display, with case, probes, many others. VK3ZJB. Ph. (03) 397 6470.

Yaesu FRG7 Rx, exc. cond., complete with readout and manual, $250. Ph. (02) 232 6261 9 a.m.-1 p.m. weekday .

Yaesu FT227R 2m Txcvr., all accessories and instruction manual, incl. circuit diagram, little used, exc. cond., also 2m 5 el. yagi, $275. Dave VK3YOH, OTHR. Ph. (03) 401 2005.

Icom IC-502, with access., all in carton, 52-53 MHz, 3W, $200, ONO. VK3ZCO, QTHR. Ph. (03) 45 2506.

FLDX400/FRDX400, good cond., 80-10m, has three auxiliary bands for future expansion, complete with mic., $400, ONO. Contact Carlo Leone (03) 347 4695 AH, or VK3ATM, OTHR.

Bearcat 220FB VHF-UHF Scanner, fully synthesised, 20 memories, v.g.c., $350, or will trade for 2m synthesised hand-held; will pick up in Sydney area. Ph. (047) 56 6765 after 6 p.m.

Hidaka 5 band trapped vertical VS-41/80KR, with trapped g/plane radials, used, good cond., $50; 20 ft. x 2 in. x 3/16 in. thick walled alum. boom, as new, $40. Ph. (03) 398 4192.

Microwave Modules, 2m to 432 MHz transverter, $180, ONO; Kenwood TR3200 FM VHF Txcvr., complete with carry case, battery charger-nlcad, three simplex, three rpt., plus 2 to 10W amplifier, $180, ONO. K. C. Dalton. Ph. (07) 377 3785 Bus., (07) 201 3006 AH.

Complete Station, perfect order, no mods., Ten-Tec 21 Century, solid state CW Txcvr., Ten-Tec crystal calibrator, model 276, Ten-Tec ant. tuner, model 277, auto keyer, Ten-Tec, model 645 "ultramatic", $400, plus freight, no offers. Harry VK2EP, QTHR. Ph. (066) 54 1536.

Kenwood VFO230 digital external VFO for TS830S, DS130 or TS120, 5 memories, exc. cond., $240; Kyokuto 2m FM Txcvr., 15W output, 8 ch. scanner, good cond., $210, VK5ZK, QTHR. Ph. (08) 297 4950.

Drake T4XC Tx, 160-10m, with AC4 power supply and Shure 444 mic., exc. cond., spare tubes and manual, reluctant sale. Peter VK3APN. Ph. (03) 317 9001 Bus., (03) 211 6979 AH.

Txcvrs, 6m IC551, 2m IC251A, brand new; antenna, 6m S. quad, 10m S. quad, 15m S. quad; TH6DXX Hygain tri-band beam, all in cartons. Ph. 240 1231 Bus., 509 8637 AH.

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Standard Nineteen Inch Rack with open frame, six ft. high or more, holes drilled at standard spacing, either lapped or to suit captive nuts, cond. is unimportant. Gordon VK2ZAB. Ph. (02) 456 3972 AH.

ALBANY

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MOE

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Nixie Tube/s, cold cathode type numeral tube/s for old-fashioned Weston 1240 digital multimeter, new or used, can anyone help? VK4ZTA, QTHR. Ph. (07) 38 5155 AH.

1946 ARRL Handbook and Circuit for Leader LSG-11 sig. gen. Tim VK3BCN, Ascot Vale. Ph. (03) 370 6092 AH.

Valve Rectifiers, type 80 or 83/83V, preferably burnt out ones, but will take good ones too, the 4-pin skirt is required to mount coil stock. Ken VK6ZA, QTHR. Supply phone number for quick reply.

Crystals, repeater 3, 146150, 146750 MHz, to suit Ken 2m hand-held. VK1WJ, 1 Bruford Place, Devonport 7310. Ph. (004) 24 2844.

Information required for HF Rx (ex Neptune aircraft) type R648-AAR41, circuit, gears, handbook and spares required. Bill Babb VK3AQB. Ph. (03) 337 4902.

813s, one pair plus sockets, or similar high power lubes. John VK2BKW, QTHR. Ph. (02) 636 4137.

476 MH Equipment: Tx, Rx, Txcvr, converter, prefer solid state, but valves considered, details, incl. state of equipment, price, etc., to Eric Jamieson, VK5LP, QTHR. Ph. (08) 389 1204 around 2230Z or 0930Z.

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QSP

GEELONG REPEATER

Unfortunately the Geelong Repeater will be off the air lor an extended period due to recent theft from the site of the receive filter and coax cable. Geelong police are investigating the incident along with other repeater site thefts over the past fortnight. The GARC Committee has recommended the construction of a brick enclosure for the receiver to improve securlly. Funds need to be raised to cover the replacement cost of the receive filter. ■

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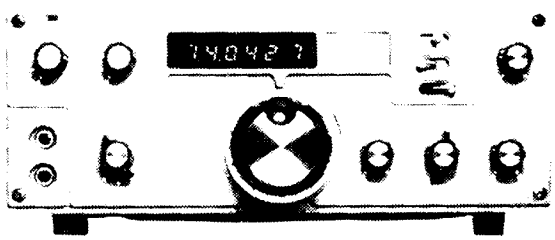

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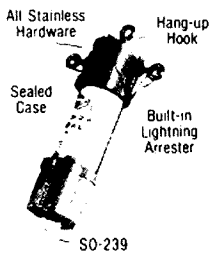

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1 KW DC

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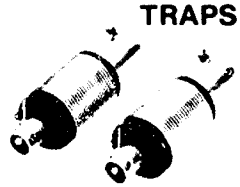

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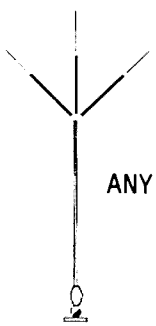

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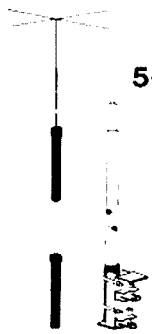
80 THRU 10 METRES

ANY THREE BANDS AT ONCE



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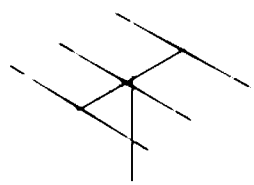
light weight
1 KW PEP



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W.A: Unit 5/319 Pearson St., Osborne Park, 6017 tel: (09) 446 9179

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 49, No. 7 JULY 1981

FEATURED IN THIS ISSUE:

- ★ HOMEBREWER'S LINEAR AMPLIFIER
- ★ A BEGINNER'S GUIDE TO RTTY
- ★ SOME THOUGHTS ABOUT TOWERS
- ★ 1981 FEDERAL CONVENTION

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Consists of
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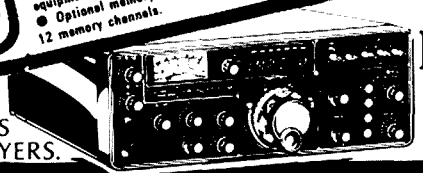

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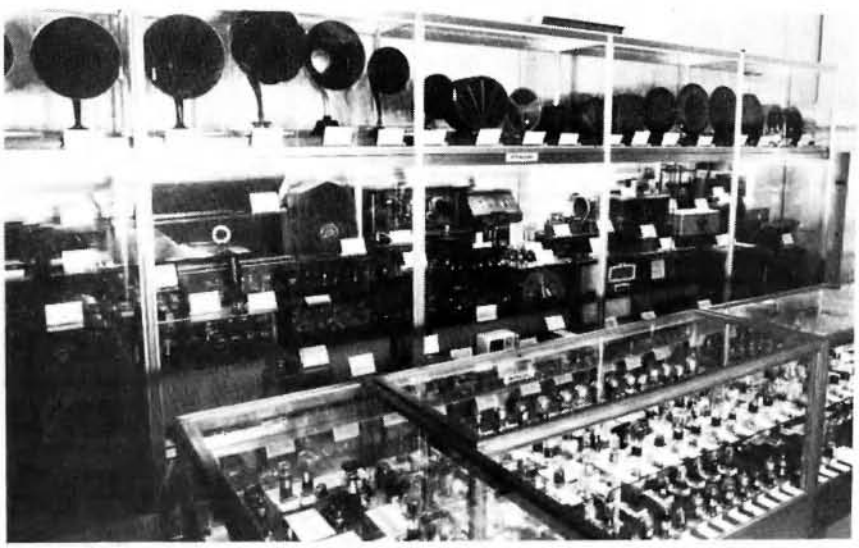

Part of a collection of early radio speakers, domestic receivers and tubes in the Telecommunications Museum, Adelaide. The museum will be featured in AR soon.

QSP QSP QSP

AMATEUR RADIO IN THE EIGHTIES

It is an appropriate time to look back at the last decade and try to apply its lessons to the future. Amateur Radio in Australia experienced and survived two significant influences during the Seventies.

FIRSTLY — a doubling in the number of licensed amateur radio operators. This was a direct result of the "CB Boom" when a large number of CB operators found they wanted to do more than use a microphone. The Service has benefited greatly from this injection of new blood although this increase in numbers led to the crowding of some bands as well as over-taxing club training programmes and facilities.

SECONDLY — The World Administrative Radio Conference held In Geneva in 1979 (WARC 79) was the culmination of over ten years of preparation and activity by the Service. This WARC was very significant in that it examined and re-appraised the existing use of all radio frequencies, including those allocated to the Amateur Radio Service. The Amateur Service's preparation was effective in virtually all frequency allocations being retained and access was given to several new bands. Equally importantly, the Service was retained in its current form and its "raison d'etre" was accepted by a majority of countries — East, West and Third World. It is now up to us to live up to their expectations and justify our privileges.

Post-WARC activities have included the negotiations involved in the preparation of the Australian Table of Frequency Allocations. This is in the course of finalisation and should contain additional privileges negotiated by the WIA.

As individual amateur radio operators, we owe a debt of gratitude to the WARC amateur delegates and to our WIA Executive for the capable representation of our cause. Both these influences, the increase in numbers and WARC 79 have set the scene for the decade that we have just entered. The gains of the seventies must be consolidated and plans made for the future. What must be done?

As you will read elsewhere, the 1981 Federal Convention adopted six long-term objectives in the Regulatory, Technical, Public Relations, Educational, International and Member Service areas, as outlined in March 1981 AR. Examination of these objectives will then lead to the formulation of short and long term plans for the direction of WIA activities. State Councils will be following up these initiatives by implementing their own programmes.

All clubs and individual members should likewise examine their own activities. Over to you as a WIA member, club member and as an individual amateur to see what you can do to ensure the continuing progress of our hobby.

D. LAURIE VK4DT
President, WIA Queensland Division ■

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WIANEWS

1981 CONVENTION

Further details, including the Executive Report and accounts for 1980 are printed in this issue. The text of a letter sent to the Minister also appears.

Although the RD Contest last year was again won by VK5 nevertheless a formal presentation was made during the Convention by Mr. Ross Ramsay.

AX PREFIX

The Executive at the May meeting decided that the use of the AX prefix be sought for the 1988 Bicentenary and the 1985 WIA 75th Anniversary. After much thought it was agreed to support the VK4 Division's request for AX to be used Australia-wide next year to mark the occasion of the Commonwealth Games. No other suggestions for the use of AX could be supported except that perhaps some consideration might be given to seek it for Australia Day (and perhaps a day either side) each year.

EXECUTIVE SUB-COMMITTEES

These were appointed and will appear in the Federal Directory. The only changes were that Mrs. Brenda Edmunds VK3KT comes in as Federal Education Co-ordinator, Reg Dwyer VK1BR takes over as Federal Contest Manager from 1st June, and Mr. Bill Rice VK3ABP heads up the newly-constituted Federal Technical Advisory Committee.

CUSTOMS

A new By-Law 8151108 applicable 12/5/1981 covers the admission of 430-440 MHz amateur transceivers.

LICENCE FORM

It is understood from DOC central office that supplies of full and limited licence forms are running low and a reprint is required. A revision of proposed forms has been submitted for comment by the Institute.

MISCELLANEOUS

The proposed Sydney to Rio Yacht Race scheduled for next year mentioned in the QSP on page 39 of February AR appears to be on. The Manly Warringah and Hornsby Amateur Radio Clubs have undertaken the arrangements for amateur communications for this race.

Dr. D. A. Wardlaw VK3ADW and Mr. M. J. Owen VK3KI accepted invitations to attend the NZART annual Conference this year.

Intruder Watch activities are noted to have increased as a result of the "Woodpecker" reports in May AR, and DOC now requires quite specific details on this source of Interference (refer IW Co-ordinator tor further information).

1981 CALL BOOK

Last, but not least, work on the 1981 Call book is proceeding well, including a wealth of reference material.

Response is still awaited tor details from many Clubs.

Holders of new calls, new licences and changes of address may still have time to get into the Call Book if details are sent in at once. ■

STOP PRESS

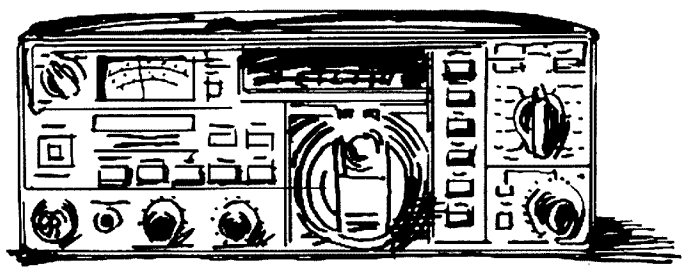
Congratulations to the Amateurs who rendered such excellent community service on WICEN and Third Party Nets during the Telecom Industrial dispute in mid June.

world of difference

IC-730
HF All Band SSB CW AM Transceiver.

The go anywhere rig for everyone. 94 mm (H) x 241 mm (W) x 275 mm (D) will fit into most mobile operations (compact car, airplane, boat or suitcase).

This sensibly priced HF rig has many features: Unique tuning speed selection for quick and precise QSY choice of 1KHz, 100Hz, or 10 Hz tuning. Receiver pre-amp built in. Noise blanker (selectable time constant) standard. And many more.



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IC-2A
Get 800 channels into the palm of your hand.

Here are all the features you've always wanted, ingeniously concentrated into the space of not much more than the size of a 2 dollar bill.
800 TR synthesized channels.
1.5W output (with special high/low battery saver switch to reduce to 1.5W).
Built in speaker, built in mic.
Slip on, slip off Nicad Battery Pack.
Optional desk charger, Speaker/mic. available.
Vicom's 90 day warranty.

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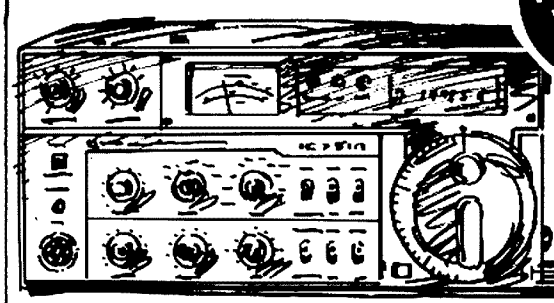
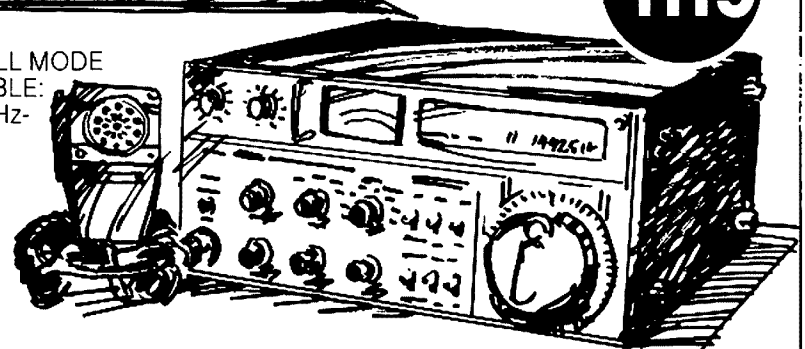


IC-251A: 2M ALL MODE FIXED OR PORTABLE: Frequency: 143.8 MHz-148.2 MHz.

$1119

IC-451A: 70CM ALL MODE FIXED OR PORTABLE: Frequency: 430 MHz-440 MHz.



Two or four metre, Icom can cover it.

These two outstanding transceivers utilize a special micro-computer that offers greater flexibility and the features you need. Memory Scan allows you to monitor three different memory channels. Program Scan scans continuously between two programmed frequencies. Scanning speed is adjustable.

FM, USB, LSB and CW coverage make these units perfect for use in mobile, DX, local or satellite work.

Letter to the Minister

The following is a letter despatched by the Institute to the Minister for Communications. The protocols referred to are No. 45 and 49 as follows:—

"No. 45

FOR THE FEOERAL REPUBLIC OF GERMANY, DENMARK, GREECE, NORWAY, SWEDEN AND THE CONFEDERATION OF SWITZERLAND:

In signing the Final Acts of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service (Geneva, 1978), the delegations mentioned above wish to state the following:

Commencing in 1976, very powerful pulse transmissions from HF stations operating within the territory of the USSR have been causing continued harmful interference over large areas on frequencies in the HF bands, including those allocated to the Aeronautical Mobile (R) Service, and will, if not terminated, be liable to cause harmful interference on frequencies in the new Plan.

The above delegations refer to Article 35 in the Convention and to Resoluption No. Aer 2 of the Radio Regulations, and express their great concern about this prolonged violation of the said provisions.

Their Administrations reserve the right to take appropriate measures to protect the Aeronautical Mobile (R) Service, and other radio services, if this harmful interference continues."

"No. 49

FOR THE UNION OF SOVIET SOCIALIST REPUBLICS:

In connection with the statement made by the delegates of the Federal Republic of Germany, Denmark, Greece, Norway, Sweden and Switzerland and contained in Final Protocol No. 45, the delegation of the USSR wishes to make the following statement:

In the Soviet Union the research on radiowave propagation is being conducted by using the radio installations in the HF range and it might perhaps (according to the statements of Administrations of certain States) cause some short-term interference to individual services. Similar signals have been recorded in the Soviet Union by the receiving apparatus and monitoring service from the operation of installations of other countries.

With a view to reducing possible interference with the Aeronautical and Maritime Mobile Services operating in the HF range from the above-mentioned research operation conducted in the Soviet Union, a number of technical and organizational measures have been taken.

At present radio monitoring services confirm the efficiency of the measures taken.

In carrying out these studies, the Administration of the Soviet Union takes due account of the provisions of the International Telecommunication Convention and the Radio Regulations."

"As you are aware, attention has recently been focused on the interference caused to Australian stations by the so-called "Russian Woodpecker". The Wireless Institute of Australia believes that these complaints are justified but, in fact, raise a much broader issue.

As you are aware, Australia is a party to the International Telecommunications Union Convention, which incorporates the Radio Regulations. As you know, these Radio Regulations include a table of internationally agreed frequencies, allocating bands of frequencies to particular Services either on an exclusive, shared or other basis. In addition, these Radio Regulations make provision for the control of harmful interference.

As your officers have no doubt advised you, these provisions relate to harmful interference across national boundaries — a transmitter may operate on any frequency so long as it does not cause harmful interference to the stations of another administration operating in accordance with the Radio Regulations.

The Radio Regulations recognise "administrations" (not individuals) and therefore it is necessary for an administration to complain of harmful interference caused to stations in its territory. If it does not, the administration having jurisdiction over the interfering station would be justified in believing that its station was not acting in breach of the Radio Regulations.

As you know, these Radio Regulations, which Australia has accepted, have the force of a treaty between nations.

The Wireless Institute of Australia has tried to work within this international framework, establishing an "Intruder Watch Service" to provide your Department, as the "Australian administration" with precise and documented reports of harmful interference suffered by Australian Amateur stations.

The Soviet Union's over the horizon radar system is only one of many sources of harmful interference noted on exclusive Amateur bands. Of course, the USSR station is significant only under certain conditions, that is, when propagation conditions and its operating band of frequencies coincide with Amateur bands.

But that is to put the matter in a very narrow compass and in a frankly selfish context. I am sure that your officers have drawn your attention to the final protocols of the Aeronautical (R) World Administrative Radio Conference held in Geneva in February of 1978 (enclosed). A number of administrations then recorded their complaints against the Soviet station. It is interesting to read the USSR response.

I have been told that you have taken the view, in reply to certain complaints, that the "Russian Woodpecker" is a defence matter and that in any event, insofar as the Amateur Service is concerned, Amateur stations are frequency agile.

With the greatest respect the Institute suggests that this is to rather miss the point.

The "Woodpecker", under good propagation conditions, is not only exremely strong but also, because of the pulsed nature of its transmissions, spreads a strong interfering signal over a wide band of frequencies. As a result, although the stations of the Amateur Service are frequently agile, they cannot avoid the interfering signal by moving in the confines of the Amateur band in question. It could be suggested that the Amateur operators concerned could move to another Amateur band to avoid the interference. It is negated, however, by the fact that the "Woodpecker" usually operates on the band with the best propagation conditions and therefore the optimum band available to the Amateur Service at that time for international communications. The net result is that the "Woodpecker" frequently renders useless the optimum band and sometimes the only band available for long distance communications at the time. This interference is therefore "harmful" to the Amateur Service to the extent that it makes the desired communication impossible.

Other nations, including Australia, may also be developing similar systems. The fact is, these other systems do not cause significant interference.

Amateur stations are frequency agile — but the Service is perfectly entitled to seek protection from harmful interference in its exclusive bands. That is what the Radio Regulations are all about. If, on the other hand, my understanding of the international arrangements to which I have referred is inaccurate, I would appreciate an explanation of those arrangements that I can place before our membership.

You may have been surprised at the "Woodpecker campaign". We feel it has partly arisen from a sense of frustration. The Institute's Intruder Watch has reported observations of many stations in many countries causing interference to stations operating in accordance with the internationally agreed Frequency Table. Unfortunately, we have little evidence of positive action by your Department in response to these reports. Perhaps that is being less than fair, and we would certainly welcome your assurance that the Department has, and will continue to, take action on an inter-administration basis in respect of such complaints.

I believe that such an assurance in respect of all stations causing harmful interference, whether the "Russian Woodpecker" or any other station, would be most welcome and would meet the legitimate concern of many Australian radio operators. More particularly, can the Australian administration be seen to be taking action in respect of the most harmful of all interference suffered by Amateur and other services, namely the USSR station?

I can assure you that the Institute is, and will continue to be, most willing to co-operate with your Department in this area." ■

(Sgd.) P. A. WOLFENDEN VK3KAU,
Federal President

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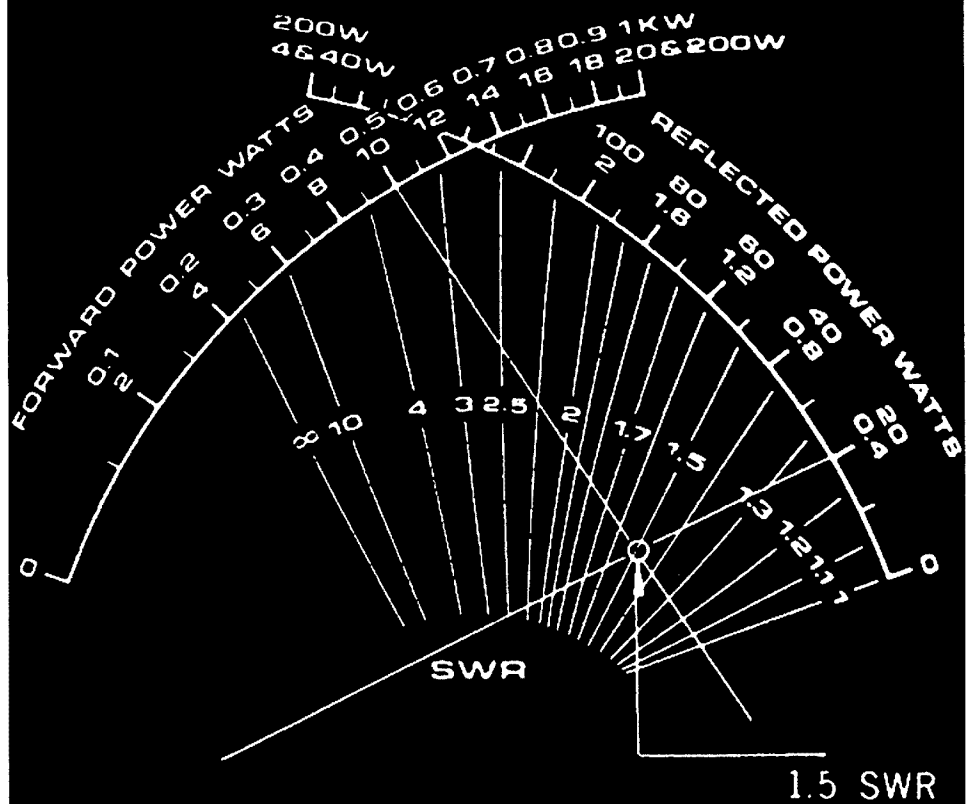

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A Beginner's Guide to RTTY

Compiled from various articles, in particular CQ magazine and ETI, by the Editor, Bruce Bathols VK3UV, 6 Ann Court, Aspendale, Vic. 3195.

Radio Teletype (RTTY) is one of those quickly growing "sepcialised" forms of amateur communications. The attraction to its devotees is probably a mixture of the magic of modern digital communications coupled with the convenience of written rather than coded or voice communications. In autostart nets, it's not even necessary to be home when receiving a RTTY message — the printer or display will record the text for you to read at your convenience. RTTY is very popular among "rag-chewers" and "engineers" alike; in fact, you get to do a bit of both. The rapid growth of digital electronics has carried over to both RTTY and the new home computer hobby. If your "bag" is chasing DX, what could be more satisfying than a DXCC certificate for all RTTY? There are several DX RTTY contests sponsored every year with heavy participation. So, rather than ask "Why?" ask "How?"

WHAT DO YOU NEED TO WORK RTTY? An amateur RTTY station needs a transmitter, receiver and antenna just like any RF communications system, In addition to some "special boxes" to make the RTTY part work. Some considerations for the equipment are outlined below.

1. RECEIVER-TRANSMITTER

The RTTY receiver and transmitter (or transceiver) should be stable, well calibrated and capable of *EXTENDED TRANSMITTER OPERATION.* When you are transmitting RTTY, the full carrier is on for longer periods of time than for CW or SSB voice. So check your manual and manufacturer for RTTY specifications and, if in doubt, reduce transmitter power somewhat. For HF work, a good SSB rig in LSB mode works well with RTTY tones (more on tones later). Most VHF-FM transmitters work with RTTY, but avoid overloading the transmitter as mentioned above.

2. ANTENNA

A good antenna will buy you the same benefits in RTTY as it does in other modes. One caution though, the traps on some antennas may not handle as much power in continuous RTTY operation as they do for CW or SSB voice. This can especially be true of trap yagi antennas for the HF bands.

3. RTTY DEMODULATOR

The demodulator connects to the receiver audio output and converts the RTTY tones to keying pulses. The quality of your printed signal is determined more by demodulator performance than by any other portion of the system. Demodulators come in all shapes, sizes and prices.

4. TONE KEYER

The tone keyer circuitry converts the keying pulses from your keyboard Into audio tones to drive the transmitter. Since this circuitry is closely related to that of the demodulator, it is usually constructed in the same cabinet.

5. TERMINAL

The terminal Is the device that prints or displays the received signals while allowing you to type your transmitted message. The terminal is sometimes divided into a keyboard and a printer or display section. The terminal can be as simple as an old surplus TTY machine or as exotic as a microprocessor controlled terminal.

HOOKING IT TOGETHER (see FIG. 1) Probably the most frightening thing to the RTTY beginner is the thought of all those wires that must be connected to make it work. A particularly complicated RTTY station can have a real "rats-nest" of wires, but it didn't start that way. Make connections in a logical and step-by-step manner and all will work well. All transceivers are slightly different, but in general you will have to make these connections:

1. GROUNDING

Before making any other connections, decide approximately where your equipment will be located and run short, low-inductance ground wires (shield braid recommended) between the cabinet grounds of all equipment AND MACHINES. Do not defeat the AC safety ground on the power cords; run separate RF grounds in addition to the AC safety ground. *LACK OF ADEQUATE RF AND SAFETY GROUNDS CAUSES MORE PROBLEMS IN RTTY INSTALLATION THAN ANY OTHER SOURCE.*

2. RECEIVER TO DEMODULATOR

Use shielded cable to connect a 500 ohm audio output of the receiver to the demodulator audio input jack. If you do not have a 500 ohm output, the 4-8 ohm speaker output will work, but not as well; a speaker to 500 ohm line transformer would be a good part to add when possible.

3. TONE KEYER TO TRANSMITTER

Use shielded cable to connect the tone keyer output of the demodulator to the transmitter audio input. Often a rear-panel "phone-patch" or "auxiliary" input is provided. If not, connect directly to the microphone connector.

4. DEMODULATOR TO TERMINAL

Use shielded cable to connect the terminal to the demodulator. Use the current loop connection for each. When con-

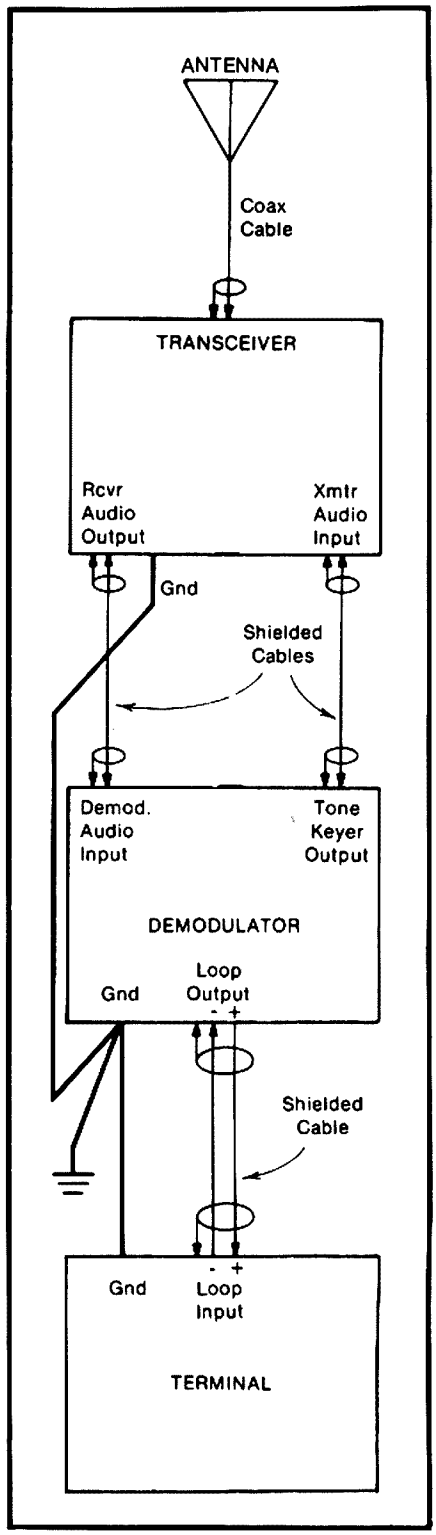

FIG. 1: Basic layout of a RTTY station.

necting to a solid-state terminal, be sure to observe the proper polarity as indicated in the operator's manuals. Be extremely careful when wiring the loop circuit — potentially lethal voltages are present when the equipment is turned on (200V DC at 60 mA). Also, be sure that no part of the loop circuit is connected to chassis ground in machines or other equipment. All RTTY equipment is connected in series when the current loop output is used.

5. CONTROL CIRCUITS

Since the control requirements differ with manufacturer, study your transceiver manual carefully to determine how to control the transmit-receive function. Usually you can control the push-to-talk (PTT) line through a pin on the microphone connector, a front-panel switch, or a rear panel accessory connector. Initially, try to manually switch between transmit and receive until you are familiar with RTTY operation. "VOX" operation through the microphone socket is possible with transceivers that have the facility when using the "AFSK" keying method. This will alleviate the necessity to manually switch the Tx on, making a very convenient operation.

WHAT IS THIS MARK AND SPACE BUSINESS?

The RTTY signal from the terminal is a series of pulses. The amateur BAUDO RTTY signal has 7 possible pulses for each character typed or printed, each transmitted one-after-another (serial). Each pulse can be either "ON" (current flow in the RTTY loop) which is called "MARK" or "OFF" (no current flow), the "SPACE" condition. To keep decoders synchronized, the first pulse of a character, the START pulse, is always a SPACE (current off); the last pulse, the STOP pulse, is always a MARK (current on). The 2nd through the 6th pulse can be either MARK or SPACE, depending upon the coding required for a character. The START and all 5 data pulses are the same length; the STOP pulse may be either equal to or longer than the others. The so-called computer ASCII (American Standard Code for Information Interchange) code uses START and STOP pulses but has eight instead of five intermediate data pulses, thus allowing a greater number of characters to be encoded. Although all machines and electronic terminals use pulses, the MARK and SPACE pulse conditions are converted into MARK and SPACE audio tones for easy radio transmission.

THE DIFFERENCE BETWEEN FSK AND AFSK

Transmitting RTTY signals via radio could be done like morse code with on-off keying of the transmitter carrier. However, the interference received during off-times would give badly distorted printout. Rather, HF RTTY is transmitted with Frequency Shift Keying (FSK) so that the mark pulse conditions corresponds to one radio frequency and the space to another. Amateur radio convention has it that the mark radio frequency is higher than space and that the separation or "shift" of the signal is standardized at 170 Hz or 850 Hz. (425 Hz shift is also used by commercial RTTY stations.) Most present-day amateur RTTY stataions use 170 Hz shift exclusively. The FSK signal is received with the BFO turned on, giving two audio frequency tones for the mark and space conditions. The audio tones are, in turn, detected in the demodulator and the resulting pulse drive the display or printer. Note that changing the transmitter or receiver frequency (on purpose or through frequency drift) will change the audio output frequency to the demodulator. The HF system is therefore quite drift sensitive. Present HF equipment frequency stabilities are quite adequate for FSK RTTY, but it is only very recently that VHF equipment was available with similar stability. Therefore, VHF RTTY has traditionally been transmitted by first keying audio tones with the RTTY pulses and then using these tones as the audio modulation of an AM or FM VHF transmitter. This is called AFSK for Audio Frequency Shift Keying. Current amateur convention is to make the mark audio frequency lower than the space frequency by the amount of the shift. Since the RTTY data is audio modulation of the carrier, frequency drift of either transmitter or receiver is a lot less critical. The audio frequency of the tones transmitted is set to be the same as those in the receive demodulator.

The required radio frequency shift keying can be done in two different ways: shift the frequency of a transmitter oscillator directly with the RTTY pulses or use a SSB transmitter with audio tones. Direct FSK keying circuits are described in most amateur journals and are generally simple, but require modification of the equipment; generation of FSK with a SSB transmitter is as follows: If a Lower Sideband Transmitter (LSB) is driven with a 2125 Hz audio tone, the RF output of the transmitter will be at a frequency 2125 Hz *BELOW* the suppressed carrier frequency. A properly adjusted LSB transmitter will have *NO OTHER* output frequencies. If the input tone is changed to 2295 Hz (170 Hz shift), the RF frequency is now 2295 Hz BELOW the carrier frequency. Thus, audio tones into the LSB transmitter have produced FSK carriers out of the transmitter. Note that, because the LSB mode was used, the 2125 Hz standard mark tone for VHF AFSK has become the higher radio frequency. Thus, the same demodulator and tone keyer can be used for both VHF AFSK and HF FSK operation. Often, this use of audio tones with a SSB transmitter is mistakenly called "HF AFSK" — actually the resulting output is true FSK, IF the SSB transmitter has no spurious outputs (such as carrier or unwanted side-band). Most HF RTTY amateur radio stations use audio tones with a SSB transmitter. Although "standard" audio tones for VHF amateur operation have long been 2125 Hz for mark and 2975 Hz for space (850 Hz shift), limited audio frequency response of HF SSB transmitters and receivers has recently given rise to a second set of "standard" tones at lower frequencies ("Low-tones").

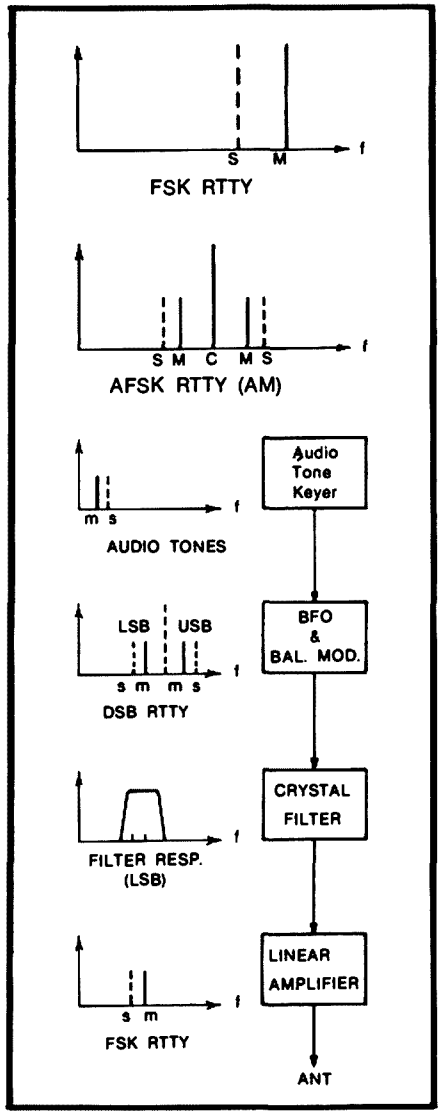

FIG. 2: "FSK and AFSK operation".

HIGH TONES vs LOW TONES

Historically, demodulator tones were set to 2125 Hz for mark and 2975 Hz for space reception of 850 Hz shift. When transmitter stability improved, 170 Hz shift was used and the space frequency changed to 2295 Hz (mark remained at 2125 Hz). These three tones were, and still are, a standard for US Amateur RTTY. However, in the early 1960s, virtually all commercially available transmitters and receivers became filter-type SSB equipment with audio pass-band limited to speech frequencies, sometimes as narrow as 2.1 kHz (300 to 2400 Hz). Obviously, the 2975 Hz (850 Hz shift Space) tone will not pass through such a filter and 850 Hz shift with these tones is not possible (although the 170 Hz shift is). Therefore, either the SSB equipment must be modified or different, lower-frequency tones must be used if 850 Hz RTTY shift is desired. Both approaches have their advantages and both are currently in use. The so-called "LOW-TONE" standard sets mark at 1275 Hz and space at 1475 Hz

(170 Hz shift) or 2125 Hz (850 Hz shift), conforming to the European IARU standard. So there are now two sets of "standard" tones, LOW and HIGH (as well as a myriad of others), all of which work INTERCHANGEABLY on HF RTTY. However, since the actual audio tone is transmitted for VHF AFSK operation, the two sets are *NOT COMPATIBLE IN VHF AFSK* applications. Current Australian and US Amateur operation uses the HIGH TONES for VHF. Thus, to use a demodulator and keyer for both HF and VHF operation, it should be set up for HIGH-TONE operation. Conversely, you may wish to have separate stations for HF and VHF, simplifying the cabling, and providing simultaneous monitor/operation capability, as well as resolving the tone problem.

FREQUENCIES FOR RTTY

HF RTTY operation has evolved to heavy operation on the 80 and 20 metre bands (CW segments) with sporadic operation on other HF bands. 80 metre RTTY stations tend to operate between 3600 and 3650 kHz and 20 metre stations between 14.075 and 14.100 MHz. Popular HF "net" frequencies used in Australia are 3545 kHz, 7045 kHz, 14090 kHz, 21090 kHz, 28090 and 28320 kHz. 170 Hz shift is used almost exclusively with mark being the higher radio frequency. 60 w.p.m. (45 baud) is the most popular RTTY speed, but 100 w.p.m. (74 baud) is gaining in popularity.

VHF RTTY operation in most areas is concentrated on 2 metre FM with 146.600 MHz being the popular operating frequency. Virtually all stations are now using the "High-tones", usually with 170 Hz shift. As with HF RTTY, 60 w.p.m. (45 baud) is most popular on VHF. RTTY repeaters are planned soon for some Australian States.

WHO DO I TALK TO ON RTTY?

RTTY enthusiasts run the full range of ages and interests, but tend to be technically inclined. The typical RTTYer is always modifying his station, likes to talk, and usually has more ideas than you have printer paper (or display screen)! Some operators are good typists; most aren't. Recently, the home computer hobby has become quite popular with RTTY people and you may find a lot of help in debugging your programmes if that's your interest. There are an increasing number of DX stations on RTTY.

HOW MUCH DOES IT COST?

RTTY is like any other hobby — it can cost as much or as little as you want it to. If you buy used machines and build kits or your own designs, the total RTTY cost can be quite low.

1. DEMODULATOR

Assuming you already have a good transceiver and antenna, your first major RTTY purchase should be a good demodulator.

2. TERMINAL

You can spend very little or a lot on the terminal. A surplus machine can often be acquired at a hamfest for little cash investment. However, by the time you figure out how it works, fix it, and buy parts and manuals the total cost may not be so low. If you do, you'd better be prepared with tools, oil, and patience. Newer machines require less work, but also cost more. ■

* * *

THE AUSTRALIAN SCENE AND WHERE TO START

For the raw beginner in RTTY there are several good publications available which are a must for your library.

Two which the author found particularly useful are "RTTY from A-Z" and "The New RTTY Handbook". Both are published by the CQ technical series, and although similar in basic contents, are sufficiently different in many aspects to warrant the purchase of both.

These two books are available from Magpubs (PO Box 150, Toorak, Vic. 3142) at modest cost (around $13 for the two).

Also worth looking at is the RSGB and ARRL RTTY Handbooks, they should be available in most technicol book shops. They are on order also via Magpubs, but at the time of publication had not been received.

THE MODULATOR/DEMODULATOR

Many articles have been published over the years but one of the best I have seen lately is a series which appeared in Electronics Today International (ETI) for August, September and October 1979.

These articles describe a fully solid state active filter design mod/demod and also gives some in-depth "debugging" of the Teletype Model 15 Printer. PCB layouts and artwork is included and it makes a very interesting project. The PCBs are available commercially, and also a kit can be obtained from "Electronic Components and Kit Sets", 118 Lonsdale Street, Melbourne. The cost is around $50 for both boards and components from the above supplier, but I suggest you check with them first for latest availability and cost.

THE TELEPRINTER

The most common printers available locally are the Teletype Models 14 and 15, although the Creed Model 7s are around, they are usually in need of some repair and parts for all machines are difficult to obtain.

I spotted a supply of Model 15s recently (February 1981) in Melbourne at the "Aussi Disposals" network of shops. To my knowledge they had about 20 or so at $50 each.

It may take some soul searching to locate a good one, but once obtained they will last almost forever. They are a very rugged piece of machinery.

Keep on eye on "Hamads" too.

The Siemens Models 100 are starting to appear at various odd places; keep an eye on your local "Disposals" shop. They are not cheap, around $250-$300, but if you can get one it is really the ultimate and worth every cent.

RADIOTELETYPE GROUP

In Australia we have a group based in Sydney called The Australian National Amateur Radio Teletype Society (ANARTS), contact may be made C/- Peter Mulligan, 52 Haughton Street, Yagoona 2199, NSW. Phone (02) 709 6060 AH or (02) 519 5855 Bus.

The group can supply information and teleprinter machines, where to obtain them, how to service them, etc., as well as supply a number of kits for RTTY applications.

AN APPEAL FOR HELP

On the HF bands, particularly 3.5, 7.0 and 14.0 MHz RTTY frequencies, many amateurs mistake a genuine amateur RTTY QSO for an intruder. Please do not deliberately QRM an amateur RTTY station, they are more prolific now and can be easily identified by the operator's CW ident every 10 minutese.

QRM from SSB and CW operators only causes friction among the amateur fraternity. Rest assured that if an RTTY intruder comes up on any part of the amateur bands, he can be quickly monitored by amateur RTTY enthusiasts and the appropriate action taken.

RTTY is an exciting part of amateur radio, I hope we may "see" you down on this mode too. ■

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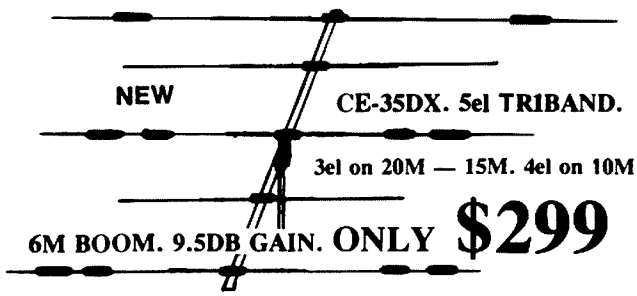

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CE-42 Duoband 4el 4M boom 2KW PEP 8.5DB gain.....$149
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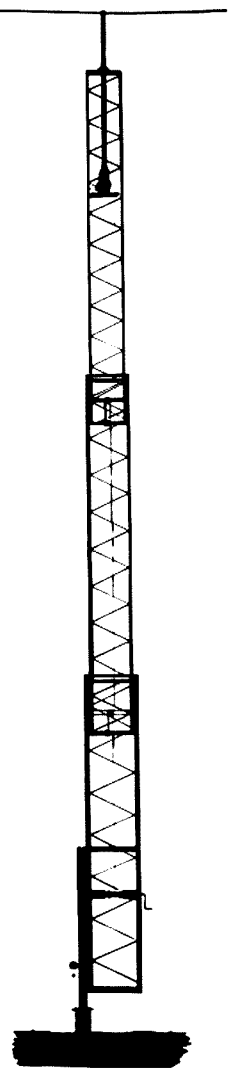

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Some Thoughts about Towers

With acknowledgement to Henry ZS6SR, Radio ZS, Dec. 1980

Towers are no more or less than the supports for antenna systems. The type of tower to be erected depends firstly on the antenna which it is desired it should carry. Consider the following questions:—

Is constant good communication over a long period, across all bands, desired, OR will occasional contact when conditions are good suffice? Depending on location, propagation from the QTH may be good, fair or bad. That extra height may make all the difference.

What equipment is available and what is envisaged? Low power equipment and good antennas can get out equally as well as high power fed to mediocre radiators. If QRP operation is envisaged, the antenna system could possibly finally be more elaborate. A stronger tower could be required.

What frequencies are Preferred Multiples of wavelengths which will give an indication of the minimum height that the antenna should be above ground? A 5/8 to ½ wavelength of 20m will suffice for 2m, 10m, 15m and 20m and this tower need only be 12.5m high. This is however not high enough for 40m or 80m operation.

Will DXing be the major prefernece? The higher the radiator above the counterpoise the lower the angle of radiation and the more desirable for long distance. If the beam extends over a roof its operation may be affected depending on the type of roof. If it is a tin roof then the effective height over the roof will be that above the roof while for the portion not above the roof the effective height will be from ground level. If the roof is not tin then in dry conditions the ground level would be the counterpoise whereas in wet weather the counterpoise would rise to roof level. A high angle of radiation may be present in certain directors thus affecting DX to some areas. Having decided on what strength and height the tower should be, consideration should be given as to what type of tower is desirable.

Among others the following can be considered.

- Rotatable Towers.
- Fixed Towers.
- Telescopic Towers that could be motorised.
- Tilting Towers.
- Self-Supporting Towers.
- Guyed Towers.
- Permanent Fixed Towers.
- Towers that can be moved at a later date.
- Climbable Towers.

Decisions as to what type of tower to acquire depends on a number of factors, but before these are considered, your own ability will dictate whether you will:—

- Design your own tower.
- Develop your design or copy someone's.
- Build the tower yourself.
- Buy a tower.

Two considerations which are related are:—

- Cost, especially to those of us with limited budgets which we would like to use for equipment.
- Real estate (space) available.

Of prime importance:—

- Safety is of prime importance and must be considered.

FINALLY one must consider:—

- THE LAW.

Stay within the law and the municipal regulations. Keep on the right side of the authorities. If a neighbour experiences TVI or BCI, possibly not caused by yourself, he will point to your tower and if you have antagonised the authorities, it is your tower that will have to come down. Plans should be submitted to local authorities well in advance of desired erection date.

CONSTRUCTION of the tower once again depends on a number of factors.

WHAT DESIGN IS BEST

Single pipe masts are acceptable but tend to be very heavy. Pipe outside diameter and wall thickness must be commensurate with the strain to be withstood. In most cases the weight becomes unmanageable and latticed construction, being much lighter, is desirable.

Plans are not readily available. Some engineers are prepared to draw plans for a fee. The alternative is to copy a friend's tower which has caught your fancy. Work will always have to be done on the antennas on top of the tower. Access to this area must be considered seriously. A telescopic tower is highly desirable, but a tilting tower is a good alternative.

WILL IT BE WELDED OR BOLTED

Welding is preferred to bolting. In any tower there is a certain amount of vibration: the guys vibrate, the beam vibrates; the tower itself picks up vibrations. Bolts are prone to loosen with vibration over a period and this can be a major problem. Drilling of holes is also time consuming and not easy.

WHAT MATERIAL SECTION TO USE

Probably 90 per cent of antenna towers, as opposed to pylons, are tubular legged with solid bar (round bar reinforcing) bracing, both horizontal and diagonal. Angle section is the obvious alternative.

WHAT MATERIALS TO USE

This depends on the skills available. Mild steel welding is easier than aluminium welding which needs special skill and equipment. Aluminium must also be of thicker section though its total mass will be lighter. It is also more expensive. Corrosion resistance of aluminium unless anodized is inferior to galvanized steel.

WHAT WEIGHT (STRENGTH OF) MATERIAL TO USE

The strength of the material to be used depends on the vertical pressure exerted on the legs and aspecially on the lower portion of the legs.

The physical mass of the tower is only a part of this pressure.

The guys exert downward pull even when not strained taut. This increases as the guys are pulled tighter. Wind resistance in a hoizontal plane exert a vertical force on the legs because it tends to tighten the guys.

This wind loading is about 120 kg mass tor every $1m^2$ (25 lbs. for every sq. ft.) of material facing the wind in a 36m per sec. (80 miles per hour) gale. This area can be calculated by establishing the total surface area of the legs and bracing, horizontal and diagonal, which faces the outside of the tower on the largest face (the surface area which you will see if you look at the members of one face) and multiply by 1.5.

When considering material, bear in mind the ultimate antenna which you would probably expect the tower to carry in future, and also the height that will ultimately be required. A base half of a 36m tower will carry any antenna at a height of 15m and can be extended later but the base portion of a 15m tower cannot be utilised to carry an additional 21m if subsequently a 36m tower is required. If one follows manufacturers' instructions and mounts a 10, 15 and 20m triband at 15m it may be found that under certain conditions 18 to 20m is necessary for satisfactory operation. A telescopic tower would probably be required and the higher it can go the better.

A tower built with material strong enough to carry a light 10, 15 and 20m beam with a small rotator, will not carry a 40 and 80m beam in addition to the heavy rotator required when you wish to add this in five years time. The tower should have been built strong enough to carry the ultimate and would have been adequate for the lightest beam in the interim.

WHAT CORROSION PROTECTION SHOULD BE APPLIED

Corrosion resistance of aluminium is not as good as galvanized steel unless it is anodized. Anodizing is more vulnerable to scratching than galvanizing, and it is here that corrosion takes a hold. Galvanizing is also preferable to painting. Painting tends to hide corrosion and this can lead to nasty accidents. Hot dip galvanizing is preferable and the completed job must be well inspected for flaws in the coating.

WHERE SHOULD THE TOWER BE SITED

A number of considerations should be made before the final site is established. The antenna should not overhang neighbours' property at any stage. A property owner owns the space above his ground.

The tower should be as close to the shack as possible to avoid power loss in long feedlines. Open feeding impedance can be affected by the metal of the tower and coax should be used on the tower.

In respect of tilting towers, fruit trees should be pruned to allow the tower to be lowered without damage to the tree.

WHAT FOUNDATION IS NECESSARY

Self-supporting towers adequate foundation is essential. As a rule of thumb a concrete cube measuring 6.5 to 10 per cent of the tower's height should be provided, e.g. 10m tower — hole 1m x 1m x 1m filled with concrete; 30m tower — hole 2m x 2 m x 2m filled with concrete.

The base section of the tower must be well embedded in the concrete and some vertical reinforcing in the concrete cube is desirable.

WHEN SHOULD THE TOWER BE ERECTED

Choose days when the weather is favourable for working on the tower. Avoid working in changeable conditions.

WHAT ABOUT GUY WIRES

Guys should be anchored to sturdy poles driven into the ground or to concrete blocks buried in the ground.

Metal guys can affect radiation. If steel guys are used they should be cut to non-resonant lengths. Synthetic rope guys are preferable.

Guys should not be too tight. The tower should be able to sway to avoid unnecessary strain.

HOW TO GET THE BEAM ONTO THE TOWER

Putting the beam onto the tower can be a problem. A reasonably successful way is to build a "tramline". A piec of fairly substantial tubing, 50 mm o.d. and about 2m long is attached at rightangles to the mast at the top of the tower. To the ends of this tube two wires are fixed and pulled taut to anchors so that the wires are parallel and at an angle of about 45° to the vertical. A pulley is attached to the top of the tower through which a rope can be fed to the centre of the beam on the ground. The beam is now pulled up the "tramline" after guide ropes have been attached to each end by which the beam is held square. These guide ropes should be attached so that they can be detached by shaking after the beam is in position. The beam must be taken up in an orderly fashion as it can easily get out of hand.

WHAT ABOUT LIGHTNING PROTECTION

There is no protection against a direct lightning strike, or heavy side strikes. It is better to lead static and light lightning strikes to earth via the tower than via the antenna and feedline.

The top point of the mast at the top of the tower should be 2 to 3m above the highest antenna. Lightning does not always strike the highest point. It often strikes 1.5 to 2.5m from the top. Always stack beams with the shortest on top to form a "Christmas tree". A 45° cone will be best protected by the tip of the tower.

The tower should be well earthed. The earth lead should be at least 70 mm² in cross section (12 to 15 mm rod). If conductivity of the ground is reasonable — 1 ohm over 4m — then an earth stake should suffice. If not a radial system of 3 to 4 radials, each at least as long as the tower is high should be buried about 0.6m underground. If conducting is questionable put salt into the trenches and keep them wet.

CAUTION

Always remove the feedline from the rig after use or when lightning is around. It is safest to "throw the feedline out of the window". Also remove the power plug. If the power lines are struck the surge will jump the switch.

DO POWER LINES IN THE VICINITY AFFECT TRANSMISSION

This depends on the distance of the power lines from the antenna. Very little reception noise will result if power lines are more than about 75 to 100m away. However, if transmission is beamed directly at the power lines there will be absorption and possible peculiar reflection, possible noise and reduced signal. Power lines over about 200m away should have no effect whatsoever. ■

QRI ?

Ralph Williamson VK3BRF

It's not possible for any one person to imagine, and write about, all the varieties and degrees of disability visited on selected members of humanity, so I'll just tell you of my experience. This might give you some small idea of the extent of the difficulties met with, and overcome, by people in worse situations than mine.

My first memory of radio was about 1930 when my father brought home a polished hardwood box about a foot square at the end and about a yard long. With it came a three-tier table, batteries of several shapes and sizes, an elegant horn speaker and a mile of wire. This combination gave out some expensive splutter and squeak but refused to yield the Melbourne Cup description to the neighbours who had gathered from miles around. We found, from "The Weekly Times", that Phar Lap had won the cup. Radio was a failure. I was six.

I vaguely remember, some time later, an army base radio station being unloaded from a convoy of trucks. With it came its mobile sub-stations, each one of them too heavy for one man to handle.

Then, after the war, there was an amateur's station, a masterpiece of construction, smelling of ozone and most impressive were its rows of cabinets and frames full of stacked modules, seen in a mercury vapour glow.

At that time I suffered the disabilities common to most young men, a young and growing family, a humpy for a house and only one foot on the lowest rung of the ladder to fame and fortune.

So for me radio had to wait until I had overcome these troubles, meantime developing others in the form of arthritis, an early retirement and various stages to a wheelchair.

Along this course it occurred to me that I should fit myself with some sedentary hobby against the time when my "get up and go" had gone, so in 1978 I mustered my thirty year old theory, polished it up a bit, took credit for having worked morse code as a postal/clerk/telegraphist and gathered a Novice licence, followed by the AOCP.

I'm currently trying to raise my morse speed to 35 w.p.m. to make sure of the RT High Speed Club's Certificate but I find my reflexes are dead flat and I fear the worst.

It became obvious, to my sorrow, that the day of the home-brewer of major items was over, but as my mobility and dexterity decreased I came to rejoice in the fact and since then I have found great delight in the size, versatility and power of factory built, all band, many mode outfits.

My problems are now reduced to those of buying, handling, repairing, operating and supplementing the black box and that of shopping.

Until recently, like most, I have been limited for space, but the loss of a daughter by her marriage has won me a spacious "Radio Room".

On moving in I took the opportunity to increase the knee height under my benches. Knee space which is ample for a person on an ordinary chair is much too low to run under on a wheelchair. By raising the benches I have increased the reaching distance over the bench which is now much too great for anyone who is unable to rise.

This was partly overcome by filling the back of the bench with storage compartments for seldom used test gear, storage drawers for components and the like, and partly by the use of a selection of "shepherds' crooks" made of a length of broom handle, slotted at one end for turning lever handled switches and cup hooked at the other end for dragging things closer. Hooking at component drawers often results in a spill and, in fact, more time is spent on picking up than on any other function. For picking up, the most useful elements are an understanding wife, a scissor type food tongs or a commercially made "Helping Hand", in that order.

To reduce the reach to light switches and power points these were moved to the hither side of the bench which raised the difficulty of having cables all over the work. Any cord of a permanent nature was suspended under the bench in cup hooks, thus reducing the confusion and danger considerably. if many cords are in use, a multiple distribution point is used, fed by a single cord.

Handling the equipment is difficult as even small items are weighty on extended weak arms. Major units are generally placed by someone else but small changes of position are effected by a lever over the edge of the bench and under the unit or by a hefty tug with the shepherd's crook. Here the bearing edge on the shelf often saves a crash. Manoeuvring a set to remove the covers and take out the innards generally falls to others.

Operating most sets, prior to adaptation, has its problems too, as their knobs, especially on multi-position switches, are inadequate. I have used dozens of levered and elephant eared switches. On stiff switches even this is not enough leverage for sore hands so a length of slotted broom handle, to fit on the levered knobs, lives on the operating desk. This gives an extra six inches advantage.

Coax connectors are the very devil and I have a pair of gasfitter's pliers handy.

Push buttons are difficult so I give them a prod with my broom handle — there is also a length of 3/8 in. dowel handy for buttons which are too close together. Push to talk levers and send/receive switches are all bypassed to micro switches. This calls for careful placement of the microphone when not in use, otherwise the world could be treated to a vigorous vocal description of the state of the universe.

Where safe and satisfactory, old plugs and sockets are replaced with ¼ in. or miniature phone jacks, the plugs being drilled and fitted with a twine loop for tugging on. Although I have a standard morse key (salvaged from a Japanese aircraft) for showing off, most of my morse is made on a mechanical semi-automatic "jigger" made by Ingram of Perth, probably more than sixty years ago. I've just bought a Hi Mound — same thing — as a spare.

Repairing and supplementing the box are my real aims but snipping a piece of wire depends on me being able to squeeze the handles of the cutters between my lower ribs and the arm of the chair, and the baring of a piece of wire almost defies description. Consequently, most of this falls to my No. 2 son, who is a technician, and it gives me great pleasure to see his trained handling of, and almost reflexive conclusions to, test results. My knowledge of this "nowaday" gear is even improving by following him. Aerial work is out of the question but I am still allowed the role of ground supervisor. This is very good for the ego.

Shopping is quite difficult and the art and pleasure of browsing is lost entirely. I have found that most firms will post goods out to a known customer on some prior arrangement.

Too frequently, as everyone knows, some item is not easily available and it is then, with my shopping as with all my other activities, that I must impose upon and rely upon the goodwill of others.

Fortunately, this goodwill is not stinted.

Finally, let me mention that sometimes the holders of Novice and Limited licences feel threatened by efforts to downgrade or drastically alter their licence conditions.

There are those who have obtained their licences under most difficult circumstances, and also who do not obtain results as easily as others. There are those who cannot, or may not, or need not, upgrade. Whether there be good reason or no reason at all for not upgrading, goodwill alone should ensure that no licensee is ever deprived of his/her hard won standing. ■

CW PORTABLE / RTTY / ASCII

TELEREADER

COMMUNICATIONS COMPUTER

CWR-685

- ★ Fully self-contained with built-in green screen monitor and keyboard
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Shortwave Listeners enquire about CWR-680 receive only unit

Other features:

- Automatic CW speed adjustment on receive.
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YAESU
THE RADIO

FT-290R 2 METER PORTABLE TRANCEIVER

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The FT-290R is a portable 2m all mode transceiver, including all the up-to-date features of convenience allowed for base station transceiver.

ALL MODE OPERATION
The FT-290R provides operation on all modes: SSB, CW and FM, over the 2m band with 2.5W RF output at 12 volt.

LCD FREQUENCY DISPLAY
The LCD frequency display allows easier reading of your frequency in daylight, and because the LCD display is illuminated by a lamp, you can easily read your frequency in dimly lit places.

PLL CIRCUITRY
The PLL synthesized channels are arranged in convenient steps of either 100 Hz or 1 KHz for the SSB and CW modes, and 10 KHz or 5 KHz for the FM mode.

DUAL VFC SYSTEM
The FT-290R features a digitally synthesized dual VFC system, which may be used for unusual repeater splits during semi-duplex operation. A receiver clarifier is also available for fine tuning.

MEMORY BACK-UP
A built-in lithium battery cell protects you from losing the memory storage, even after as long as five years. The need to re-store the memory after long periods of non-use no longer exists!
The period of operation has been improved with the installation of 8 C-size dry batteries, or NiCd batteries. An optional NiCd battery charger is available.

OPTIONS
CSC-1 carrying case
NC-11B/C NiCd battery charger
FL-2010 10W linear amplifier

SCANNING MICROPHONE
The standard microphone supplied with your FT-290R includes fingertip up/down scanning controls for easy frequency changes.

GENERAL SPECIFICATIONS

Frequency coverage: 144-148 MHz.

Modes of operation: USB, LSB, CW and FM.

Synthesizer steps: SSB/CW: 100 Hz, 1 KHz;
FM: 10 KHz, 20 KHz

Power requirements: 8 C-size dry battery cells or
8 C-size NiCd battery cells
External: 8.5-15.2 V DC
Memory back-up: built-in lithium battery cell.

Current consumption: 70 mA on receive; 800mA on transmit (2.5W RF, FM)

Antenna impedance: 50 ohms

Case size: 58(H) x 150(W) x 195 (D) mm.

Weight: 1.3kg without batteries.

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ELECTRONIC SERVICES
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'AR SPECIAL

COMPANY	WIRELESS INSTITUTE OF AUSTRALIA
REGISTERED	17th JANUARY, 1972
NUMBER	919154
OWNERS	SEVEN WIA DIVISIONS
EVENT	ANNUAL FEDERAL CONVENTION
YEAR AND DATE	1981 — 2/3/4 MAY
SERIES	FORTY-FIFTH
VENUE	MELBOURNE
OBJECT	ANNUAL GENERAL MEETING
SCOPE	AMATEUR RADIO SERVICE COMMON SERVICES FINANCIAL AND CORPORATE AFFAIRS REQUIREMENTS
ATTENDEES	CHAIRMAN — FEDERAL PRESIDENT SEVEN FEDERAL COUNCILLORS (THE "FEDERAL COUNCIL") ALTERNATE COUNCILLORS ALL FOUR MEMBERS OF EXECUTIVE (ONE OVERSEAS) FEDERAL SPECIALISTS AND D.O.C. GUESTS
CONSTITUTION CHANGE	EDITOR TO BE APPOINTED HENCEFORWARD BY EXECUTIVE
EXECUTIVE	ALL MEMBERS RE-APPOINTED
ACCOUNTS	ADOPTED
REPORT FOLLOWS	MUCH CONDENSED (SEE ALSO JUNE AR)

A study in concentration and a concentration in study.

Mr. Ross Ramsay, accompanied by Mr. C. W. Pike, attended the Convention dinner on Sunday, 3rd May, as reported in AR June, and addressed the delegates as well as answering questions. Further notes from his address:—

Government, he mentioned, had approved the drafting of the new radio Bill which will of course be quite separate from the Broadcasting legislation. What priority this may have in comparison with other Government legislation remains to be seen. Mr. Ramsay expected the new 10 MHz band to become available to amateurs on a secondary basis from 1/1/1982. There were, he said, some users of this frequency segment, but not too many. The 18 and 24 MHz bands however posed greater problems and no dates could be given for completion of the transfer of the existing users but he hoped this would be well before the target date of 1989.

On the question of interference being covered in the new radio communications legislation Mr. Ramsay pointed out that the Commonwealth has to keep in mind State legislation which also relates to the "inci-

dental" powers set out in the Australian Constitution. He did say that operations in relation to interference complaints cost the Department a great amount of money which he hoped the new Act would address.

THE FUTURE

CONVENTION MATTERS

Two of the major items debated in the Convention related to the possibilities of celebrating the Institute's 75th anniversary in 1985 and planning the future. The 1985 celebrations were examined from two levels. **Outwards** at obtaining wide publicity for amateur radio and **Inwards** at events for amateurs. Some matters were seen as essential for early planning; as for example researching the possibilities of producing an Australian amateur history book in relation to costs, volunteers and collection of data, etc. The Executive was instructed to proceed with these overall tasks with assistance from the Divisions. Planning for the future of amateur radio and of the WIA proceeded under the main headings specified by VK4DT in March AR for both the short and long term basis and for completion of detail by both the Divisions and the Executive. The Divisions agreed to report back not later than 30th September this year in relation to the long term aims. If you have any thoughts let your Divisional Council know now.

THIRD PARTY

In regard to Third Party Traffic handling the delegates concluded that the message form for this should follow the general form used by the emergency services. Continuing negotiations were seen as necessary to remove the prohibitions against "phone-patch" traffic. By a majority vote it was considered desirable to approach the Department to allow "autopatch" or repeaters. The Department is also to be approached to allow the transmission of incidental music (on amateur bands) which occurs as an integral part of a radio or television training programme transmitted for the express aim of providing instruction in radio communication techniques. Support was given for an approach to DOC to delete the requirements in Handbook paragraphs 6.20 and 6.21 which require special permission for club stations to operate portable. No support was forthcoming for a proposal to ask for the deletion of Handbook paragraph 6.56 relating to the relaying transmissions.

TECHNICAL

The Federal Council decided —

(a) there was insufficient support to request DOC to extend the 80m band Novice CW segment downwards by 10 kHz;

(b) the status quo of the morse training frequencies should be maintained;

(c) A 6m FM repeater band plan be adopted within the FM section of the band 52.5 to 54.0 MHz;

(d) The 70 cm repeater channel 433.625/48.625 be recognised as a nominated WICEN portable repeater channel;

(e) A case be developed for obtaining a Federal Grant-in-Aid.

These Convention items are additional to those reported in June AR.

IARU

IARU was discussed in detail. A policy relating to the proposed amendments to the IARU (HQ) Constitution was adopted mainly along the lines of "cosmetic" rather than drastic changes. A vote of thanks was passed to the Japan Amateur Radio League for producing and circulating the IARU Region 3 News Bulletin.

CONTESTS AND AWARDS

On contests and awards it was agreed to amend the WAVCKA rules to allow Australian contestants to participate. The new rules will be published in due course for comments. These will include certification of log claims or proof in the form of QSL cards at the option of the claimant. A suggestion that an obsolete award (SWL Century Club Award) be discontinued was agreed provided adequate notice is given as perhaps someone may be working for it. The WAVCKA (VHF) Award is hard to obtain and could be regarded as too restricted but will remain on the books. A motion that any changes to the RD Contest rules should revert to the decision of Federal Council was defeated.

MEMBER SERVICES

Suggestions that WIA annual membership cards and a tear-off counterfoil on subscription renewal notices did not find favour mainly in relation to extra costs involved. A year and month coding on AR involved were reasonable. This could help QSL Bureaux if implemented.

Much thought was devoted to recruiting new members as well as the retention of existing members on a continuing basis. It was recognised that the Institute is supported by the members and in turn should not expend unnecessary effort and hard-earned money in providing free services to non-members without some likelihood of mutual advantage.

Various membership matters were discussed, including AR magazine, which did require a much greater input of material from members Details of possible improvements and courses of action are to be formulated by the Executive's Publications Committee. The affiliation of country-wide amateur societies, e.g. Radio Amateurs Old Timers' Club was supported on a majority vote and the Executive was instructed to re-draft a set of proposed regulations devised two years ago to accommodate current Divisional thinking on such affiliations.

Members desiring further detail should consult their Divisional Federal Councillor. ■

Executive Report 1980/81

It is with pleasure that I present to this Council the Report of the Executive for 1980/81.

The last twelve months have been extremely busy for the Federal administrative arm of our organisation. Not only have we had to contend with the aftermath of WARC 79, but also with a number of important long term issues relating to both amateur radio generally and to the operation of our Institute in particular.

1. MEMBERSHIP

1.1 It is pleasing to report that together with the continued increase in the number of licensed amateurs, so too has our membership grown; 7514 members in 1979 to 7819 members in 1980. Our Institute today is larger than it has ever been.

1.2 The *rate ot increase* in Institute membership, however, is presently not as great as the *rate of increase* in new *licensees and* this is of *real concern.*

1.3 The true statistical picture is somewhat hazy, as official DOC figures refer to the number of licences issued and not the number of licensees.

1.4 The Institute's records, however, are based on people and therefore the number of licensees who are members.

1.5 In the case of dual licence holders, i.e. limited with novice, DOC records this, rightly so, as two licences; whereas the Institute would record only one member.

1.6 This situation had the potential of making a nonsense of some statistics, especially now that we have entered a period of accelerated novice and limited licensee upgrading.

1.7 Last year approximately 250 members (4%) held dual licences, this year approximately 450 (6.5%) hold dual licences.

1.8 The introduction of K calls should, from this year on, clarify the situation and allow an equitable comparison. This of course does not entirely explain the present membership situation.

1.9 The recruiting drive prior to WARC and WARC itself caused our ranks to swell.

1.10 We must continue to recruit members. The aftermath of WARC is proving to be costly, with the necessity for the WARC team to continue their involvement in official meetings whenever they may be held in Australia.

2. LICENSING

2.1 Amateur licence fees were increased during the year. Full and limited licence fees were increased from $12.00 to $15.00 and novices from $6.00 to $10.00.

2.2 The introduction of combined limited and novice licences, and the subsequent issue of "K" call signs, has been most welcome, especially with the reduced confusion for operators and a single licence fee payable.

2.3 "C" calls, however, are presently "under the Departmental microscope".

2.4 With the rapid increase in amateur licences, call signs have become a trifle confused, viz., Limited calls Z, Y, X, Novices N, V, P, etc.

2.5 Also affecting licensing was the long-awaited publication of the new Amateur's Handbook incorporating revised operating conditions. This matter is dealt in more detail elsewhere, refer 3.2.

3. REPRESENTATION TO THE DEPARTMENT OF COMMUNICATIONS

3.1 Regular formal meetings have been held with officers of the DOC and I am pleased to report that at our most recent meeting in February, a number of outstanding issues were finalised and others brought closer to fruition. A number of changes have occurred In Central Office staff during the year, and it is hoped that, since their re-organisation, Amateur Radio affairs will be dealt with more promptly.

Important Issues

3.2 *Handbook.* The new Amateur Operator's Handbook was published during the year.

3.2.1 Due to a number of important changes, e.g. introduction of Third Party Traffic, sections of the Handbook are already out of date. The Executive is currently discussing the necessary changes with the Department.

3.2.2 Also of importance, particularly to potential Amateurs, is the matter of non-examinable sections of the Handbook. I am pleased to report that this aspect is also near to finalisation and details should be available soon, perhaps in time for this Convention.

3.3 *Third Party Traffic.* During the opening address for the 1980 Remembrance Day Contest, the previous Minister for Posts and Telecommunications, Mr. Staley, announced the lifting of Third Party restrictions for communications within Australia.

3.3.1 Reciprocal agreements with other countries have been followed up and during February the Department advised the Institute that an agreement had been reached with Canada. It is hoped that the USA will follow soon, together with other countries, including Brazil. This will assist with the Sydney-Rio Yacht Race In 1982.

Miscellaneous

A number of miscellaneous issues were finalised during the year.

3.4 *WIA to WIZ Call Signs.* This suffix block is now held in reserve for WIA official stations.

3.5 *Identification Intervals.* Now administratively clarified at 10 minutes.

3.6 *F5.* Is now permitted for trial period on 23 cm (other higher bands currently under negotiation).

3.7 *Over the Counter Licensing.* Is gradually being introduced to State offices of the Department.

3.8 *Beacon Conditions* were finalised.

3.9 *NBVM* transmissions by Amateurs now approved.

3.10 *Joint Committee (DOC/WIA)* established in most States.

3.11 *Portable Repeaters* for WICEN activities approved (2m and 70 cm band).

3.12 *Equipment Specification* for transmitters are no longer required by DOC with initial licence applications.

Outstanding Issues (which are hopeful of early agreement)

3.13 *Special Prefixes* for national anniversaries, special events, etc.

3.14 *Ten words per minute permanency* for Novices wishing to upgrade to full calls (possibly two year period).

3.15 *F5 on bands above 23 cm.*

3.16 *Log keeping* — removal of mandatory requirements.

3.17 *Intruders;* increase in DOC interest and involvement.

3.18 *Reciprocal Licensing* with other countries.

3.19 *50-50.15 MHz window* on a non-interference basis to be made available.

3.20 *Examination Statistics* as an aid to class instructors.

3.21 *WICEN Call Signs,* special call signs (perhaps abbreviated version of existing call signs) for WICEN activities.

3.22 *"C" Calls.* DOC has raised the question of need for retention as originally envisaged.

3.23 Details of discussions with DOC Central Office are Included in the notes of meetings already circulated to Divisions following each meeting.

4. FORMAL SUBMISSIONS

A number of formal submissions were made on behalf of the Amateur Service to various Government Departments during the year.

4.1 Submission for the review of the Citizens Band Radio Service policy was made in August 1980 to the DOC.

4.2 A short submission relating to cable and subscription television services made in October 1980 to the Australian Broadcasting Tribunal.

4.3 Comment on the draft table of frequency allocations in January 1981 to the DOC.

4.4 Comments on the proposed Radio Communications Act made in January 1981 to the DOC.

4.5 Needless to say, the preparation of these types of submissions requires considerable effort and time. Michael Owen again (or should I say still) carried much of the workload for which I and the Executive are extremely grateful.

4.6 However, we are not grateful for the short lead times which were allowed by Government Departments for the preparation of the necessary submissions — this is especially the case with the time allowed by the DOC for submissions relating to the draft frequency table and the new Radio Communications Act. The Christmas-New Year break was disrupted for a number of the Institute's officers by the need to prepare these two major and far-reaching submissions.

> Draft Frequency Table was released for comment 2nd December, 1980 — submissions required by DOC by 16th February, 1981;
>
> Radio Communications Act made available first week of January, 1981 — comments required by 31st January, 1981!

The time allowed for the submission on the new Act was particularly short and for such an important matter is viewed with abhorrence.

4.7 Although not a formal submission as such, the institute sent a telex to the Minister (P & T) regarding an amendment to the Wireless Telegraphy Act. Our concern was with legal custody and disposal of equipment forfeited under Section 7 of the Wireless Telegraphy Act.

5. DIRECT MEMBERSHIP SERVICES

5.1 *Amateur Radio Magazine.* The Publications Committee Report deals with this matter in detail. However, it is significant that during the year publishing costs were contained even In the ambiance of constrained commercial advertising. This, however, did not unduly affect overall quality of our journal and our thanks go to all concerned on the publications side.

5.2 *Call Book.* The 1980 Call Book, intended to be an interim issue between the usual publications each second year, was well purchased by members and others. Finacially, its publication was a success, however some criticism was received because the issue did not contain all updated

information published in earlier issues — although it was not intended that it should.

5.3 *Magpubs.* As agreed at the last Convention, this service is no longer handling subscriptions to overseas magazines with the exception of the NZART, "Break In" and "VHF Communications". This has relieved the office staff of frustrating, time-wasting and unprofitable duties. The sale of books, however, continues and provides Divisions with an additional source of income.

5.4 *Additional Badge.* After a number of years of discussion our Institute now has an internationally recognisable badge — the diamond — which has been well received to date. As Councillors are aware this badge *does not* supersede our traditional one, but will be of great assistance to Amateurs travelling overseas.

5.5 *Video Tape Library.* This service continues to grow and is a good example of a decentralised Federal activity. We thank John Ingham VK5KG for his efforts in this area, and he can be assured that this service is very well received by Amateurs generally.

5.6 *Broadcast Tapes.* These tapes, recorded by Bill Roper and Ron Fisher, and scripted by the office, usually in conjunction with the Federal President or another appropriate Institute officer, continue to serve a worthwhile function. During the year an experiment was tried with a number of shorter items, which could be broadcast at random. Feedback from Divisions on this approach and the subject of broadcast tapes generally would be appreciated. It would appear that the Federal tape service is still required based on the few comments received from the general membership.

5.7 *EMC and Interference.* At long last with the help of VK3 Division, this vacancy has now been filled. Tony Tregale VK3QQ has already made himself known to Divisional Presidents and other office-bearers of the Institute, together with many of the country's Radio Clubs. He has established a small Committee and already collected much information relating to interference from both local and overseas sources.

The activities of the Co-ordinator and his team will in time be of great assistance to Amateurs in their "hour of need", as well as assisting Council and Executive.

6. SPECIALIST AND ADVISORY COMMITTEES

Details of the activities of these Committees are included in their Annual Reports. However, a few points are worth noting.

6.1 *Intruder Watch.* Since the receipt of the Intruder Watch Co-ordinator's Report 81.04.04, Graem Fuller VK3NXI has indicated that he is prepared to continue as Federal IW Co-ordinator, although presently he will not be able to devote his full time to this activity. Alf Chandler VK3LC has offered to assist in the operation of IW nets and activities in the interim, as well as continuing as Region 3 Co-ordinator. This aspect of our Institute's activity is very important.

6.2 We are hopeful that the DOC will be able to co-operate more fully in this matter in the near future, so it is important that the WIA does not falter now.

6.3 At the Region 3 IARU Directors' Meeting held last June the following decision was taken — "that the Intruder Watch was a worthwhile activity and that whilst there were many problems in establishing and running the service, the Association should persevere" — so should the WIA!

6.4 *VHFAC.* During the year Keith Malcolm VK3ZYK had to resign his position as Chairman, and Bill Rice VK3ABP, a foundation member of this Committee, took over as Chairman. This Committee continues to act as an important advisor to the Executive.

6.5 *Project Assert.* A worthwhile activity about to founder because of lack of suitable personnel. Monitoring stations continue to gather data, however a good adminisrator is required to act as Co-ordinator. Approaches have been made to various individuals and Divisions, but so far to no avail. This is another Committee which could operate quite successfully interstate.

6.6 *Non-Ionising Radiation Hazards.* Jim Lloyd VK1CDR continues to represent and inform the Institute in this area.

6.7 *Federal Repeater Committee.* Ken Seddon VK3ACS, Chairman, is presently overseas and we are pleased that Peter Mill VK3ZPP, a long-time member of the Committee, volunteered to act as Chairman in Ken's absence.

6.8 As mentioned previously, the details of the various Committees' activities including those not mentioned in this Report of the Executive are contained in their own Reports to this Convention, however I would like to take the opportunity on behalf of the Executive to thank all of those involved in these very important areas of the Institute's activities, and in particular thanks go to the various people involved in sub-committees located away from Melbourne.

7. IARU AND WARC 79

IARU. David Wardlaw VK3ADW and Michael Owen VK3K1 continue to act as our IARU liaison officers. Details of their activities and those of the IARU can be found in the IARU Report.

Some important issues worth focussing on are:—

1. The possible restructuring of the IARU.
2. The next Region 3 Conference, scheduled for April 1982, to be held in the Philippines.
3. During the year Michael Owen, on a private visit to Japan, was able to discuss repeater conditions and reciprocal licensing details amongst other things with the JARL.
4. The Institute has accepted an invitation to attend the 1981 NZART Conference.

7.1 *WARC 79.* Both David Wardlaw VK3ADW and Michael Owen VK3KI continued handling the important matters arising from WARC 79. During the past year they attended a number of meetings, the culmination of which was the release by the Government of the Draft Table of Frequency Allocations.

7.2 As widely reported in Amateur Radio and on the broadcasts, the Institute prepared and submitted its response to the Draft.

7.3 Individual members were also encouraged to respond to the Draft via a proforma included with February AR.

7.4 Both David and Michael deserve a special vote of thanks for the considerable effort they continue to put into this important matter.

7.5 Work towards the allocation of the new bands at 10, 18 and 24 MHz is proceeding and it is hoped that this subject, and the latest situation, will be discussed at the Convention.

8. MISCELLANEOUS

This section deals with a number of unrelated subjects but nonetheless Important, particularly to the future of Amateur Radio in this country.

8.1 *Channel 0, 5A and UHF.* The same problems as have been discussed at many Conventions still exist In the Channel 0/Channel 5A area. Suffice to say that whenever the opporunity presents itself to point out to the authorities the views of the Amateur Service, this Is done. Both of these channels continue to be used for the broadcasting service.

8.2 Perhaps the only "high point" during the year was the Introduction of UHF television broadcasting in both Sydney and Melbourne, with its obvious advantages to both the general public and the Amateur Service. Un-

fortunately, there appears to be little being done, even by Amateurs, to convince John Citizen that there are advantages In using UHF.

8.3 *Education.* We should be responsive to the need for Amateurs to upgrade themselves, especially those wishing to move from the Novice ranks into those of the limited and/or full call.

8.4 Greater assistance to Amateur bodies in Region 3 is worthy of consideration. We have occasionally provided reference material (books, etc.) to groups of Amateurs, particularly in low income countries. WIA video tapes have been forwarded by our video tape Co-ordinator to Clubs in the Solomon Islands and Vanuatu.

8.5 Our magazine, Amateur Radio, is sent to all sister societies in Region 3, but perhaps it would be to Amateur Radio's long term interest if clubs in some of the poorer countries within Region 3 were supported, perhaps by "sister clubs" in Australia, i.e. an Australian Club adopting a similar Club in one of these countries. There would, however, be a number of major problems associated with the co-ordination of such an activity.

8.6 *Wilful Interference.* It was reliably reported during the year that some Amateurs were causing wilful interference to other services.

8.7 Individuals should consider the implications very carefully before setting themselves up as judge and jury, particularly on emotional issues such as Channel 0 and Channel 5A.

8.8 Not only is their reputation at stake, but so is the entire Amateur Service — bad publicity we can do without!

8.9 *Administrative Involvement.* Volunteer labour is becoming harder to find. We are *all* entering an era of change in the administration of our Institute. This is presently most noticeable In the publication of our journal, Amateur Radio, where paid staff now carry out the production functions of the magazine. Some years ago this was entirely done by volunteer workers.

8.10 Members expect their money's worth these days. They expect prompt replies to their queries and they expect the Institute to operate in a professional manner. This requires *people* and expertise.

8.11 I sense that many volunteers within the Federal systems, and I include those that make up the many subcommittees, are getting tired, particularly here in VK3. The mushrooming of Radio Clubs, especially in the major centres such as Sydney and Melbourne, has meant that those who do have administrative abilities and interests are already deeply involved in running *their* Club.

8.12 In some States, Divisional Councils are having difficulties in finding interested Amateurs to become involved In Council affairs or even finding sufficient members to make a quorum. The causes are many, but the effect Is the same. We, within the Institute, no longer have a choice but, by necessity, take whoever shows the slightest interest in the administrative side of Amateur Radio. And when this lack of suitable "labour" is coupled with unnecessary duplications, as so often happens, there Is a very real risk that "the willing horse will be flogged to death"!

Recruiting

8.13 In Section 1 reference was made to the declining rate of Increase in new members. Reference was also made to the necessity to continue recruiting.

8.14 During 1980 $1500 was spent on membership recruiting. For this year (1981) $3000 has been allocated.

8.15 Most of our expenditure in this area has been in advertisements —ARA, CBA, etc. Such advertisements still appear worthwhile — but only just, and it is expected that their worth will diminish with the decline in new licensees.

8.16 A direct approach to new licensees is worthy of consideration. In the past some Divisions have done this independently but perhaps a co-ordinated central aproach may be better.

9. EXECUTIVE

9.1 The Executive for 1980/81 was elected as follows:—

Peter Wolfenden VK3KAU
President, Chairman

Ken Seddon VK3ACS
Vice Chairman, Chairman Repeater Sub-Committee

Courtney Scott VK3BNG
Hon. Treasurer, Chairman Finance Sub-Committee

Bruce Bathols VK3UV
Editor Amateur Radio

Harold Hepburn VK3AFQ
DOC Negotiator

Bill Roper VK3ARZ

9.2 Whilst not members of the Executive, David Wardlaw VK3ADW (Immediate Past President) and Michael Owen VK3KI attended Executive Meetings and were of great assistance during the year.

9.3 Those who attended Executive Meetings are listed in Appendix 2.

9.4 Also sharing the workload with the Executive were the Federal Officers:

IARU R3 Liaison Officers
Mr. M. J. Owen VK3KI and
Dr. D. A. Wardlaw VK3ADW

Satellites and Spec. Projects Co-ord.
Mr. R. C. Arnold VK3ZBB

Federal Intruder Watch Co-ord.
Mr. G. Fuller VK3NXI

Ch. Fed. Repeater Sub-Comm.
Mr. K. C. Seddon K3ACS

Federal Education Co-ord.
Mr. R. E. Hartkopf VK3AOH

Federal Historical Officer
Mr. G. M. Hull VK3ZS

Federal Contest Manager
Mr. W. A. Watkins VK2DEW

(VK/ZL/O Contest Manager)
Mr. N. E. Penfold VK6NE

Federal QSL Manager
Mr. N. E. Penfold VK6NE

Federal Awards Manager
Mr. W. D. Verrall VK5WV

Ch. VHF/UHF Advisory Comm.
Mr. K. G. Malcolm VK3ZYK

Federal EMC Co-ord.
Mr. A. Tregale VK3QQ

Federal WICEN Co-ord.
Mr. R. G. Henderson VK1RH

Federal Videotape Co-ord.
Mr. J. F. Ingham VK5KG

Ch. Federal Finance Sub-Committee and Hon. Federal Treasurer
Mr. C. D. H. Scott VK3BNG

10. OFFICE AND STAFF

10.1 Details of this aspect of the Institute's operation can be found In the Secretary's Report. However, a few important events during the year were:—

The resignation of Mr. Mark Stephenson VK3NOY (VK3PI), and the subsequent appointment of Mr. Bill Baly for AR production work;

The resignation of Mrs. Joan Seddon and the subsequent appointment of Mrs. Ann McCurdy;

The purchase of a new photocopying machine;

The purchase of some additional office furniture.

10.2 In the operation of an organisation such as ours, it Is essential that we have a nucleus for everyday business activities. Because of the present structure of the Institute and because we rely heavily on so many volunteers right across Australia, we need an efficient and responsive office — for without it the Institute would soon be in difficulties.

10.3 I would like to personally thank our four hard-working employees, and also of course, the two who resigned earlier this year, who have all been of great assistance not only to me personally but to all associated with the administrative aspects of Amateur Radio In this country.

10.4 Present office staff are:—

Mr. P. B. Dodd, Secretary/Manager.
Mr. L. G. Baly, AR Production.
Mr. C. W. Perry, Membership Records/EDP.
Mrs. A. McCurdy, Secretarial and general duties.

In conclusion I would like to thank all officers of the Institute who gave so readily of their time. I would also like to thank those many individual amateurs who went out of their way to assist or advise in the running of the Institute and through it Amateur Radio in this country.

Personally, I have found the task of being Federal President somewhat demanding, however I believe that the flurry of activity this year has produced some worthwhile results, particularly in the DOC area. Also some foundation stones — let's hope firm ones — have been laid in other areas for the future.

(Sgd.) P. A. WOLFENDEN VK3KAU
Federal President.

APPENDIX 1

Membership Statistics. These have been compiled on the seme basis as in previous years. It should be noted that DOC statistics refer to licences issued, whereas WIA statistics reter to the number ol individual amateurs. All statistics are for 31st December, 1980 (previous year in brackets, same date).

TABLE 1

	Total Licences	WIA Licensees	% members to total licensees	Other WIA members	Total WIA members
VK1	308 (280)	160 (157)	52 (56)	39 (60)	199 (217)
VK2	4606 (4091)	1905 (1841)	40 (45)	198 (246)	2103 (2087)
VK3	4292 (3639)	1995 (1747)	46 (48)	321 (367)	2316 (2114)
VK4	2129 (1726)	1043 (944)	49 (55)	137 (159)	1180 (1103)
VK5/8	1809 (1528)	963 (854)	53 (56)	160 (226)	1123 (1080)
VK6	1088 (914)	552 (488)	51 (53)	97 (107)	649 (595)
VK7	436 (384)	254 (256)	58 (67)	55 (62)	309 (318)
Other	38 (34)	— (—)	46 (50)	1007 (1227)	7879 (7514)
Totals	14906 (12596)	6872 (6287)	— (—)	— (—)	— (—)

Note: To the above may be added 91 licensed and 12 unlicensed clubs = 103 clubs in EDP records (not regarded as members this year) — affects % by 1% only.

TABLE 2. % increases/decreases:

	DOC Licences %	WIA Licensees %	Total WIA Members %
VK1	+ 10	+ 2	— 8
VK2	17	3	+ 1
VK3	18	14	+ 10
VK4	23	10	+ 7
VK5	18	13	+ 4
VK6	19	13	+ 9
VK7	14	0	— 3
Total	+ 18	+ 9	+ 5

TABLE 3. Numbers of WIA members holding double calls (nominal):

VK1	7
VK2	136
VK3	126
VK4	97
VK5	40
VK6	26
VK7	14
	446

6872 + 446 = 7318
446 = 6.5% of 6872
+ 6.1% of 7318
6.1% of 14906 = 909
14906 — 909 = 13997
6872 = 49% of 13997

TABLE 4. Total licences by grades and growth rates (%):

	Full	%	Limited	%	Novice	%	Total
VK1	176 (171)	3	48 (45)	7	84 (14)	31	308 (280)
VK2	2398 (2129)	13	1104 (943)	17	1304 (1019)	28	4806 (4091)
VK3	1919 (1630)	18	1278 (1132)	13	1095 (877)	25	4292 (3639)
VK4	827 (741)	12	586 (459)	28	716 (526)	36	2129 (1726)
VK5/8	840 (729)	15	380 (369)	3	569 (430)	37	1809 (1528)
VK6	556 (496)	12	272 (224)	21	260 (194)	34	1088 (914)
VK7	222 (198)	12	114 (100)	14	100 (86)	16	436 (384)
Other	—		—		—		38 (34)
Totals	6938 (6126)	+13	3762 (3273)	+16	4148 (3197)	+30	14906 (12596)

TABLE 5. WIA members by grade:

	F/C	A/T	S (Student)	G (Pens.)	L (Life)	X (Fam.)	Clubs
VK1	157	39	—	—	1	1	3
VK2	1668	173	47	168	12	35	21
VK3	1675	269	172	161	7	23	28
VK4	965	126	4	55	5	25	28
VK5	855	132	27	86	4	19	12
VK6	497	82	22	39	5	4	11
VK7	230	47	4	15	6	7	—
	6047	868	276	524	40	114	103
Federal	—	—	—	—	10	—	—
	6047	868	276	524	50	114	Total 7879

Note: 240 S grade, 446 G grade, 45 L grade and 94 X (Family) grade hold licences analysed as follows:

	S	G	L	X (Family)	Total	Clubs
VK1	—	—	1	1	2	3
VK2	45	149	11	32	237	19
VK3	157	132	6	17	312	24
VK4	2	48	4	24	78	25
VK5	18	74	4	12	108	11
VK6	16	31	5	3	55	9
VK7	2	12	5	5	24	—
Federal	—	—	9	—	9	—
			45	94	825	91

APPENDIX 2.

Attendance at Executive Meetings (excluding Meeting on 23rd Apjril, 1981).

	Attended	Maximum
Mr. P. Wolfenden	13	13
Mr. B. Bathols	*2	13
Mr. H. Hepburn	6 + 1 (apptd. 3/80-81)	11
Mr. C. Scott	13	13
Mr. K. Seddon	11	11
Mr. M. Owen	2	—
Dr. D. Wardlaw	7	—

Also attendad: Messrs. L. G. Baly 6/7, P. B. Dodd 13/13, R. Hartkopl 1, K. Malcolm 1, A. Noble 1, T. Pitman 3, W. Rice 1, M. Stephenson 2, A. Tregale 1.

THE WIRELESS INSTITUE OF AUSTRALIA
A COMPANY LIMITED BY GUARANTEE
INCORPORATED IN VICTORIA UNDER THE COMPANIES ACT, 1961

In accordance with the Companies Act, 1961, the Executive state the following:—

(e) The names of the Executives in office at the date of this report are:—

P. A. Wolfenden	VK3ZPA
K. C. Seddon	VK3ACS
C. D. H. Scott	VK3BNG
H. L. Hepburn	VK3AFQ
B. R. Bathols	VK3UV
W. J. Roper	VK3ARZ

(b) The principal activity of the Wireless Institute of Australia is to:—

1. Represent generally the views of persons connected with Amateur Radio in the Commonwealth of Australia, its territories and dependencies.
2. Promote the co-operation between the Divisions in the encouragement and development of amateur radio.
3. Safeguard the interest of the Divisions and the members in relation to frequency allocations, rights and privileges.
4. Promote the development progress and advancement of amateur radio in all matters in relation to amateur radio in general.

(c) The surplus of income over expenditure for the year ended 31st December, 1980, was $271 compared with $4,734 for 1979. There is no provision for income tax required as the Company is exempt under Section 103A(2) of the Income Tax Assessment Act.

(d) During the year provisions were increased:—

1. Provision for holiday and long service leave was increased by $7,306 to $12,498.
2. Provision for Superannuation — Increased by $1,000 to $6,879.

(e) The Executive has taken reasonable steps, before the Statement of Income and Expenditure and Balance Sheet were made out, to ascertain that action had been taken in relation to the writing off of bad debts and making of provision for doubtful debts and to cause all known bad debts to be written off and adequate provision to be made for doubtful debts.

(f) At the date of this report the Executive is not aware of any circumstances which would render the amount written off for bad debts, or the amount of the provision for doubtful debts, inadequate to any substantial extent.

(g) At the date of this report the Executive is not aware of any circumstances which would render the values attributed to current assets in the accounts misleading.

(h) At the date of this report no charges exist on the assets of the Institute which have arisen since the end of the financial year and does not secure the liabilities of any other person.

(i) There does not exist any contingent liability which has arisen since the end of the financial year.

(j) No contingent liability or any other liability has become enforceable within the period of twelve months after the end of the financial year which in the opinion of the Executive will or may effect the ability of the Institute to meet its obligations when they fall due.

(k) Since the end of the previous financial year the Executive has not received or become entitled to receive a benefit by reason of a contract made by the Institute or a related corporation with the Executive or with firms of which its members are also members or with companies in which members have substantial financial interests.

(l) The results of the Institute's operations during the financial year were in the opinion of the Executive not substantially affected by any item, transaction or event of a material and unusual nature. There has not arisen in the interval between the end of the financial year and the date of the report any item, transaction or event of a material and unusual nature likely in the opinion of the Executive, to affect substantially the results of the Institute's operations for the next succeeding financial year.

Dated at Melbourne this 9th day of April, 1981.

MEMBERS OF THE EXECUTIVE

(Sgd.) C. D. H. SCOTT
(Sgd.) B. R. BATHOLS

STATEMENT OF INCOME AND EXPENDITURE FOR YEAR ENDED 31st DECEMBER, 1980

	1980	1979
Income:		
Members' Subscriptions	$112,731	$97,098
Interest Received	7,654	5,138
Surplus — Magpubs/Book Sales	9,963	20,743
Donations — WARC/Other	261	81
Expenditure:		
Amateur Radio (Note 1)	63,237	58,517
Audit Fees — 1978	—	578
— 1979	(82)	700
— 1980	600	—
Award Payments	200	—
Bank Charges	10	381
Committee Expenses	261	1,011
Convention Expenses	5,529	4,330
Depreciation	552	534
Electricity	564	524
ELP Expenses	4,000	3,300
General Expenses	130	749
Holiday Pay and Long Service Leave Provision	7,306	1,692
Insurance	703	757
Licences and Fees	220	—
Membership Recruiting	1,477	3,023
Postage and Freight	3,895	4,205
Printing and Stationery	4,061	2,789
Rent and Rates	4,143	3,317
Repairs and Maintenance	174	228
Satellites and Special Projects	189	—
Salaries and Secretarial	30,234	29,658
Superannuation	1,000	1,000
Telephone	936	851
Travelling Expenses	999	182
	130,338	118,326
Net Surplus	271	4,734
Accumulated Funds Brought Forward	37,834	33,100
Accumulated Funds Carried Forward	$38,105	$37,834

BALANCE SHEET AS AT 31st DECEMBER, 1980

		1980	1979
Members' Funds:			
Accumulated Funds	$38,105		$37,834
Add ITU/WARC	533		533
IARU (Note 2)	1,029		533
		$39,667	
			$38,367
Special Fund — Ron Wilkinson Achievement Award (Note 3)		1,273	1,213
		$40,940	$40,422
Represented by:—			
Current Assets:			
Cash on Hand		$115	—
Commonwealth Trading Bank		4,895	$14,521
Commonwealth Savings Investments		—	2,104
Australian Savings Bonds		10,000	42,100
Australian Resources Development Bank		8,000	2,200
R.E.S.I. Building Society		40,223	—
Sundry Debtors — Less Provision for Doubtful Debts ($2,000)		17,413	18,264
Stock on Hand — At Cost		7,757	4,714
		88,403	83,903
Non-Current Assets:			
Furniture and Fittings — At Cost Less Provision for Depreciation ($1,426)		2,207	1,798
		90,610	85,701
Deduct Current Liabilities:			
Sundry Creditors		6,590	1,603
Subscriptions in Advance		20,431	25,833
Provisions —			
Superannuation		6,879	5,879
Amateur Satellites		2,972	2,972
Holiday and Long Service Leave		12,498	5,192
Deposit VK4		300	300
Dick Smith Education Fund		—	3,500
		49,670	45,279
		$40,940	$40,422

NOTES TO AND FORMING PART OF THE ACCOUNTS

AMATEUR RADIO (Note 1)

	1980	1979
Income:		
Advertising	$24,519	$32,198
Subscriptions and Sales	2,421	1,719
Inserts and Sundries	1,896	2,946
	$28,836	$36,863
Expenditure:		
Awards	90	90
Debt Collection	297	—
Postage	15,252	13,555
Honoraria	—	4,400
Publishing Costs	61,411	68,095
Salaries	14,118	7,941
Travelling Expenses	905	1,299
	$92,073	$95,380
Excess Expenditure Transferred to General Account Representing Cost of AR to Members	$63,237	$58,517

IARU FUND (Note 2)

Balance Brought Forward		$842	$390
Add Members' Contributions		1,450	1,145
		2,292	1,535
Less Donation to IARU	$500		
Expenditure	763		693
		1,263	
Balance Carried Forward		$1,029	$842

RON WILKINSON ACHIEVEMENT AWARD (Note 3)

Balance Brought Forward		$1,213	$1,153
Add Interest		110	110
		1,323	1,263
Less Award Payment		50	50
		$1,273	$1,213

AUDITORS' REPORT TO THE MEMBERS OF THE WIRELESS INSTITUTE OF AUSTRALIA

1. In our opinion, the accompanying accounts, which have been prepared under the historical cost convention, are properly drawn up in accordance with the provisions of the Companies Act and so as to give a true and fair view of —
   (a) 1. The results of the Institute for the year ended 31st December, 1980, and the state of its affairs at that date.
   2. The matters required by the Companies Act to be dealt with in the accounts.
   (b) The accounting records and other records and registers, required by the Act to be kept by the Company, have been properly kept in accordance with the provisions of that Act.

HEBARD & GUNNING, Chartered Accountants.
Melbourne (Sgd.) P. W. HEBARD,
9th April, 1981. Partner.

THE WIRELESS INSTITUTE OF AUSTRALIA EXECUTIVE STATEMENT

In our opinion

(a) The Statement of Income and Expenditure is drawn up so as to give a true and fair view of the surplus of the Institute for the financial year ended 31st December, 1980.

(b) The Balance Sheet is drawn up so as to give a true and fair view of the state of affairs of the Institute as at the end of the financial year.

MEMBERS OF THE EXECUTIVE
(Sgd.) C. D. H. SCOTT
(Sgd.) B. R. BATHOLS

STATEMENT OF PRINCIPAL ACCOUNTING OFFICER

To the best of my knowledge and belief the accounts for the year ended 31st December, 1980, give a true and fair view of the matters contained in Section 162 of the Companies Act, 1961, and required to be dealt with in the accounts as presented.

PRINCIPAL ACCOUNTING OFFICER
(Sgd.) P. B. DODD

Home-Brewer's Linear Amplifier

for the 3.5, 7.0, 14, 21 and 28 MHz Bands

Drew Diamond VK3XU 43 Boyana Crescent, Croydon 3136

INTRODUCTION

There are many transceivers and transmitters in use today which deliver 2 to 10W CW and perhaps 30W PEP for SSB such as the popular FT7. The users of such equipment often require more power in order to compete with the many powerful stations and during periods when propagation conditions are very poor. Newly qualified full-call operators may wish to take advantage of the higher power privilege without going to the expense o fobtaining a new transceiver.

A linear amplifier lends itself very well to home construction, as the only test gear required is a multimeter, two SWR meters, a dummy load and perhaps an oscilloscope should it be necessary.

The choice today lies with modern solid-state devices, or a traditional electron-tube design. At present the cost of each is about the same in terms of dollars per watt economics. However many of the components required for a tube amplifier can be gathered at little or not cost, depending upon the resources of the builder. For instance, the power transformer and many other components can be salvaged from an old black and white TV set.

Some advantages of a tube amplifier over a solid-state design are:

- Cheaper, depending upon resources. Helps recycle old parts.
- May be used with loads which depart substantially from 50 ohms.
- Tubes will withstand maltreatment more readily than transistors.
- all the parts are relatively easy to obtain.

And some disadvantages of a tube amplifier are:

- Dangerous voltages are used with tubes.
- Tune-up is required for each band change.
- Replacement tubes may be difficult to obtain in five to ten years.

The amplifier to be described covers the 3.5, 7.0, 14, 21 and 28 MHz bands. Power output is about 100W, 160W PEP for 2W input. Input SWR is less than 1.5 on every band. Two-tone third-order intermod distortion is in the order of —30 dB.

CIRCUIT DESCRIPTION

A pair of 6146 tetrodes are used in parallel. These tubes were chosen for their ruggedness, electrical characteristics and general availability. Cost per tube is around $13 at present.

The input signal is matched to a 1.5k resistor via a 50 ohm to 1.5k ohm pi matching network for each band. By stepping up the impedance in this manner, it becomes possible to fully drive the amplifier with a relatively small signal. The input capacitance of the tubes, strays and coax all become part of the right-hand side of the network. Selectivity is improved too, so that any out-of-band spurii are attenuated before being presented to the tubes for amplification. Neutralisation is unnecessary due to the swamping effect of the 1.5k terminating resistor.

The tubes are operated in class AB1. Bias is applied to the grids via the terminating resistor. The grid circuit is metered so that any grid current due to overdriving can be detected. The screen grids are held at +210V for correct linear operation. Two 105V regulator tubes in series are used to establish this voltage.

The plates are fed with HT via plate choke L6 which has an inductance of 95 uH and is series resonant at 25 MHz, thus presenting a high impedance at all frequencies used. Parasitic suppressors Z1, Z2 and the 10 ohm grid resistors discourage VHF oscillation. The plate impedance is matched to the output via a band switched pi coupler to a nominal load of 50 ohms. L8 provides a DC ground should the plate blocking capacitor fail. The 0.3A fuse will blow under this fault condition.

Plate supply of about +650V is obtained from a full-wave rectifier comprising three series 1 kV diodes in each arm. Resistors of 470k across each diode force an equal voltage distribution during reverse cycles. The CR network across the 500V winding provides transient protection for the diodes. Screen voltage is obtained from the CT of T1. The 5V and 6.3V windings are connected in series and rectified to supply about +13V for the relays A-F.

Relays A-E switch in the input network appropriate to the selected band. A spare set of contacts on the bandswitch (S2a) achieves this. Changeover relay R routes incoming signals around the amplifier during the receive mode of transceiver operation.

Bias potential is obtained from a full-wave bridge on the 240V (now 100V) winding of T2 connected back to front and powered from the 5V winding of T1. The 10k WW potentiometer taps off about —50V for grid bias.

The meter circuit is in fact a 20k ohm/volt voltmeter with 1V sensitivity. With S3 in the grid current position, the meter reads 5 mA full-scale (no grid current should flow for AB1). Cathode current (plate plus screen, but labelled plate) is measured in the second position.

CONSTRUCTION HINTS

Anyone building this amplifier should be experienced in constructing high-power/high-voltage equipment. Less experienced builders should only attempt a project of this kind under the guidance of someone well versed in high-voltage work. The need for care cannot be overstressed as the voltages used in this amplifier *can kill* or at best cause painful burns.

The prototype is housed in a commercially available enclosure measuring 29 cm W, 15 cm H and 29 cm D, and has a removable top cover.

All components associated with the input are separated from the output by a partitioning shield. Conductors which must pass through the shield should be bypassed. The five feedthrough capacitors for the input relay conductors may be soldered to a square piece of double-sided PCB.

The conductor carrying the plate supply should pass through a feedthrough insulator or grommet and have a bypass close to the shield. The inner conductor from a length of RG58 coax may be used for high voltage wiring. Keep the braid and use it to connect the various components in the

General View

output network as shown in the photo. If the amplifier is to be housed in an anodised case, such as the one used for the prototype, the ground connections for the output components should all be connected together using braid.

The 6146 sockets should have a solder lug under each mounting nut so that bypass capacitors for cathodes and screens may be mounted close to the tube pins for best effectiveness. The 10 ohm resistors in the screens and grids should also be placed close to the sockets with minimum lead length.

Two or three layers of insulating tape should be wrapped around the 200 uF filter capacitors where they are fixed in their clamps in order to prevent voltage breakdown.

A dozen holes of 1 cm diameter must be made in the enclosure above and below the 6146s so that they may be cooled by convection. There is room for a small blower if continuous (RTTY) operation is planned. A path for convected air through the input side of the shield should also be provided for cooling transformers, diodes and resistors.

Power transformer T1 may be salvaged from an old B and W TV set which employs a 5U4 or 5AS4 type rectifier. Such a transformer should have the necessary windings and capacity for the project. When the transformer has been removed from the set locate the primary (240V) winding. It will probably have taps for 220, 230, 240 and 250V. Use the 250V tap. A multimeter with a x1 ohms range can be used to locate these. Some typical winding resistances are shown on the circuit. The 5V and 6.3V windings will probably have wires of 18 or 16 gauge covered with plastic tube. The HV winding should have red covered wires with a black centre top (CT). Check with a multimeter for about 40 ohms from red to red and 20 ohms from any red to black.

Test the transformer by applying 240V AC to the primary and no loads on the secondaries (keep hands off the powered transformer). The unloaded transformer should only be warm after some hours operation. If it gets too hot to tuoch it is probably faulty.

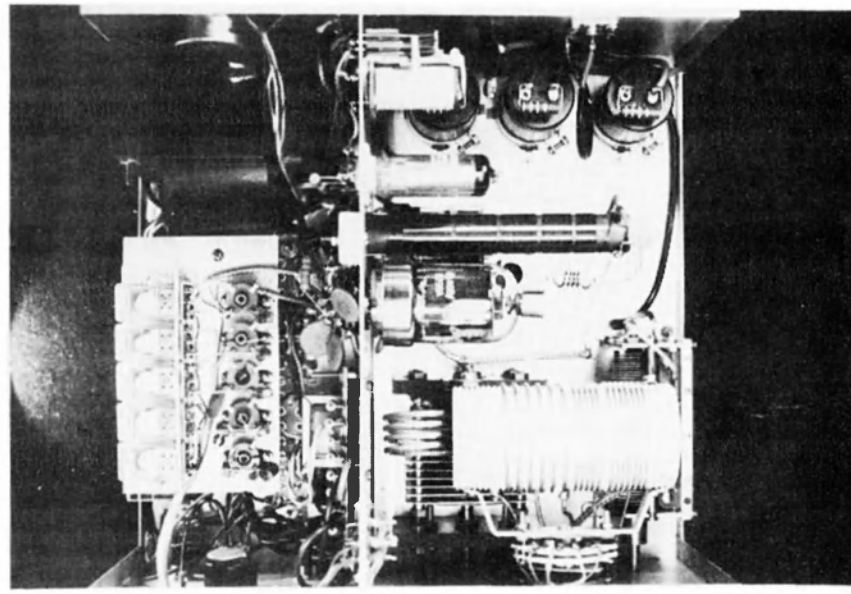
Voltages may be checked by connecting a multimeter to the various secondary windings. Remember to remove the primary power when changing connections! When the 5V and 6.3V windings have been located, connect one lead of the 6.3V pair to one of the 5V. Measure the total voltage; if it reads about 1.3 choose another lead and check again. It should read about 11.3 when the phasing is correct.

The 6146 plate connecting caps may be fabricated from 20 gauge brass sheet, cut to size and formed by wrapping it round the shank of a 1 cm twist drill. Parasitic suppressors Z1 and Z2 consist of three turns of 18 B and S wire wound on a 47 ohm 2W carbon resistor. They should be soldered to the plate caps with minimum lead length.

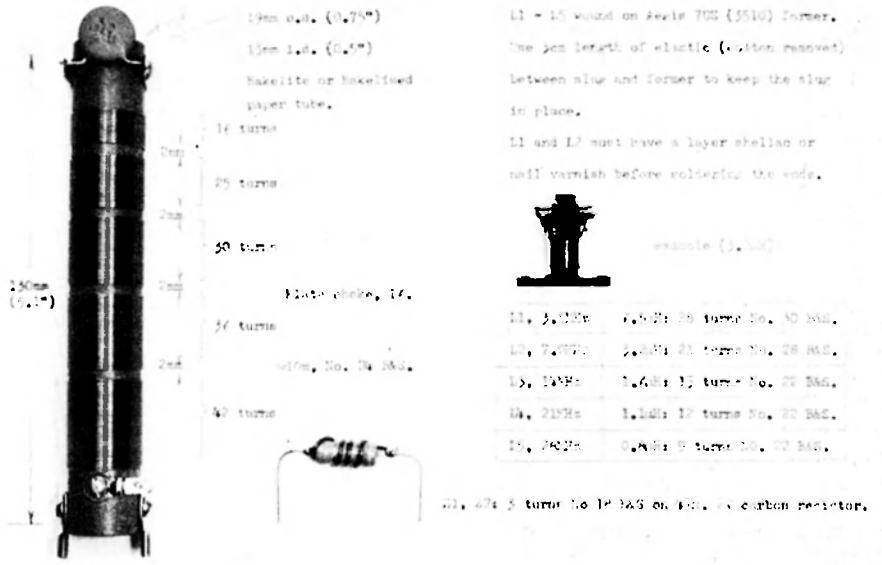
The capacitors used on the input (50 ohm) side of the input networks may be ceramic, styroseal (poly) or silver mica types with voltage ratings greater than 150V. Similar capacitors should be used on the 1.5k side with ratings of at least 300V. All bypass and blocking capacitors should be disc ceramic or mica with voltage ratings as indicated on the circuit.

The 250 pH variable capacitor in the output network may be difficult to obtain. Emtronics of Sydney can supply 3.5 kV units although this voltage rating is in excess of that actually required as a 1 kV unit will do the job. The loading capacitor consists of a three gang 415 pF per section broadcast capacitor. Watkin Wynne of Sydney can supply these. L7, the band-switched output coil, is a ready-made unit, and may be obtained from William Willis & Co. Pty. Ltd. in Melbourne (see ads in AR).

A 240V to 12V 150 mA transformer is used at T2. The turns ratio is 20 : 1, so



Top View



Coil Details

with 5V applied to the 12V winding, 100V will be obtained from the 240V winding.

All resistors should be carbon except the two wire-wound resistors which feed the regulated screen supply. These resistors may be heat-sunk to the shield as shown in the photo in order to disperse the heat that they produce.

OPERATION

After wiring checkout, switch the amplifier on with the output tubes removed. Carefully measure the +650, +210 and —VE bias supplies. Set the bias pot for —50V on the slider. All being well, switch off and install the tubes (remember to allow the filter capacitors to discharge).

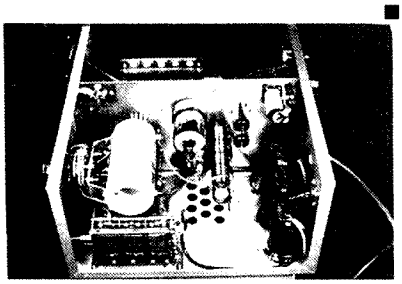
To adjust the input networks: Connect the amplifier output to a dummy load via an SWR meter, and connect the exciter to the amplifier via a second SWR meter. One or two watts of carrier drive should be applied to the amplifier input. Some transceivers, such as the FT7 have no drive control, so 6 dB of attenuation must be inserted between the exciter and the SWR meter. Note that the SWR meter must go between any attenuator and the amplifier input, otherwise the attenuator would absorb much of the reflected signal, and yield a false SWR reading.

Power-on and after the heaters have warmed up set the bias pot for 50 mA of no-signal plate current. Close S4 or ground PTT and apply carrier to the input. With the amplifier bandswitch set to correspond to each exciter band the appropriate slugs of inductors L1 through L5 are adjusted for minimum SWR for each band. It should be possible to obtain an input SWR of less than 1.5 on each band. The amplifier output network must be tuned for each band being so adjusted with the output SWR meter indicating output power. Little or no grid current should be allowed to flow during this set-up. The plate current will be about 200 to 250 mA when the input and output networks have been properly adjusted. The input SWR meter is no longer required after successful completion of these adjustments.

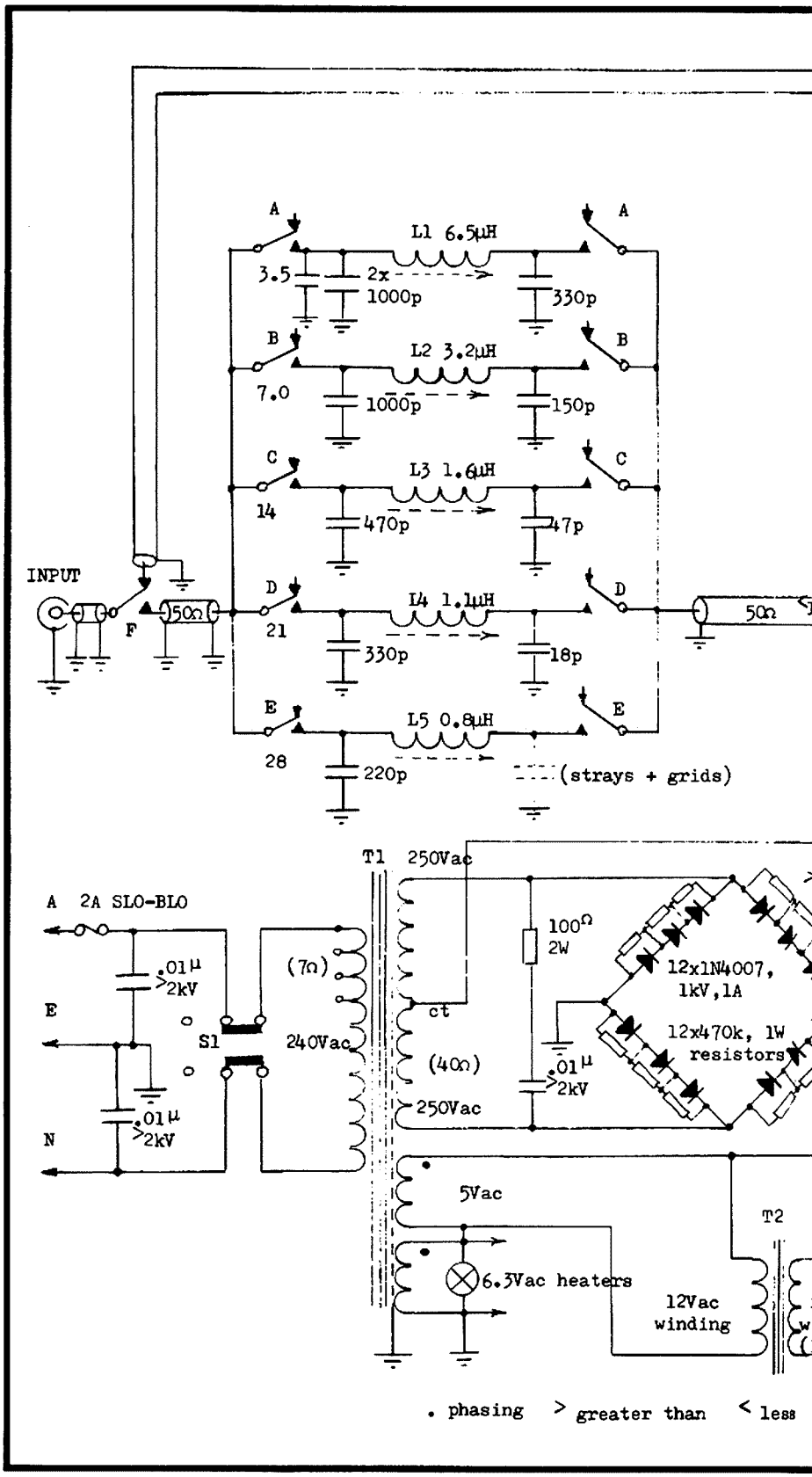
During on-air operation with CW or SSB the grid current should be checked periodically to ensure that little or no current is being caused to flow otherwise key clicks or splatter will occur.

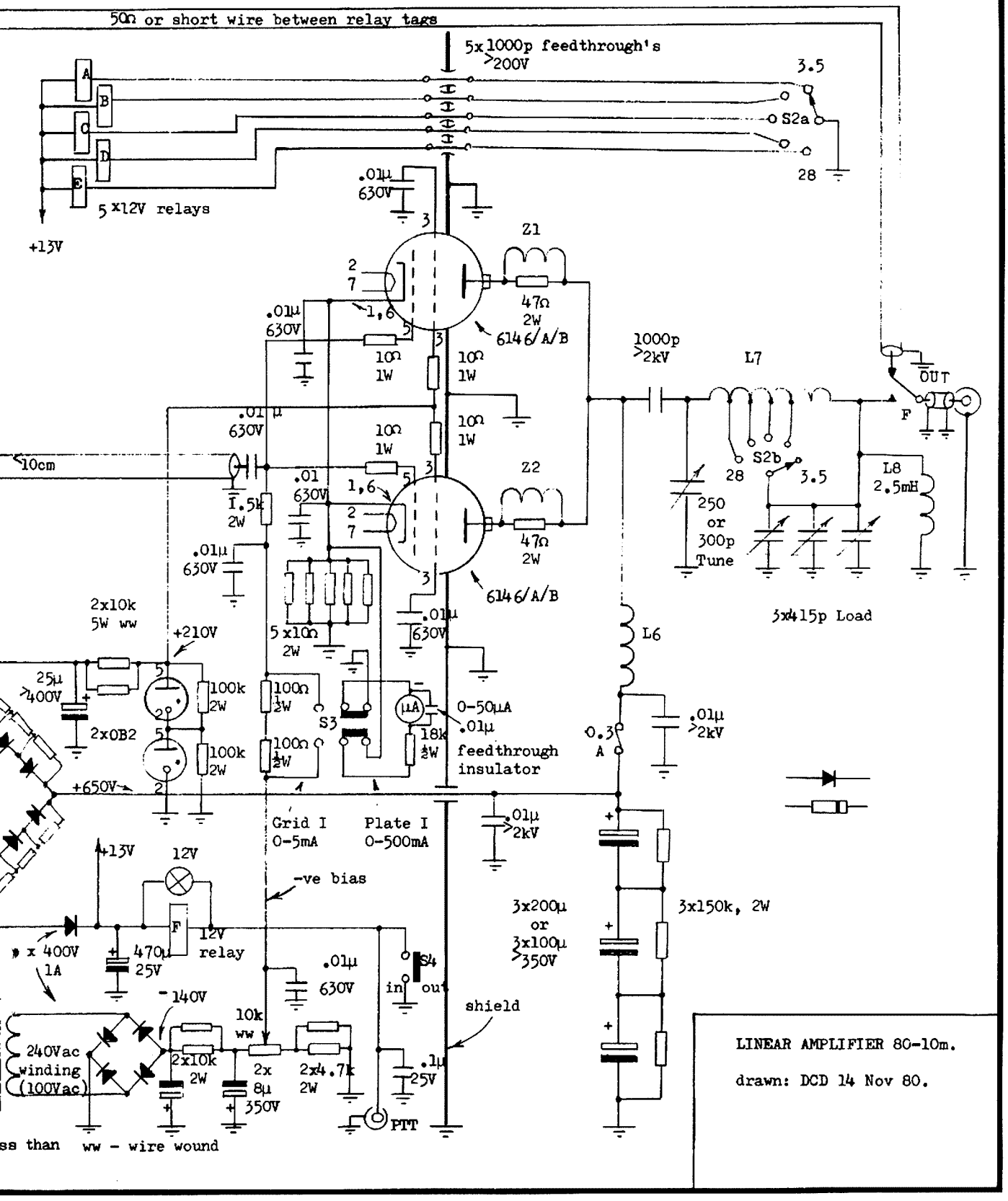
The author wishes to thank Nick Kane for the photos and Terry Fraser VK3DCL for the loans of his FT7 with which we performed the two-tone IMD measurements.

■



Output Side




50Ω or short wire between relay tags
5x1000p feedthrough's >200V
3.5
S2a
28
5 x12V relays
+13V
.01µ 630V
Z1
47Ω 2W
6146/A/B
1000p >2kV
L7
OUT
F
S2b
L8 2.5mH
250 or 300p Tune
3x415p Load
10cm
1.5k 2W
Z2
2x10k 5W ww
+210V
5 x10Ω 2W
L6
25µ >400V
2xOB2
100k 2W
100Ω ½W
S3
0-50µA
18k ½W
feedthrough insulator
0.3 A
.01µ >2kV
+650V
Grid I 0-5mA
Plate I 0-500mA
+13V
12V
-ve bias
3x200µ or 3x100µ >350V
3x150k, 2W
x 400V 1A
470µ 25V
12V relay
S4
in out
shield
-140V
10k ww
240Vac winding (100Vac)
2x10k 2W
2x 8µ 350V
2x4.7k 2W
.1µ 25V
PTT
ss than ww - wire wound
LINEAR AMPLIFIER 80-10m.
drawn: DCD 14 Nov 80.

VK2 MINIBULLETIN

COUNCIL REPORT

At the May Council meeting, Bill Martin VK2PFH was appointed VK2 Intruder Watch Co-ordinator for 1981-82. NSW members reporting on commercial intruders into primary amateur frequencies can send reports noting the date, time, frequency, signal strength and, if heard, any call sign or identifictaion either direct to Bill at 33 Somerville Road, Hornsby Heights 2077, or to Divisional office. Bill has sent information on Intruder Watching to all VK2 affiliated Clubs. Please help Bill to help us by sending reports to him.

Council was pleased to welcome Armidale and District Amateur Radio Club to affiliation with the NSW Division. Armidale's address is c/- 201 Kennedy Street, Armidale, NSW 2350. Any club which would like to apply for affiliation with the NSW Division and join with the 29 other affiliated clubs at the next Conference of Clubs in November can do so by writing to the Divisional Secretary requesting affiliation, enclosing two copies of the Club's constitution and listing five Club members who are also ordinary (full) members of the NSW Division.

At the meeting, Divisional President, Athol VK2BAD, and Secretary, Sue VK2BSB, reported on a meeting called by the Land and Environment Court in May. The meeting was attended by an assessor from the court, representatives from Campbelltown City Council, counsel for Mai Martyn VK2VWG, and the Divisional President and Secretary. The meeting could not arrive at a compromise and the case will now go to court. The hearing has been set down for 21st July. To date (29/5/81) $805 has been donated to the Tower Fund. Many thanks to those who have donated recently: Summerland ARC $20, N. Cornish $25, P. Lord VK3NPL $50, B. Field $8, G. McDonald $10, R. Biddle $5, A. Cory $10, St. George ARS $50, W. Swanston $5, J. Mead $10, P. Medway $10, and L. and M. Salmon $10. If you would like to help Mr. Martyn in his appeal against the rejection by Campbelltown City Council of his application to erect a 17m guyed commercial tower for amateur use, please send cheques made out to the WIA to Box 123, St. Leonards 2065.

QSL BUREAU

In March, Hunter Branch advised Council by letter that they were unsuccessful in filling the position of QSL Officer for the Division. The Division's QSL Officer over many years has been Bill Hall VK2XT, an Honorary Life Member of the NSW Division. Council and all members are extremely grateful for the many years of unstinting effort donated to the Division by Bill and his team of helpers, in particular Fred Myers VK2AAX and Lew Ansell VK2BTO, to name but two who have assisted Bill. Divisional Council will make a presentation to Bill at the next General Meeting in recognition of his many years of valued assistance to the Division.

At the April Council meeting the urgency of maintaining QSL Bureau continuity was discussed and Council decided to bring the Bureau to Sydney. Council arranged with Hunter Branch to pick up the Bureau's effects on Sunday, 26th April. Five Divisional Councillors went to Newcastle, and while there received a request from Westlakes Amateur Radio Club to have discussions with seven of their committee and members at the Westlakes Club rooms. Councillors agreed to the meeting, at which Westlakes put forward a strong case for leaving the Bureau at Teralba to be run by Westlakes ARC on behalf of the Division.

As a result of the meeting, Council decided to invite written submissions from any affiliated clubs and members willing and able to conduct the Bureau. This was announced on broadcasts and a letter was sent to all affiliated clubs. At the May Council meeting submissions were received from Westlakes ARC, 18 Newcastle amateurs supporting the Westlakes offer, one Sydney amateur and a list of 16 amateurs who had volunteered to sort cards at Atchison Street by writing their names on a list at Atchison Street. After much discussion, Council decided to appoint Doug Pearson VK2AVO as VK2 QSL Officer and to accept the offer from Westlakes to conduct the operations at their club rooms in York Street, Teralba. The address for the Bureau is: VK2 QSL Bureau, PO Box 73, Teralba, NSW 2284.

Westlakes Club can be contacted at any time on (049) 58 1588 and is open at the following times, with the exception of school holidays, Tuesdays to Fridays from 4 to 5 p.m., Tuesdays and Wednesdays from 6 to 11 p.m., and Saturdays from 1 to 8 p.m. There is a special insert into this edition of AR for NSW members concerning the QSL Bureau. If you have not received your insert, ring Divisional Office on (02) 43 5795 and one will be sent to you. We urge all members to send QSL information to the Bureau **IMMEDIATELY.** If no directions are received, the Bureau will presume you do not collect QSL cards and will return them to the sender.

Coffs Harbour and District Amateur Radio Club has been trying over the past few months to arrange local exams for their Novice candidates. The nearest exam centre is at Lismore, a round trip of over 400 km. Copies of Coffs Harbour Club's correspondence with DOC were received by Council at the May meeting. The Divisional President has written to DOC, Sydney, supporting their application for a local Novice exam at Coffs Harbour.

Council appointed the following members to the Repeater Committee for 1981-82: Chairman Tim Mills VK2ZTM, Michael Goard VK2ZNV, Paul Smith VK2ZSA, Gary Stern VK2ZBB, Jill Rowling VK2DLY and Henry Lundell VK2ZHE. Also appointed were the members of the Education Service Committee for 1981-82: State Supervisor Ken Hargreaves VK2AKH, Kurt Welzel VK2GQ, David Wilson VK2ZCA/NMW, Les Dickenson VK2DNS, Ian Hook, Ian O'Toole VK2ZIO and Martin Lansdown.

FOURTH CONFERENCE OF CLUBS

The 4th Conference of Clubs affiliated with the NSW Division was held on Sunday, 24th May, at Goulburn RSL Club. Barry White VK2AAB was elected as Chairman and Ross Wilson VK2BRC was elected as Secretary. Twelve affiliated clubs were represented at the Conference by the following delegates (the number in brackets is the vote allocated to each club based on one vote per 10 ordinary WIA members): Goulburn ARC, Barry Croker VK2DBA (1), Hornsby ADARC, Guy Fletcher VK2BBF (2), Illawarra ARS, Geoff Cuthbert VK2ZHU (7), Liverpool ADARC, Val Rochfort VK2BXR (4), Manly Warringah DRC, Ian Dodd VK2DLU (3), Mid South Coast ARC, Kevin Graham VK2BKG (7), Orange ARC, Ross Wilson VK2BRC (2), Parkes ADARC, Ross Wilson VK2BRC, South West ARS, John Eyles VK2BXD (3), Southern Highlands ARS, Frank Ritchie VK2VGX (1), Wagga ARC, Russ Read VK2AZR (3) and Westlakes ARC, David McKie VK2BWK (8). The delegates attending the Conference were representing 371 ordinary members of the NSW Division.

The meeting adopted Standing Orders for the conduct of Conferences which had been prepared, as directed by the second Conference, by Fred Herron VK2BHE and

Delegates and Observers at the Fourth Conference of Clubs:
1st Row: Henry VK2BUT, Barry VK2DBA, Barry VK2ZAG, Guy VK2BBF, Frank VK2VGX.
2nd Row: Barry VK2AAB, Keith VK2BKG, Val VK2BVR, John VK2KDJ, Milton VK2DCW, John VKQA (Sec. VK4).
3rd Row: Geoff VK2ZHU, Ian VK2DLU, Ray VK2ZME, Jeff VK2BYY, eKith VK2AKX, Russ VK2AZR.
4th Row: Ross VK2BRC, David VK2BWK, John VK2BXD, Jeff VK2KBK.

Harold Wright VK2AWH. A written report, prepared by Divisional President Athol Tilley VK2BAD, on actions taken by Council as a result of recommendations from the third Conference, was presented. The Conference decided to recommend changes to the frequency and time of the VK2 affiliated club net to Thursdays at 9 p.m. on 3600 kHz. Motions on the agenda which were carried by the meeting were: (1) that a directory of affiliated clubs be included in all editions of the call book; (2) that Council investigate disposal of the Atchison Street property and replacing it with a property to include adequate facilities, including offices, QSL room, meeting room and other sections as required; (3) that a CW test at 14 w.p.m. be available for Australian amateurs wishing to obtain reciprocal licensing privileges overseas equivalent to their full Australian licence; (4) that "K" call licensees be permitted to use CW on 6m and up; (5) that consideration be given to making an award for items made as "home-brew" equipment; (6) that Council apply for DOC permission for affiliated clubs who relay Divisional broadcasts on to 160m, 10m, 2m and 70 cm repeaters to conduct a 5 minute local broadcast immediately following the Divisional relay; (7) that the WIA press for an increase in the allowable deviation for FM on 10m from 3 kHz to 7.5 kHz; (8) that continued pressure be put on the DOC to allow use of the WARC bands; (9) that Australian contests be restricted to limited portions of the HF bands to enable normal social activities to be maintained by other amateurs; (10) that clubs running field days use common frequencies for fox hunts — AM pedestrian 144.3 MHz, FM mobile 146.55 MHz, HF mobile 28.47 and 7.05 MHz, UHF mobile 439 MHz; (11) that John Moyle Field Day rules be altered to allow VHF contacts to be scored on a distance basis and to encourage portable operation; (12) that the WIA press for permission to establish FM repeaters in the band 29.5 to 29.7 MHz. There were naturally other motions submitted which were either lost or referred to the next Conference. All motions which were carried are now presented to Divisional Council as recommendations from the Conference.

The Chairman Barry VK2AAB presented the trophy for the 1981 John Moyle Memorial Field Day VK2 Inter Club Contest to John Eyles VK2BXD, who accepted it on behalf of the winning clubs, Griffith Amateur Radio Club, 24 Hour Open Section, 8389 points, and Oxley Region Amateur Radio Club, 6 Hour Phone Section, 758 points. The next Conference of Clubs will be hosted by Illawarra ARS on Sunday, 1st November next. The Secretary, Ross Wilson VK2BRC, kept comprehensive minutes of the fourth Conference, and any member who would like a copy is invited to send a large SASE to the Divisional Secretary, Box 123, St. Leonards 2065.

NEW CLUB AT DUBBO

On Wednesday, 27th May, the inaugural meeting of the Orange Region Amateur Radio Club was held at Orana Education Centre, Dubbo. Thirty-six interested persons attended, including 25 amateurs, from as far afield as Wongarbon, Wellington, Nyngan, Tottenham, Coonabarabran, Trangie, Gilgandra, Narromine, Trundle, Orange, Bathurst and of course Dubbo. Divisional Councillor Neville Wilde VK2DR and Alternate Federal Councillor Wally Watkins VK2DEW attended as WIA representatives. The meeting adopted a constitution for the Club and elected the following office-bearers: President John Hams VK2ZMT, Vice-President Peter Harrison VK2CAZ, Secretary Kathy Kinsey VK2VAS, Treasurer Peter Haywood VK2VEH, Publicity Officer Trudy Hansen, Eductaion Eric Brodrick VK2BEO, Repeater Chairman John McLean VK2KCE, and Cec Kearlnes VK2AKC. The Club will shortly be applying for affiliation with the NSW Division and welcomes any new members and visitors to its meetings, which will probably be held each fourth Wednesday night. (Submitted by Nev VK2DR.)

COMING EVENTS

25th-26th July: Two day bike trials at Orange. Amateurs required for assistance with WICEN communications. Contact Peter VK2TK on (063) 65 9112. All NSW members and clubs are invited to submit news for inclusion in this column. Please send it to Box 123, St. Leonards 2065, to arrive two days before the end of the month prior to publication, e.g. by 29th July for September AR.

Susan Brown VK2BSB. ■

THE WA BULLETIN

VK6 DIVISIONAL NOTES

The Annual General Meeting of the VK6 Division was held in April and for the first time for many years sufficient nominations for Council were received. As provided for in our Constitution, members present at the meeting decided by ballot the positions of President and Vice-President of the Division. Mr. Bruce Hedland-Thomas VK6OO was appointed President, and Mr. Ross Greenaway VK6DA Vice-President. Our thanks to those who volunteered their services as Councillors and officers of the Division for the next twelve months.

Our 150th Anniversary Celebration Award results may by now have been published elsewhere, but just to keep the record straight here are the award winners:—

9M2LN 12432 points, VK6RS 6175 points, VK6XJ 4050 points, VK6SH 2298 points, VK6YL 1809 points, VK6HU 1728 points, VK6DC 1386 points, VK6YF, 1296 points, VK6NGX 522 points, OK2QX 358 points, VK6QK 357 points, VK7NFR 354 points, L40018 33435 points, GI5515 395 points.

WICEN

Members of WICEN are pressing on with the task of outfitting the caravan, several well attended working bee activities have been undertaken. A number of exercises have been planned for the near future. WICEN will also mount a display to mark the end of SES week later in the year. Some problems have been encountered with the destructive activities of some white cockatoos which have attacked the coaxial cable of the antenna system at SES Metro HQ.

INSTANT RADIO CLUBS

During the recent visit by some members of Council to a number of country centres, sufficient enthusiasm was generated at one stop-over point for the local fraternity to start a new district radio club. It is hoped to bring you more news of Mandurah and districts once they are more organised. Good luck, fellows, and please keep in touch.

It was announced at the May general meeting that the Minister for Local Government had overruled a decision by one of the local shires and one lucky amateur is now allowed to legally proceed with the erection of an antenna tower — nice to notch up a victory now and again.

MEMBERSHIP

Welcome aboard to those recently appointed to membership of the Division, and the best of luck to those who undertook the recent exams.

WIRELESS INSTITUTE OF AUSTRALIA
WA DIVISION

COUNCIL REPORT FOR THE YEAR APRIL 1980 TO MARCH 1981

At first reminiscence it seemed as if it had been the kind of year when we had had to work hard in order to stand still. But perusal of the various minutes reveals a year with some modest achievement.

MEMBERSHIP

We have now passed the peak of the influx of new members coming from the ranks of CB. This means our increase in numbers and, hence, in income from fees will be small, perhaps 5 per cent per annum, and we shall have to budget wisely. We shall have to strive to make membership attractive in order to retain our present members. Total numbers at 19th January, 1981, were 662, an increase of 59 from about the same time last year.

FINANCES

The results of sound financial management by the Treasurer, John VK6TU, and all the Council, are shown in the audited balance sheet which has also been circulated.

The Federal Council decided to set their 1981 dues at $18 and no longer to carry pensioner members because of the large numbers involved. Divisional Council was forced to increase pensioner subscriptions to $18 but chose not to levy Divisional fees. Other subscriptions were increased to $24 full and $23 associate, which we trust will enable sufficient income without being swingeing.

MEETINGS

Meetings have continued to be held in Science House which, while sometimes cramped and not ideal, seems still to be our best compromise. Don Lorimer continues to do a splendid job catering for our supper now with a young offsider, Mark. One meeting when Don was away, Mark did it all on his own, showing great initiative by commandeering the Institution of Engineers' tea. The fury of the caretaker was placated by much crossing of his palm with silver.

From October, for a trial period, we have had no lectures, only business meetings. From this we seem to have discovered that there are two distinct populations in the membership — those who want only meetings and those who also want lectures. It has been decided to re-introduce having a lecture every 2-3 months, but the exact format is still under discussion. Meanwhile, the attendance and interest at meetings has been very encouraging. There is one feature of meetings about which all members agree.

THE QSL BUREAU

The Bureau gives a service which is beyond criticism and continues to be soundly managed by Jim VK6RU, now with his deputy Dave VK6NHD, for two cents per card. The manager's outdated 1980 international call books were donated to the newly formed ParaQuad Radio Club.

NEWS BROADCAST

The news broadcast has staggered through the year but never actually fallen, thanks to Barry VK6IF, Tony VK6NY and Norm VK6AUS. It attracts a faithful band of regular relay operators and we started a 15m relay which seems to be appreciated by listeners in the north-west. The news broadcast is very important, being almost the only service we provide to most country members. We should all do more to support it with news items and assistance. Country members might also note that news from them would also be welcomed. We now have a new high quality broadcast console featuring dual cassette decks, thanks largely to Vic VK6VK.

AWARDS AND PRESENTATIONS

Jack VK6JS, who had been "founder award manager", was forced to resign by pressure of work. The post was taken over by Nick VK6XI. September saw the 100th Zone 29 Award presented to VK6NYL and now 130 have been issued. The Worked All VK Call Areas Award is now available to VK operators under a revised set of rules as a result of pressure from this Division.

There are other awards which cannot be obtained by just sitting in front of a microphone or pounding a Morse key. Nor can they be applied for.

The 1980 AGM confirmed the election of Ross VK6DA to life membership. At the October meeting he was presented with the first of the new international style lapel badges.

During the year Adrian VK6CU was given the Outstanding Voluntary Service Award for his dedication to all aspects of repeater planning, building, installation and maintenance. At the end of the year Trevor VK6ZCB was given the Award for the same thing. You will recall that Will VK6UU was Amateur of the Year 1978 for his contribution to repeaters. If these repeater people should ever decide to take over the Institute we are due for a shake up. Or is there something about the Institute which stifles such enterprise? At Christmas, Dave VK6IW also was given the Outstanding Vountary Services Award for his work as Membership Secretary. The Amateur of the Year 1980 was Peter 6HU in recognition of his organization of the radio aspects of the 12th Australian 4th Asian Pacific Jamboree and also many years of unrecognized work for this Institute and radio in Scouting.

The Christmas meeting, at which the awards were presented, was held in the Bell Room at the Herdsman Hotel and was probably the best ever, thanks mainly to the organization by Neil VK6NE. It turned out to be a bit of a benefit evening for the Schroeders, with Helen entertaining us and Norm VK6NS getting the best object in the mystery auction.

THE PATRON

During the year our patron the Governor, H.E. Sir Wallace Kyle, retired and the new Governor, H.E. Sir Richard Trewbridge, agreed to be our new patron. It is hoped that the meetings will presently vote to re-appoint him. The value of vice-regal patronage was demonstrated very convincingly last year over the AX6 call sign.

DISPOSALS

There was not a lot of equipment for disposal during the year. Twenty-three 77 transceivers and eight 1676 transceivers were sold by ballot and some gear from the estate of the late respected Ron Hugo VK6KW was auctioned. One third of the Pye transceivers, donated by Philips TMC, was given to the Repeater Group on certain conditions. Finally, we disposed of 33,000 free OSL cards to 114 members. These were donated by the Perth Rotary Club as a result of Stan's VK6NDD idea and influence.

FEDERAL MATTERS

Michael Owen attended the April meeting and talked about the organization and outcome of WARC 79. He also met privately with some of the Council for beneficial discussions of some of our problems. Early in 1981 the Department of Communications' proposal for spectrum management, implementing the WARC decisions, were published. With few exceptions, they were acceptable to amateurs and the WIA. In August the Federal Body made a submission to the Enquiry into the Future of CB, stating, among other things, that there should be no common frequencies between the two services and there should be no lowering of the standard required to obtain an amateur licence as a way of providing spectrum space for CBers. May saw the long awaited publication of the new Handbook, and on Remembrance Day the Minister announced the granting of third party traffic privileges providing there was no financial gain to any of the parties. At one general meeting the membership voted that 50 cents per member per year be set aside towards WARC 99. The Council frankly regards this motion as over enthusiastic, nevertheless the implied $300 or so will be put aside each year. In January the battle for reduced licence fees for pensioners was finally lost. Council decided that the expense of sending a second alternate Federal Councillor to the Convention was not warranted unless he was an expert in some field which was to be a major topic. It offered to pay part of the expenses of Adrian VK6CU to attend to gain experience on behalf of the Repeater Group, but he had to withdraw due to pressure of studies. The DOC has reserved the call sign block WIA-WIZ for the Institute and this Division voted to exchange our permanently portable station call sign VK6AW1 for VK6WIA.

WICEN

WICEN has consolidated its relationship with the SES and has set up two radio rooms in metropolitan headquarters. The Council provided a beam and rotator. The portable repeater VK6REE is now available for emergencies. There have been numerous exercises and real emergencies involving WICEN. WICEN always provides communications for the tracker dogs when searching for missing persons. As exercises, WICEN provided the communications for the Neurological Foundation's Fun Run to Rottnest and the Scouts' SWANTIKI. The Council made available funds to purchase a 15 foot caravan, which is currently being fitted out as a mobile forward operations radio centre by the WICEN operators themselves.

REPEATER HILL

The Repeater Group seems to be enjoying a period of real enthusiasm and achievement. The portable repeater VK6REE has been made even more compact so that it will now fit into the boot of an ordinary car. It is a much travelled repeater, having been carried up Mt. Toolbrunup by one intrepid group, from where it was heard back in Perth, and is at present being used to evaluate new sites for the Bunbury repeater. It was also used to test the new Perth channel 4 site, which is now being developed — the dreaded Tick Hill. As there is no mains power at Tick Hill, the group's wind generator will come into its own. The group is very pleased with the assistance it has been receiving in developing the new site. The Council is also pleased to assist this and other groups who do so much to further the achievements and improve the facilities of radio amateurs.

SLOW MORSE

The slow morse broadcasts have continued at high efficiency. Cyril VK6CR has not yet achieved his ambition of a team of 20 operators but has received some splendid testimonials from satisfied customers.

INTRUDER WATCH

The Intruder Watch, alas, is not well supported. There are only three stations apart from Dave VK6WT himself, who furnish regular reports. The Intruder Watch does achieve results and we must all resolve to support it.

EDUCATION

This Division does not run its own theory courses but those run under the auspices of the Technical Education Division and the Education Department are all lectured by Institute members. Those that spring to mind are Dave VK6WT, Mt. Lawley Tech.; Terry VK6ZLT, Fremantle Tech.; Wayne VK6WD, Carine Tech.; Dick VK6LN, Bunbury.

Council donated a set of Morse tapes to the Carine course.

The Division used the $500 from the Dick Smith Education Auction to establish a videotape library under the librarianship of Charlie VK6ZCK. It contains both educational and public relations films from the Federal videotape library.

SCOUTING

JOTA went off as usual with a number of new groups participating for the first time and VK6REE being activated. SWAN-TIKI was postponed due to the amoebic meningitis scare, but, when held, communications were provided by WICEN as an exercise.

BOOK SALES
Book sales under Chris VK6DV continue to be our main income apart from fees. The number of books sold are down, although clearly if country members could actually see the books stocked they would buy more. Council decided to continue the policy of rounding up book prices, at least partially to undewrite the $300 per year voted towards WARC 99. Chris is also the custodian of a copy of the World Radio and TV Handbook which may be borrowed between meetings and which was instituted as a service to SWLs.

CONTESTS
The contests this year brought forth no surprises, including our losing the RD contest again. This Division is taking action, through the Federal Convention, to try to ensure that we do not suffer again from unfair rules and an obdurate Federal Contest Manager.

GENERAL
The Amateur Advisory Committee in this Division has been discontinued by the DOC due to financial difficulties. Both the Department and the Division hope that it might be replaced by some kind of liaison meeting in office hours.

Ross VK6DA has asked for any historical photographs which members may wish to pass on, and has received some, notably from Jim VK6RU and John VK6BB. Ross looks like becoming a kind of unofficial historian. Maybe we should make it official!

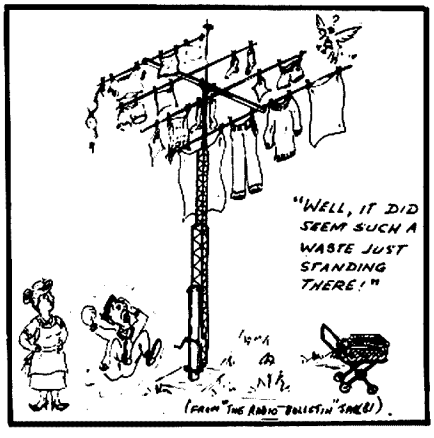
Individual members have donated a total of over $150, plus a good many hours of work, to the newly formed Paraquad Radio Club. The Council donated a peak reading power meter and SWR bridge worth slightly more than $100.

We have been offered a complete 10 metre beacon by the RSGB and are at present investigating what acceptance would entail, but we are enthusiastic about the idea of having our own beacon.

Early in April, six of the Councillors visited four centres in the south-west. Seventy-nine letters were sent to amateurs within a 50 mile radius of each centre and thirty-nine amateurs came to the various meetings. Discussions ranged widely but included the Federal Convention Agenda motions. The meetings provided a forum for the amateurs in each district to meet each other and Mandurah actually formed its radio club at the meeting. It is hoped that the new Council will plan other trips or possibly arrange to bring delegates from country radio clubs to Perth.

. . . AND IN CONCLUSION
The Council would like to thank everyone who has worked in any capacity for the Institute. Peter VK6HU once worked out that there are 86 different jobs in the Division. Of course they are not all equally demanding or responsible and not all are occupied. But the fact that the Division goes on means that someone is doing the majority of them. It is pleasant to record that we look like having a full Council next year for the first time in a few years. If during next year each member would think up just one idea for the betterment of amateur radio or the Institute and put it to the General Meeting for discussion, it could be a great year.

B. Hedland-Thomas VK6OO, President. ■



VHF-UHF
AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston, S.A. 5233

JULY 1981

VHF/UHF BEACONS

Freq.	Call Sign	Location
28.230	ZL2MHF	Mt. Climie
28.260	VK5WI	Adelaide
28.262	VK2WI	Sydney
28.888	W6IRT	California
50.005	H44HIR	Honiara
50.100	KH6EQI	Pearl Harbour
51.022	ZL1UHF	Auckland
52.013	P29SIX	New Guinea
52.150	VK5KK	Arthurton
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.320	VK6RTT	Carnarvon
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.400	VK7RNT	Launceston
52.425	VK2RAB	Gunnedah
52.435	VK3RMV	Hamilton
52.440	VK4RTL	Townsville
52.450	VK2WI	Sydney
52.500	JA2IGY	Mie
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
53.000	VK5VF	Mt. Lofty *
144.010	VK2WI	Sydney
144.400	VK4RTT	Mt. Mowbullan
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.555	VK5RSE	Mt. Gambier *
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.800	VK5VF	Mt. Lofty *
144.900	VK7RTX	Launceston
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.400	VK4RBB	Brisbane
432.450	VK3RMB	Mt. Bunningyong

Some changes to the beacon list this month. YJ8PV is no longer operational, same applies to VK3RGI.

By the time you read this it is possible the Mt. Gambier beacon will be operating on 144.555. This is the frequency advised by VHFAC. Will be using 20 watts to a clover leaf, and completed as a South-East Radio Group project. This is great news for those in the Adelaide area as it will be the first two metre beacon outside of Adelaide capable of being heard on a continuous basis. VK6RTW in Albany is probably the most consistent, but this goes for weeks without being heard. VK3RTG is rarely ever heard, the next most possible could be VK3RMV at Hamilton when it gets going soon.

It is also possible by the time you read this that the Adelaide beacons will be off the air for a rebuild. They have been active for many years but are sadly in need of an overhaul and won't be able to carry on much longer. As always, it seems very few people are prepared to work on a beacon project, and we must thank Mark VK5AVQ for the work he has done so far in the rebuilding project and keeping the present beacons running, but he needs help now whilst doing his final year of studies. It would be nice to see some of those who have made good use of the beacons for DX contacts come forward at this time and lend a hand. I am prepared to help, who else? In the meantime we will have to rely on the VK5KK beacon on 52.150!

I have included some of the 28 MHz beacons again — this band is still very useful for setting up contacts on six metres, and I was reminded of this by VK5MX when he wrote with details of VK5WI on 28.260 which has been operating officially since 5/12/80. More details of this on the beacon information page, to be prepared for you all to read when those who have not so far written to me with details of their beacon do so!

The beacon does not include the great number of stations which have keyers, largely from overseas countries. Many stations can be heard on 28.885 advising others they have keyers operating on six metres on various frequencies. Of particular interest of late have been the stations from the southern portion of Africa who run keyers between 50.100 and 50.112, e.g. ZS6LN, ZS5TR, ZS3E, etc. 28.885 has certainly been an outstanding help in getting six metre contacts under way, particularly in efforts to get 50 MHz stations to transmit or listen on 52 MHz.

THE SIX METRE SCENE
There certainly has been a slowing down of six metre activity but this is to be expected during late May and June. However, Joe KG6JDX looked into my shack at 2257Z on 26/4, the next day Jack ZS6LN copied at 0737Z on 50.107. Rene FO8DR made a happy day for me on 29/4

when at 2342Z I worked him on 52.008 on CW! Signals were 539 and it was the first time I had an opportunity to work Rene, as previous hearings had always been on 50 MHz. A prompt return for my QSL was gratefully received about 15/5. On 30/4 Jack ZS6LN again on 50 MHz, then on 2/5 a contact with KH6IAA at 0744Z. 3/5 produced another new country for me when I first contacted VS5DX and had a cross-band contact, 28.885 to 50.100, at 0046Z. Signals continued to improve to allow me to finally work Graham split frequency, he on 50.100, and I on 52.040. Signals on 50 MHz were 5 x 9, on 52 MHz 5 x 4. Things went quiet for a while, while I was extra busy at work, then along came a couple of good contacts with Peter H44PT on 15/5 at 2335Z on 52.050, signals 5 x 7/8. ZS6LN agan on 18/5 at 0746Z, also a number of JAs that day, worked a couple of JM1 stations for first time around 0800Z.

Lots of stations have been heard but not worked, due to being on 50 MHz, e.g. KH6EQI, KH6HI, 2330Z on 27/4, 28/4; ZS2SS 1/5; W7KMA on 28/4 at 0020Z; XE1GE, 2300Z on 11/5; VS5DX, 0030Z on 15/5, etc. Interesting to note ZS6LN and KH6IAA had a 5 x 9 contact both ways on 50 MHz on 19/5.

While still in VK5, John VK5ZBU was very pleased to receive his QSL for his contact with FO8DR on 29/4, this being an SSB contact, and one of the few on SSB ever made to that station from VK5. He also reported on 20/5 at 1415Z when there seemed no activity on 6 metres, KH6EQI was copied by Col VK5RO via the long path, there being no sign of the signal direct.

SIX METRES SPANS INDIAN OCEAN

Congratulations to **Wayne VK6AM** for his contact with Phil ZS2SS on 52.005 at 0832Z, this being the first and only contact so far on 52 MHz to Africa. Signals were 5 x 2 on SSB after earlier making it on CW. **Wayne VK6WD** had a partial contact on 18/5 with ZS6LN on 52.00.5 Wayne had been following a contact crossband between VK5ZK and ZS6LN 28 to 50 MHz when he called Jack and had a contact 28 to 50.106. He then went up to 52.005 and received a reply on 28 MHz that he had been heard, so it's pretty close to another 50/52 MHz contact.

Contact with any portion of Africa from Australia has been a long time coming, but now that it has been made it will surely help to keep an interest at both ends of the pond for the future, and with the number of obviously eager stations at both ends, it is only a matter of time before others share in this interesting path. September/October may even be a more suitable period, one never knows until the time comes.

MELBOURNE NEWS

Gil VK3AUI fills in on the Melbourne scene with advice that on 22/4 an opening to VS5 reported by VK3XQ, VK3ZUT and VK3AMQ; 23/4 VS5DX, WA4TNV/KL7 and VS6BE on 50.110, also JA8. On 24/4 VS5TX and VS5LH around 0100Z. Then on 25/4 KG6DX 50.110 519 at 0100 and 0150Z, VS5TX 50.100 at 0130Z, W6XJ 50.100 at 2241Z 219, KG6DX 50.110 at 2303Z 559, H44PT 52.010 at 2330Z worked VK3XQ, VK3AKK, VK3NM, VK3AUQ and others. 26/4 VS5DX worked by VK3NM at 0046Z split frequency 52.020/50.105, AH8A heard on 50.104 at 2209Z, 519, and at 2235Z, 539, JA1RJU 50.107 2224Z 4 x 2.

27/4 weak JA 52.050 0533Z. 28/4 XE1TIS 0130Z to VK3ZTK, VK3KAG, VK3BQS, VK3OT. 30/4 VK)YBC reported H44PT, KG6DX, FO8DR and XE1GE all on 50 MHz from 2200 to 2359Z. At 2315Z Rod VK3YBC heard and taped a QSO on 50.110 between WB4AEG and N5BBT, signals to 5 x 7! He just had to sit and listen to them! 1/5 H44PT heard PY2AA, the beacon of PY2XB, on 50.060 at 579. Dick VK3ADR endeavoured to ring Brazil but no answers. The beacon was later heard in New Zealand. 3/5 VS5DX 50.110 at 0048Z. 11/5 VK3AMQ worked XE1GE at 2330Z. Also reported worked by VK3AMK, VK3KAG, VK3ZUJ and VK3AQR. 15/5 H44HIR 50.005 2312Z 559. 16/5 VS5DX 50.110 at 0031Z and worked by VK3AQR.

All the above activities have taken place through the continuing interference being experienced from Channel 0, which generally is much worse than the former transmitter despite low power. Thus the name CRUD O seems appropriate to the channel!

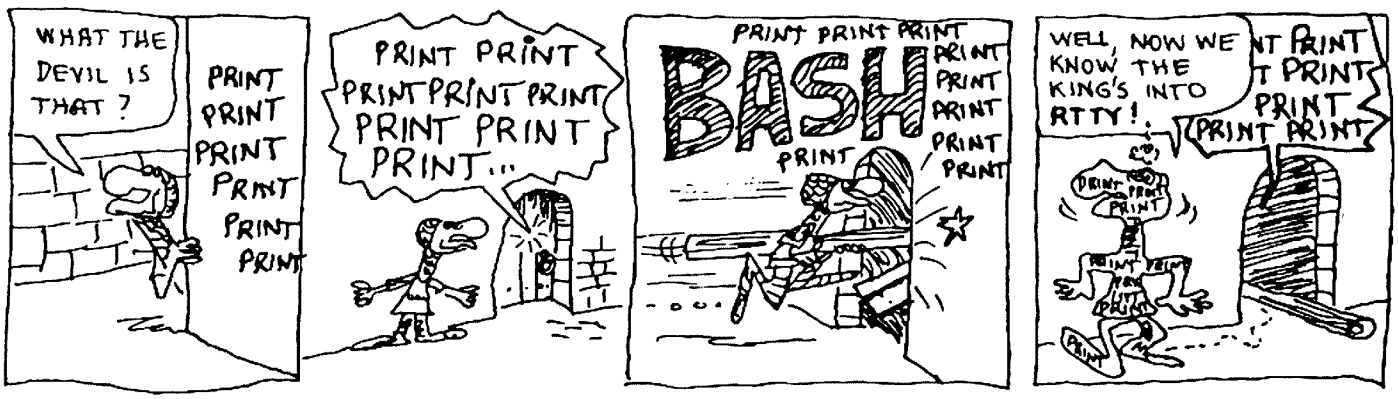
FROM TASMANIA

We don't often hear from the "Apple Isle", but a letter has appeared from **Ian VK7ZZ,** who reports Monday, 20th April, was a great day for 6 metres (it sure was!). At 0000Z heard VS6BE on 50.110, very strong, until Ian went to morning tea at 0105Z. (Really! Going to morning tea with DX around — my tip, have the tea brought to the shack, Ian!) Many JAs on 50 MHz, mainly CW and all 10 districts. At 0033Z worked VK6WD and at 0041Z VK6BV. These two stations worked with antenna peaking 20° west of north, and Ian has asked for an explanation why? Well, strange things happen on 6 metres, but the most likely is that as signals were only around S1 to S2 that you worked them via a form of backscatter, or in this case "side-scatter", and scatter signals can be received from anywhere. Scatter signals can be proved by turning the antenna direct to the station, when most times the signals will disappear entirely or become much weaker. Common paths for such effects exist in VK5 when you can be working into VK6 and also able to work VK4 on backscatter, with no sign of the VK4 on direct path.

Same day, from 1005Z, more JA until 1127Z on 50 and 52 MHz, Ian worked 15 stations. VK7ZJG, VK7AZ and VK7ZOT shared in these too. Ian reports that he had a contact with Yoshi JA2BZY, who advised on that day he had worked EL2FY and EL2AV in Liberia, as well as stations in Europe, and these Liberian contacts had given him WAC on 6 metres, with a total of 53 countries. A very outstanding effort. Thanks for writing, Ian.

NEW SOUTH WALES REPORT

Neville VK2QF from Hargraves, near Mudgee, sent a letter which arrived too late for inclusion last month in which he reports very exceptional openings to JA throughout January and February, continuing on to March with over 100 contacts on 15/3, finally going quiet from 18 to 31/3. KG6DX on 14/4 and 15/4 at 2315Z. 19/6 K6FV 529 at 2307Z for first W QSO, 2323Z WA6BYA 5 x 1. 20/4 VS6BE 519 at 0326Z on 50.110. VS5DX at 0335Z cross-band to 28885, more JAs mostly 5 x 9. XE1GE 2228Z 519. AH8A 2238Z, KG6JDX 2244Z 5 x 1. 21/4 AH8A 2218Z 5 x 3;



From "The Propagator"

23/4 VS5DX 0036Z 519; 24/4 VS5LH 0113Z 5 x 3; 25/4 VS5DX 0104Z 5 x 9, AH2K 0140Z 5 x 2, heard KHO Saipan briefly. 25/4 JA. 29/4 XE1GE 2322Z 599. FO8DR 2330Z 5 x 5. Thanks for writing, Neville.

BEACON BAND PLAN

As most of you will know there does exist a proposed band plan for the various beacons in Australia. It is a long time since the plan was published in "AR", so with overall news a bit scarce this month it might be the right time to outline the plan so that those in the process of upgrading their beacons can consider changing frequency to fit in with the plan. There are probably some anomalies in the arrangements, but overall there aren't a lot of objections to an ordered state of affairs. Primary beacons are those suggested for capital city or near capital city use, secondary beacons for areas outside the metropolitan area and/or the country areas, particularly as applied to the larger States, e.g. Queensland and Western Australia.

On 6 metres the primary beacons are listed for operation between 52.400 and 52.495 MHz, secondary beacons 52.300 and 52.395 MHz. The fourth figure indicates the State by call sign numbering, the third figure indicates a primary or secondary beacon. The same style of numbering applies on 2 metres and 70 cm. On 2 metres the primary beacons are 144.400 to 144.495; secondary beacons 144.500 to 144.595 MHz. The 70 cm beacon segment is located between 432.400 and 432.600 MHz.

To ensure adherance to the band plan the following table sets out the various frequencies for primary and secondary beacons for 6 and 2 metres.

Call Area	Primary		Secondary	
VK1	52.410	52.415	52.310	52.315
VK2	52.420	52.425	52.320	52.325
VK3	52.430	52.435	52.330	52.335
VK4	52.440	52.445	52.340	52.345
VK5	52.450	52.455	52.350	52.355
VK6	52.460	52.465	52.360	52.365
VK7	52.470	52.475	52.370	52.375
VK8	52.480	52.485	52.380	52.385
VK9	52.490	52.495	52.390	52.395
VK0	52.400	52.405	52.300	52.305
VK1	144.410	144.415	144.510	144.515
VK2	144.420	144.425	144.520	144.525
VK3	144.430	144.435	144.530	144.535
VK4	144.440	144.445	144.540	144.545
VK5	144.450	144.455	144.550	144.555
VK6	144.460	144.465	144.560	144.565
VK7	144.470	144.475	144.570	144.575
VK8	144.480	144.485	144.580	144.585
VK9	144.490	144.495	144.590	144.595
VK0	144.400	144.405	144.500	144.505

At a glance you will now be able to see whether your beacon complies with the suggested band plan. It appears at this date the only beacon fully complying in regard to frequency and location is VK3RGG, whilst VK7RST, VK2RAB, VK3RMV and VK4RTL, being non-metropolitan stations, are actually using a metropolitan segment. To follow the plan exactly these stations would need to be on 52.470, 52.325 (or 52.320), 52.335 and 52.340 respectively. On 2 metres the only beacon to conform is the new Mt. Gambier beacon on 144.555, being the frequency advised by the VHFAC. A good start!

The above information will be of value to those people who have written asking for details of beacon band plan frequencies. I haven't got full information in regard to band plan proposals for 70 cm and 23 cm so will leave this for the time being and pass this on when I am sure the information is correct.

While on the subject of beacons, I have received a letter from **Kevin VK3ANY,** who is the Publicity Officer for the Eastern Zone of the Victorian Division of the WIA, who confirms the VK3RGI beacon is not operational and has not been for some time whilst certain problems in regard to its final location are solved.

Peter says in reply to the comment recently of **Mike VK3ASQ** that the original beacon frequency of 144.162 was due to a junkbox crystal (!) but as it was only for test purposes it was not of great importance at the time, but when the beacon is finally re-installed it will be on a frequency in accordance with the band plan. Thanks for writing, Kevin, and putting the record straight.

MICROWAVES

Last month I ran a couple of paragraphs regarding 10 GHz operation, mostly in the UK. Here is a bit more to add to that, again from "Break-In" on the same subject:—

"Pat Hawker G3VA, In the World of Amateur Radio of 'Wireless World", March 1981, draws attention to the use of precipitation scattering as an effective mode of propagation on 10 GHz. Although, in general, tropospheric and precipitation are of less consequence for over-the-horizon SHF propagation than super-refraction and ducting, this is not true over very rough terraine or where there is local screening by hills.

"On the 10 GHz amateur band, Clive Elliot G8ADP, who lives in a heavily screened location in Hampshire, can work regularly over paths of up to 150 km by means of tropo scatter and is convinced that signals are quite often enhanced by rain scatter. Over a particularly difficult path of 40 km to G3JVL, located at sea level near Portsmouth, effective contacts are largely dependent on rain scatter, with signals maximum when there is heavy rain virtually overhead (drizzle is not sufficient). In such circumstances signals from G3JVL can often be received regardless of which direction G8ADP's aerial is pointing.

"He feels that this form of over-the-horizon propagation is still seldom recognised by amateurs, since much of the effort tends to be concentrated on portable operation where heavy rain is not welcome. Under normal, i.e. dry conditions, the signals from G3JVL are about —6 dBn (in a 2.5 kHz bandwidth), but in heavy rain may rise to 30 dBn, or about 5 to 16 dBn with the aerial pointing in other directions, including straight up."

TECHNICAL TIP

In the May 1981 "Propagator" was a comment from Dave VK2VAV/YKQ after hearing two stations on 2 metres discussing "cutting resonant half-wavelengths of coax" and trimming their coax for best results. He wasn't impressed, and said:—

"Let it be known throughout the land . . .

1. *If the antenna impedance equals the cable impedance which equals the output impedance of the transceiver, then the coax length will make no difference (except for a power loss in the cable).*
2. *If the transmission line is a multiple of half-wavelengths long then the impedance at the transceiver end of the cable will be exactly that of the load (the antenna), regardless of the characteristic impedance of the cable.*
3. *If the transmission line is an odd multiple of quarter-wavelengths long then the impedance at the transceiver end will be equal to the square of the line impedance, divided by the impedance of the load (antenna)."*

So there!

After all that I think it is time to close and get ready for the coming Mt. Gambier Convention on the June holiday weekend. Closing with the thought for the month: "Some of the new nations are discovering that a country is like a children's birthday party. It's easier to get one started than to keep it going peacefully."

73. The Voice in the Hills. ■

QSP

HOW TO KILL AN ORGANISATION

1. Don't come to meetings, but if you do, come late.
2. Find fault with the officers and other members, particularly on the air.
3. Never accept office; it is easier to criticise than to do things.
4. Nevertheless, get annoyed if you aren't appointed to a committee.
5. If appointed, don't attend the committee meetings.
6. When asked to express your opinion, say nothing but afterwards tell everyone how things should be done.
7. When others roll up their sleeves to help, say the institute is run by a clique.
8. Never write a magazine article; it's too much of a bore.
9. Hold back on your dues as long as possible, or don't pay at all.
10. Don't bother about getting new members, but if you do, be sure they are moaners like yourself.

This appeared in AR nearly 20 years ago. Perhaps an 11th rule could be added:—

11. Be sure to be a mine of misinformation on the air.

"BUYING" QSL CARDS

ARRL's DXCC ethics rules have been strengthened considerably in a move against DX stations allegedly demanding payment before providing confirmation of a contact.—Ham Radio, March 1981. ■

SIDEBAND ELECTRONICS ENGINEERING

P.O. BOX 23 SPRINGWOOD NSW 2777
WAREHOUSE 213 HAWKESBURY RD. SPRINGWOOD
TELEPHONE (047) 54-1392

APRIL — We announced bargains on ANTENNAS and ROTATORS

RESULT — Rotators — T2X Tailtwister and Ham-IV sold out. KR-400 — a few left at $120. Antennas — TET HB35C — a few left at $360. Cushcraft A3 — a few left at $260. HY-GAIN TH5-DX — one left at $370. HY-GAIN TH3-JR — a few left at $220. HY-GAIN 18-AVT/WBa — a few left at $110.
THEY WON'T LAST MUCH LONGER . . . BUY NOW AT THE GOOD PRICE."

ANTENNAS

TET HB35C log/yagi 10-15-20M 13' boom	$360
HY-GAIN TH5-DX yagi 10-15-20M 18' boom	$370
CUSHCRAFT A3 yagi 10-15-20M 14' boom	$260
HY-GAIN TH3-JR yagi 10-15-20M 12' boom	$220
HY-GAIN 18-AVT/WBa 10-80M vert. 25' tall	$110
HY-GAIN GPG-2 2M vert. 5/8W 3-4db gain	$22
HF Helical whips 10-15-20-40M each	$25
HF Helical whip 80M	$30
SPECIAL PRICE for set of whips w/bumper mount and spring base	$120

MULTIMETERS - DIGITAL

DT-810 LCD readout 16 ranges colour coded	$95.00
DT-820 LED readout 16 ranges colour coded	$75.00
CC-01 Carrying case	$4.00
UP-11 hFE Probe	$3.00
UP-12 IC clip leads	$2.50
UP-13 Universal test lead kit	$5.00

MULTIMETERS - ANALOG

DT-1313 19 ranges colour coded	$30
DT-1314 38 ranges colour coded	$35
DT-1316 36 ranges colour coded	$40

ACCESSORIES

CNA-1001 Daiwa 250W auto ant. tuner	$250
MK-1024 elect. keyer w/programmable memories	$195
JACKSON CURRENT SENSING CAR BURGLAR ALARM	$45
POWER SUPPLIES 240/13.8V DC:	
2A regulated current limiting protection	$35
4A regulated short circuit protected	$55
6A regulated short circuit protected	$75
ASAHI TYPE bumper mount	$6.00
STANDARD BUMPER MOUNT COMPLETE	$5
HD SPRING MOUNT w/SWIVEL BALL MOUNT	$15.00
HD SPRING MOUNT	$10.00
SWIVEL BALL MOUNT	$5.00
HD GUTTER MOUNT 3/8" 24 thread base	$7.00
MIRROR/ROOF BAR MOUNT WITH BASE	$6
MAGNETIC BASE w/CABLE & PLUG	$16.00
MAGNETIC BASE w/out CABLE	$15.00
STANDARD MARINE BASE	$5
SLOPE ADJUSTABLE MARINE BASE	$5
ADAPTORS 3/8 stud	25¢
ADAPTORS DOUBLE MALE 3/8"-5/16"	40¢
ADAPTORS DOUBLE FEMALE 3/8"-5/16"	70¢
AOADPTOR 3/8" Male-5/16" Female	70¢
COAXIAL 3-way push button switch	$15.00
DUMMY LOAD 30W to 150 MHz	$12.00
5-SECTION LP FILTER KENWOOD & SIMILAR	$25.00
YM-37 YAESU 8 pin standard mic	$15.00

ROTATORS - All rotators complete w/bottom mast bracket and for 28V AC operation
KEN KR-400 MEDIUM DUTY brake pwr 1300 in/lb $120

CABLES & BALUNS

RG8/U quality coax cable 50 ohm per metre	$1.25
RG 213/U quality coax cable 50 ohm per metre	$1.50
RG58A/U quality coax cable 50 ohm per metre	50c
RG 58C/u quality coax cable 50 ohm per metre	60c
6 core rotator cable per metre	75¢
BN-86 balun 50 ohm 1:1 1KW	$25.00
HI-Q balun 50 ohm 1:1 1KW	$15.00

TRANSCEIVERS RECEIVERS ACCESSORIES

Yaesu Musen, Trio-Kenwood and Icom equipment available plus accessories. Ring, write or call in for information brochures and prices.
KYOKUTO FM-2025A Mk 2 transceiver 2M FM10 memory 25W scanning $340

SWR/POWER/FS ETC. METERS

JD-110 SWR/PWR/FS (black) 1.5-144 MHz	$15
JD-111 SWR/PWR/FS (silver) 1.5-144 MHz	$15
JD-140 Antenna matcher 100W 25-40 MHz	$15
JD-171 SWR/PWR/FS 1.5-144 MHZ	$20
JD-175 SWR/FS/ant. matcher 1.5-144 MHz	$25
JD-176 SWR/PWR/FS/Matcher 1.5-144 MHz	$35
JD-178 SWR/PWR/FS/MOD/MATCHER 1.5-144 MHz	$40
JD-181 SWR/PWR/FS 1.5-144 MHz	$15

MARINE TRANSCEIVERS

2W 3 ch. hand-held w/crystals	$70
5W 6 ch. hand-held w/crystals	$115
5W 6 ch. mobile w/crystals	$130

CONNECTORS

PL-259 RG-8U and RG-58U types each	75¢
SO-239 1, 2 or 4 hole mount each	75¢
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T-CONNECTOR 3 x SO-239	$2.00
T-CONNECTOR 2 x SO-239, 1 x PL-259	$2.00
PL-258 Double female 2 x SO-239	75¢
DOUBLE MALE 2 x PL-259	75¢
UG175/U reducer for RG-58U coax	20¢
UG176/U reducer for RG-59U coax	20¢
ADAPTOR RCA male to SO-239	75¢
LIGHTNING ARRESTOR PL-259/SO-239	$2.00
MLS RIGHT ANGLE PL-259 to RG-58U	75¢
GLP RIGHT ANGLE SO-239 to RG-58U	$1.00
M-RING car body mount 2 x SO-239	$1.00
UG363/U 2" feed thru D/F 2 x SO-239	$1.50
CABLE PLUG for RG-213 cable	$4.00
BNC CONNECTORS SILVER PLATED WITH TEFLON INSERT:	
UG88/U male in-line plug for RG-58U	$2.00
UG1094A/U panel mount socket	$2.00
UG89/U in-line socket for RG-58U	$2.00
UG914/U double female adaptor	$3.00
UG491A/U double male adaptor	$4.00
UG255/U BNC male to SO-239	$2.00
UG273/U BNC female to PL-259	$2.00

MICROPHONE CONNECTORS

2, 3 & 4 pin plugs and sockets	each $1.00
5 & 6 pin plugs and sockets	each $1.50
8 pin plugs and sockets	each $2.00

All prices are NET, ex Springwood NSW, on pre-payment with order basis. All risk insurance is free of charge, allow for freight charges by air, road, rail or post, 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

Proprietor — ROY LOPEZ (VK2BRL)

YOU and DX

G. (Nick) Nichols VK6XI
6 Briar Place, Ferndale, WA 6155.

Without doubt it's been an interesting year of penning these articles, 12 months of somewhat surprising propagation, cycle 21 had peaked and was on its way down in July last year and many of us expected 10 metres to reflect the downturn — it didn't, in fact the last year showed 10 has still got a lot of life left in it. What else did the year hold? Some fine DXpedltions, some aborted ones, and without any question a distinct downturn in "on air" manners.

What will the next 12 months bring us? Someone prepared to write these notes — certainly at the present time no offers have been received!

What about some of the countries that have been "missing" for so long? CHINA — no I don't think we'll see activity for at least 18 months. I still believe, however, if any group of amateurs have a chance of launching a DXpedition there, then Australia would go very close to topping the list — has anyone tried?

ZA — Albania, well that's a different matter entirely — if there is going to be activity — and I believe there is — then expect it within the next six to eight months.

Closer to home, I felt XU may well have been activated this year, but from information filtering through, whilst many "foreigners" are now working there, just getting in and out is one giant sized pile of red tape. No, write this one off for some considerable time yet.

FACT AND FICTION

Desecheo, KP4/D came off, well as I write plans were being firmed for the activation June 8th through 15th — hope you worked it. I gather it is very unlikely permission for another activation will be granted for a long time to come.

Likewise a station should be active from C31 — Andorra about now, relieving some of the pressure on the locals for this semi-rare country.

ZM7 — Tokelaus Island — yet another that was due to be activated during the past month.

Rumours of PY0 — St. Peter and Paul by Recife based amateurs. Finance as usual is the problem — If you feel like helping out with a contribution send same to PY7OD or PY7ZZ (they gave you Fernando de Noronha last year). September Is the expected month, so don't delay.

KH5 — Palmyra — rumours are rife that landing permission was not obtained for the recent activation — here's hoping they're wrong!

3V8 — I do wish the rumour mongers would make up their mind. October is now heavily tipped for some activity.

TY — Benin — much more activity should be heard from this semi-rare West African nation. The International DX Foundation are presently sending a complete set of equipment to a school there, so a permanent station (in addition to Bull TYA11) will soon be a reality.

IF THE CAP FITS . . .

Quotes of the month: The times stations, after sitting in a pile-up for hours, finally gets acknowledged — first transmission "I know there's a lot of stations calling you so I wonn't hold you long . . ." and a VK5 to HK0EHM — "you've got a lovely 5 x 5 signal HJ0HM — Charlie I think you said your name was . . .".

ON THE BANDS

10 Metres

Continues to provide some fine DX but subject to severe "wipe-outs" on a regular basis.

On phone VS5DG, FH8OM, HR3JJR, S79WHW, ZK1AR, ZK2BGD, HK0FBF, HK0EHM, ZS2MI (Marion Island), ZD7BW, 5V7HL, CN8EA, TU2IJ, TYA11, FM7WE, 7P8AC, ZS3MS, XT2AU, JT1AN, JT1KAI, EA9JV, VP1ME, 8R1J, D4BCD, 9N1MM, EL2AK, C5ACZ, YK1AA, KC4AAA and HT1JML were available and worked by many VKs — how did you fair?

On CW things were a little quieter but for the patient H44RW, JA8AQD/JD1, LU6AKG, UH8EAD, UL7GBR, 9M2OK and ZS6ANL/3D6 were fairly active.

15 Metres

From the list above you may have gathered I didn't get down this far. For the CW fanatic, however, there was plenty available — K7CA/CE3, EA6DD, FK8DM, HK0BKX, IS0ZFL, SV1NN, ZK2BGD, EL0AVX, UP2PAQ, JD1AMA, 8J3XPO and 8J5SUN; the last two no doubt would have pleased the prefix hunters.

20 Metres

On phone the usual pile of DX so commonplace on this band, one exception, however, was Ted 5V7HL, rotator control box now operational (well, intermittently), worked a few VKs long path; he hopes to give more VKs a chance when conditions permit.

On CW lots of activity — A35UW, FB8YH, FG7TE, FM7AV, FY7YE, VP2VEG, VP9CB, VS5RP, ZF2AA and 3B8DB were the choicest pickings.

40 Metres

Phone was a whole mess of JAs but CW gave much relief, particularly early in the morning toward Africa, 9X5AB, ZD8TC, ZD8RH, DJ6SI/6W8, TY9ER, with long path signals from FG7BR, KP4A, KV4AA workable from VK6, whilst for the 40 buffs east of here A4XIZ, CM2PE, FO8HA, LZ2KIM, Q1BIH/PJ2 and 8Q7BI were avalable at good strength.

80 Metres

Even the fanatics have given this band a miss, the occasional ZS and JA, but really not worth the time and effort.

Many thanks this month to the following contributors — Eric L3-0042, Peter VK6RZ and Joe VK2DPI. Thanks also to people who have during the past 12 months contributed and made this column possible. Your help and encouragement was much appreciated.

Perhaps I may sign off with the following thought:

I wonder if there is one aspect of our hobby that people do not appreciate sufficiently (if at all)? It's unique. We, laymen, can communicate with persons world-wide, irrespective of race, colour, creed and "Iron Curtains". Our hobby — amateur radio — has done something which so far other human endeavours have failed to do — namely uniting people world-wide — long may we continue to do so.

QLS INFORMATION YOU MAY HAVE MISSED

ZK1AR — via AA6Z.
9G1RT — via KV7HV.
CN8EA — via CN8EI.
YK1AA — via PO Box 25, Damascus, Syria.
FH80M — via DJ1TC.
TYA11 — via ON5NT.
3E6AB — via PO Box 133, Mbabane, Swaziland.
HK0EHM — via WD9DZV.
S79WHW — via PO Box 491, Mahe, Seychelles.
EA9JV — via PO Box 100, Melilla.
HP1XOG — via VK3VYP (SASE please).
VP1ME — via PO Box 367, Belize City, Belize.
OY9R — via K2IJL.
NP4BN — via KP4EQG.
FO8EW — via Box 5498, Pirae, Tahiti.
FO8DF — via Box 5225, Pirae, Tahiti.
FO8HA — via Box 1119, Mahina, Tahiti.
VS6EY — via G3GKI.
ZK2BGD — via Box 37, Alofi, Niwe.
A35UW — via ZL2UW.
FB8YH — via F3KH.
FM7AV — via F6BFH.
FP0FSZ — via VO1FB.
HL9RW — via SN3QJ.
H44RW — via ZL1AMO.
JA8AQN/JD1 — via JA8JL.
KA2AA — via WA4TKR.
VP2VEG — via W0DVZ.
VU2BGS — via Box 153, Bangalore, India.
ZF2AA — via W8LUI.
4S7UD — via JE1QDQ.
4S7US — via DF2RG.
8Q7BI — via JH4RUG.
VP2VHK — via N6ZV.
ZD8RH — via G4DBW.
9K2AH — via JA8BI.
HP1XEK — via DL1HH.
TL8CN — via W5RU.
N4ADJ/KH2 — via WB4CCT.
RG4C — via UK4CAA.
VP2MKU — via N6ST.
YB8AEG — via WB2JOC.
YB0ACP/6 — via K6DLV.
DJ6SI/6W8 — via DJ6SI or DK9KD.
VE7AAZ/4U — via VE1VWV.
FM7CD — via F5VU.
TY9ER — via DL8DC.
VQ9PF — via KA2EER.
HK0BKX — via WB4QFH.
BV2A — via JA2MTO.

VK0s IN ALPHABETICAL ORDER

AB — via VK2BRN.
AC — via VK3ZQK.
AE — via ??
AL — via ??
AP — via VK3VPJ after April, 1981.
AS — via VK3ZAT.
BA — via VK2ACI.
BC — via VK8VV.
CC — via VK2BCC.
DB — via 568 St. Kilda Road, Melbourne.
GM — via VK6 Buro.
GS — via VK2AOZ.
GW — via VK5GW.
HM — via W7PHO.
JC — via OZ8AE.
JM — via VK3BAF.
JS — via VK6NS.
KC — via VK4 Buro.
KH — via VK5WV.
KS — via VK3 Buro.
LD — via V2RS.
PK — via VK5 Buro.
RD — via ??
RM — via VK3AKK.
RP — via VK3YAP.
SF — via VK3SF.
SJ — via 568 St. Kilda Road, Melbourne.
SW — via VK4ATS.
TB — via VK3ADD.
VL — via VK3 Buro.
WR — via W7ZFY.
WW — via VK5XX.
XX — via WA7ABK.

Numerous requests for QSL information and numerous misdirected cards for VK9 and VK0 have lead me to obtain the following detailed information:—

VK9s IN ALPHABETICAL ORDER

BS — via W3HNK.
CCT — via VK5QX.
CGR — via VK5QX.
DIK — via DJ5CQ.
FV — via ??
JJ — via K9IL.
KK — via WA3HUE.
MR — via K9IL.
NA — via Norfolk Island.
NI — via Box 27, Norfolk Island.
NC — via Norfolk Island.
NK — via W6EDN.
NL — via PO Box 103, Norfolk Island.
NM — via EJ5CQ.
NNW — via Norfolk Island.
NNI — via PO Box 27, Woolgoolga 2450.
NS — via PO Box 103, Norfolk Island.
NV — via OTC, La Perouse.
NYG — via VK6NE.
RH — via Silent Key.
TR — via N2IT.
TV — via ??
XI — via VK6RU.
XS — via VK9NS.
XT — via VK3OT.
XW — via VK6RU.
YJ — via K9IL.
YK — via WA3HUP.
YN — via WA3HUP.
YR — via K9IL.
YS — via VK9NS.
YT — via VK3OT.
ZG — via VK6 Buro.
ZM — via VK4ABW.
ZR — via VK2BJL. ■

AWARDS COLUMN

BILL VERRALL VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

BLUE MOUNTAINS AWARD

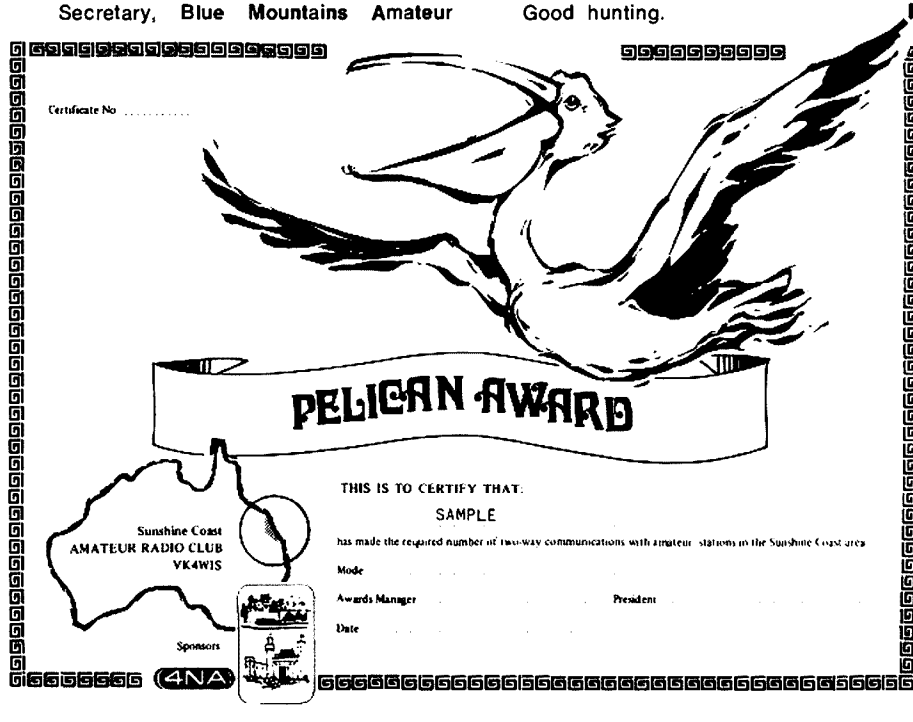
1. This award is available from the Blue Mountains Amateur Radio Club to all licensed amateur radio stations and short wave listeners.
2. Stations must work five (5) members of the Blue Mountains Amateur Radio Club under their own call. A member will only qualify once as a contact for the award.
3. The club station, using either VK2AUX or VK2NCM, will qualify as one contact if contacted only during the weekly net. However, the club station may be counted more than once if worked on nets in different weeks (up to the necessary five (5) contacts). The club net takes place on 3.540 MHz each Tuesday evening at 8.00 p.m. EST.
4. Any mode and any authorised band will qualify. This applies regardless of the location of the applicant.
5. QSL cards are not required. Applicants must send a log extract containing all relevant information (date, time, frequency, mode, signal report and name and call sign of the station worked).

   SWLs must indicate both call signs of the stations heard in QSO and if the club net is claimed, one station involved in the net, not necessarily a club member.
6. The cost of the award is $0.50 or two (2) IRCs.
7. Applications are to be made to The Secretary, **Blue Mountains Amateur Radio Club, PO Box 54, Springwood, NSW 2777.**
8. **DESCRIPTION:** The award is printed on cream card with all printing in black. It measures 180 mm x 255 mm.

PELICAN AWARD

1. This award is available from the Sunshine Coast Amateur Radio Club to all licensed amateur radio stations.
2. Stations must obtain ten (10) points by working Sunshine Amateur Radio Club members. Overseas stations need only obtain five (5) points for quallfication.
3. Stations can be worked on any band using any authorised mode.
4. A contact with the club station VK4WIS counts as two (2) points.
5. QSL cards are not required. Applicants must send a log extract containing all relevant information as in 5 above.
6. The cost of the award is $2.00 or 10 IRCs.
7. Address all applications to the Awards Manager, **Sunshine Coast Amateur Radio Club, PO Box 80, Nambour, Old., Aust. 4560.**
8. **DESCRIPTION:** The award is printed in two colours on good quality white matt paper. The title is in blue and black, the bird in black and surround blue. This award measures 305 mm x 230 mm.

Good hunting. ■



TRY THIS

WITH THE
TECHNICAL EDITORS

A HOME BREW UHF SIGNAL GENERATOR

Bruce Mann VK3BM of Swan Hill

Suddenly one is Involved in UHF and it is a new ball game. Our farm and the district have gone for UHF CB in a big way, but unfortunately a number of these transceivers appear to be deaf. On the assumption that the problem is in front end alignment and as the recommended signal generator would cost thousands of dollars I decided to build my own. After weeks of frustration there was finally a satisfactory result. So it is hoped that the following will be of interest to the 432 MHz boys.

The first attempt was to put one of these sets with batteries and dummy load into an aluminium box. But even with cover screwed down tightly there was so much leakage that the S meter of a receiver 20 metres away went hard over. At 50 metres distance the S meter averaged S7 but was wavering so much that attempts at alignment were aborted by violent movement of the meter whenever one put a hand near the set. Obviously the unshielded receiver was picking up the signal directly. The requirement then seemed to be to build a completely shielded signal generator so that the signal at required strength could be fed solely through the 52 ohm antenna terminal of the receiver. A box of much thicker plated steel was obtained, the transceiver and batteries enclosed and leaks spotted by the use of a mini loop on a coax lead to a receiver aerial terminal. Despite every effort there remained far too much radiation. So this first box was placed inside a similar but larger box. But surprisingly radiation, though less, was still at an acceptable level.

In desperation I tried the effect of raising the inner box from the floor of the larger one to a central position and supported if there by stuffing in screwed-up newspaper. The result was much worse! But there was perhaps a clue — connection between the boxes. A wire from the inner to the outer box greatly reduced radiation. This was followed by earthing the outer to the inner box with eight well spaced set screws and this brought radiation to below the identifiable level.

ATTENUATION

Having successfully contained the 470 MHz signal within the shielding the problem now was to feed out this signal through a coaxial cable at any desired level from fractional microvolts to the full output of the 4 watt transmitter.

I first tried conventional T pads using carbon resistors in diecast boxes. But I soon abandoned this because Belling-Lee UHF connectors, RG8CU coax and Eddystone diecast boxes all leaked 470 MHz like sieves.

Then one sleepless night there flashed into the failing memory facts from a prewar article on the then newly discovered wave guides. This pointed out that there is tremendous attenuation in a wave guide that is much undersized at a given frequency. Next morning crude experiments with a piece of ¾ inch copper tube and hairpin loops on coax showed that from full output (about 4 watts) down to practically zero required the separation of the loops within the tube of only about two inches. Further experiment showed that a pair of small discs, one fixed and one movable, were better than loops.

Problems were thus solved. All that remained was to tidy the haywire set-up, calibrate it and put it to use.

At this point I will mention some of the details that seem to have been necessary in the achievement of the satisfactory result:—

The spot welded seams of the metal boxes had to be thoroughly soldered. The front panels of the boxes had to be tightly screwed down using a screw every inch, after having made certain that the facing flanges were true. Virtually every crack and hole had to be blocked with metal.

Each power lead out of the inner box had to pass through a feed-through capacitor and then through double-shielded wire having the shield braid earthed at each end. The necessary switches were covered by a small diecast box bolted to the rear of the front panel.

The RG58CU cable from the inner box to the front panel required a second copper braid over the outside and the braid had to be properly earthed.

The solid brass type of Acme UHF coax connector was necessary on the front panel. The fixed attenuator disc of about ⅜ inch diameter on a short stem was plugged into the central contact of the Acme panel socket.

The attenuator tube was about 6 inches of ¾ inch copper tube with the threaded sleeve from a coax connector soldered to one end. This screwed onto the panel Acme socket. As there was marginal leakage at this sleeve and also from the first inch or two of the tube, another tube was put over this one and fastened by a flange to the front panel.

The movable attenuator disc was soldered to the centre conductor of a metre of coax. Over the coax was fastened insulating bushing that centred the disc in the tube but allowed free movement back and forth. A lever was linked to the coax and the scale drawn and calibrated.

The 12 volt rechargeable batteries were placed in a diecast box above the set-up and connected via feed-through capacitors and double shielded wire as described earlier.

IN USE

With the output cable from this signal generator plugged into the aerial terminal of a transceiver front end alignment was a simple matter but unfortunately this did not fix the deafness problem. Experiments proved that the receivers, to achieve good results, had to be tuned on a steady signal through their usual antenna and feedline set-up.

So we built a small ground plane antenna and connected the signal generator to it, and found some interesting effects. It was observed as in our first experiment that under some conditions too much signal was being picked up directly by the unshielded receiver rather than through the antenna terminal. This rendered alignment impossible, for to put a hand near the set would violently swing the S meter reading. This problem was usually overcome by careful placement of the generator and ground plane antenna. In general the best position for these was on the ground closer to the receiving antenna than the receiver, if possible, with a clear path between the two antennas. Severe movement of the S meter will be caused by moving people, foliage, etc., in the path of the signal. Even trees not in the direct line, but waving in the wind, have caused trouble through reflections. Alignment in situ in most cases made a dramatic improvement in results.

432 MHz

The foregoing of course referred to experiments on 470 MHz CB but surely there are lessons there for 432 MHz? Text books invariably stress the importance of antenna coupling in a UHF receiver.

I was astonished at the simplicity and effectiveness of the copper tube attenuator. It seems to me that it would be quite feasible to make an effective signal generator for 432 MHz using this principle.

How about a simple miniature crystal controlled transmitter built on a strip of Vero board complete with battery? This could be slid down a copper tube (say 2 inch diameter) and the output taken off from a coax connector on a closed end, or alternatively on a support pushed well down the tube. Output could be varied by sliding the transmitter thus varying the spacing between a disc on Tx output and a disc on the coax.

Anybody care to try it?

TECH. EDITOR'S NOTE

Some years ago 73 Magazine carried an article discribing a signal generator similar to the one suggested by Bruce. The waveguide-below-cutoff attenuator can be used to achieve great precision in measurements. It is used in commercial attenuator calibrators for example.

If you build the above suggested generator the mini-transmitter will need to be held on a non-conducting rod If elaborate screening is to be avoided. A noise generator with a high output could be used instead of the mini-transmitter to allow testing of many frequencies. (VK3APW.) ■

THE PARASOL ANTENNA: A Cheap Tribander

The information presented here was provided by Dick VK3SV.

Quite a number of amateurs have now built this antenna with claims of 5 dB gain, 18 dB front-to-back ratio and 37 dB side rejection being made for 15m operation. Some constructors dip the loops and adjust the length for resonance at favourite frequencies but Dick cut his to nominal size and used an ATU.

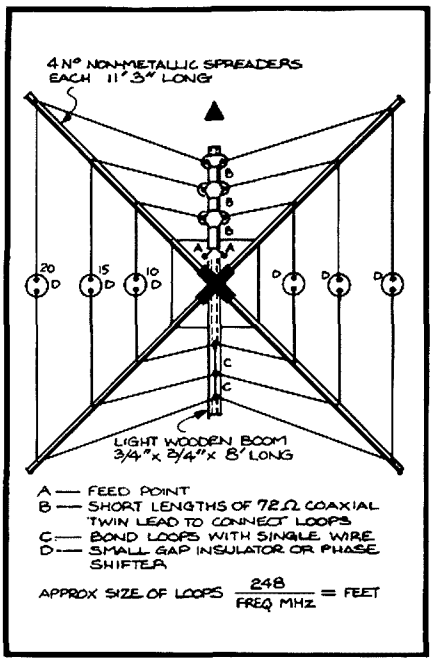


FIG. 1

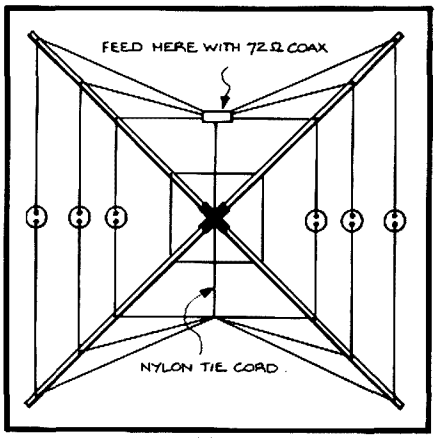


FIG. 2

The original VK2ABQ antenna was described in Electronics Australia, October 1973. Fig. 1 shows a modified version which reduces the element spacing slightly at the current maxima. This is done by pulling these points in towards the centre. An improvement in front-to-back ratio is claimed. Coat buttons were used for insulators in the original system. Egg insulators are suggested.

A simplfied construction is shown in Fig. 2. In both cases the antenna is drawn as seen from above.

Figs. 3 and 4 show the construction used by Dick in building his Parasol.

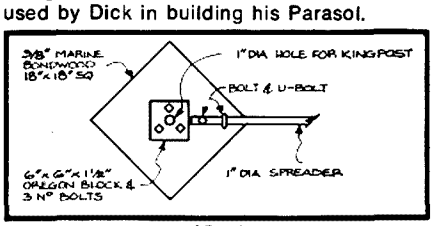


FIG. 4

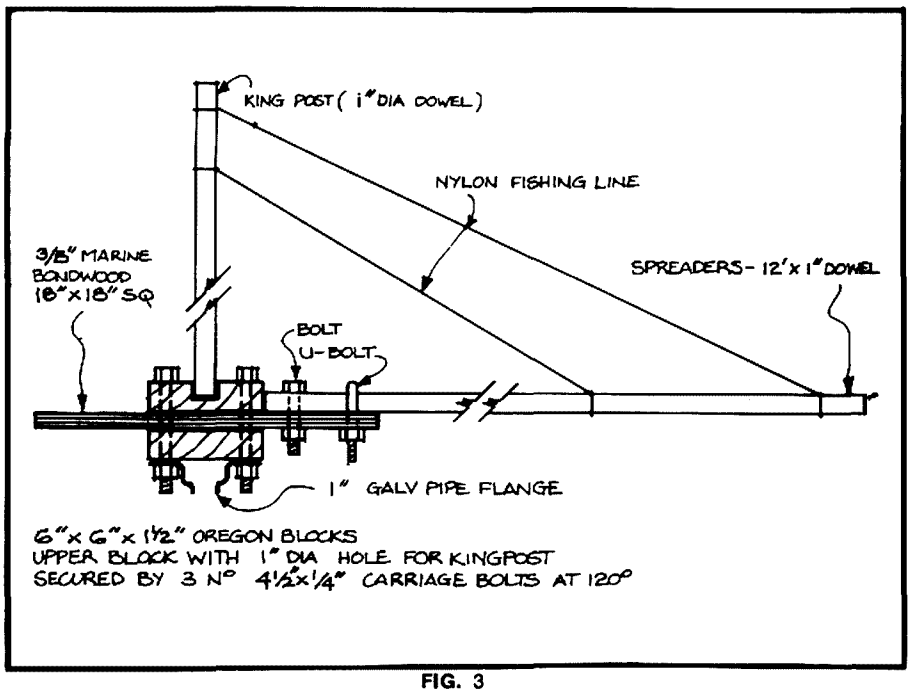


FIG. 3

THE BOW-TIE MONOBANDER

For the person who prefers a mono-bander Fred VK2ABQ has devised the Mono-band Bow-tie. This is shown in Fig 5. A gain of 6 dB and a front-to-back ratio of 20 dB are clamed. Details again via Dick VK3SV.

The information given In Figs. 1 and 5 was previously published in Radio Communications, probably during 1979.—VK3AFW. ■

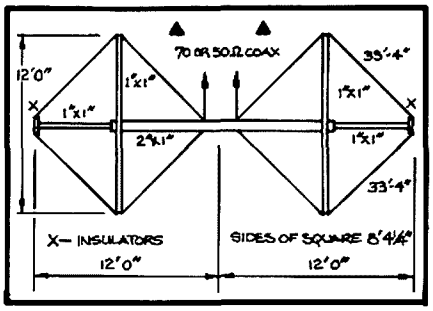


FIG. 5

INTERNATIONAL NEWS

NEW BANDS

On a unanimous vote the delegates at the IARU Region 2 Conference held in Lima from 13th to 17th October, 1980, supported these criteria for the use of the new (shared, secondary) 10 MHz band when it becomes available (details in brief):—

- Telegraph only — RTTY permitted only in top 10 kHz;
- No competitions or contests, no points or awards;
- Operations only permitted to the higher classes of licence In each country;
- Max. power 250W;
- All R2 societies to request their administrations to adopt these criteria.

In relation to the 18 and 24 MHz bands the delegates, recognising that it may be some years before these two new exclusive bands become available, endorsed the principle of regionwide uniformity in the subdivision by transmission modes. Without specifying precise sub-band allocations It was agreed that the lower portion of each band would be used for CW, RTTY in a relatively narrower segment at the upper end of the CW band and the remainder for radiotelephony and SSTV.—Region 2 News, January 1981.

PHILATELY

The Region 2 News contains details of new amateur radio postage stamps bringing the world total to 19. The new ones are a $700 Argentina stamp carrying the words "Homage to the Radio Amateurs", a 7c "Isla Catalina" Dominican Republic stamp, a Polish postal card commemorating the 50th anniversary of PZK and a Djibouti 250F stamp honouring amateur radio to come out on 25th June (first day covers from ARD Box 215, Djibouti). ■

AMATEUR SATELLITES

R. C. Arnold VK3ZBB

AMSAT AUSTRALIA

At the recent Federal Convention it was agreed that our satellite group would, in future, be known as AMSAT AUSTRALIA under the auspices of the WIA. This will be a significant step forward in our relations with other international AMSAT bodies and in fact will bring us in line with the rest of the world. It is to be hoped that this will not reflect adversely on the name of its predecessor, OSCAR 5, which, in turn, led to the great success of OSCARS 6, 7 and 8.

AMSAT DONATION

Also at the Federal Convention it was agreed that the Wireless Institute would make a donation of $US500 towards the construction of Phase IIIB satellite; I am sure that all members of WIA who are interested in satellites will be grateful for this generous gesture.

SATELLITE OPERATIONS

Both satellites continue to operate reasonably well, although AO7 has been very noisy during the past month or so. As I indicated recently, it is possible that AO7 is travelling on the fringe of the sun's illumination and this is causing a reduction in the voltage to the transmitters. This situation will probably continue to the end of July. I have reports from time to time that AO8 is missing but although I do not check every orbit my own records show that it has always appeared on time but tends to disappear halfway through the pass, probably due to antenna shading.

"MOTORVATION"

Courtesy AMSAT Satellite Report.

The liquid fuel kick motor option discussed in ASR No. 4, April 6, 1981, is again in the news. AMSAT DL has received the assurance of the West German manufacturer that the motor will be made available to AMSAT. Coincidentally, news from W3GEY is that we have obtained a solid fuel kick motor donation as well. AMSAT officials were obviously delighted at this turn of events because of all the satellite sub-systems aboard Phase III, the kick motor was least likely to be fabricated in-house. As it stands, it is a bolt-on subsystem on which the entire mission critically depends.

Does the sudden confluence of kick-motors itself cause a problem for AMSAT? Assuming that the required plumbing can be obtained for the liquid motor, the availability of one of each breed (liquid vs. solid) meshes rather well with other long-term planning scenarios. For example, as is well known, Phase IIIB is due to be launched mid-1982 from the European Space Agency's Kourou, French Guiana facility by an Ariane rocket. Since the primary mission of the Ariane calls for insertion of the payloads into an orbit inclined 7° to the equator, AMSAT will need more kick motor energy on Phase IIIB than would have been needed on Phase IIIA. That is because the transfer ellipse on Ariane LO2 which carried Phase IIIA was designed for 17° inclination. From the transfer ellipse of 7° or 17°, AMSAT would very much like to attain an inclination in the 60 to 63° range. (See ASR No. 4 for the underpinning rationale.) Thus, since more energy is needed for Phase IIIB to go from 7° to 60° plus, it is fortuitous to have the liquid option.

On the other hand, substantially less is known about Phase IIIC and its "ride". AMSAT is presently diligently working to secure a ride for Phase IIIC. With a renewed interest in the United States in continuing the larger launch vehicles well into the 80s, the possibility of obtaining a US ride is somewhat brighter than, say, a year or two ago. In the case of a US launch, however, the solid fuel motor will do quite nicely since the transfer ellipse of a typical heavyweight US launch has a higher inclination. That means less energy must be carried aboard Phase IIIC to attain a usable orbit. And that means the solid fuel rocket is quite satisfactory.

If you imagine AMSAT's future project planning as a score card or the like, with a number of boxes to be checked-off before the mission can be accomplished, then the score cards for both Phase IIIB and IIIC have several very important boxes checked-off (albeit in pencil for the moment).

SPACE SHUTTLE

From Mode J Newsletter, courtesy Larry W9MXC.

Many questions are being asked WHY isn't AMSAT investigating launch opportunities on the space shuttle? NO good answer has been given. One source said he was told by an AMSAT representative AMSAT does not have the expertise to provide an (IUS) Intermediate Upper Stage, which would carry the satellite from the point it would be kicked out of the shuttle to the desired orbit we would require. I can't believe this is acceptable, out of our vast technical pool do you mean to tell me we don't have the needed experts, or is it we've not explored this avenue? We should get our FOOT IN THE DOOR with "NASA" and try to secure a possible ride, then get our heads together and if necessary develop the expertise (that is if we don't already have it). No experts — BULL — "CAN'T NEVER COULD DO ANYTHING". Let's get in the Ball Park, fellows, we may not come to bat but we've at least made a showing.

OSCAR 7				OSCAR 8		
Date	Orb. No.	Eqx Z	Eqx °W	Orb. No.	Eqx Z	Eqx °W
JULY 1981						
4	30329	0112	98	16969	002	62
11	30417	0147	107	17067	0034	70
18	30504	0027	87	17165	0107	79
25	30592	0102	96	17263	0140	87
AUGUST 1981						
1	30680	0136	105	17630	0029	69

OSCAR 7 operates on Mode A and Mode B on alternate days subject to some unpredicted variation.

OSCAR 8 operates on Mode A Monday to Thursday; Mode J Saturday and Sunday; Modes A and J. Tuesday and Friday; experimental use Wednesday.

SPACECRAFT FREQUENCIES

Mode A: Uplink 145.850-145.950 MHz; Downlink 29.400-29.500 MHz.

Mode B: Uplink 432.125-432.175 MHz; Downlink 145.975-145.925 MHz.

Mode J: Uplink 145.900-146.000 MHz; Downlink 435.200-435.100 MHz. ■

WICEN

R. G. HENDERSON
Federal WICEN Co-Ordinator

My column this month follows up a few matters raised at the recent Federal Convention.

CALLING FREQUENCIES

The Convention confirmed the proposed 15 and 10 metre WICEN frequencies, so the HF net frequency list is:—

3600 kHz, 7050 kHz, 14100 kHz, 21190 kHz, 28450 kHz.

Experience over several years has indicated that, because of our wide range of available frequencies, it is desirable to have set calling frequencies; again practice has shown that these need not be slavishly adhered to as network working frequencies, indeed some States use different frequencies for their weekly reporting and training nets.

On VHF and UHF the local repeater channels will obviously be preferred, but note should be taken of the declared WICEN repeater allocations established in some States, for example, 147.150/146.550 MHz (VK2) and 433.65/438.65 MHz (VK3).

DOC REGULATIONS

Following the granting of third party traffic privileges the Handbook is somewhat out of date regarding WICEN exercises. The current situation is that we should advise local radio branches of exercises before the event (as distinct from seeking approval). This action has several advantages for third party conditions must still be satisfied; we want them informed should we suffer deliberate interference and it's a courtesy that contributes to our contact and liaison and shows we are acting in a reasonable manner. Emergency operations regulations are monitored by our representatives at the joint DOC/WIA meetings.

THE NAME WICEN

The name WICEN came in for some discussion at the Convention for it was

pointed out that it does not mention amateur radio communications and means little to the man in the street, or to the disaster authorities or SES unless they have been well briefed. Some co-ordinators may recall that the possibility of a name change was discussed about three years ago.

The British use the mnemonic RAYNET (Radio Amateurs' Emergency Network) to describe the RSGB emergency communications organization which may exercise at civic activities within certain guidelines.

In the USA the Amateur Radio Emergency Service (ARES) and the National Traffic System (NTS) are sponsored by the ARRL and Radio Amateur Civil Emergency Services (RACES) is sponsored by the Federal Emergency Management Agency. ARES can operate in "non-declared emergencies", such as civic service, whereas RACES operations are authorized by the FCC upon request from disaster agencies.

Those readers familiar with WICEN will appreciate that we operate in reasonably unrestricted circumstances, we can take part in training exercises, civic services exercises and may be called out by the disaster agencies, viz., NDO, SES or the police.

Personally I see merit in a descriptive title, but also recognize the need for some continuity or bridging with our existing title, so what do you think of this?

"WICEN — Amateur Radio Emergency Communications, shortened to WICEN-AREC", with the ability to drop the "WICEN" prefix at a later date if so authorised. But please do not forget that "WICEN" in full describes our historical origin.

MESSAGE FORMS

The need for a message form for amateur radio third party messages was raised recently (AM May 1981) and the Convention considered that it should follow the general style of the existing SES message form (as adopted by WICEN), with the non-applicable boxes omitted.

This is a sensible and natural progression as only confusion would result if a completely different layout were used. I hope to reproduce the form in next month's column. ■

INTRUDER WATCH

Graeme Fuller VK3NXI

The campaign against the OHR signal nicknamed the "Woodpecker" has made it necessary for some extensive changes in the reporting of intruders for the Intruder Watch.

The changes really relate to concentrating more on specific cases of harmful interference encountered in your observations instead of just scanning the bands up and down and reporting everything you hear.

To get our Administration to take notice of our reports and act upon them we have to be more precise in our reporting.

Here is a sample report which lays out this concept. Although the sample is typed that is not obligatory so long as the report is legible, well spaced and with as much detail as possible.

The words "harmful interference" are mandatory as they carry more weight with our Department than any other.

Also the specification of the interfering signal causing the interference to you or to some stations heard underneath that interference is important.

A bearing is helpful, too, specifying whether it is long or short path.

Suitable log sheets, together with a summary, will be forwarded by me to our Department for action.

However, the above does not mean that you should discontinue altogether scanning the bands and reporting what you hear, but when you do report that type of observation put it on a separate sheet from that of specific interfering signals. General observations are helpful for summary purposes because the monthly summaries are forwarded to the Headquarters IARU Monitoring Service in England and to the USA, where they are subsequently forwarded to the FCC, both of whom compare them with observations from other countries.

We must now congratulate Fred VK1MM, Bill VK2PFH, Frank VK3VAV and Frank VK7BC on their appointment as IW Co-ordinators. Hereunder is a list of the other Australian Co-ordinators:—

VK4 — Gordon VK4KAL; VK5 — Leith VK5LG; VK6 — David VK6WT; VK8 — Henry VK8HA. ■

LEGEND
'M' = Measured
'E' = Estimated

WIRELESS INSTITUTE OF AUSTRALIA – INTRUDER WATCH SERVICE
SAMPLE
OBSERVER'S LOG SHEET

MONTH

NAME AND CALLSIGN

ADDRESS

RECEIVER: Drake TR7 general coverage.

AERIAL(S): Hygain quad.

DATE	TIME GMT	FREQUENCY IN kHz 'M' OR 'E'	CALLSIGN IF HEARD	MODE	RST	BEARING 'M' OR 'E' DEGREES	DETAILS OF TRAFFIC IF KNOWN AND ANY OTHER INFORMATION
07	0530-40	21151	-	P9	5 9	130 long path	OHR pulse signal "woodpecker" covered VK3XB and several novices from USA intermittently causing them to have to close down.
12	1030	14072	-	P9	5 9	330	OHR signal caused harmful interference to VE1BBK and W3PA. Heard W3PA say "sorry Ron but QRM from the woodpecker here".
12	1057-1110	14071	-	P9	5 9	330	OHR caused harmful interference to me VK3LC in contact with W2KZM who remarked "can hear the woodpecker here which makes copy hard".
12	1142-54	14072	-	P9	5 9	330	OHR caused harmful interference to me VK3LC in contact with WB5NUK who remarked "sounds likeaa commercial pulse over you"
14	0524-35	21172	-	P9	5 9	130 Long path	OHR caused harmful interference to me VK3LC in contact with VE7FEF who remarked "woodpecker here Russians have agreements but don't seem to keep th[illegible]
14	0535-0602	21172	-	P9	5 9	130	OHR caused harmful interference to me VK3LC in contact with DJ6HE who remarked " I can hear the woodpecker here now". The interfering signal kept on for quite a long time after my contact.
18	0745-0800	14265	-	P9	5 9	130	OHR caused harmful interference to me VK3LC and VK3XB in contact with G5XB and G3KSH our weekly sked for Intruder watch.

AROUND THE TRADE

NEW ANTENNA

Chirnside Electronics have recently released an additional tri-band beam to their already extensive range of mono and multi-band antennas.

The new addition is the model CE-35DX, which features 20-15-10m operation with the use of traps for automatic band selection.

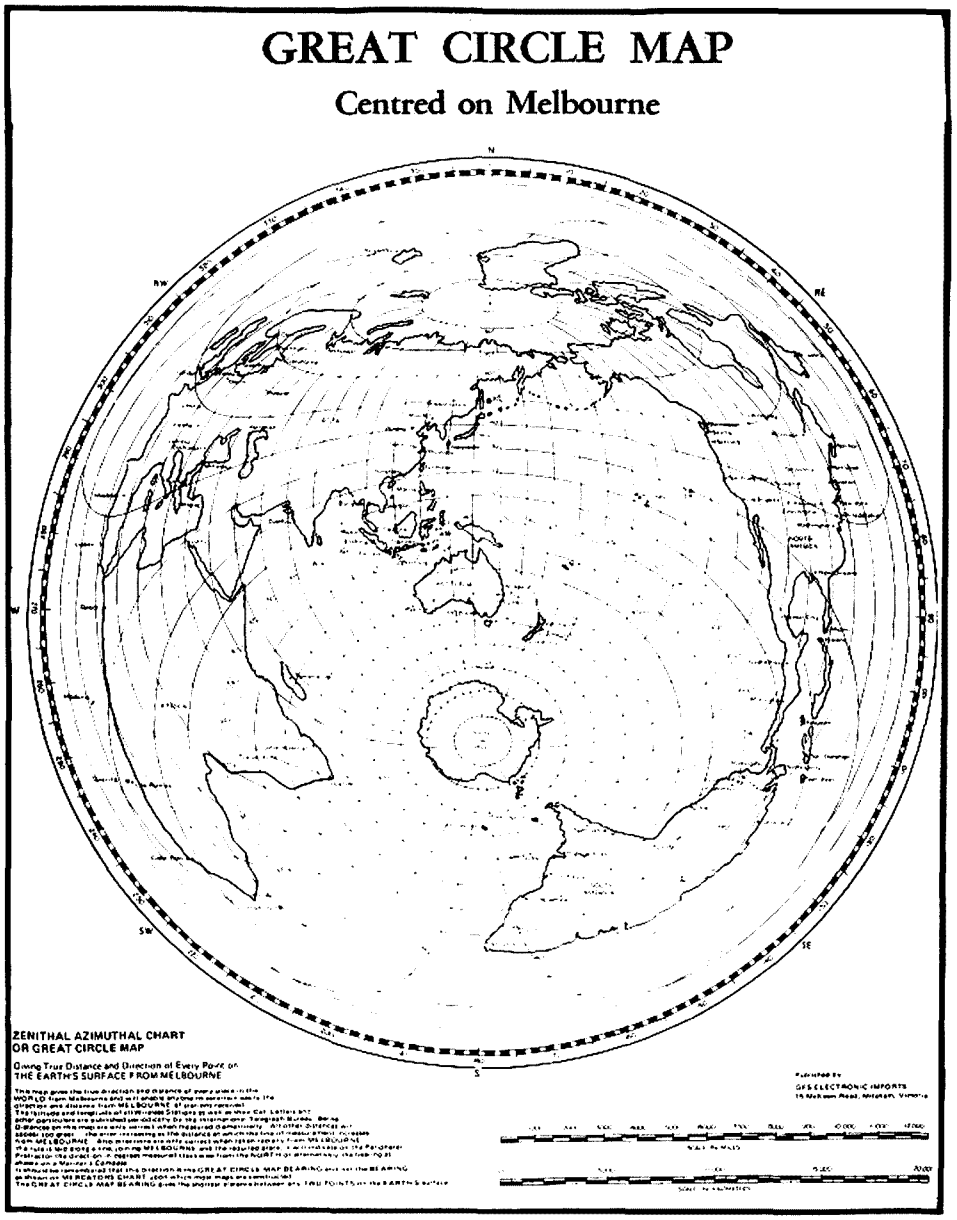
Unlike the already very successful model CE-35, which features 3 elements on each band, the model CE-35DX features 3 elements on 20m, 3 elements on 15m and 4 elements on 10m, all mounted on a 6m boom (19 ft. 3 in.). The average gain is 9.5 dB and the average F/B ratio is 25 dB and is capable of handling up to 2 kW PEP.

Like all other Chirnside antennas, this model also features heavy duty elements made of high grade aluminium. Elements with traps in them start at 30 mm or 25 mm in diameter, depending on the amount of traps used. The two elements without traps start at 19 mm and taper down to 12 mm and are neatly finished with plastic end caps on all elements. Stainless steel compression clamps are used at the adjustable joining sections for strength and durability and also allow for easy adjustment where necessary. The assembly of this antenna is made very easy with the use of a colour code system, as featured throughout the existing range of their antennas. This antenna (CE-35DX), like all Chirnside's other antennas, is neatly packed in a heavy duty carton which measures 2.25m x 15m x 15m (7 ft. 6 in. x 6 ft. x 6 ft.). The approximate weight of the antenna when packed is 24 kg. The recommended retail price of the CE-35DX is $299, which appears to be good value for money.

Chirnside antennas are now available from some interstate and country dealers. Contact Chirnside to find your nearest dealer.

For further details contact Chirnside Electronics, 26 Edwards Road, Chirnside Park, Lilydale, Vic. 3166. Ph. (03) 726 7353. ■

CW Electronics of Brisbane has changed premises from their old location in Tarragindi to 416 Logan Road (Pacific Highway), Stones Corner (next door to the post office). CW's managing director, Brian Beamish, said that the move will offer more convenience to clients and "permit us to demonstrate and display our goods and services to the best advantage. This move demonstrates our growth, which at some stages has even surprised me," stated Mr. Beamish, "whereas many companies in this area, especially in radio, are pulling in their horns, we see this as a prime opportunity to expand both our goods and services to the enthusiast." ■



GREAT CIRCLE MAP IN PRINT AGAIN

GFS Electronics Imports of Mitcham, Victorian, advise that they have available, once again, their Melbourne centred Great Circle Map, which has already proven popular with many amateurs around the country.

The Great Circle Map, known as a Zenithal Azimuthal Chart, gives its user the true direction and distance from Melbourne to every point on the earth's surface thus enabling the accurate directing of beam type antennas. Size of the map is 43 x 32 cm. It may also be used, with reduced accuracy from any city in Australia.

Price of the map, including postage, is $2 and it may be obtained from GFS Electronic Imports, 15 McKeon Road, Mitcham, Victoria 3132. Ph. (03) 873 3939. ■

1981 FOREIGN AND UNITED STATES CALL BOOKS NOW AVAILABLE

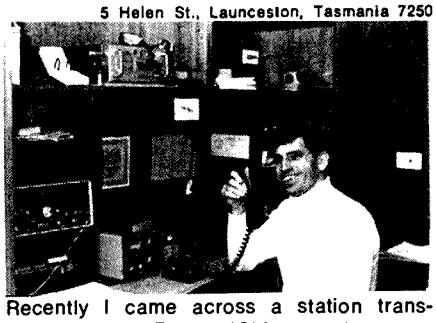
The 1981 Foreign Listings Radio Amateur Call Book now has over 360,000 listings, while the 1981 United States Call Book has 398,829 US radio amateurs listed. As well both call books boast a wealth of other useful information such as QSL Managers, World Call Prefixes, International Postal Information, Standard Time Charts, World QSL Bureaux, plus others.

Both of these Call Books are now available from GFS Electronic Imports, Mitcham, Victoria. GFS also have the 1981 print of the Radio Amateurs' Kit of Maps, which consists of three maps plus an atlas. All maps and the atlas are printed in four colours with zones and call prefixes marked.

For more details contact GFS Electronic Imports, 15 McKeon Road, Mitcham 3132. Ph. (03) 873 3939. ■

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
5 Helen St., Launceston, Tasmania 7250



Recently I came across a station transmitting an English/Chinese language lesson while I was scanning across the 48 metre band. On the night I heard it, signals were very clear, and the lesson was from a primer with the story of Peter and the Wolf.

Now the only Chinese station listed as being on this frequency in WRTH 81 is the People's Broadcasting Station in the Xinjiang Autonomous Region. This part of China is located in the remote north-west area, close to both the Soviet and Mongolian borders. So it was really with some trepidation that I submitted an English language report to the station.

I was certainly surprised and excited to receive their reply exactly one month later. Unfortunately, it was written in the Chinese alphabetic script! So it was another three weeks or so before I could obtain an accurate translation of the letter and confirmation card. The number of Chinese-Australians who can neither read nor converse in their ancestral tongue really surprised me. They were embarrassed, and so I was as well for putting them under pressure. The Chinese script is not made up of letters or symbols as the European or Arabic alphabets from which our alphabet has been constructed, but is made up of ideograms. That is, one symbol represents an idea rather than a letter, which sounds much simpler if people cannot understand each other's speech, but comprehend the ideogrammatic symbols. Unfortunately, there are seven to eight thousand symbols to be learnt, making it extremely complex. The Chinese themselves have tried to standardize is to 770 symbols, whilst the Japanese have tried to simplify it down to 63, and in effect created another script.

When it was translated, they confirmed that I had indeed heard their station. This was possible because the subject matter in the lesson I mentioned earlier, as well as several key sentences and words in English, were enunciated clearly and precisely, spelling out the words letter by letter. This did make it easier to compile a report on the broadcast.

Urumchi, where the station is located, is the capital of the vast Xinjiang (or Sinkiang as we were taught at school many years ago) Autonomous Region. Its population is made up principally of Uighur and Kazak tribespeople and nomadic Mongolians .The Han (Chinese) are in the minority. There is also a close relationship with the fierce hill people to the south and west. Also of significance, that there are large Uighur and Kazak populations not far away just across the border in the USSR.

Because of its strategic position close to the Soviet and Mongolian borders, there is a large transmitting centre relaying Foreign Service programmes from Beijing (Peking) to these areas. However, it appears that 6120 kHz is used for domestic service programmes in Chinese. This vast region with a widely scattered but mobile listening audience needs several channels to cover the area. Not only do they broadcast in Chinese, they also carry Uighur and Mongol. They also forwarded me copies of the programme guides in the Kazak and Mongol scripts. I somehow think it unlikely that there would be anyone in Australia able to read or translate them. Interestingly, the Mongol script goes from bottom to top, left to right. The Kazak one is very similar to Arabic and Persian. This isn't surprising as they are predominantly Islamic. It reads from top to bottom, but right to left.

If you are interested in attempting to catch this station, listen on 6120 kHz at approximately 1300 GMT, when they broadcast the English lessons. The station informs me also that 4735 kHz is allocated for Kazak programmes, with an additional channel on 3960 for their Chinese broadcasts. Other frequencies in use are 2330, 3609 and 3738 kHz, but I am unbale to state what language they employ.

Recently I received back a QSL card from Radio Nederland in Hilversum on their 9770 kHz transmitter located at Bonaire. It came back in exactly 10 days compared to exactly four months for a report from the BBC in London. So what is significant in that? Nothing really, except that I know of several SWLs who still are awaiting confirmation from these stations. I do not think it is the fault of the stations concerned, but the bad quality of submitted reports.

It is certainly not sufficient just to state that you observed the particular station on a given frequency at x hours local time and that you would like a QSL card, as in one case I heard of lately. Reports such as these are destined for sure straight for the waste paper bin.

Set out your reports and observations neatly and legibly, stating the frequency in kilohertz, with all times in Co-ordinated Universal Time/GMT; it would aid verification if the local time at the station is included as well, this as well as 15 to 30 minutes of programme information, signal strength (preferably using the Sinpo System), etc. Where stations don't normally acknowledge listener's reports, they as a rule reply to the comments about their programmes for it indicates to them that people are listening to them. Audience feedback is very important to their planning and presentation.

With small stations on a limited budget, it helps if you include return postage in the form of International Reply Coupons (IRC) or unused mint stamps to the value of postage. This will not be necessary with the larger broadcasters, however you will elicit if it is required, from the QSL columns in the shortwave club news sheets.

They would also like to know some information about you, your interests and activities. Above all, indicate some interest in their broadcasts even if you violently disagree.

Listening around the various frequencies from time to time, you have possibly come across the Volmet Networks. These are Utility Stations that transmit weather bulletins from various regional air terminals throughout the world, for the benefit of transoceanic flights, and other terminals. The information usually consists of wind direction and velocity, barometric pressure (QNH or altimeter), visibility, temperature (both wet and dry), cloud cover expressed as OCTA (five OCTA means 5/8th cloud cover, eight means completely overcast) as well as upcoming terminal forecasts. Most are aired in English on Upper Sideband.

Inforamtion is updated every half-hour. Sydney Volmet, VLS, on 10017 can be heard on the hour and half-hour. It also uses 3432 and 6680 kHz at the same time. Other Volmet stations are located at Anchorage (Alaska), Vancouver, Oakland (nr. San Franciso), Honolulu, New York, Shannon (Eire), Singapore and Tokyo. They usually can be found in the aeronautical allocation sharing a common frequency for their transmissions. In the table I have included the regional allocations. Interestingly, Australia is part of the S.E. Asia network and not the Pacific.

VOLMET NETWORKS TABLE

Europe: 2980, 5575, 11391 kHz.
Atlantic: 3001, 5652, 8668, 13272 kHz.
Pacific: 2980, 5519, 8903, 13344 kHz.
S.E. Asia: 3432, 6680 and 10017 kHz.
North Africa: 6575, 8896, 11279 kHz.
South Africa: 3495, 6617, 10073 kHz.
Middle East: 3001, 5561, 8819, 8823.5 kHz.

For example, New York Radio WSY 70 can be heard on 13272 kHm almost continuously from 0600 to 1200 GMT and 2000 to 2100 GMT. It can also be heard on 8668 occasionally but mixes with Shannon Volmet, which also transmits continuously as well. The channels are usually shared in five minute slots by the various regional centres during the half-hour. Listen on 13344 kHz and you will hear Oakland, Honolulu, Tokyo, Hong Kong, Auckland and Anchorage follow each other.

The Russians also have a Volmet Network running occasionally either in Russian or English on 13278 or 9033 kHz, but they are irregular in both frequency and time.

Well, that is all for this month. Until next time, the best of DXing and 73. ■

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70 CM FM HAND HELD

1 watt L.C.D. display, memory, scan, offset, etc.

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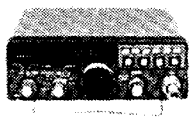
(Write for details and brochures)

NEW RELEASE

FT 780 R WAS ~~$825~~



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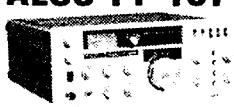

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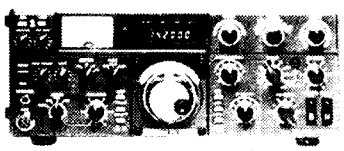

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★FT.290R 2m all mode portable coming around... **$399**
★FT.208 R New LCD 2m FM hand-held due in soon!

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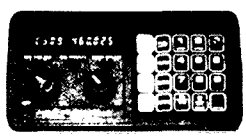

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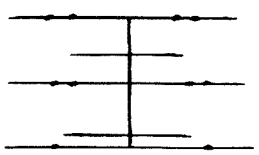

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NOVICE NOTES

Edited by Ron Cook VK3AFW

Where has all the AM gone? I hear some of you ask. Well, AM is alive and reasonably well, if not actually very robust. Try tuning 160m during the morning "coffee" sessions or the low end of the novice allocation on 10m. Some brave souls even venture on to 80m in the wee hours with Geloso VFO and trusty 807. AM has had a minor resurgence in the USA — nostalgia perhaps.

With the decline of the sunspot cycles about to start and the drop-off of the CB market I suggest that the novice may be able to acquire a low cost CB AM rig which could be put on to one or two net frequencies on 10m. During the past sunspot lows the 10m band was much neglected on frequencies more than 100 kHz away from 28.600 MHz. We cannot afford to let this happen in the future. Perhaps we should consider repeaters for the top end of 10m as per USA.

Well, some of you are probably a bit shaky on your AM theory so I have included a contribution from Elmo Jansz VK7CJ, which covers the basic theory well.

Over to you, Elmo.

THE BASICS OF AMPLITUDE MODULATION

Introduction

Radio stations broadcasting to the public do not do so in the frequency range referred to as audio frequencies. The audio frequency range lies in the frequency band 20 Hz to 20 kHz, which is the range of human hearing, but of course these figures vary with the individual.

Audio frequency information is used at the receiving end. Hence we may ask the question "Why don't we transmit on the range 20 Hz to 20 kHz? If all the broadcasting stations in a given locality transtmited simultaneously at audio frequencies, the airways would be blanketed by frequencies within the range 20 Hz to 20 kHz, and would interfere with each other's transmissions.

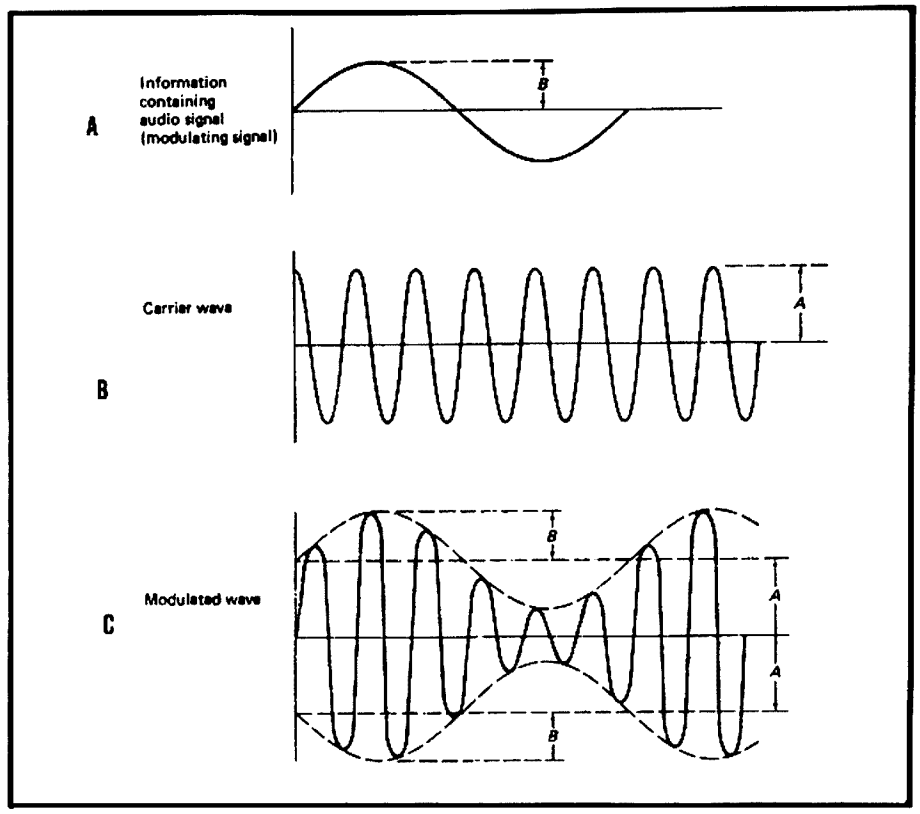


FIG. 1: AM waveforms; (a) and (b) show the basic components which are combined to give an AM signal as in (c).
A is called the amplitude of the carrier.
B is called the amplitude of the audio.

Also, from the basic idea of antenna design, the optimum size of an antenna is one-half or one-quarter of a wavelength.

Calculating the value of a half wavelength at audio frequency gives:—

7,500,000 metres at 20 Hz and 7,500 metres at 20 kHz.

These figures are obviously physically impracticable.

How then is the problem overcome? The answer lies in imposing the audio information to be transmitted on to a higher frequency signal called a "carrier". When this compound signal is received, the two signals are separated in the receiver and the original audio information recovered. Each station broadcasts using a different frequency, from which we could select the transmission of interest and eliminate all others by means of tuned circuits in a receiver.

The process of imposing audio information on another signal of much higher frequency is called "Modulation". The compound wave form, that is, after the modulation process has taken place, is called the "Modulated Signal". There are, very broadly, two basic types of modulation — Amplitude Modulation and Frequency Modulation. In this article we shall have a closer look at Amplitude Modulation.

AMPLITUDE MODULATION

In amplitude modulation, the amplitude of the carrier is varied in accordance with the amplitude of the audio signal. The three wave forms involved in amplitude modulation are shown in Fig. 1. Fig 1(a) shows the audio signal or modulating signal, (b) the carrier, and (c) the modulated wave.

For those who are mathematically inclined the unmodulated carrier can be expressed by an equation of the form —

$$y = A \sin 2\pi fct$$

where fc is the frequency of the carrier in Hz.

Similarly, the modulating signal can be represented by —

$$y = B \sin 2\pi fmt$$

where fm is the frequency of the modulating signal in Hz.

MODULATION INDEX

An important term, which is used in dealing with amplitude modulated signals is the Modulation Index which is defined as follows —

$$m = \frac{\text{Peak value of Modulating Signal}}{\text{Peak value of Carrier Signal}}$$

In this case $m = B/A$.

Again, using a little more mathematics, the composite modulated wave form can be represented by an equation of the form:

$$v = Vc \sin 2\pi fc t + \tfrac{1}{2} mVc \cos 2\pi (fc - fm) - \tfrac{1}{2} mVc \cos 2\pi (fc + fm).$$

Where Vc is the peak value of the unmodulated carrier, represented up to this point by A. Vc is the accepted jargon in communications.

FREQUENCY SPECTRUM

Let us now look at this equation more closely and try to interpret its various components in more down to earth physical terms. The modulated wave form is seen to have three frequency components, viz., fc, (fc — fm), (fc + fm).

If this modulated wave form is examined on a Spectrum Analyzer — an instrument used to analyze the various frequency components present in a compound wave form, a frequency vs voltage spectrum as shown in Fig. 2 will result.

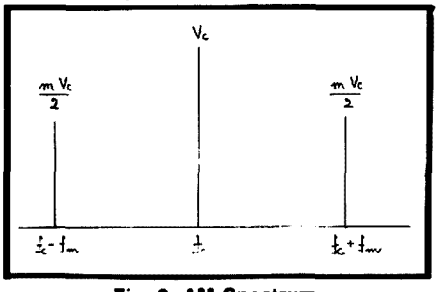


Fig. 2: AM Spectrum.

The frequency (fc + fm) is given a special name called the upper side band, while the frequency (fc — fm) is called the lower side band. These are the frequency components that are used in single side band transmissions. The amplitudes of the side bands are each equal to ½ mVc. Observe that this quantity depends on the modulating factor m.

POWER CONTENT

The total power content of the amplitude modulated signal can be represented by an expression as follows:—

$Pt = \frac{1}{4} m^2Pc + \frac{1}{4} m^2Pc + Pc$ Watts

where Pt = Total Power
Pc = Carrier Power
m = Modulation Factor

Each of the terms $\frac{1}{4} m^2Pc$ represent the the power of each side band.

The above expression is normally simplified into the form:—

$Pt = Pc (1 + \frac{1}{2} m^2)$ Watts.

This is a very useful expression in communications work, for it gives the total power of a modulated signal in terms of the carrier power Pc and modulation factor m.

EXAMPLE

Let us now work through a little problem to illustrate the above Ideas. We are given the carrier power as being equal to 60 watts and the modulation factor is 100 per cent. We wish to find the total power of the modulated signal and the power in each side band.

We use $Pt = Pc (1 + \frac{1}{2} m^2)$
$Pc = 60W$, $m = 100\%$
Therefore $Pt = 60 (1 + \frac{1}{2})$
$m = 100\%$ really is $m = 1$.
Hence $Pt = 90$ watts.

We know that the power in the upper and lower side bands are equal — each being equal to $\frac{1}{4} Pcm^2$.

in this case, power in L.S.B. = Power In U.S.B. = $\frac{1}{4} \times 60 \times 1 = 15$ watts.

CONCLUSIONS

The above figures bear out some startling facts. Two-thirds of the total power is in the carrier, while only one-third of the total power is contained within the side bands. Such a system, in which two-thirds of the total power is contained in the carrier alone and the rest in the two side bands is not very efficient. Methods have been developed to make better use of the available power. Some of these are Double Side Band Limited Carrier, Single Side Band Suppressed Carrier, etc.

Thank you, Elmo. AM died out on the DX bands because it uses twice the bandwidth of SSB, and because an SSB transmitter has up to a 9 dB greater signal in a distant receiver if the **PEP** inputs are equal. Nevertheless, unless the best frequency used in the receiver is correct to about 0.01 Hz, then AM quality of reproduction is far superior and hence easier to listen to during long rag chews. AM thus has a place for short haul type QSOs In those bands where there is space for several AM channels (e.g. 10m) or for those bands which have periods when DX working is not practical (e.g. 160m and 80m during daylight hours).

73 de VK3AFW. ■

"I MADE IT"

"I made it, I made it, wow, I made it!" The sheer joy of seeing those magic words "You were successful". The feeling cannot be described, only felt.

It has taken me twelve months of concentrated study, dotted with bouts of ill-health.

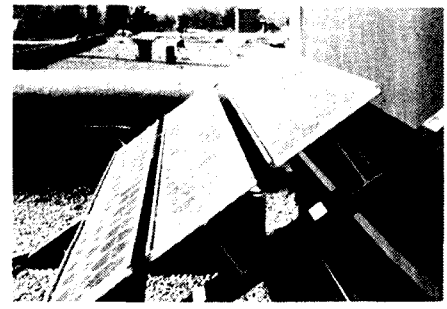
There are many people I have to thank for contributing to my success. Firstly my OM, Nev. VK2ZBQ, whom I bombarded with questions, morning, noon and night, seven days of the week, every week of the month, every month of the year. At 10 p.m. if I thought of something THAT COULD NOT WAIT UNTIL MORNING, Nev. would lend me an ear. He was a tower of strength to me.

Then there were the members of the Liverpool and District Amateur Radio Club, such as Athol VK2BAD, whose AOCP class I attended until I fell ill, then Athol sent me his notes to continue studying, and Paul VK2VXA, who drove me to classes, and Russll VK2NVR, who had been studying with me since the 4th December, 1980, and, last but by no meanes least, Susan VK2BSB, who had such faith in me and drove me to Macquarie University so I could take the exam. To all these people, and all the others who gave me moral support, which is very important, I owe my unbounded gratitude.

I'm applying for the "K" calls until I can master the Code, then it's "ALL SYSTEMS GO, LOOK OUT WORLD HERE I COME". Well maybe . . . maybe.

Daphne VK2NXD. ■

Congratulations, Daphne and good luck
— VK3AFW



SOLAR POWERED QSOs

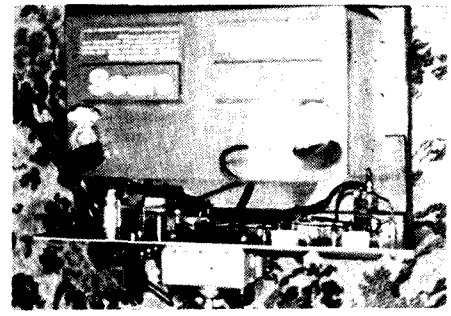
Greg Taylor VK3VGT wrote in recently about a station that he had worked. This was John WSPIZ.

John runs an Argonaut 509, a 2 watt QRP rig.

Outside he has 3 solar panels, see photo each giving 20V at 0.5A. During daylight hours the Argonaut is powered directly from the panels via a 13.5V regulator.

When the weather is not sunny and also at night two 12V batteries are used to power the rig. Of course these are charged by the solar panels during the day. Even during dull weather the panels supply a useful charge. The solar panels were purchased second-hand for only $40 each, so now John has no worries about the energy crisis.

The other photo shows a battery, the regulator, metering and switching equipment.—VK3AFW. ■



QSP

JOTA

Hera is an extract from the Scout Association of Australia report on the 23rd Jamboree-on-the-Air in October 1980:—

"How can we continue to adequately express our thanks to the Amateur Radio Operators who again this year responded magniliecntly to our appeal to make available their services and their equipment, so that nearly 20,000 Scouts and Guides and our well-wishers could enjoy the 23rd Jamboree-on-the-Air. So often have we said "bravo" or "thank you" that they could be forgiven for thinking we might be becoming blase, but I should like to assure them, on behalf of us all, that this is far from being so and that we will always be sincere in our appreciation. This year also a number of Branch Organisers have paid tribute to the Novice Operators among our Amateur Radio friends, who are increasing in numbers greatly each year, and who are becoming more and more noticeable for their contribution, especially in those remote areas, where Limited or Full Call operators may not always be found. So we gratefully include them in our thanks."

A total of 389 VK amateur stations participated in JOTA 1980, recording 7368 contacts including nearly 2000 overseas contacts. *Perhaps* 1981 can be made even better. ■

AFTERTHOUGHTS

THE TRINITY LOOP ANTENNA

In this article (Amateur Radio, V. 49, No. 5, May 1981, pp. 22-23) the author suggests that long DC control lines should be broken into non-resonant lengths with RF chokes. This is sound advice. The technical editor's comment which follows should be replaced by the following:—

"The RF chokes may be formed by passing the control lines through RF torroids spaced so as to ensure that no resonances occur near the operating frequencies. The control wires should be looped through the torroids to form at least 6 turns. A dip oscillator could be used to check the lines for resonance. If a resonance does occur then the radiation pattern and gain of the antenna will be changed. Screened leads will be found helpful in reducing feedback of RF into the shack."

Fig. 2 includes a mysterious statement "20 =". This should be replaced by the approximate equation:—

$$Zo = 280 \times \log(S/a) \text{ ohms}$$

where a is the radius of the feedwire in the same units as S the spacing. Zo is the impedance of the feedlines system. ■

CLOSE-UP

DF4NM was a recent visitor to Melbourne. Helga hopes to return to Australia with her husband, Ekkehard DL3NAB as permanent residents in the near future.

VK amateur radio will certainly benefit with the arrival of this happy couple, whose interests cover HF and VHF. Helga is an ardent CW operator and DX hunter.— VK3VF. ■

Magazine Review

73 MAGAZINE May 1981
Special Antenna Issue.

June 1981
DF Doppler System Breakthrough (TC).

QST March 1981
PIN Diode Switching. Colour TVI (TP).

RADIO COMMUNICATION April 1981
Hellschreiber (G). Phase Shift Monitor (C). ■

QSP

CB IN UK

April 1981 Radio Communication reproduces the text of a press release issued by the UK licensing authority on 26th February. The UK personal two-way service (CB) will be authorised on the 27 MHz band on FM and a further frequency around 930 MHz. 27 MHz FM is expected to give far less interference to other users and is in line with France, Netherlands and Germany where 27 MHz FM has been legalized, and Eire, which is expected to do the same. The press release stated that existing illegal 27 MHz AM equipment will not be legalized — the volume of interference from CB sets using 27 MHz AM equipment is increasing; nearly 5000 complaints in the previous 5 months being an increase of about one-third of all recorded complaints. New FM equipment will have to conform to minimum specifications and will require to be permanently marked. An annual licence fee is envisaged and it was hoped the new service would be brought into operation by the autumn in the UK. The RSGB welcomes the concept of licensing CB but retains reservations about the use of 27 MHz. ■

MALICIOUS INTERFERENCE

A malignancy by a minority, malicious interference continues to plague the amateur bands and has become a crisis in recent times. The ARRL poses and answers a number of questions in QST April 1981. A major and most effective way of combating it is to ignore it on the air but follow up with a report to the licensing authorities. Do not engage interfering stations in their own game. Amateurs and clubs should spread the word about proper operating standards and exert peer pressure. ■

EARTHQUAKE PREDICTIONS

Recent information suggests that the reception of beacon-type radio signals have some correlation with shifts in the earth's continental plates. There is some belief that hours before an earthquake occurs certain characteristics of transmitted radio signals improve. Amateurs are needed to gather information on changes in band conditions, particularly unusual or unpredicted HF band openings, and to report their observations for research purposes. Details from KB6CC, 4024 W. Monte Vista Avenue, Visalia, CA93277. QST April 1981. ■

PACKET REPEATERS

The primary function of a packet repealer is the same as that of the conventional repeater — to extend the geographic coverage of fixed or mobile stations but packet repeaters have the potential to far outstrip conventional repeaters with respect to flexibility and creative use. Also called a digital repeater, or "digipeater" In Canada, the packet repeater receives a message or block of data for re-transmission on the same frequency channel. A San Francisco amateur machine transmits data at 1200 baud. The framing format is high-level data link control and this is hoped to be one of the first steps in nationwide, or even international, networks of interconnected computer system. In April 1981 QST KA6M says this is a new frontier of amateur radio. ■

The Sunshine State "Jack Files Memorial Contest"

W. G. Sebbens VK4XZ, VK4 Contest Manager

All Radio Amateurs throughout the world are Invited to participate in this contest, the aims of which are to perpetuate the memory of the late Jack Files and to enable amateurs to work stations for the Worked all Queensland Award and other awards issued by Amateur Radio Clubs in Queensland.

DATE AND TIMES

Sat., July 18th, 0830-1230Z (1830-2230k).
Saturday/Sunday, July 18/19th, 2330-0130Z (0930-1130K).

DIVISIONS AND SECTIONS

(1) Stations within VK4.
  (a) TX ALL BANDS.
  (b) TX HF ONLY.
  (c) TX VHF UHF ONLY.
  (d) TX ALL BANDS CLUB STATIONS.
(2) Stations Outside VK4.
  (a) TX ALL BANDS.
(3) SWLs.
  (a) RX ALL BANDS.

RULES

1. Contacts via repeaters or cross band or cross mode are NOT permitted for scoring purposes.
2. Stations may be worked repeatedly on all bands and modes provided that one hour has elapsed since the previous contact on that band and mode.
3. Scoring. In accordance with the above aims bonus points as follows apply: For the first contact to each Queensland City or Shire on each band during both, not each, sessions — 10 points. For every contact with a VK4 Club Station— 10 points. These are additional to the points below.
   (a) Stations within VK4:—
   HF contacts to Opposite Zone, 5 points; Same Zone, 3 points; Outside VK4, 1 point. (VK4 is divided into two zones, the dividing line being the Tropic of Capricorn.)
   VHF/UHF contacts to Other City or Shire, 5 points; Same City or Shire, 3 points; Outside VK4, 1 point.
   (b) Stations outside VK4:—
   HF, VHF, UHF contacts to VK4 Stations, 1 point; no points for other call areas.
   (c) SWLs:—
   HF, VHF, UHF Stations logged as per rule 2, 1 point.
4. On the various HF bands it is recommended that operation be below 1820, 3600, 7075, 14175, 21175, 28450 kHz.
5. All logs shall show date, GMT, band, mode, call, n-sent, n-received and points. There must be a front sheet with the usual station, division and score details and declaration. Logs must reach the WIA Q Contest Manager, PO Box 964, Townsville, Q 4810, before 2nd August, 1981.
6. Awards will be given to the highest score in each section. However, should a contestant receive an award in one section he will not be eligible for an award in any other section.
7. The Contest Manager's decision will be final and no disputes will be entered into. ■

NEWS RELEASE

The following news release of 19th May, 1981, Issued by the WIA Victorian Division, is published for general Information.

The MMBW has passed an amendment to the Melbourne Metropolitan Planning Scheme which could cost ratepayers hundreds of thousands of dollars in unnecessary administration expense.

Anyone intending to put up an aerial for reception or transmission of radio signals in a residential area may have to apply for a planning permit. This could result in local councils being deluged with applications for planning permits from persons in poor TV reception areas, those who want an antenna for reception of interstate or regional broadcast stations or short-wave International radio broadcasts.

Especially affected are those who engage in communications systems for safety and rescue, including volunteer coast guard services or civil emergency radio networks, users of certain types of CB antenna and most amateur radio antenna installations.

The amendment No. 115, Part 3, follows a move by a number of municipal councils to upset recent decisions by the Town Planning Appeals Tribunal and in effect seeks total discretionary control for councils over the erection of radio masts and aerials in residential areas and the residents' right to receive or transmit radio signals.

The amendment, as proposed by the MMBW, will require a planning permit to be obtained for an antenna which has any horizontal dimension in excess of 3 metres. The proposals also place severe restrictions on the height of masts in addition to engineering requirements covered by a permit issued under the uniform building regulations.

The Town Planning Appeals Tribunal has held in a number of cases that a resident has a right to do those things which accompany normal domestic living, including the performance of a hobby. The Tribunal has taken the view that, under current planning regulations, a planning permit is not required for the erection of radio masts and antennas connected with domestic or hobby purposes. They are, however, covered under uniform building regulations insofar as engineering standards are concerned. Local councils have sought to use the building regulations to prevent erection of antennas on other than engineering grounds.

Speaking on behalf of the Wireless Institute of Australia, which represents amateur radio operators at national and international government level, Mr. Alan Noble said that he was mystified that the MMBW had not sought competent advice. He said the WIA supports orderly planning in the community, but the Institute expects that planning and regulation should take reasonable account of the natural laws of physics. The current proposals do not do this. He said the WIA sent a submission of advice to the Minister for Planning as soon as it became aware of the current proposal. Mr. Noble said the amendment, if approved in its present form, could affect nearly all types of antenna installations used for amateur radio, including satellite communications and UHF transmissions.

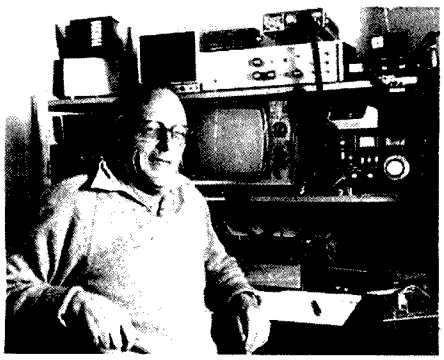
Amateurs are qualified by technical and by regulation examinations conducted by the Department of Communications. The Amateur Radio Service plays an important role in international friendship and ethnic relations. This is important to Australia in its physical isolation from the rest of the world. Amateur radio permits members of our ethnic communities to speak with their homelands by radio. People wishing to have an aerial designed to receive TV Channel 0 ethnic or an aerial designed to receive short-wave broadcast programmes in their own language from their countries of origin would also be required to obtain a planning permit.

Any unreasonable restriction placed on the size of amateur antenna installations would affect the efficiency and usefulness of the station. It would reduce the effectiveness of the Institute's civil emergency network operators to the community in time of need. Melbourne amateur operators played an important part in the Darwin disaster by providing a vital link between Darwin and the rest of Australia for some time.

"It appears that some local councils are not aware of these aspects or they are not concerned with them in their efforts to achieve total discretionary control in the planning of parochial community 'amenities'," Mr. Noble said. It was unbelievable that at a time when the State and Federal Governments are seeking actively to reduce costs, people at local government level appear to be acting in the opposite direction. ■

CONTESTS

Wally Watkins VK2DEW
Box 1065, Orange 2800



CONTEST CALENDAR

July		
1	Canada Contest	
4/5	Venezuelan SSB Contest	
11/12	IARU Raidosport Contest	AR 7/81
18/19	Colombian Contest	CQ 7/81
18/19	Seanet CW Contest	CQ 7/81
25/26	Venezuelan CW Contest	CQ 7/81
25/27	County Hunters CW Contest	CQ 7/81
August		
8/9	European CW Contest	
15/16	Remembrance Day Contest	AR 7/81
15/16	Seanet Phone Contest	CQ 7/81
22/23	All Asian CW Contest	
October		
3/4	VK/ZL Phone Contest	AR 5/81
10/11	VK/ZL CW Contest	AR 5/81

EXCHANGES

Seanet: RS(T) plus 3 figure QSO number starting with 001.

Venezuelan: RS(T) plus 3 figure QSO number starting with 001.

All Asian: OM — RST plus age, YL — RST plus 00.

RULES

IARU Radiosport, 0000Z July 11-2400Z July12. This is all band with three categories, CW, phone or mixed. Each station may be worked once per band regardless of mode. Single operator stations are limited to 36 hours of operating time. Off times must be at least 30 minutes and indicated in your log. There is no time limit for multi-ops, but operation must remain on the same band for at least 10 minutes.

Exchange: RS(T) plus your ITU zone.

Points: One point for stations in your zone, 3 points if station is outside your zone but on the same continent, and 5 points if on a different continent. Multiplier is the sum of different ITU zones.

Final score: Total QSO points from all bands times the sum of the multiplier from each band.

All logs to IARU headquarters, Box AAA, Newington, CT 06111, USA, by August 30th, 1981.

From June 1st the Federal Contest Manager will be **Reg Dwyer VK1BR,** and Reg will hold the position for a period of three years. All correspondence should be directed to **Box 236, Jamison 2614.**

Read carefully the rules for the **Remembrance Day Contest** this year. There are several changes but the most important is the change in scoring. From your point of view the scoring will now be easy — one point per contact. The formula will be applied by the Contest Manager and will be updated each year and is based on a Division's average participation over the previous 5 years. This formula has been proposed by Neil Penfold from VK6 and has been agreed to as it is the best formula yet brought forward that will allow any Division to win the trophy based on participation.

As this is my last column for Amateur Radio I wish to thank all those who have participated in contests over the last three years, and also to thank those who took time to write to me with sound suggestions, some of which have been adopted.

Best wishes to you all in your future contests.—Wally Watkins VK2DEW.

Remembrance Day Contest 1981 — Rules

AUGUST 15-16

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 perpetuate their memory throughout Amateur Radio in Australia.

The name of the winning Division each year is also inscribed on the trophy and, in addition, the winning Division will receive a 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), P29, and ZL on authorised bands above 52 MHz and as indicated in rule 5.

CONTEST DATE

0800Z 15th August, 1981, to 0759Z 16th August, 1981.

All amateur stations are requested to observe 15 minutes silence before the commencement of the contest on Saturday afternoon. An appropriate broadcast will be relayed from all Divisional stations during this period.

RULES

1. There shall be 3 sections —
   (a) Transmitting Phone
   (b) Transmitting CW
   (c) Receiving
2. All Australian Amateurs (VK call sign) may enter the Contest whether their stations are fixed, portable or mobile. Members and non-members of the Wireless Institute of Australia are eligible for 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 all bands a station in another call area may be contacted once on each band using each mode. That is, you may work the same station on each of these bands on Phone, CW, SSTV and RTTY.
   (b) AM, FM and SSB contacts score one point.
   (c) All CW/CW, SSTV/SSTV and RTTY/RTTY contacts 2 points. Note rule 3 re cross mode contacts.
   (d) On the bands 52 MHz and above, the same station in any call area may be worked using any of the modes listed in rule 3 at intervals of not less than one hour since the previous same band/mode contact. However, the same station may be contacted repeatedly via satellite not more than once by each mode on each orbit.
   (e) Acceptable logs for all sections shall show at least 10 valid contacts.
6. Multi-operator stations are not permitted (except as in rule 7), although log keepers are allowed. Only the licensed 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.
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 15 September, 1981, and posted to FCM, Box 236 Jamison 2614.
11. TERRESTRIAL REPEATERS: Contacts via terrestrial repeaters are not permitted for scoring purposes. However, contacts may be arranged through the repealer and if successful on another frequency, that contact counts for scoring purposes.
12. PORTABLE OPERATION: Log scores of operators located outside their own call area will be credited to that call area in which operation takes place, e.g. VK5XY/2. His score is added to the VK2 scores.
13. All logs shall be set out as in the example shown and in addition MUST carry a front sheet showing the following information in this order:
    Section, Score, Call Sign, Modes, Name, Address.
    Declration: "I hereby certify that I have operated in accordance with the rules and spirit of the contest."
    Signed Dated
14. The Federal Contest Manager has the right to disqualify any entrant who, during the contest, has not observed the regulations, or has consistently departed from the accepted code of operating ethics. The Federal Contest Manager also has the right to disallow any illegible, incomplete or incorrectly set out logs.
15. The ruling of the Federal Contest Manager of the WIA is final and no disputes will be entered into.

AWARDS (Sections (a) and (b))

Certificate will be awarded to the top scorer in each section for each call area and will include the top Limited and Novice station. There will be no outright individual winner. Further certificates may be issued by the FCM at his discretion.

VK0 scores are added to VK7 and VK8 to VK5. Scores by VK9 stations are added to the mainland call area geographically nearest. Scores claimed by ZL and P29 stations are not included in the scores of any VK call area.

The trophy shall be forwarded to the winning Division in its container and will be held by that Division for the specified period.

RECEIVING SECTION

1. This section is open to all Short Wave Listeners in Australia, Papua, New Guinea and New Zealand, but no active transmitting station may enter.
2. Contest times and logging of stations on each band are as for transmitting.
3. All logs shall be set out as in the example. It is not permissible to log a station calling "CQ". The detail shown in the example must be recorded.
4. Note the times and conditions set out in rule 5 (transmitting).
5. Club stations may enter this section. All operators must sign the declaration.

AWARDS

Certificates will be awarded to the highest scorers in each call area. Further certificates may be awarded at the discretion of the Federal Contest Manager. ■

EXAMPLE OF TRANSMITTING LOG

Date/time GMT	Band	Mode	Callsign worked	NR sent	NR rec'd	Points

EXAMPLE OF RECEIVING LOG, VICTORIAN SWL

Date/time GMT 16/8/81	Band MHz	Mode	Callsign heard	NR sent	Station called	Points
0612	7	P	VK5PS	002	VK6RU	1
0615	7	CW	ZL2AZ	004	VK4KI	2
0618	14	P	VK0ZZ	006	VK6FI	1
1620	28	P	VK3NAA	077	VK6NZZ	1

Dupe Sheet for the Remembrance Day Contest

John Moulder VK4YX
P.O. Box 323, Warwick, Qld. 4370

Avoiding duplications on your log sheets during a contest can be a problem, even if you have only worked 50 contacts. The method I am about to describe is not original. I came across an article in a 1960 edition of AR, which described a method of using a dupe sheet for each VK call area, plus one for ZL and P29. As you can probably surmise, it was evolved for the annual RD contest.

Juggling a few sheets during a contest didn't appeal, so I adopted the basic idea and came up with the following.

I obtained a sheet of thin white cardboard approximately 60 centimetres square from the newsagent. I measured in 4 centimetres from each side and draw a border. Along the top and bottom and likewise down each side, make a mark each 2 centimeres. Draw a grid pattern by interconecting all the marks top and bottom and side to side. At the top and bottom of each column, starting from the left hand side, mark each letter of the alphabet. Do the same down each side, starting at the top.

The top left hand corner should look like FIG. 1.

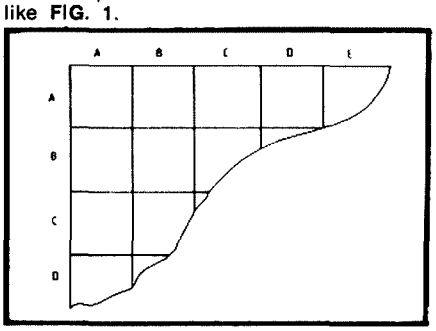


FIGURE 1

Along the top of the coardboard we label FIRST CALL LETTER. Down the sides we label SECOND and THIRD CALL LETTERS. We are now ready to go.

As an example, say we worked VK8BD on 15 metres. Looking across the top of the sheet, we locate column B; down the side we locate column D; in the intersecting square we write, 8/15. See Figure 2. If you worked P29BD on 10 metres, you would enter P29/10 in the same square. We can take two further steps if needed. You may like to enter the mode after the callsign and the time of contact, if it can be squeezed in.

Very clever you may be thinking, but what about a callsign with a three letter suffix? As an example we'll say we worked VK7BCC on 80 metres CW, and ZL2BCA on 15 metres SSB. We locate our intersecting square of B C, and we enter 7C/80CW. Underneath this entry we write ZL2A/15SSB. See Figure 3. All the information can be fitted in a 2 centimetre square if you use a fine tipped pen. You could use larger squares, however the size of cardboard needed may make it too unwieldy. This system is used hand in hand with your normal log sheets. What I did was work a string of stations, enter them on the dupe sheet, and then continued on in a merry way.

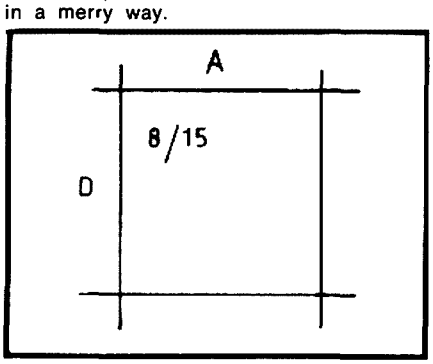


FIGURE 2

The only problem I can envisage, is the size of the sheet may make it unworkable for some operators. I got around the problem by taking over the kitchen table, which just happens to be beside our wood burning stove (very cosy). I had a great time during the 1980 RD. I made my best score, with no duplications. Unfortunately I completely forgot to send my log sheets in. Give this system a go. ■

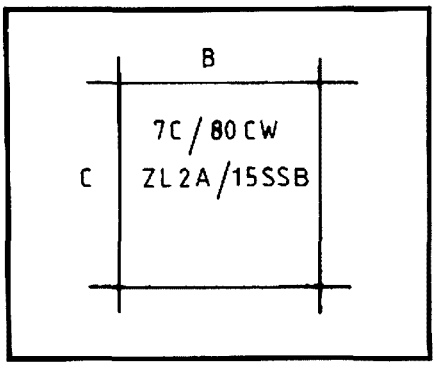
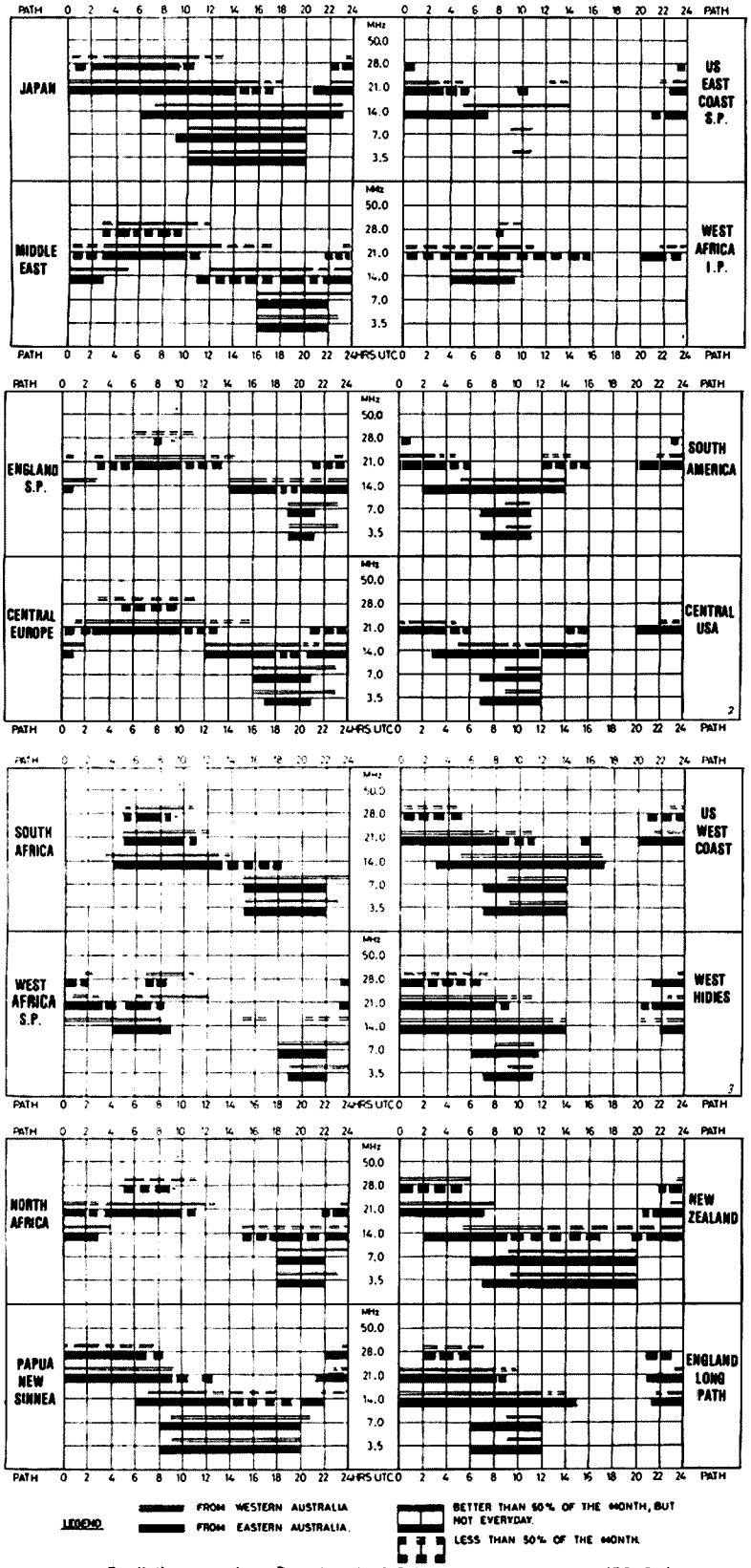


FIGURE 3

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

NATIONAL EMC ADVISORY SERVICE

Tony Tregale VK3QQ
Federal EMC Co-ordinator

ELECTRO-MAGNETIC COMPATIBILITY

Australian amateurs may take some cold comfort in the fact that the professional engineers are confronted by many complex EMC problems, especially in Europe and North America, as outlined by IEEE and in ITEM.

In these days of modern single sideband amateur equipment and colour television, the incidence of TVI is, in most cases, the fault of the television receiver, not your amateur equipment. In by far the majority of cases, the reason for interference is found to be inadequacies of TV receiver design and construction.

Audio devices are designed to amplify audio signals such as music or speech and are not intentionally designed or intended to function as receivers of radio signals. The problem is not caused by the improper operation or by the technical deficiencies of the radio transmitter. The strong radio frequency energy is accepted by the audio circuitry due to inadequacies in design, "overloads" the amplifier, is "rectified" and amplified, and appears at the speaker as an undesired sound. The only "cure" is by treatment of the audio device.

With Australian RFI legislation in the "pipe-line" it is interesting to note that German amateurs are worried at some aspects of new EMC regulations, which are due to be introduced there in July this year, and which could present major problems to amateurs. Receiver immunity standards, imply that listeners and viewers can expect to be protected against strong signals. The limits vary from 3 v/m to only 0.5 v/m between 47 and 108 MHz and as low as 0.2 v/m on intermediate frequencies of the receiver. It has been shown that field strengths of 15 v/m can be encountered at distances of about 12m from amateur transmitting aerials of stations operating within legal limits.

The German EMC regulations are not concerned with electronic appliances other than radio and television receivers and do not cover audio amplifiers, tape recorders or electronic organs.

The National EMC Advisory Service is making every effort to monitor all aspects of RFI as applicable to amateur radio. The efficiency in this area can be vastly improved by the assistance of all Australian amateurs. ■

HELP WITH INTRUDER WATCHING

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

At the last meeting of ALARA a small memento of our appreciation for services rendered was presented to Daurel VK3ANL. Our good wishes go with them as they return to the USA.

A very slow response has been received from the last news letter. Office-bearers and the new constitution are still pending.

Mavis VK3BIR, QTHR, is in charge of new memberships and also subscriptions, etc.

Jessie VK3VAN, c/- PO Box 38, Frankston, is our new Secretary. Thank you very much for offering assistance.

Mavis VK3KS, QTHR, is awards custodian for ALARA award. Please apply direct for speedy return of award.

Geraldine VK2NQI, PO Box 56, Kemps Creek 2171, is magazine editor and is very anxious to hear from you about your achievements. Remember, no news means no newsletter.

Bobbie VE7CBK sends her 33 to all girls via Mavis VK3BIR.

Liz DJ0KC sends her 33 also to all VK YLs and says when daughter Fia is bigger she hopes to become more active.

NEW CALLS noted since last month:—

VALDA: VK3DVT, was VK3VUO.
DIANE: VK6KYL, was VK6NGQ/ZYL.
MARGARET: VK6QM, was VK6NFO.
MARGARET: VK2KES, was VK2VPQ.
DAPHNE: VK2KDF, was VK2NXD.

Congratulations to all the girls on their up-grades and good luck to all who are still studying.

Congratulations to Jenny VK5ANW on your appointment to Council. Jenny was the only YL delegate at State Council Conference in Melbourne recently.

A novel competition won by Joyce VK2DIX was a shopping contest. In 90 seconds Joyce managed to "win" herself a good supply of groceries to help the budget.

Remember the ALARA net, Monday nights 2030 EAST, 3.565 ± MHz. A roster is working now, so please call in; VK2DYL is used by Geraldine and Daphne. Marilyn VK3DMS and Mavis VK3BIR or Helene VK7HD are the calls to listen for.

Until next month, good luck and good DX. 33/73 Margaret VK3DML, 28 Lawrence Street, Castlemaine 3450. ■

QSP

10 MHz BAND

The ARRL in relation to the impending new band at 10 MHz (on a secondary, non-interference basis) proposed that General, Advanced and Extra class amateur licensees should have equal access, an input limitation of 250W and modes be limited to A1 and F1 with some provision for telephony use in emergencies.—QST April 1981. ■

SILENT KEYS AND OBITUARIES

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

Mr. W. D. TAYLOR	VK2PJ
Mr. T. W. M. PETERSEN	VK4YO
Mr. W. D. TAYLOR	VK2PJ
Mr. E. A. H. CHEEL	VK3VKD
Mr. E. T. WALTER	VK5EE
Mr. T. H. PETERSON	VK4YO
Mr. R. RUSSELL	VK3VER
Mr. R. J. HAINING	VK2AMQ
Mr. B. B. ROCKING	VK3ADB

ERN CHEEL **VK3VKD**

The passing of Ern Cheel VK3VKD on the 12th April, 1981, aged 73 years, was sudden.

Although Ern had baen a Novice operator for just over 18 months, the enjoyment he received from the hobby was immense. He was a member of the Gippsland Gate Radio Club, and a keen "Rag Chewer" with an interest in fly fishing, golf and water colour painting. He had over 500 OSOs logged, mostly on 18m.

His cheerful approach to the hobby will be sadly missed. To his wife Nell, and his daughter and family, deepest sympathy is extended from all his Ham friends.

Barrie Astbury VK3NJB. ■

BRUCE HOCKING **VK3ADB**

I regret to inform you of the death of Bruce Hocking VK3ADB, of 45 Wallace Street, Morwell 3840.

Mrs. Hocking has supplied me with the following information:—

Bruce died on 18th May, 1981, at the Traralgon Hospital; gained his AOCP September 1971; call sign VK3ADB. He was widely known for his marketing and maintenance of the 2m Gippsland Transceiver Kit.

He was an Elder of the Presbyterian Church, Morwell; President of 1st Morwell Scout Group; an OASIS member of Apex; President of Morwell Horse and Pony Club; Lifeline Councillor; Committee Member Commercial Road State School Morwell; Past President Morwell Presbyterian Tennis Club.

His funeral service filled the Morwell Presbyterian Church.

And I lost a very good friend.
He was a Unit Controller with the SEC.
Yours faithfully,

J. G. Colley VK3QZ. ■

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.

10 Forest Grove, Epping, NSW 2121
18/5/81

The Editor,
Dear Sir,

One of the difficulties in enjoying amateur radio in 1981 is coping with the very congested conditions on our bands — the HF bands in particular.

It seems to me that the Institute policy could be making this situation worse by actively encouraging more people to take out amateur licences. It could be also that the Institute has gone the way of most organisations, perhaps unthinkingly and by default, of striving to become bigger, because "bigger is better". The WIA was formed because of amateur radio, not vice versa. It may be that a static (or smaller) amateur population could be served better by a static (or smaller) WIA.

A constant, or falling, number of licences should mean less work for all parts of DOC, and could mean a slower rate of increase in licence fees, particularly in this era of the user paying. It may also result in a net average increase in the technical and operating competence of the overall amateur fraternity.

While it is true that the amateur ranks provide a pool of trained technical people, it seems to me that its importance should now be looked at more nationally because (i) more amateurs are simply buying grey boxes and so require less technical ability than previously; (ii) with the world becoming digital, there are many people whose hobby and self-education interests are leased on microprocessors rather than receivers and transmitters; and (iii) the field of electronics now means much, much more than radio, as it did 40 or 50 years ago, with many more people involved. This means that increasing the number of licensees may not be as important as it once was seen to be.

It may be argued that the large world-wide amateur population resulted in the new WARC bands. However, it could also be that the success was due more to better preparation, organisation and management than before — the sign of a maturing organisation.

Please don't misinterpret my thoughts in this letter. I am not suggesting that amateur licences be any harder to obtain. Rather, I am suggesting that the role of the Institute should be to assist those who have, or who wish to obtain, a licence, but to desist from actively campaigning for more new amateurs. Publicity, where necessary, should be along the lines of "this is what we do", rather than "come and join us". After all, the radio spectrum is finite, and more users in the same space must mean more crowding.

I should add that I have, in the past, helped people obtain their licences by assisting a class.

Yours faithfully,

G. McCulloch VK2BMZ. ■

Point Lookout, Norah Head, NSW
May 20th, 1981

The Editor,
Dear Sir,

Ref. Third Party Traffic Network. The timely reminder to give the lads a "free uninterrupted channel" is most welcome. For too long has this group been harassed by two well known Cretins and some of their followers. Here on the North Coast they are well known for their purposeful jamming of Sam Voron's net.

In a letter written to another radio publication the operator from Castle Hill was termed a "KOOK" and has already drawn criticism to himself and the Amateur fraternity by his blatant interruptions of the net. He and other Tono/VDU operators, and other licensed operators who should know better, have consistently caused jamming and rude comments on the 80m and 40m net in which Sam

operates. The Castle Hill "KOOK" is well known for his on air comments in relation to Third Party Traffic, and I doubt whether he has ever handled a message in his life. His expulsion from the CB band was because of his degrading habits. Unfortunately his acquisition of an automatic means of sending Morse code has given him Dutch courage to send this and RTTY over all parts of the bands. As an intruder "KOOK" he is well named.

We and others here are highly critical of his unauthorised transmissions and of course if you take their typewriters and video readouts from them, they are dumb. It is doubtful if any can do over 20 w.p.m. Morse code without automatic means, and one from Pt. Macquarie is hopeless, using a key board without proper spacing. I hope the WIA will monitor these people and let Sam and his mates have a fair go.

Yours faithfully,

L. Adamson VK2PVH. ■

3 Corkill Street,
Freshwater 4872, Old.
14/5/81.

The Editor,
Dear Sir,

Having read Sam Voron's amazing article, "National Third Party Amateur Radio Network", AR May 1981, my first reaction was "You must be joking surely!".

If you have published this article to expose the NTPN as a lot of nonsense, unworthy of amateur radio — "My congratulations, Sir!" — If, on the other hand, you have accepted it, then the WIA appears to have abandoned WICEN and to be on the path of self destruction.

For the benefit of all your readers the ridiculous misconceptions in this article must be corrected.

FIRSTLY

WICEN **DOES NOT** participate in uncontrolled traffic nets handling **unauthorised** emergency messages. It appears that the third party traffic "intentions" of the WIA have been misunderstood or deliberately misread by Sam Voron.

SECONDLY

In Queensland the State Emergency Service and WICEN will in **NO WAY ACCEPT** SB type "Emergency traffic" of the kind envisaged by him and the operation of his NTPN with WICEN is just

NOT ON!

Unreliable operation of this type is so often open to hoaxing and false information that it is not acceptable to the Emergency Services whose manpower and facilities could be placed at risk by irresponsible persons during a disaster situation.

Several years ago the Queensland SES moved to "short circuit" this type of network and responsible CB operators were recruited into the Communications groups to be correctly trained in emergency traffic handling with the SES.

THIRDLY

WICEN welcomes all new amateurs who wish to assist in emergency networks, they would be correctly trained in the standard operating procedure by experienced operators and instructors.

They would gain valuable experience in controlled net operating during regular WICEN/SES exercises so that, in an emergency, they are ready to render a worthwhile community service.

This WICEN training is provided by district Amateur Radio Clubs throughout the country.

FOURTHLY

He complains that his illegal network is being interfered with — well! there are rotten apples in every barrel — they are usually found together!

Responsible amateurs are just not interested in his "one man band" antics.

Sam Voron should act on his own advice and direct all "Dear Aunty Jane" traffic from the general public to the nearest phone box.

I know that the majority of amateurs will agree with me when I say that this type of traffic is **NOT** what Amateur Radio is for and it is **NOT WANTED** on our bands!

Genuine amateurs should be concerned with enhancing the reputation of our hobby not degrading it!

Ted Gabriel VK4GY, WICEN Co-ordinator, Region 1, Queensland. Ex VK6TG, formerly WICEN Co-ordinator, Western Australia. SES Communications Instructor, Cairns, Queensland. ■

R A O T C
RADIO AMATEURS OLD TIMERS CLUB

VK/ZL QSO PARTIES

It has been agreed between executives of the Old Timers' Clubs of Australia and New Zealand that members of the two Clubs should get together in a series of pilot "QSO Parties" or "mini contests" over the next few months.

As there are problems such as dates and times which are mutually acceptable to all areas, there being a four hour time difference between ZL and JK6, and skip distance on the higher frequencies, the experience gained in the conduct of these contests and the advice and preferences fed back in comments with the entries, will help us determine the format and frequency desired by a majority of the joint club memberships.

RULES

Eligibility

The contest is open to members of OTC (New Zealand) and RAOTC (Australia).

Contest Exchange

Members will exchange:—

1. Their Club membership numbers, VKs prefixed by "A", ZLs prefixed by "Z".
2. Year of first licence.
3. Name.
4. Age.

e.g. Nr. A 256 1951 Bill 49
Nr. Z 128 1923 Harry 78

Scoring

Each completed exchange will score 5 points.

Multiplier

The total of VK/ZL districts contacted will be added.

Final Score

Contact points x multiplier.

DATES AND TIMES

Contest 1 80 metres — centre frequencies: CW 3515 kHz, SSB 3650 kHz.
Monday, 20th July, 1981, 1000Z to 1400Z.

Contest 2 40 metres — centre frequencies: CW 7015 kHz, SSB 7075 kHz.
Monday, 17th August, 1981, 0800Z to 1200Z.

Contest 3 20 metres — centre frequencies: CW 14050 kHz, SSB 14150 kHz.
Monday, 14th Sept., 1981, 0200Z to 0800Z.

ENTRIES

Claimed scores, i.e. contact points x multiplier = final score, and mode used will be forwarded to the Secretaries of the respective Old Timers' Clubs, who will then exchange lists for publication of results.

Keep these dates before you and please make an effort to participate.

All amateurs who have been licensed for a period of 25 years or more are eligible to join the Radio Amateurs Old Timers' Club.

A self addressed stamped envelope (9 x 4) to the Secretary, Harry Cliff VK3HC, PO Box 50, Point Lonsdale, Victoria 3225, will bring you a membership application form.

Old Timers' Net — First Monday of each month, 0000Z on 7120 kHz, 0200Z on 14150 kHz. ■

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

Scalar SC22DX 5 Band Vertical Trap Antenna, has had one hours use, only on portable use, complete with instructions, $100 (a bargain at this price. Mal VK2PDA. Ph. (066) 74 1898.

TS520S HF Txcvr., as new, all manuals and orig. packing, $539; PRC11 39-55 MHz FM Txcvr., with circuit diagram, $49. VK2VSI. Ph. (049) 97 0383, 9 a.m.-1 p.m., or write PO Box 16, Hawks Nest 2324.

Bigear 2m FM PLL, as new, 144-148 MHz in 5 kHz steps, +600 kHz, +1 MHz, —600 kHz, —1 MHz, offset for repeater working, hi/low power, complete with manual, $260, ONO. Barry Fittler VK2DLI. Ph. (049) 33 3658 or 95 Bruswick Street, East Maitland 2323.

FT75B Txcvr., AC power supply, some crystals, external VFO, $300. VK2AQX, QTHR. Ph. (067) 42 1067.

Marconi Video Monitor, type V6112, 14 in. screen, frequency response 10 kHz to 9 MHz at ± 3 dB, technical manual, $50; BC221-AL HET frequency meter, 125 kHz to 20 MHz, with calibration book, $45; 5FP7 CRT, suitable for slow scan monitor, $10. VK3ZY, QTHR. Ph. (03) 277 4748.

Yaesu FT101EE, AC/DC, complete with fan, mic., cables, instruction manual, late model, perfect cond., $560. Ph. (059) 74 1136.

Yaesu FT200 Txcvr., plus power supply and mic., $300. VK2ASI, QTHR. Ph. (067) 66 1033 or (067) 65 7947 AH.

Kenwood Station: TS180S Txcvr., fitted with WARC freq. bands, CW filter, 2nd stage SSB filter, SP180 ext. spkr. with switchable audi filters and AT180 tuner/SWR/power meter, al as new, orig. packing, $995 the lot. Barry Hartley VK2FE, QTHR. Ph. (042) 29 1455 (work), (042) 84 2439 (home).

Kenwood TS520S, $550. Ph. (03) 791 2947 after 4.45 p.m.

RTTY System: Consists of a Xitex SCT100 video terminal, a model 15 printer, ST16 demodulator-regenerator, 2650 computer, soltware for RTTY Is memory to store the broadcast off air, any stored text can be transformed to tape at 2000 baud and reloaded, built- in EPROM programmer, sotware Includes Basic, assembler, source generator and text processor, also available model ASR33 ASCII printer. sell complete system or separate. VK2BHF, QTHR. Ph. (02) 981 4762.

TS820S with DC-DC converter and CW crystal filter, $750. Bruce, QTHR. 98 7797.

Yaesu FT-2FB FM 2m Txcvr., all popular repeater and simplex channels installed, together with matching heavy duly FP-2 Yaesu AC power supply, nicad charger, both units in exc. cond., with owner's manual, $175. GPO Box 5076, Spdney 2001, NSW. Ph. (02) 799 7655.

Communications Receiver, Marconi type CR150/3, 2-60 MHz, $85; Geloso amateur band receiver, type G209, $80. VK2LK, QTHR. Ph. 635 6874.

Calculator: Hewlett Packard HP25 programmable scientific calculator with 49 programme steps and memories and 87 pre-programmed functions, supplied with nicads, charger, user's manual, programmes book and case, $70. Ray VK1ZJR/4, QTHR.

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TS520S, as new, in orig. carton, $580. Ph. (076) 32 3048.

Icom IC202 SSB Txcvr., in perfect cond., plus 20W AWA linear amp to suit, $200. VK4ZNC, QTHR. Ph. 225 7207 work, 205 2121 home.

Icom IC22S 2m Trx, incl. 5/8 mob. whip, $195; Heath SB200 linear amp., 80 through 10m, 1200W input, $350; Heath H8 microcomputer, 16k ram parellel/serial I/O, basic, assembler, text editor, $495; Heath H9 video display/keyboard, RS232 interface, $300; mod. 15 teleprinter, $50; all gear good cond., working, must sell, QSYing HZ1, make offers. VK3BSX. Ph. (03) 598 1034.

National DR48 Rx, digital readout, variable filter, covers 525 kHz to 31 MHz, plus 88 to 108 MHz FM, 6 mths. old, mint cond., with carton, worth over $500, will sell for $390 or best offer. K. Blume VK2BJK, QTHR. Ph. (02) 449 1598.

Eddystone 750, 0.5 to 32 MHz, continuous coverage Rx, $100; BC348, 1.5 to 18 MHz, $50, or nearest offer. VK5MC, QTHR. Ph. (087) 35 9014.

TRS80 Microprocessor, 16K, level 2, inc. VDU and tape deck, also 16K interface, disc drive 1 and 2, tractor feed printer; software: inventory control and general ledger, plus spare discs, little use, selling well below cost, ideal station log. VK2BOT. Ph. (065) 53 9506.

Teleprinter Ribbons, new nylon on Kleinshmidt spools, rewind on to your own spools, standards width, black, $3.50 per dozen posted; Philips VCR cassettes, good, used cond., suit N1500 or N1700 machines, VC45s, $8 posted, VC30s, $6 posted. VK4KDP, PO Box 300, Darra, Old. 4076. Ph. (07) 375 4444.

Shack Clearance: Yaesu FT7B and FP12 power supply, $600, has extra 10m and 11m xtals; JIL SX100 VHF/UHF scanning Rx, $300; Cobra 148GTL converted CB, 20W PEP, full 1 MHz coverage, $200; CE-42 duo-band yagi, with balun, $130; Scalar 5 band trap dipole, $60; Dick Smith 40 MHz freq. counter, $80; all serious offers considered. VK3NWL, QTHR. Ph. 723 3717 RH.

Collins S Line, 75S-3B, 32S-3, 516F-2PS and Collins mic., spare tubes, manuals and solid state speech processor, $1300. VK2ALF, QTHR. Ph. (02) 230 5235 Bus, (02) 476 4903 Home.

One Robot 400, fast to slow TV converter, $700. VK3YRB. Ph. 429 1461.

Two X Philips FM321 Txcvrs., 70 cm, as new, $215, ONO; Kyokuto FM-2025A 2m Txcvr., as new, $310, ONO. Peter VK2YPU, QTHR. Ph. 601 1134.

Collins S-Line 75S-3 Rx, noise blanker, full set Skytec tubsters, $600; 32S-1 Tx with 516F2 power supply, speaker, spare valves, $600. VK4AJ, 3 Owen Street, Toowoomba Ph. (076) 38 1113.

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Deceased Estate VK1JK: Yaesu FTDX 401D Tx, matching FV401 VFO (unused), matching Yaesu speaker, complete station with all manuals, all unmodified, performance and appearance as new, sell only as one package, $425. Mrs. Knight, Canberra. Ph. (062) 54 2630.

Equipment owned by former VK4ADD: FT101B Txcvr., Yaesu, $500; Yaesu dummy load wattmeter, $85; Oskerblok SWR-201 SWR and power meter, $30; 3-way coax switch (manual), $5; morse keys at $5 each. Mint cond., all boxes and manuals included Mrs. Sutherland, 34 Ashbourne Tce., Labrador 4215, at the Gold Coast. Ph. (075) 37 1109.

WANTED

Radar Systems, GEE and Monica receivers, PSU and control panels, H2S, SCR717, APS2, APS3, APS4, TPS3 radars, tailend Charlies, Rebecca, Eureka, and Wallhar, hand books, indicators, aerials, chassis of complete systems required regardless of cond. W. BABB VK3AQB. Ph. (03) 337 4902.

Kenwood TS7625, with mic., good cond., model 15SR teletype, good cond. VK5NTW, PO Box 108, Chermside, Qld. 4032.

2m Meteor Scatter Skeds, suitable station, would need to be 800 to 2000 km from Brisbane. If interested please contact Allan VK4ZRF, QTHR. Ph. (07) 349 1488 home, (07) 225 4477 work.

Linear Amp, suitable for FT7. VK3WW, QTHR. Ph. (03) 465 2991.

Could someone help me with a circuit diagram and operating instructions for the Radio Equipment Pty. Ltd. Supertester university valve and capacitor tester, all correspondence answered. Contact or send to M. A. Martin, VK3VSM, 19A Mason Street, Regent, Vic. 3073.

Used HF SSB Txcvr, need not be working, must be cheap, for radio club. PO Box 505, Bondi Junction 2022, NSW. Ph. (02) 799 7655.

Prop Pitch Motor or cowl gill motor for steering a 20 ft. dish for moonbounce operation, non-working units acceptable. Chris Skeer VK5MC, Hatherleigh 5280. Ph. (087) 35 9014.

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CB and Ham Disposal Sale: FT901D 1.8 to 30 MHz AM, FM, SSB, FSK, CW Txcvrs., $895; MLA 2500 2000W 1.8 to 30 MHz linear amp., $895; DX 160 Rx, $139; FRG7 Rx, $295; Eddystone Rx, 2 models, VHF 19 to 165 MHz, UHF 146 to 500 MHz, 240V functional, $250; serviceable, $120; Collins $30,000 1700 channel 200 to 400 MHz brand new military Tx with circuit only $95; lots of CB radios and walkie talkie 18 channel SSB AM from $139; 23 channel AM $49; 18 channel AM, $69; 27 and 28 MHz helical antennas, $8.50; different rigs coming in each tested like new before despatch to you. When in Sydney drop into Park Disposals, 32 Park Street, Sydney 2000, near Town Hall Railway. Ph. (02) 264 7515. Rigs posted anywhere in Australia, NZ, PNG, Pacific.

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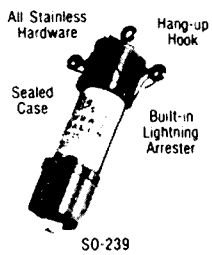

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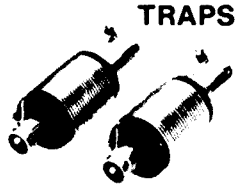

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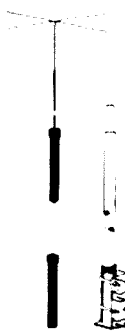

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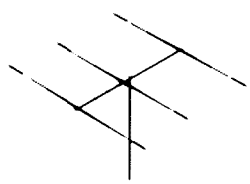

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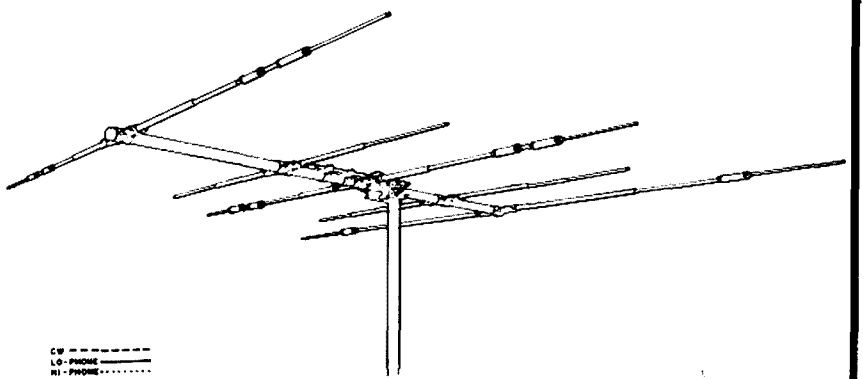

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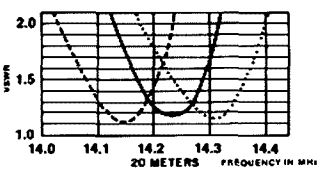

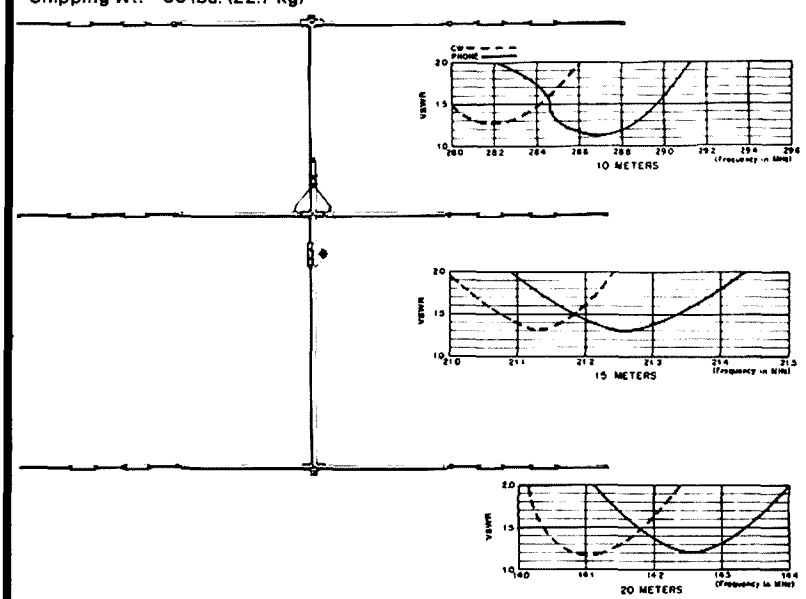

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amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 49. No. 8 AUGUST 1981

FEATURED IN THIS ISSUE:

- ★ DIRECT CONVERSION RECEIVER FOR 3.5, 5 OR 7 MHz
- ★ MOUNTING A QUAD ANTENNA
- ★ AMATEUR RADIO OPERATORS KEEP AUSTRALIA'S COMMUNICATIONS LINKS OPEN
- ★ REVIEW OF KENWOOD TS530S HF TRANSCEIVER

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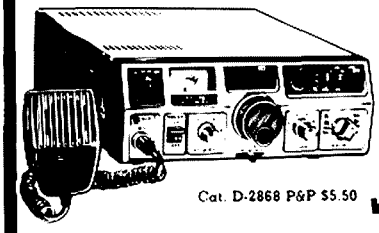

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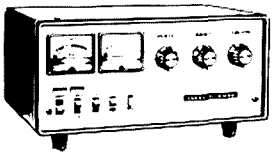

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Material should be sent direct to P.O. Box 150, Toorak, Vic., 3142, by the 25th of the second month preceding publication. Phone: (03) 528 5962. Hamads should be sent direct to the same address by the 1st of the month preceding publication.

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CONTENTS

ARTICLES

DEPARTMENTS

Cover Photo

IN TOUCH WITH THE WORLD

David Boehm VK1UD, a science teacher at Melba High School, conducts the ACT Division's novice classes as well as running the Melba High School Radio Club. The photo shows that Club in action at a lunch-time session.

From the ACT Schools Authority's "Impact".
Photo: Australian Information Service

QSP QSP QSP

GFW

WIA

This term, used by amateurs and other people, on the bands and in the media, is intriguing and makes one curious. Along with other references to the people who work for the WIA, these utterances tend to discredit. Are they justified?

Yes will be the cry from some, but the great silent majority will just float along, listening and reading with bewilderment as to what it's all about, while some perhaps will take the trouble to inquire a little further.

The WIA is composed of a cross-section of the population, who have joined together to protect and advance the amateurs' cause. Every member is eligible to contribute towards the running of the Institute. Even the attendance at a monthly meeting is a way of showing your interest. The workload of administering the Institute's affairs has in the past, and no doubt will in the future, be carried out by a small number of members. These people who volunteered their time, and occasionally their private resources, need the members' assistance. As someone wrote recently, the government you vote into power may not always do what you think it should. So with the Councils of the WIA

On many occasions there are insufficient nominations for the Councils, a sad reflection on our membership. And when these people do serve on behalf of the organisation, many of their decisions are loudly criticised. Perhaps in some cases rightly so, but it is very hard to make the right decision without knowledge of the subject and/or feedback from members, and this is what is continually being asked of your Councillors.

To demonstrate practically, how does a Councillor intelligently make a decision on whether or not the AOCP licence holder should be allowed the operating privilege of using NBVM on the new 10 MHz band? Almost at that point, many stop to ponder, what is NBVM?

So the Councillor studies the subject, or if he is fortunate he finds an exponent of the mode who can enlighten him, and so on. To have knowledge of all facets of Amateur Radio, the understanding of how the machinery of administration works, if possible know the policy of the P. and T. Department of Communications in many amateur matters, and remembering all the time "It's just a hobby", is difficult.

Yet there is always a place for the newest member willing to give his/her time to assist in our WIA activities. And it's here that we are lacking, so how about it? Some of our new members must surely want to assist the organisation, so please come forward.

Challenge and constructive criticism are usually welcomed by WIA Councils and, if possible, acted upon. Laying back, observing the scene, and handing out criticism continually really does not encourage anyone to stay on a Council position or encourage members to come forward and become Councillors. Sometimes the critics are asked, if they know the right way, why don't they take a position on Council; you all know the result. The pay and conditions, by the way, are particularly generous. Hill By sheer voluntary effort, Australia has one of the best Amateur Services in the world, was a major factor in the creation and running of the Region 3 organisation, and recognised internationally as a progressive organisation prepared to place people where they may participate to further the Amateur Service.

While the WIA remains a numerically small organisation (and one just cannot see the population growing to better than approximately one amateur per 1000 people) our aims need to be realistic and attainable. To expend our limited manpower on useless or unprofitable aims needs to be constantly monitored.

So, reference the "Great White Father" tag on the WIA, in effect the label is attached to you, the member.

"He who knows only his side of the case, knows little of that."

N. E. PENFOLD VK6NE
VK6 Federal Councillor ■

WIANEWS

JUNE EXECUTIVE MEETING

Your AR Editor, Bruce Bathols VK3UV, has been appointed Executive Vice-Chairman for 1981-82. Both Brenda Edmonds and Tony Tregale attended the June meeting and spoke about their portfolios of Education and EMC respectively.

Advice was received from Secretary of the Australian Broadcasting Tribunal that the terms of reference of the Cable and Subscription Services Inquiry have been expanded to include a more detailed consideration of radiated subscription television services. The Institute is currently investigating these matters, particularly the possibilities of interference problems, prior to making a further formal submission.

The Department of Communications is preparing, for comments, draft standards for the technical equipment and operation of sound and television stations. Parts of the draft have been received and are under examination by FETAC for those areas which could have any effects on the amateur service. Further parts will also be analysed as they arrive.

The Ionospheric Prediction Service held a short ionosphere course in Melbourne on 25th May which was to be attended by Len Poynter, Evan Jarman and Tony Tregale from the WIA. This course was reported as highly technical, most interesting and informative.

INTRUDER WATCH

A letter of 22nd June from the Minister for Communications on the subject of intruder watching is reproduced in this issue.

JOINT MEETING

The postponed June meeting of the DOC/WIA Joint Committee was held on 1st July. The Department gave the WIA a list of those paragraphs in the Handbook which were viewed as not suitable for examination questions. The list will be studied for finality as quickly as possible. Also discussed were log-keeping, which the Institute for many years has desired to be voluntary and reciprocal licensing with certain overseas countries currently under negotiation, particularly with France in relation also to New Caledonia. The one year validity of a 10 w.p.m. morse pass by Novice licensees is another subject under negotiation. A revision of the full and limited licence forms, because stocks were said to be almost exhausted, raised a number of discussion points relating to the fact that the WARC 79 amendments to the Radio Regulations would be due to come into effect from 1st January, 1982. Among the many amendments, other than those to the frequency allocations, is one relating the new designation of emissions. A copy of these designations will be published in AR soon to enable amateurs to familiarise themselves with them. Yet another subject, arising out of the 1981 Federal Convention, was a conditional agreement about the linking of repeaters for specific purposes. Here is the text of DOC letter RB4/4/4 of 1/7/1981:—

"Following a recent submission by the WIA to one of our State offices in which approval was sought to establish a system of VHF/UHF Amateur Repeater Linking, the Department has considered the implications of this proposal as an Australia-wide issue and appropriate policy guidelines have now been issued within the Department.

I am pleased to advise that, subject to the conditions set out below, the Department raises no objection to the linking of VHF/UHF amateur repeaters, for the purposes of improving remote area coverage during:—

(i) Recognised WIA Divisional news broadcasts or re-broadcasts for a period or periods which, in total, do not exceed one hour per week; and

(ii) Departmentally approved WICEN exercises or operations.

The relevant conditions are as follows:—

(a) Repeater linking is to be minimised, and should be employed only for the duration of approved exercises or broadcasts, and only when necessary during WICEN operations. One reason for this condition is to ensure that the disruption to normal operation is limited and does not unfairly restrict non-participating amateur stations in the area.

(b) Initiation of repeater linking should be strictly controlled by the WIA. Any repeater which may be used in a link arrangement should incorporate a secure means of preventing unauthorised use of the link function. Examples of potentially suitable systems include a complex tone or digital coding system, restricted manual access, etc.

In the event of a non-WIA repeater group seeking approval to participate in linking operations during WIA broadcasts, the applicant group is required to provide the Department with evidence of co-ordination with the appropriate WIA State Repeater Committee. Provided this evidence is received, the application will be processed n the same way as one from the WIA.

It should be clearly understood that any approvals to permit repeater linking are issued on the basis that such operation be confined strictly within the enunciated guidelines.

Applications which are in accordance with the principles outlined above should be referred to the State Manager, Regulatory and Licensing, in the applicant group's State.

I would be grateful if you could arrange to disseminate this information to WIA State Administrations and also to provide suitable publicity via the normal means available to the Institute."

EXAMINATION STATISTICS

As promised at the Joint Committee meeting on 25th February the Department has released some broad-based statistics relating to the February 1981 exams. These are interesting.

For the AOCP theory paper 83 per cent of those who applied to sit the exam actually sat. Similar statistics for the other to sit for the exam actually sat. Similar statistics for the other exams were 72 per cent lor the AOCP Regulations exam, 57 per cent for morse sending and 62 per cent for morse receiving. 1089 candidates sat for this exam out of 1307 applications. In the AOCP theory exam States below the national average in attendances were VK6, VK5/8 and VK7. The pass rate for this exam was 35 per cent (i.e. 383 passed): Below average pass rates occurred in VK6 (28 per cent), VK4 (30 per cent) and VK2 (32 per cent) — VK5/8 recorded a 51 per cent pass rate. The national average of around 35 per cent has been steady for some years.

In the AOCP Regulations exam the attendance was 72 per cent and the pass rate 65 per cent. VK2 recorded only a 33 per cent pass rate. 190 candidates passed out of 291 who sat. The highest pass rate of 85 per cent was in VK3.

In the AOCP morse sending exam 56 per cent passed (176 passes) out of 309 who sat. Once again VK2 achieved only a 26 per cent pass rate. VK3 led with 86 per cent passes. In the AOCP morse receiving exam only 31 per cent (143 out of 447) recorded a pass. VK2 pass rate was 5 per cent below the national average, VK4 were 3 per cent under and VK5/8 were 9 per cent above.

In the Novice morse sending exam 61 per cent attended and 73 per cent passed (85 out of 115). Here VK6 were 14 per cent under average for attendance but all those who did attend obtained passes, as also occurred in VK7. The pass rate for VK2 was only 48 per cent. In the Novice morse sending exam the attendance figure was 71 per cent and 53 per cent passed (112 out of 208 who sat). VK2 were slightly (8 per cent) under average for the pass rate and VK4 were 19 per cent above.

No other statistics are obtainable. ■

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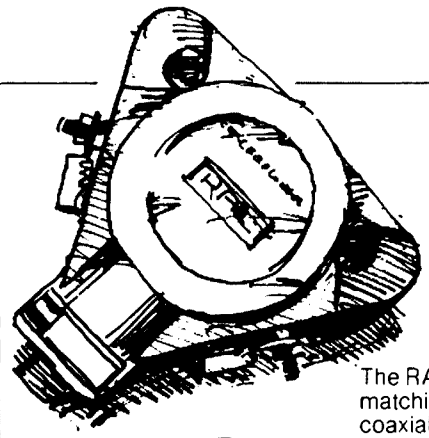

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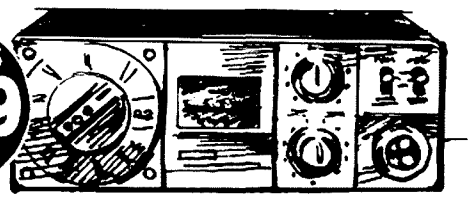

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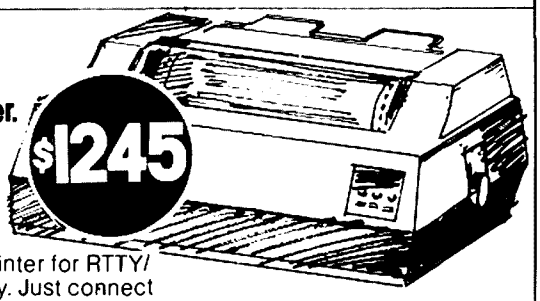

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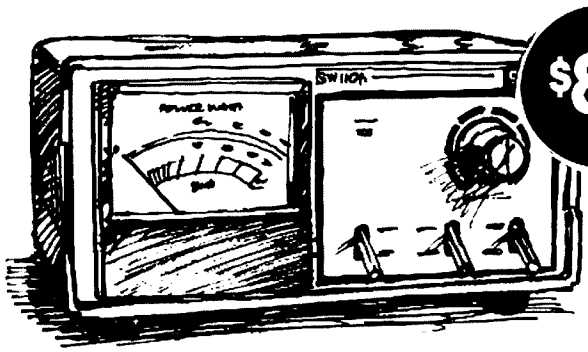

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Broadcasts— 1100 local. 1.825, 1.8125 (Ncle), 144.12, 3.595, 7.146, 28.32, 52.12, 52.525, MHz, Rptr. Ch. 6650 Oberon, 6700 Orange, 6750 Gosford, 6800 Lismore, 6850 Wollongong, 7000 Sydney, 8525 Sydney.
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Broadcasts— 1820, 3550, 7095, 14175 kHz; 21.195 28.470 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.
Gen. Mtg. — 4th Tuesday, 19.30.

WA:
President — Mr. B. Hedland Thomas VK6OO
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Broadcasts— 3560, 7075, 14100, 14175 kHz. 28.47, 53.1 MHz. 2 metres Ch. 2 Perth, Ch. 6 Wagin. Time 0130Z.
Gen. Mtg. — 3rd Tuesday.

TAS.:
President — Mr. I. F. Ling VK7XL
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VK3 — Inwards QSL Bureau, Mrs. B. Gray VK3BYK, 1 Amery Street, Ashburton, Vic. 3147.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse VK3XY, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001
VK5 — QSL Bureau, Mr. Ray Dobson VK5DI, 16 Howden Road, Fulham, S.A. 5024.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
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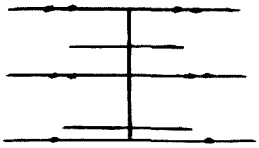

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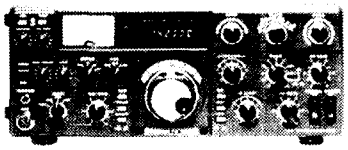

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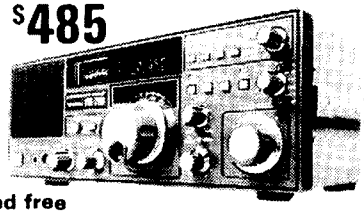

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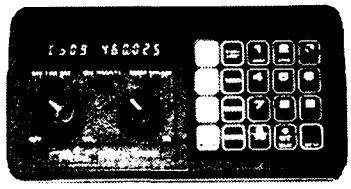

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HISTORY

Direct conversion receivers were popular in the 20s and were known then as regenerative receivers. The first tube acted as RF amplifier, local oscillator and detector, with reception of AM and CW signals being possible.

Regenerative receivers have been revived from time to time, and have provided many prospective amateurs with their first really "hot" receiver. In the late 60s the DC receiver re-emerged as a viable alternative to the complex superhets in general use. The cause of the DC comeback is not clear, but perhaps may be attributed to the growth in popularity of QRP/portable operation and the availability of some very useful ICs.

PERFORMANCE

DC receivers have some features which are worth considering. Some of these are:—

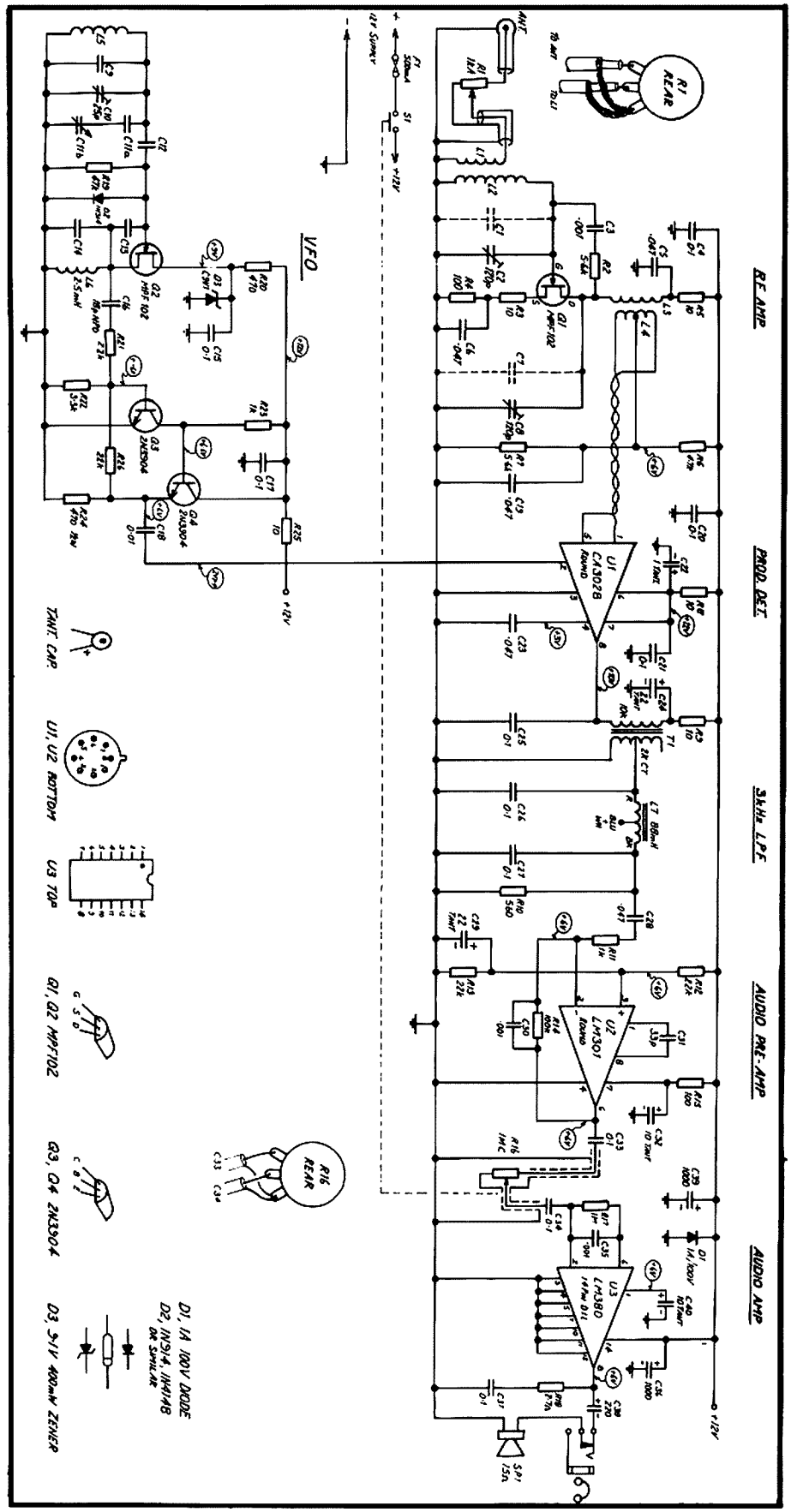
- Simplicity of design.
- Freedom from spurious responses.
- Low power consumption.
- Signals have a crystal-clear "presence" which are less affected by impulse noise (no ringing in selective circuits).

The receiver to be described is intended as a companion to a QRP transmitter, or for use on its own. All the components used are readily available in Melbourne at present, and cost is estimated at $50.

Frequency coverage is 3.5 to 3.7 or 5.0 to 5.5 or 7.0 to 7.3 MHz. The 5.0 to 5.5 range is intended as a tunable IF for use with converters. Each band extends about 20 kHz above and below these limits. Three receivers were built and yielded the following figures: Power consumption is 100 mA from a 12V supply (will operate down to 9V). Sensitivity is 0.4 microvolts for 10 dB S + N : N. Although no exact measurements have been made, immunity to unwanted strong signals is high, and compares well with receivers of far greater cost and complexity.

CIRCUIT DESCRIPTION

The RF amplifier is a tuned input, tuned output circuit employing an MPF102 N-channel FET at Q1. Coupling from input to output is minimised by using toroidal inductors. The amplifier is stabilised by using source degeneration developed across R3, and negative feedback via C3-R2.



The product detector employs the popular CA3028 at U1. This IC consists of two transistors with their emitters tied together and returned to ground via a third transistor (log-tailed pair). The bases of the two top transistors have the signal applied in push-pull (pins 1 and 5), and VFO is applied to the base of the bottom transistor.

The VFO frequency is the same as that of the incoming signal for SSB and AM, and offset by perhaps 1 kHz for CW signals. For example:—

An incoming CW signal f1 on 7020 kHz.
VFO f2 on 7019 kHz.

The mixing products will be:—
f1 + f2 = 14039 kHz and
f1 — f2 = 1 kHz.

The 14039 kHz component is removed by C25, which leaves the 1 kHz component to negotiate the 3 kHz low-pass filter, matched to the output of U1 by T1. (The author tried and rejected several product detectors, including the ring hot-carrier diode and dual-gate MOSFET circuits, as they suffered too easily from cross-modulation and AM demodulation square-law effects.)

Selectivity is achieved by using a 3 kHz low-pass filter, C26, L7, C27. 3 kHz is about the right amount of bandwidth for adequate adjacent channel rejection for SSB, and a good "feel" for CW.

Audio pre-amplification is provided by U2, an LM301, which is a cheap low noise amplifier. The gain is determined by the ratio of R14 : R11.

$$\text{i.e. } NdB = \log \frac{R14}{R11}$$
$$= 20 \log 100$$
$$= 40 \text{ dB}.$$

R14 has a capacitor, C30, across it in order to give a further roll-off with increasing audio frequency. Low-frequency roll-off is provided by C28 in series with R11. So it is possible to receive AM and DSB signals without excessive burble. Sufficient audio power to drive speaker or headphones is provided by the popular LM380 at U3.

The VFO circuit employs the time-proven Colpitts oscillator. A toroidal core was first used for L5, but this was rejected in view of the poor inductance/temperature characteristic. So L5 is a conventional air-cored coil using a poly former. In the interest of frequency stability, the fixed capacitors must be either styroseal (poly), mica, or NPO types as indicated in the coil table. Q3 and Q4 buffer the oscillator and 2 to 6 volts peak to peak is obtained at the emitter of Q4. Incidentally, a frequency counter may be connected at this point in order to directly indicate the receive frequency.

CONSTRUCTION

The bulk of components are accommodated upon a double-sided circuit board. The only holes necessary are those for the mounting screws, coils L5 and L7, and the variable capacitor. All components are soldered directly on to the copper tracks as shown. All copper should remain on the reverse side of the Board. This method combines construction simplicity with ease of trouble shooting should it be necessary.

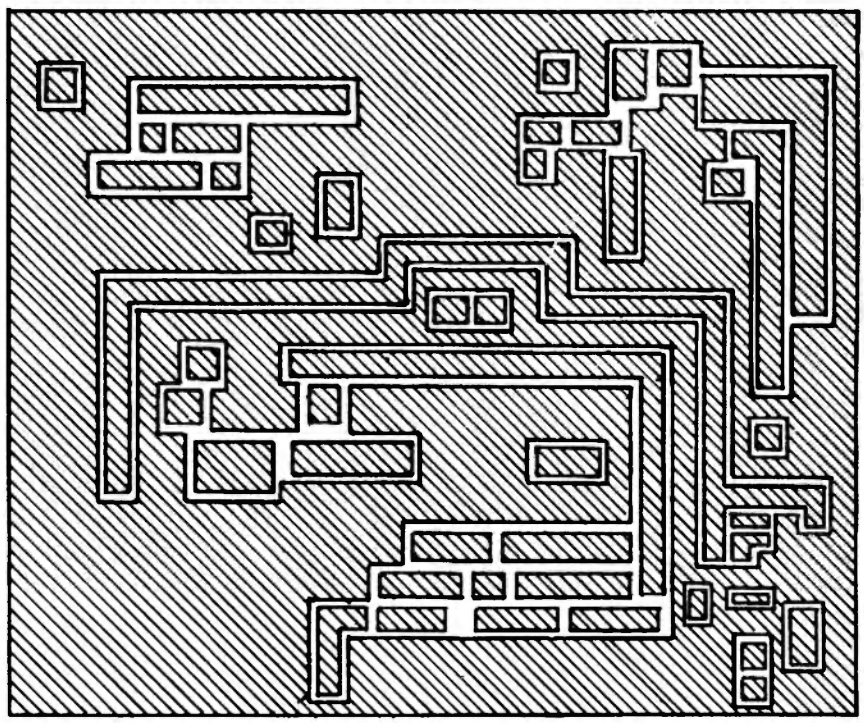
L2/L3 (7uH) example.

L5 (4uH) example.

Coil Table.

Band	L1	L2/L3	L4	L5	C1/C7	C9	C11a	C12	C13/14
3.5-3.7 MHz.	5turns 22B&S on grnd end of L2.	10uH:18turns 22B&S on Neosid 4527B/1/F25 toroidal core.	5turns ct on grnd end of L3.	6uH: 18turns 20B&S on Jabel 3/4" poly former. (5.4F).	140pF NPO cer.	56pF NPO.	120pF NPO.	470pF styro.	1000pF styro.
5.0-5.5 MHz.	4turns 22B&S on grnd end of L2.	7uH: 14turns 22B&S on Neosid 4527B/1/F25 toroidal core.	3turns ct on grnd end of L3.	4uH: 15½turns 18B&S on Jabel 3/4" poly former.	56pF NPO.	15pF NPO.	150pF NPO.	390pF styro.	680pF styro.
7.0-7.3 MHz.	4turns 22B&S on grnd end of L2.	5uH: 11turns 22B&S on Neosid 4527B/1/F25 toroidal core.	3turns ct on grnd end of L3.	3uH: 12½turns 18B&S on Jabel 3/4" poly former.	Not used.	39pF NPO.	33pF NPO.	270pF styro.	470pF styro.

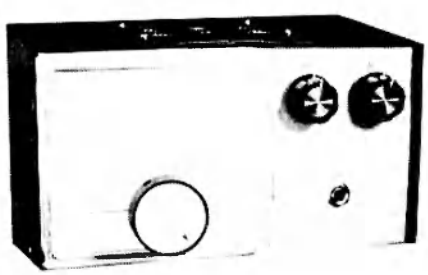
Coil Table.



PC Board Layout.

The dial in the photo is a Jabel JB6/1N with 6 : 1 ratio, although the dial used may be left to the individual constructor. A smaller dial would allow greater miniaturisation, but poorer frequency resolution.

Ideally, an insulated flexible coupler should be placed between the dial drive and the shaft of the tuning capacitor. In this receiver there was simply no room.



With careful alignment of the shaft and drive, no problems should occur. However, it is necessary to solder a piece of copper braid between the capacitor shaft and the frame of the ball drive. The reason for this is not immediately obvious. The balls in the drive unit provide a noisy alternative path to ground for C11b, which results in a "gritty" change instead of a smooth change.

If a mains power supply is used, it should not be mounted in the case along with the receiver, as stray magnetic flux from the power transformer will induce hum into T1 and L6. common-mode hum can sometimes occur with this type of receiver. This problem can usually be cured by using a floating supply (mains earth on the supply but neither side of the supply rails grounded).

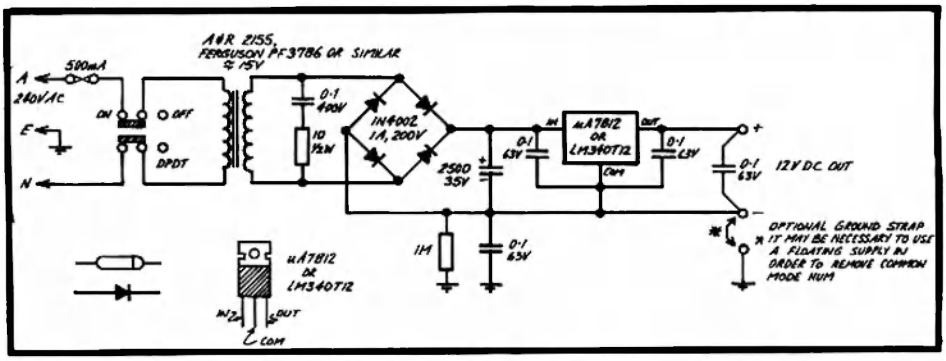
The speaker may be mounted inside the receiver case provided that at least 8 cm clearance is allowed between the speaker magnet and the circuit board components, otherwise howling may occur.

ALIGNMENT

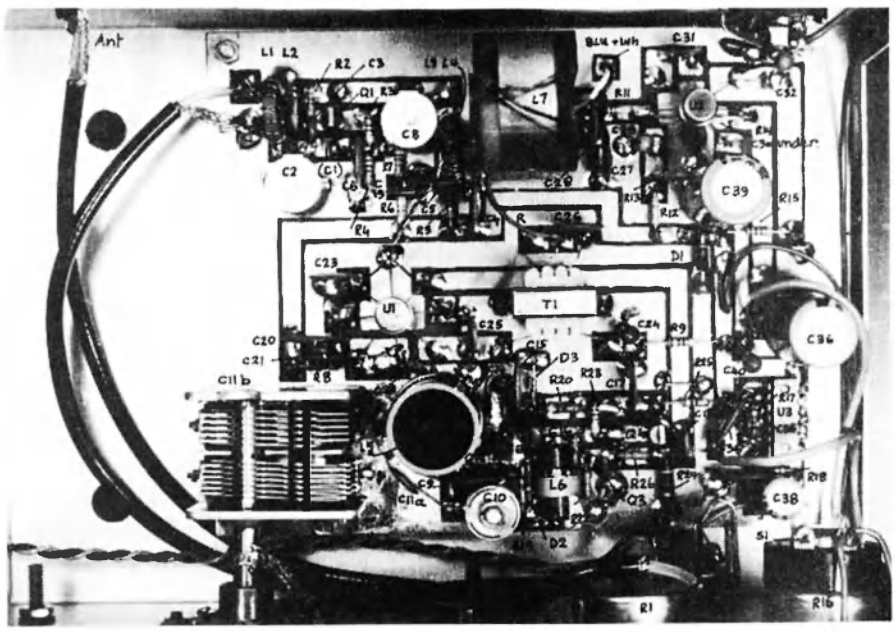
It is first necessary to set the VFO tuning range. C10 is used for this. Output frequency may be monitored at the emitter of Q4. A counter, BC221, or another receiver (loosely coupled) may be used to determine VFO frequency. If greater tuning range is required, the value of C11a may be increased, and that of C9 decreased accordingly. It should be possible to set the band limits with a bit to spare. With this done, an antenna (this is the exciting part) is connected to the input, and a weak signal tuned in. C2 and C8 are peaked for maximum signal strength. Some compromise in the setting of these two may be necessary in order to obtain gain flatness across the band.

The capacitor actually used at C11b may be left to the resources of the individual, as variable capacitors can be difficult to obtain these days. The capacitor in the prototype is a 100 + 200 pF one available from several sources here. Another suitable capacitor is the Roblan type RMG1-100 pF. The toroids, coil formers and variable capacitor may be obtained from J. H. Magrath of Melbourne, or Watkin Wynne of Sydney. All other components should be available from well-stocked electronics shops.

Should anyone attempting this project have difficulty in obtaining any of the necessary parts (particularly the 88 mH coil), please write and I shall obtain them for you. All photographs were provided by Nick Kane.



A suitable power supply.



Component locations.

REFERENCES

Solid State Design — ARRL.
Radio Communication Handbook, RSGB.

■

QSP

1980 JOTA

Little jottings from the 1980 JOTA Report — VK0KC was operated at Mawson Station. They fired up the rig early on 18th October only to discover they were in the middle of a radio blackout which lasted nearly 10 hours. Eventual tally was about 56. Thanks to F6EPY permission was given by the PTT for Scouts to speak on the microphone during JOTA but, alas, only on the official station F6JAM. The Victoria Scout Group on Malta were very active using 9H4H for special permission had been given by the authorities for Scouts to speak on the air. Scout constructed masts and towers abounded but the Tikipunga Scouts (Whangarei, N.Z.) took the easy way out and used a mobile crane with a 25m boom to hold up the end of their aerial. ZL2WA made an Oscar 7 contact with VK4ZRQ to the delight of everyone present. The Army Signals Division has now agreed to provide the necessary equipment to set up permanent Scout stations in each of the 19 State HQs. All newspapers, radio and TV gave JOTA good coverage (including front page photographs in some newspapers) in Portugal.

SM7LHK should be qualified for the Guiness Book of Records —230 Scouts, 1 operator and 1 station in a wardrobe 1.5 metres square. Many stations in Switzerland organised other radio-scouting activities over JOTA weekend — fox hunting, kit building, technical discussions, etc. One group operating G3RKN and G3GZG let the Scouts tune in stations they wanted to work and the operator then called them. This was a highly successful strategy — "you find them, we'll work them" — creating great interest to the Scouts. ■

CABLE TV SYSTEM

According to Ham Radio, March 1981, the expansion of cable TV systems poses a potential threat to Amateur Radio operators. Although they are supposed to be closed (non-radiating) systems, many use the VHF spectrum from 50 to above 225 MHz for their multi-channel content and when systems leak (an all-too-common occurrence due to corrosion, loose connectors or cable damage) interference results. Cases of cable-system interference on amateur repeater inputs have been documented. Amateur interference to cable reception also occurs with poorly shielded continuous tuning convertors in use. ■

EMDRC HONOURS WARC REPS.

At the April General Meeting the EMDRC paid tribute to David Wardlaw VK3ADW and Michael Owen VK3KI for their selfless services to amateur radio and in particular their participation at WARC and their many visits and lectures to the club, by presenting them with Life Membership of the EMDRC.—EMDRC Radio Bulletin, May 1981. ■

IYDB

1981, The International Year of the Disabled Person. Elizabeth Community College, close to Adelaide, have set up a working party to co-ordinate College activities for IYDB. One such activity planned is an Amateur Radio display manned by and designed for disabled people on the 8th and 9th of July. The College envisages that the display will be followed with a course of instruction leading to licences for disabled people and possibly the formation of a club for them. Further details from VK5AIM. ■

Mounting a Quad Antenna

J. A. Gazard VK5JG
39 Glenhuntly Street, Woodville South, SA 5011

A quad antenna for 21 or 28 MHz is cheap and easy to construct but it is a different story when it comes to providing a structure to mount and rotate it about 30 ft. in the air.

This structure must be able to withstand the hurricane that occurs, say once in 10 years, and the gales that occur two or three times a year.

It must be possible to climb to the antenna so that the quad can be erected, adjusted and repaired if necessary. To satisfy these conditions a steel tower such as a windmill tower or a solid guyed mast with foot pegs would seem to be necessary, but these two structures are expensive, may be unsightly when erected in a back garden, and often offend neighbours. Also the guys of a mast hinder the erection of the quad.

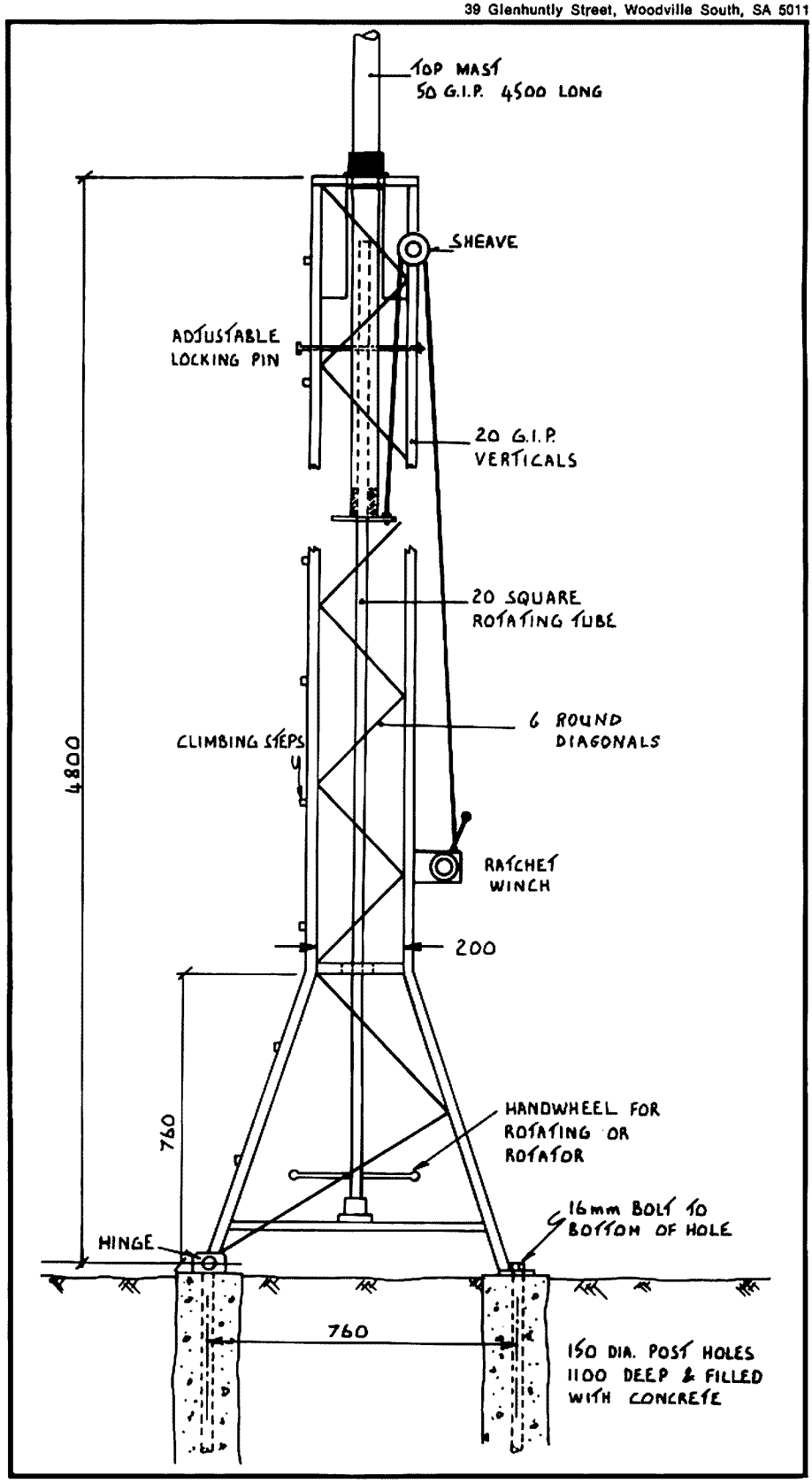
If the structure could be easily and quickly lowered when the quad was not in use the hazard of high winds would be avoided and a much lighter, neater and cheaper mast without guys could be used. The telescopic mast shown in the sketch has this feature. The lower section is of lattice construction and strong enough to withstand any wind when the top section is lowered. The top section of 2 inch galvanized waterpipe is not strong enough to withstand gales when raised to the full height but when telescoped into the bottom section does not come under stress. It can be raised or lowered in less than 30 seconds. The rotating mechanism is not affected by raising or lowering and can be used with the mast at any height. No guys are required.

The bottom lattice section can be climbed for fitting and adjusting the quad which is done with the top mast lowered.

Construction of the tower will not be difficult for anyone with a home workshop that contains an arc welder. The vertical members of the lattice consist of four ¾ inch waterpipes set at 8 inch centres and the diagonals are of ¼ inch round steel except where the verticals spread out at the bottom. Here the diagonals are of ½ inch round. On one side of the diagonals are replaced by horizontal ½ inch rounds which form the steps by which the mast is climbed.

The top mast can be 2 inch galvanized waterpipe or similar tubing. The top mast slides in a close fitting out tube 18 inches long, welded into the top of the lattice tower. If a suitable close fitting tube cannot be obtained a box made of four angle irons can be used.

The top mast hangs on a 3/16 inch diameter winch wire which passes over a sheave near the top of the lattice mast and is wound on a ratchet winch drum attached to the mast about four feet above ground.



In all four masts constructed here the winches had a drum made from 1¼ inch pipe with large washers as end plates. One washer had six ratchet teeth cut with hacksaw and file to make a strong holding ratchet.

Rotating of the mast is done by a ¾ inch square 16g tube which passes through a square hole in the bottom of the pipe mast and telescopes into it when the mast is lowered. A hand wheel or motorized rotator can be used at ground level.

The writer is prepared to supply additional information to anyone proposing to build a mast. This information can be supplied by letter, on the air on 7 MHz SSB, or to a local visitor. ■

MOUNTING A QUAD ANTENNA

EDITOR'S NOTE: Some of the following points may be covered by the additional information which VK5JG offers to supply. However, on the information contained in the article alone, the following comments or suggestions are made jointly by the draftsman and the technical editor:

(a) As indicated, a locking pin is essential as a safety device and to relieve winch cable load.

(b) The top sleeve bearing might better be two sleeves about 1 metre apart.

(c) There should be a thrust bearing at the bottom of the rotating mast.

(d) The hold-down bolts should not be smaller than 16 mm (⅝ inch).

(e) *Most important,* the concrete footings as shown are too small, and should be at least 450 mm (18 inch) diameter.

(f) The structure could be further improved if the base were increased to about 1 metre square and the tower uniformly tapered, i.e. the corner pipes left straight, not bent. ■

Victorian Division N-E Zone at Wodonga

A meeting of the North-Eastern Zone of the WIA (Vic. Division) was held in Wodonga on 4th April, 1981.

The venue was the Wodonga Continuing Education Centre. Some of those present were caught on film. These were (see photo, read from left to right) Graeme VK3VAC/ZGL, Rodney VK3UG, Norm (no call), Ross VK2DGY, Nigel VK3YVQ, Bob VK3AJN (hiding behind sign), Ross VK3KAN, Arthur VK3NOI, Rodney VK3CBO, Ron (no call), Evan VK3VVE and Brian (no call). Andrew VK3XBH was present but not pictured.

Many items were discussed at the meeting which was well attended. These included a report on the repeater VK3RNE after work done on it by VK3AFN/VK2DGY involving cleaning and adjustment of the cavities. Discussion also touched on the subject of increased power for the repeater to increase the coverage area. A report was made on the progress of the Mt. Wombat repeater (Shepparton) and all seems to be going to plan there. Presented to those at the meeting was a multi-page listing of all those hams, Limited, Novice and Full Calls) in the North-Eastern Zone. There are still copies of this very useful sheet, which can be obtained from VK3KAH, VK3AFN or VK2DGY by sending a SASE and 50 cents to cover printing costs. They are each five pages long, categorized by town/area. A must to any operator, new or old, in the Zone. Discussion was then centred on the next meeting, which will be held in Shepparton on the 19th July. The venue is the Mechanics Institute Hall, Wyndham Street, commencing at 1 p.m.

For those interested, there will be a tour through Radio Australia, Shepparton, at 11 a.m. on that day. If you wish to join the tour, be at the front gates of RA no later than 10.50 a.m. Talk-in facilities will be via channel 40 (146.0 MHz). Also at the meeting Gordon VK3BWG will give a talk and demonstration of various types of radio teletype equipment in use by amateur opertors. This is your Zone, so please give it your support by attending.

After the meeting there was (as usual) a series of fox-hunts on VHF. Shown in the photo is the fox held by Brian VK3AFN. It uses an IGL exciter followed by a 2W amp. The dipole antenna can be seen here, but seems to become invisible when you look for it. Two operators looked at it for minutes and couldn't see it when hidden in a tree.

The results of the hunts were:—

Hunt 1: 1st, VK3XBH and Co.; 2nd, Brian (no call); 3rd, 3YVQ/2DGY; 4th, 3UG/3KAH.

Hunt 2: 1st, 3UG/3KAH; 2nd, 3YVQ/2DGY; 3rd, 3XBH and Co.; 4th, Brian.

Hunt 3: 1st, 3UG/3KAH; 2nd, Brian (no call); 3rd, 3YVQ/2DGY; 4th, not found.

(Sophisticated equipment not necessary . . . the winners were using a vertical whip and Yaesu FT-480R!!)

We (the Committee and interested members of the Zone) would all like to see you

at one of our meetings, so why not set aside Sundy, 19th July, to come and meet us all and try your hand at the activities, see and hear the things of interest at the meeting and let us know you're interested. Join in and enjoy. See you at Shepparton.

Yours faithfully,

Ross Wheeler VK2DGY.
Secretary/Treasurer N.-E. Zone. ■

Amateur Radio Operators keep Australia's Communications Links Open

Sam Voron VK2BVS
2 Griffith Ave., East Roseville, NSW 2069
Ph. (02) 407 1066 before 9 p.m.

Australian amateur radio operators set up a national 24 hour radio network over a 5 day period to provide the public with a means of sending messages during the breakdown of the public telephone network which has resulted from industrial action.

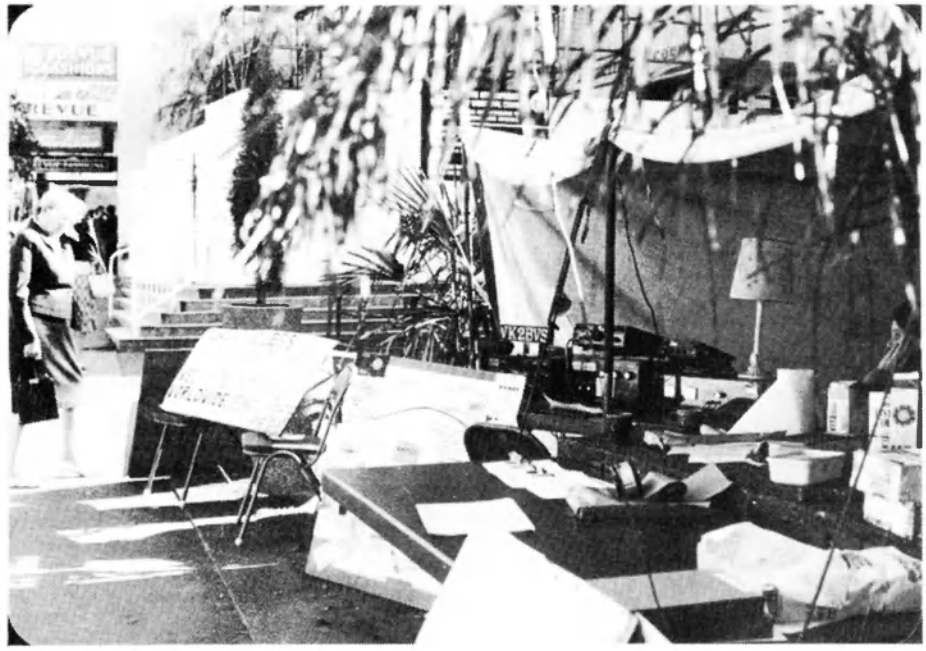
By Wednesday, 10th June, it was clear that Australia's communication was not improving. NSW WICEN had already set up a daily preparedness network and was in constant briefings with developments and intentions of the third party traffic net.

Even though our new third party regulations allow any amateur at any time to make the facilities of our hobby available to the public, a message was sent to the Department of Communications in Canberra via Dave VK1DN (telephone communications between Sydney and Canberra not being available), advising that I would be "investigating the immediate setting up of amateur radio sations at easily accessible locations in Sydney and other centres for the handling of health and welfare messages for the general public".

Thursday, 11th June, was spent with Simeon VK2AVD investigating suitable locations for the setting up of what we termed "public access" amateur radio stations. That evening a message back from Canberra on 80 metres from Mr. Ross Ramsay, DOC in Canberra, stating that "the Department had no objection to amateur radio operators setting up a communications network such as that provided that no financial gain was involved and no commercial messages were passed".

It was decided to set up this network by Friday afternoon. Friday morning saw the construction of an 80, 40, 20 and 15 metre inverted vee antenna system with one coax fed line and the construction of a large display board.

Meanwhile that morning we learned that fear of the political union situation and red tape meant that the Sydney Town Hall and railway locations fell through. We approached the local Willoughby Municipal Council and within half an hour all red tape had been cut. By this time it was 4 p.m. and an amateur station was appearing near the footpath in the middle of Chatswood shopping centre in front of the Town Hall. The Council provided two large tables, ten chairs and a 240 volt extension cord from the second floor of their office



The main amateur radio operating and co-ordinating point for the Sydney general public, outside the Willoughby Municipal Offices. The display board was made with the future in mind.

VK2AVD setting up for the 24-hour TPTN Sydney operation.

block, running under the door gap (thus maintaining their security). The antenna system was raised to the top of the flag pole.

Australian Associated Press, who fed the radio, TV and newspapers nationwide, was contacted, as were individual TV stations. Throughout that evening Sydney television channels 0/28, 7, 9 and 10 were broadcasting how amateur radio enthusiasts across Australia were setting up a national communications networks for the passing of urgent messages, and that all you had to do was catch a train to Chatswood railway station and the amateurs would do the rest. The first to carry the story was channel 10 as their number one Item on their 6 p.m. national news. Public response was Incredible, jamming the switchboard and causing the station to repeat the information again in the middle and at the end of their news coverage.

Over the 5 days some 130 people filled out amateur radiograms. The public kept the original as a memento of their visit and the carbon copy was filed in one of three folders — messages to be sent, messages sent awaiting reply, or into the messages completed folder. The message form used consisted of an introduction, a WICEN message format which the third party net had been experimenting with, and a disclaimer.

The introduction read "Amateur radio operators are hobbyists developing their personal skills In the many facets of radio communications, electronic experimentation, world-wide friendship on radio, public service, amateur television, facsimile, radio teletype, slow scan world-wide two-way TV, orbiting amateur radio satellites, and morse code, as well as voice long distance communications.

"Your involvement is helping Australian radio enthusiasts develop their nationwide and international message handling skills.

"When the public needs help amateur radio operators are there."

The disclaimer read "This message is handled free of charges by a licensed amateur radio operator. As such, messages are handled solely for the pleasure of operating, no compensation direct or indirect, paid or promised, can be accepted by a station owner. For the same reason neither eventual delivery nor accuracy of message can be guaranteed."

The outdoor station was surrounded by other display boards containing photos and front covers of Amateur Radio magazine. This served to highlight the diversity of the amateur radio enthusiast to both the visiting media and the public.

An extensive network was operating on 3570 kHz on the Friday night, with messages for any part of Australia, plus one for Canada being picked up by someone in the net. With operators in a sleeping blanket out in the open on the concrete pavement, the radio link was faithfully maintained, with the TS820 and the FL2100Z going strong night and day.

Message Category	Personally Presented Messages to VK2BVS	Telephoned Messages to VK2UK	Category Totals
Notification of death and/or funeral arrangement	30	10	40
Notification of imminent death	4	—	4
Medical condition inquiries (patients in hospital)	33	8	41
General health inquiries	7	4	11
Urgent medical information	1	—	1
Transport (Arrival/Departure information)	37	10	47
Births notification	6	—	6
Birthday, Anniversary congratulations	3	—	3
Messages for hospitals	4	—	4
Mesages for nursing home	1	—	1
Messages for marriage and family centre	1	—	1
Messages for Army	1	—	1
Welfare and Information messages not listed	9	1	10
Messages totalled	137	33	170

Prepared for a third night sleeping in a cold winter's environment, Sunday evening appeared to forecast rain. Dave VK2BPU saved the situation by providing a large tent for the station an its operators.

Radio stations kept transmitting regular announcements of what the amateurs were doing, press reports started to appear in the newspapers. Radio talk-back programmes wanted interviews, journalists looking for interesting stories, television stations returned for follow-ups.

In other parts of Australia, amateurs were also taking the initiative in providing a communications link for their community. Public access amateur stations were set up at the local car park in Ouse, Tasmania, by VK7KJ and his local team, as well as by the Iliawarra Amateur Radio Club at a local hall in Wollongong.

Other amateurs began making their phone numbers available for transmission over their local radio stations. These numbers were also publicised through the AAP media network.

I was initially against the idea of a phone number for Sydney, fearing an excess of low precedance messages would swamp our system, however Ed VK2UK, as a test Sydney number, showed that the telephoned messages were just as urgent as those personally brought to the station. To cope with the demand Colin VK2VUA, Peter VK2AGB, John VK2VSF and Brian VK2VLC also made their numbers available for public media broadcast in Sydney.

The many net control operators and participants did an excellent job. I am afraid to mention some of the ones that stand out in my mind because I am sure I will miss out on some of the other less familiar call signs who also did a fantastic job.

During the day 7060 kHz was used with links to 21150 kHz. VK8OD, with the Northern Australia third party traffic net which was formed a week or two previously, allowed easy integration with the expanded 24-hour third party network.

Considering that most amateurs don't have a message format, and most probably never handled a message before, it's hard to believe just how well the whole operation proceeded. I feel sure that this situation where the community needed, welcomed and used our help, has left all who participated with a tremendous sense of pride in our amateur radio service.

Congratulations were received from the passing public on the streets of Sydney and from the Council administrators. Amateur radio has come Into its own, we did a job that no other could do, and I will never forget the on-air teamwork and the response of the public to a job well carried out and done.

Following is a breakdown on the type of messages sent over the five day period ending Wednesday, 17th June at 4 p.m.

Many more messages were relayed for other stations but these are not included above. Send in your traffic break-up so a more complete picture is built up. More experiences could be imparted about the life and death messages which arrived via a courier, the message delivered by no less than five police officers, or the thankful family from Perth who caught a plane to Sydney and spoke with their father before he died. Summing up, I would like to look to the future. There were many distressed people we could not help because we have no international third party agreements with specific countries.

I think some amateurs may have felt, "third party traffic, that's nice, now what can we do with it?". I think that question has suddenly been answered in a most dramatic and unexpected way.

Since the end of the 24-hour activity, the third party traffic net has returned to its three times daily schedule, 0245Z and 0700Z on 21150 kHz, VK8OD Darwin net control, and 1125Z tuning call, 1130Z traffic list on 3570 kHz ± QRM. Message forms are available at 10 per 25 cents from the author's address. A roster is being drawn up to maintain the net on a seven day per week schedule. If you have one day or more free per week to help on 80m, contact Sam VK2BVS; if you can help on 15m, contact Bill VK8OD. ■

Telecom Australia Museum — Adelaide

For many years interested staff of Telecom Australia have been collecting material with historic interest. However, it was not until 1962 that, on the initiative of Mr. V. F. Reeves, then Assistant Director Engineering, the collection was organized into a museum display.

The Museum was originally located in Engineering Building, 42 Franklin Street, Adelaide. In order to make it more accessible for public viewing, it was transferred to Electra House in March 1976.

The Electra House ground floor display is the first stage of a large project which in the next few years will result in the whole building being taken up with displays of historical items and archival materials.

The present displays include such items as:—

Radio: Crystal sets, early spark coils, early battery receivers, horn speakers, etc., as well as an experimental transmitter used by an Adelaide operator to switch on the lights of a house in New York.

Telephone: Early hand-made instruments to current models, including the 1904 desk telephone from Central Exchange.

Telegraph: 1860 magnetic instruments as used on first SA line, items from Overland Telegraph line to Darwin of 1872, and a portrait (1886) of the founder of telegraphs in South Australia.

Kevern Rowe VK5AKE recently visited the Museum and reported it for the SA Journal of April 1981.

Kevern writes: "The displays have all been beautifully restored to as near original appearance as possible and are very well presented in glass cases. Unfortunately, our request to "fire up" a home-brew amateur transmitter from the 1920s fell on deaf ears, a pity but quite understandable.

"A fascinating range of early radio equipment is on display. There are "Cat's Whisker" crystal receiving sets, valved TRF receivers purchased from large city department stores as kit sets and assembled at home, to mention a few.

"The extensive range of early amateur home-brew rigs indicate that visual appearance of the finished product was as important as how effectively the gear actually worked. Highly polished wood bases and plywood front panels, acid etched to give a polished marble appearance, were noted. Great attention to detail was also paid to mechanical aspects of building, with first class workmanship quite apparent.

"Many of the items have cards attached giving some historical information, but the Museum staff (all volunteers) have a wealth of interesting commentary which add to the enjoyment of a visit."

So next time you are in Adelaide, pop into Electra House in King William Street (next to the GPO), for a look at the "good old days". The Museum is open from 10.30 a.m. to 3.30 p.m. on weekdays. ■

Early receiving tube cartons on display.

A selection of valves and a transmitting capacitor.

AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

Here are details of a new 10/10 award which is available from the Cairns Bird-Wing Chapter of 10/10 International. This Chapter commenced on 10th May, 1981, and at the time of writing, almost 100 certificates have been issued to Australian and overseas amateurs and 13 of the first upgrade to VIP have been issued to VKs.

I quote verbatum from the publicity sheet which is included with this award:—

CAIRNS BIRD-WING CHAPTER OF THE 10-X INTERNATIONAL

"Hi, greetings from Cairns Far North Queensland, the home of the Bird-Wing Butterfly (Ornithoptera priamus). A rare species found flitting in and around the tropical rain forest of north Queensland, with wings of emerald green trimmed with black and approximately 6 in. from wing tip to wing tip. This butterfly will only breed on a vine-like plant called a Dutchman's Pipe, which grows in the rain forest.

The city of Cairns is located at 16° 55 south, 145° 47 east. A tropical area of Australia with a rainfall of approximately 80 to 100 inches or 2,000 to 2,800 mm annually, and a temperature range of approximately 34°C to 12°C or 94°F to 54°F. The mountain ranges to the west are covered with a blanket of lush green softwood rain forest, while to the east the Pacific Ocean and the Great Barrier Reef with its myriads of coloured fish and living corals are a truly tropical wonderland.

The requirements for this 10-X award are first the station applying must be a member of the 10-X International.

For basic 15 points, including 1 Chapter member or two honorary Chapter members. For VIP 100 points, including two Chapter members or three honorary Chapter members. For Dutchman's Pipe 200 points, including three chapter members or two first State/country. For Protector 300 points, including five Charter members and three first State/country.

Points as follows: Basic 2, DX 1, FS/FC 1, HC 2, VIP 3, Dutchman's Piper 4, Protector 5.

Application must include name, QTH, 10-X number, certificate number and any other upgrades of each station worked.

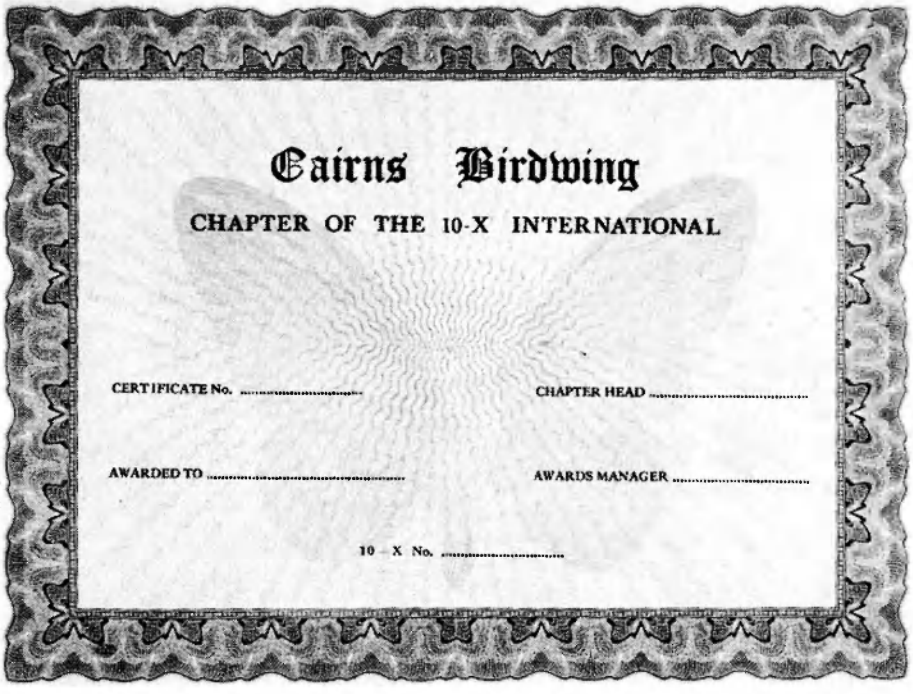
COST

Australian: Basic $2, VIP $1, Dutchman's Pipe $1, Protector $2.

DX: Basic $3, VIP $1, Dutchman's Pipe $1, Protector $3.

Please supply your full name, QTH, call sign and 10-X number on your application. Also the cost for prompt processing and return of your certificate or upgrades.

Chapter Head: Ivan E. Dammash VK4NOK, 16 Irene Street, Cairns, Queensland 4870, Australia.



All applications for awards to: Denis Williams VK4VBZ, PO Box 2, North Cairns, Queensland 4870, Australia.

Thank you for joining the Bird-Wing Chapter."

DESCRIPTION

This award is printed in four colours on white parchment. The background is on gold with the butterfly in varying shades of light green and grey and the surround in dark green with all printing in black. It measures 275 mm x 210 mm.

In the October 1980 issue of AR I featured another 10/10 award with upgrades which is available from the Welcome Stranger 10-X Chapter from Ballarat, Victoria. You require 250 points, including five Chapter members, to qualify for their VIP award, which is shown in the illustration.

This award is a multi-colour jumbo card print of a street scene of Sovereign Hill, Ballarat, showing the Cobb & Co. coach. The printing is in gold. This award measures 300 mm x 210 mm.

The same issue of AR featured an illustration of the City of Melbourne 10/10 Chapter basic award on the front cover and the rules for this award were included in the issue.

The City of Melbourne 10-X Chapter has recently announced a rule change in the points scoring system. The basic award requirement remains unchanged, i.e. 15 points, including 1C or 2HM or 2HC. The first endorsement (Captain Cook) requirement is 100 points, including 2C or 2FS, second endorsement (Moomba) 200 points (previously 250), including 3C or 5FS, and VIP 300 points (previously 500), including 5C or 10FS. All other details remain unchanged as included in the October 1980 issue.

I will feature descriptions and illustrations of the City of Melbourne 10-X upgrades in a future column.

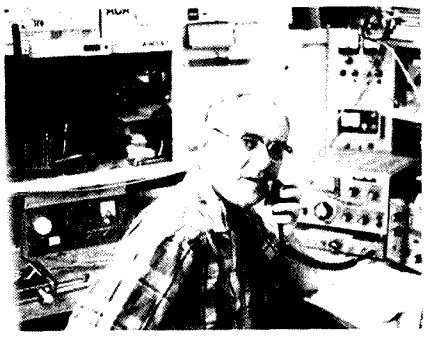
Also I have not forgotten the Power Valley 10-X Chapter. I will include descriptions of their awards in the October issue.

Good hunting. ■

UNDU AWARD

Applications for this award must be accompanied by $US12 instead of $US6, from 31/7/1981, because, according to Sr. Jose Gonzalez of the Philippine Amateur Radio Association, the costs of airmail rates, handling and printing costs have more than doubled. Cabled information of 19th June. ■

AMSAT AUSTRALIA



R. C. Arnold VK3ZBB

With the indulgence of our Editor you may have a new portrait to grace this edition of my notes.

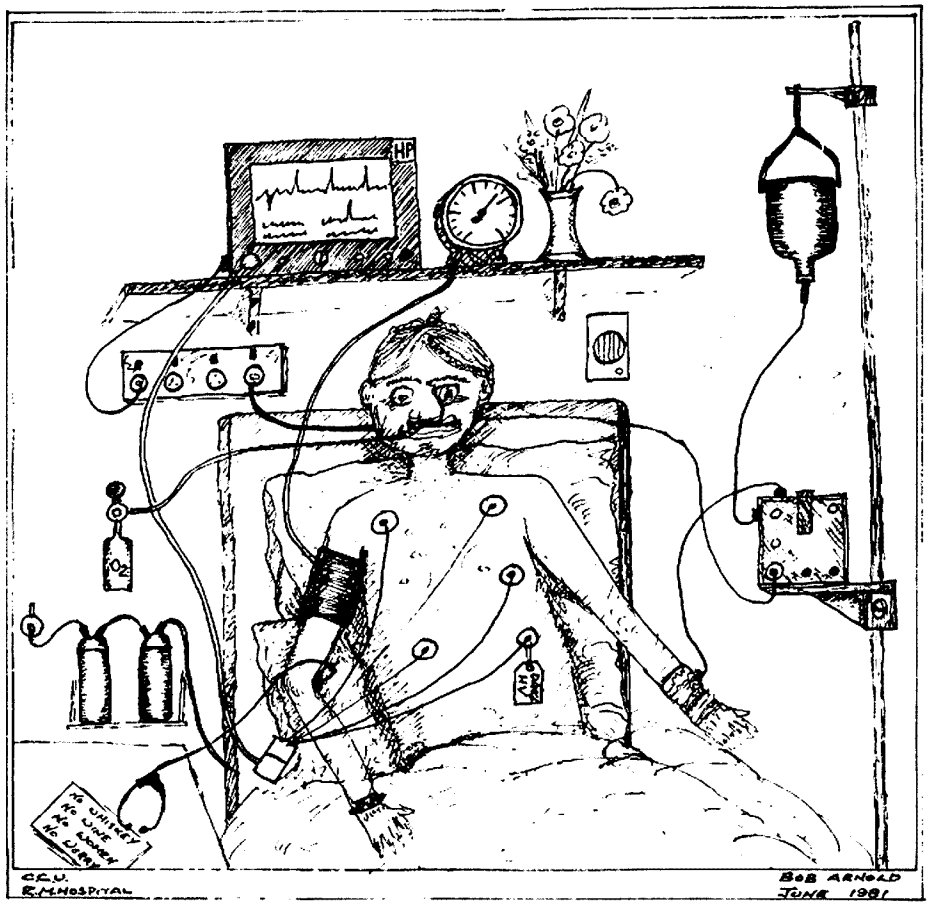
It graphically shows the situation I was in at the end of May after suffering a coronary attack and being rushed to the Royal Melbourne Hospital, where devoted care put me back on the rails again.

I have tried to illustrate some of the remarkable electronic aids available to assist medical staff to diagnose and treat disease, including electro-cardiographs which can be monitored from a distance and set to sound an alarm if any deviation from a predetermined pattern is recorded.

A most interesting device which could easily be adapted for amateur use (and nearly was) took the form of a five-point ECG recorder, about the size of a Penguin book, which was strapped to my waist, thus permitting a continuous record to be kept of my reaction to various activities such as walking, washing and eating. The standard magnetic tape was changed each 24 hours when it was analysed on a computer.

I would particularly like to thank the many amateur friends who sent good wishes to me via a number of routes. It was good therapy to realise that so many cared. Special thanks to our Federal President Peter Wolfenden, Charlie VK3ACR, Neil VK3ANK, Andy VK3YQX and XYL, who visited me in hospital.

Pleased to say I am making good progress and should be back to a normal routine by the time these notes are published.



I was delighted to receive a letter from Barry Abley VK3YXK, of the Electronics Department, Geelong Technical School. Barry's boys at the school, in the 10 and 11 age group have, from limited information, constructed a scale model of UOSAT which is due to be launched in September. It is a very creditable effort and I hope the photograph will reproduce sufficiently clearly for readers to make their own assessment.

The boys already monitor OSCARS 7 and 8 and will be looking for UOSAT and Phase III when they are activated.

The Geelong Technical School is also active in the transmission of television signals in the 70 cm band under the call sign VK3YTG. I am aware of similar activity at Footscray Technical School through Bill VK3JT, and at St. Bernard's College through Dick VK3ARR. If other schools are interested I shall be pleased to include an article in these notes.

I have been unable to monitor and work the satellites during June, but I have some disturbing news from Charlie VK3ACR. It appears that when working OSCAR 7 on orbit 30063 at 0906Z, 11th June, the signal suddenly cut off and did not re-appear whilst the satellite was in sight. In fact, no contact has been made with AO7 since that time and it is highly probable that Charlie experienced its demise. There is just a possibility that the satellite moved into shadow which, of course, would cut off power to the transponder and beacon as the batteries have already failed. If this is so, AO7 should be operating by the end of July, but as the AMSAT experts do not share this opinion it is a pretty vain hope. What a wonderful satellite it has been — over 30,000 orbits in 6½ years of opera-

tion with virtually unrestricted availability.

PREDICTIONS

In the hope that AO7 may return to operational status I am giving my predictions for both satellites:—

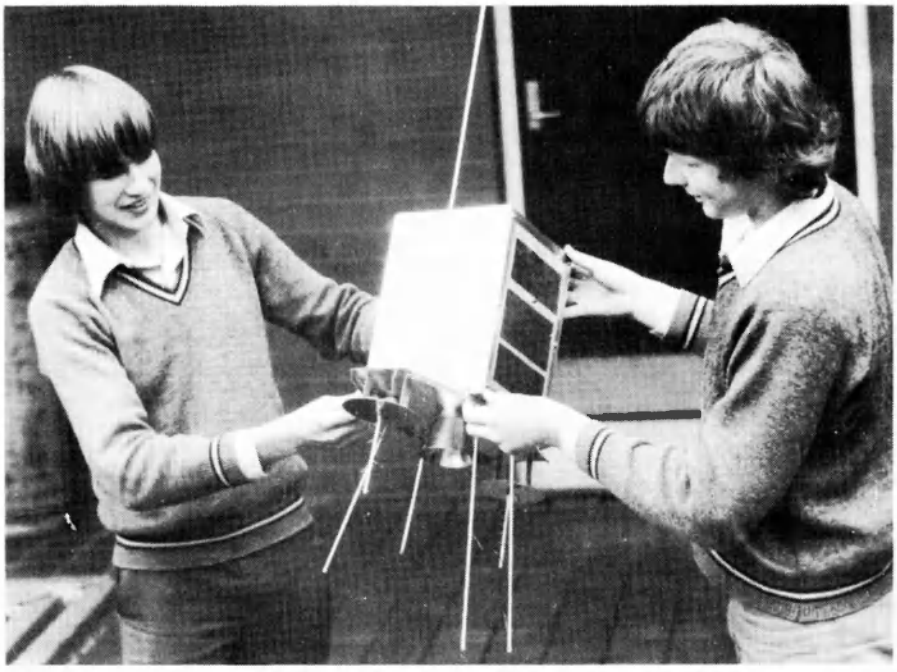
	OSCAR 7			OSCAR 8		
Date	Orb. No.	Eqx Z	Eqx °W	Orb. No.	Eqx Z	Eqx °W
AUGUST 1981						
1	30680	0137	104.8	17378	0029	69.4
8	30767	0017	84.9	17476	0101	77.7
15	30855	0051	93.8	17574	0134	85.9
22	30943	0126	102.7	17671	0023	68.4
29	31030	0006	82.8	17769	0055	76.7

It was good to hear that Ariane rocket LO3 was successfully launched from the ESA centre in French Guiana with Meteosat II and two other satellites aboard.

This augers well for the LO7 launch, possibly in June 1982, which will carry Phase IIIB amateur satellite. ■

RIGHT ♦

Scale model of UOSAT constructed at Geelong Technical School.



CLOSE-UP

Adapted from "The Millington Star", Tennessee, USA

The Tasmanian Devil Award in Dennis Cornell's shack (above) has pride of place. Dennis WD4HRO decided to qualify for it at the suggestion of VK7 amateurs, with whom he is a popular contact.

Dennis, of Millington, Tennessee, became an active amateur 13 years ago while in the US Navy. Serving on board the aircraft carrier USS Saratoga in the Mediterranean, he became involved in phone patching for crewmen wishing to speak to their wives and families in the US.

His wife, Kristi, is a novice operator studying for her general licence. ■

NOVICE NOTES

Edited by Ron Cook VK3AFW

CATCHING YOUR FIRST DX, IN A SCIENTIFIC WAY

Newcomers to the DX bands usually find working DX quite difficult. This month I will give some advice that will help these operators, although I do not claim this will give DXCC within three months.

Firstly make sure your station is efficient. Secondhand coaxial cable, poorly made connections to connectors and a poorly adjusted rig can (and must) be avoided.

Start with the transceiver. Check that the audio is crisp and clear. Adjust the gain and drive controls to allow full output on peaks only. Practise speaking across the face of the microphone with a constant level of voice. This will eliminate the gasping and heavy breathing noises as well as ensuring a high level of audio at all times.

Install a low loss feed system. This includes properly made connections at the aerial as well as at the transceiver.

Erect the best aerial that you can afford. A beam is not necessary to work DX but it helps a great deal. Put up a monoband beam if your budget is limited or build a wire beam from scrap timber and copper wire.

The various DX columns and notes give details of rare dX and special DXpeditions. For the experienced operator these are of great help but if you haven't yet worked any DX don't bother with trying for the rare ones yet. The pile-up of competing stations will give you less than one per cent chance if you are a beginner at this game.

Try working some Pacific DX, USA or Asian DX first.

Now you can't work the DX if they are eating their evening meal or in bed asleep. This simple fact is often overlooked. Countries like USA and Japan have large amateur populations, many of whom work shift work, so there may always be some JA or W stations about. Most places, however, have amateurs who work from 9 to 5, 5/6 days a week and operate in the evenings around 8 p.m. their time or in the afternoons on their Saturday or Sunday.

Tokyo, for example, is one hour behind EAST so JA stations may be expected in greatest numbers from 9 p.m. EAST on week nights and 3 p.m. to 7 p.m. EAST on weekends. The table shows "prime" times for various DX areas. Now we can select times when the numbers of DX stations are a maximum, increasing the number we could work if the band is open.

How do we know if the band is open in prime time? Well, the propagation predictions at the rear of this magazine show likely times when various frequencies will provide a path. We can select a frequency band which gives a good chance of there being an opening to our selected area at a prime time. The next step is most important. Tune the band carefully with the beam in the correct direction. Note the call areas being heard.

After tuning up and down you will have a list of stations (and frequencies). With a very little luck many of these will be from your selected DX target area. Now to work some stations.

It is always more productive (unless you have a really big signal) to answer stations calling CQ. Select a station with a good signal and note what happens when he stands by.

Suppose that after five seconds no one has replied to him. You are in luck. Give him a 2 x 2 call. ("JA3ZZZ JA3ZZZ this is VK3ZZZ VK3ZZZ go ahead.") It is advisable to give the repeat of your call in phonetics. Speak slowly and clearly. Do not rush you words as the other operator has probably learnt English as a second language, perhaps just so he can work more DX. If he comes back to you then fine. On your next over give him his report, your name and acknowledge his report when given. This is the minimum information required. Extra details such as "QSL via the Bureau", QTH, equipment, weather, etc., are fine, but unnecessary; if the DX stations gives these details he would like them from you. If not, then sign clear and look for another QSO.

If you want to rag chew with a DX station ask him first. You will be very unpopular with everyone if he wants to work large numbers of stations and you start holding up the queue by describing your cabbage patch.

What do you do if someone else calls before you? You wait until that QSO is complete and the DX station invites further callers. Give him a 2 x 2 call. If there is no evidence of a pile-up but he goes back to another station, wait until that QSO finishes before calling again.

If there is a pile-up then consider looking for another station calling CQ. If you decide to stick with this station then a different tactic is necessary. If propagation is not favouring your area but is favouring another area, then you may have to wait until the queue gets short or conditions change. Note the reports he gives to different VK call areas. Usually signals peak to eastern States first, then VK5, then VK6.

When calling give your call sign once with the last letters in phonetics (e.g. VK3 Alpha Foxtrot Whiskey). If there are several "heavies" in there calling let them fight each other. Wait until they stop and if the DX station doesn't come back (all he heard was garbage) give your call sign once. He knows you are calling him and doesn't need reminding of his own call. Be very careful with this procedure. It is known as "tail-ending" and does not always work. The "heavies" may hear you calling, think that your signal offers no opposition to theirs and (quite rudely) jump on and call over the top of you. Often this situation will get out of hand and cause the DX station to QRT in disgust.

To improve your technique tune around and find an expert operator. Listen to the way he operates. Calmly, speaking deliberately and clearly, repeating information only when asked and always asking whether the other station has his report before calling in other stations. He remains in command in spite of any poor or downright unsocial operating by other stations. He may refuse to work stations ignoring his instructions and requests or, if he does give them a report to get them off the frequency, they will never get a QSL from him.

Listen to the JA stations forming a dogpile on some DXer's frequency. Notice how they keep quiet when the DXers has picked out a call and is working that station. Compare their operating with others and decide which is the more effective. Remember, even when working DX a little consideration goes a long way.

73. VK3AFW. ■

DX PRIME-TIME TABLE

DX QTH	E.A.S.T. for 8 a.m. local	for 2 p.m. local	for 8 p.m. local
Central Europe	5 p.m.	11 p.m.	5 a.m.
South Africa	4 p.m.	10 p.m.	4 a.m.
Arabia	3 p.m.	9 p.m.	3 a.m.
India (Calcutta)	Noon	6 p.m.	Midnight
Philippines	10 a.m.	4 p.m.	10 p.m.
Tokyo	9 a.m.	3 p.m.	9 p.m.
Fiji	6 a.m.	Noon	6 p.m.
Hawaiian Is.	4 a.m.	10 a.m.	4 p.m.
Los Angeles	2 a.m.	8 a.m.	2 p.m.
New York	11 p.m.	5 a.m.	11 a.m.
Brazil and Greeland	9 p.m.	3 a.m.	9 a.m.
British Is.	6 p.m.	Midnight	6 a.m.

LISTENING AROUND

With Joe VK2BJX, Buronga, NSW.

My geographical location at 34 degrees 10 minutes south and 142 degrees 11 minutes east is probably largely responsible for the fact that I work more VK5s than I do any other call area, because Buronga is in the far south-west of New South Wales, just 4 kilometres north of the Mildura, Victoria, post office. Most recent of these included VK5APG of Adelaide.

When this QSO started it looked like a fairly routine one, that is until Paul told me that he is only 16 years of age, and still a student at Marian High School, Mitchum. Paul has been on the air for just over a year, and to get his Kenwood 520S he went out and sold newspapers. Now if that isn't eagerness to get going on amateur radio, I don't know really what is. At school he's in the right atmosphere for ham radio, as his physics teacher is a ham, as are also five other lads in his class. At the school the students share use of a three element 20 metre beam, which they take turns in using. All of which means that it looks like the Marian High School at Mitcham is not short of "electronics" bods.

Am very pleased to be able to welcome to the air waves Russell VK3VRZ of Narre Warren, who is the brother of a very good friend of mine who helped me get my ticket when he was in Mildura, namely Graeme VK3GZ, who is now somewhere in VK6. Russell came on the air for the first time on 17/6/81, and Gordon VK5HM and I were among the first to speak with him.

When I'm on the air, while I enjoy almost every QSO, I particularly like the "unusual" contacts — someone who is located far away, perhaps in some unusual place. Joanne VK5PJH, at Ernabella in the Musgrave Ranges, about as far north and west that you can go in SA without being either in the NT or WA, who was using a Kenwood TS120V in the wee small hours of Sunday, 24th May, told me that Ernabella is no longer a mission station. Why don't we hear you on the air more often, Joanne?

In the early hours of another morning a WA6 located in California, with a hefty two kilowatt signal, broke in on some of us using 80 metres. VK5HM was the only one who could get back to him, and when the Californian was asked what he was doing down in the VK portion of 80, he said that he had a "special experimental licence". On his first over with 5HM he was S5 R7 here, but on his second he was down in the mud.

Peter VK5ATB, portable at the Moomba gasfields in the far north of SA, is always interesting to talk to. He has sent me a lot of information about the gasfield and the camp where about 200 persons work. Despite the isolation of the area, they have all mod cons up there and when leave is due, they go by charter flights to Adelaide.

Sam VK2BVS and his helpers did a wonderful job with the Third Party net when the recent dislocation of the telephone services were on. Sam and his helpers were at the Chatswood Shopping Centre, sleeping bags and all, and with antenna on the shopping centre's flagpole. Sam tells me that even while asleep in his sleeping bag he can still "listen" on the Third Party net. While there, it seems that Sam and his helpers had some excitement when burglar alarms went off and scores of uniformed police converged on the centre. While the telephone dislocation troubles were on a bedridden amateur named Horrie at Renmark, answering a call for assistance by a Shepparton amateur in regard for another person who had suffered a heart attack, rose from his bed to phone the Renmark police and got them to relay the message on to the relatives of the person who had the heart attack.

Bob VK7RD, maritime mobile aboard the "Ion Baron", an iron ore bulk carrier, was heard just after midnight on 21/5/81. Bob was then a mere 100 miles west of Adelaide, heading from Port Kembla to Port Headland. Radio Officer Bob, whose home QTH is Hobart, was in South-East Asia last year. Aboard the 109,000 tonnes bulk carrier, Bob was only using 5 watts PEP on 80. At a speed of unloading of 6,000 tonnes per hour, the "Iron Baron" has a turn-around of only 24 hours at Port Headland, and guess what it brings back as ballast — salt water!

Ever heard of **Coolbellup?** Well, it's in VK6, near Fremantle, and Bert VK6ZY lives there. Bert, who runs a Kenwood 120S, is a gardener at a primary school, and he's a chap who, like me, reckons that you can't beat a cuppa tea made from rain water. Bert and I talked about that Fremantle landmark called the Rampart (which I have seen). The Rampart was built by convicts between 1840 and 1845, and is now used as a museum.

Harry VK3NPQ, from Trawool, between Seymour and Yea, had just become a grandfather ("another boy" he said) when I spoke with him on 12/6/81. Harry has been around for 65 summers and had shortly before come on the air using a Gemtronics and a transverter. He now sports an FT200 plus an 80 metre dipole, strung between gum trees on 40 acres of God's own country. Harry had been a regular SWL to 5HM and myself before coming on air.

Bob VK4VRP is a 25 w.p.m. bod who has spent more than 16 years in the army in a "supervisory" level. He uses an FT707 and has a relative in Mildura. Another Bob VK3CCH ("Chicken, Chips and Hamburgers) from Rosebud, who is a senior radio officer with OTC (VIM Melbourne) is now learning shorthand and says he may one day enter politics.

Early in June our QSO had a breaker who said he was 600 miles west of Adelaide. I took him to be somewhere on the Nullabor Plain, but if you look at a map of SA you will see that this could not be so. The penny didn't drop with me, but someone else got suspicious and asked the mobile what sort of mobile he was. The aeronautical mobileer turned out to be John VK3BUI of Mount Macedon. It turned out that he was flying at 33,000 feet in a 707 or a 727. He was my first aeronautical contact, and his outside temperature was minus 47 below freezing. About five of us spoke with John, who was using one of those million dollar sets on which you can dial up any frequency, and we left him to attend to his other duties when he was 180 miles out of Adelaide and headed for Bordertown.

Sugar Mike Six Lima Quebec Germany was another unusual QSO. Joe VK3LVE, from Rockbank, broke in to let me know that this other Joe SM6LQG was on VK3BSB's cocktail net. So I took my turn along with about 27 others to speak with Joe — Mickey Mouse. He was headed for Java, and I asked him what his present position was. He left his radio to go to the bridge to get me a satellite fix, which at 12.50 a.m. on 17/6/81 was 36 degrees 42 minutes south, 125 degrees 24 minutes east on a course of 280 at a speed of 13.5 nautical knots. The following morning I again contacted him when he was off Albany, due to turn north via Cape Leeuwin within hours, thence on to Java.

Thanks to the many who have responded so helpfully to my request on how to key my Kraco. I will reply to all direct. I now have an American EICO tri-bander, valved rig, and will be able to key this rig directly. My typewriter is now repaired and I will shortly be preparing a special article on Marconi's early attempts to send signals direct to Australia and I hope you will find it interesting. Thanks to the many also who have urged me to keep writing this column. It will be my pleasure to do so.

73s from Joe VK2BJX. ■

EQUIPMENT REVIEW

The Kenwood TS-530S HF Transceiver

Ron Fisher VK3OM

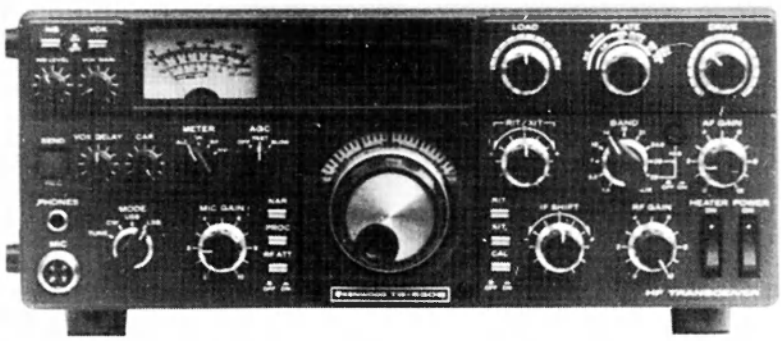
Several months ago when TRIO-KENWOOD COMMUNICATIONS announced their new TS-830S transceiver, they surprised many amateurs by reverting to a tube type final amplifier. They had after all brought out the TS-180S just a few months earlier and apart from the older TS-520S which was by now barely several years old, had made an almost complete change-over to fully solid state HF transceivers. Why then change back to tube finals? Perhaps the 180 did not achieve the popularity that KENWOOD expected and certainly it did have quite a few bugs. We did, in fact, obtain a TS-180 to review for AR but found that it had several problems. It was returned to the distributor and we were never offered another to complete our review. However, to contradict this, there is no denying the popularity of the TS-120/130 series. Their compact siz eappeals to many for both portable/mobile and base station use.

No doubt many amateurs are somewhat doubtful about solid state finals for normal home station use and perhaps many of them have had unfortunate experiences with them. Whatever the reason, Kenwood have seen fit to bring back the valve.

Before getting back to the TS-530S, a quick look at the TS-830S is in order to put the two transceivers into perspective. The 830 was hailed as a replacement for the successful TS-820S. Apart from the obvious additions to the front panel control functions, the circuit was changed from a single conversion design to a double conversion system with a 455 kHz second IF. The new TS-530S on the other hand has reverted to the 820 system of single conversion with a PLL system supplying the required heterodyning frequencies. We can therefore say that perhaps the new TS-530S is more closely related to the 820 than is the 830.

Before looking more closely at the 530 perhaps it should be pointed out that these transceivers are apparently in short supply, with most dealers being unable to supply. We were therefore pleased to receive the review sample from **Andrews Communications Systems** of Sydney, who assure us that they have plenty in stock.

Let's look at the main features of the TS-530S. In appearance it bears quite a similarity to all of the current Kenwood HF transceivers. It is the same size and general appearance as the 830 and both are slightly smaller than the earlier 820/520 series. The panel height has been reduced by 2.5 cm and the width by 1.5 cm.



A digital frequency readout is now fitted as standard as is the excellent IF shift system. The transceiver covers all bands from 160m to 10m, including all the new WARC bands. There is also an auxiliary band position to allow for any future expansion. The noise blanker now has a front panel level control and VOX gain and delay are also brought out to the front.

A new feature is the front panel selection of a narrow selectivity receive option. Four filters are offered. The 2.4 kHz SSB filter is fitted as standard. A 500 Hz or 270 Hz filter can be fitted to the CW filter position which is selected on switching to the CW mode. Then a third filter can be installed and selected with the "Narrow" button. This can be either a 1.8 kHz SSB or your choice of the two CW filters. This is indeed a very neat idea. Unfortunately the optional filters were not available for testing.

Some of the other features are:

A speech processor for the transmit audio.

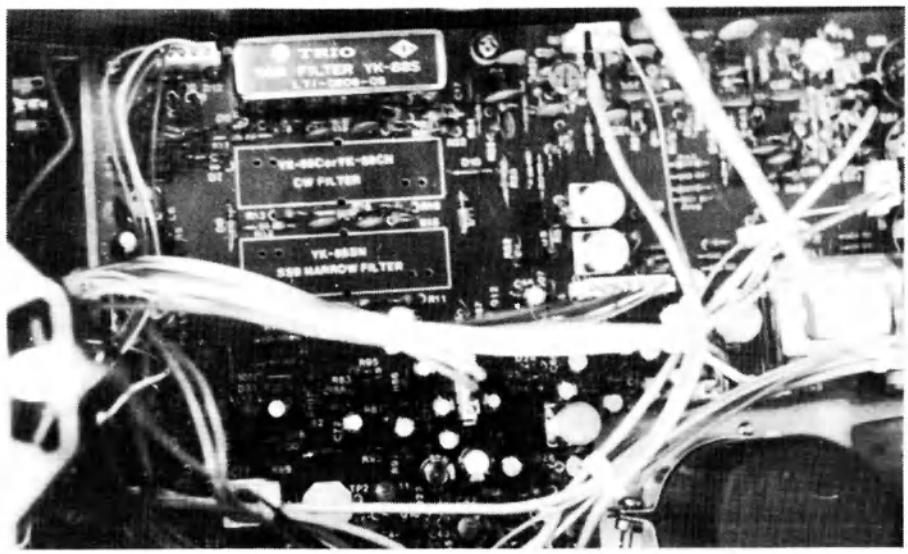
Selectable offset tuning for either transmit or receive, or both.

Selectable AGC for fast, slow or off.

A 25 kHz calibrator and an RF attenuator in the receiver front end.

The well illuminated and very legible meter can be switched for ALC, final cathode current, relative RF output, final high voltage and receiver S meter. One interesting aspect of the controls is that there are no concentric knobs, quite a boon for large fisted operators.

There is no provision for an optional DC power supply and in fact the AC line cord goes into the back of the set through a rubber grommet, the multi pin type connector for the AC cord has been eliminated. Other economy moves with the 530S are the elimination of a phone patch input and output connection. However, details on how the owner can instal a patch input is described in the handbook and an audio output is provided via the remote connector socket. The main tuning dial has also been simplified and is calibrated at 10 kHz



Left hand front view, showing SSB filters and positions for optional filters.

intervals only. No doubt the inclusion of the digital readout with its accurate resolution has been the reason for this.

TS-530S CIRCUIT FEATURES

As mentioned earlier, the 530 has a single conversion circuit with the actual IF frequency centred on 8130 kHz. Looking at the receiver line up first, the RF stage is a 3SK73 dual gate Mosfet. This is followed by an FET buffer stage into the mixer, which is balanced using two FETs. The heart of the 530S is of course the PLL unit, which supplies all of the carrier and heterodyning frequencies. It is interesting that it is now possible to change modes, that is from USB to LSB, without changing frequency — a decided advantage. Likewise, changing bands does not produce any frequency change to the dial setting, only the MHz reading changes to suit the new band.

The transmit speech processor is an audio compressor which switches between the microphone preamp and the mic-gain control. At the same time as this is switched in, the ALC action is changed to give a very fast attack and decay time. I will comment on the effectiveness of this later. It seems that Kenwood designers have gone to quite a deal of trouble to reduce spurious responses on both receive and transmit. The 3SK73 Mosfet, as used in the receive RF stage, is also used throughout the IF section and all mixers are double balanced.

Unfortunately no RF negative feedback is applied across the transmitter final stage as in the TS-820 and TS-830 transceivers. It is also interesting that IM distortion does not rate a mention in the transmitter specifications. This is a pity as Kenwood certainly made much of the improved IMD in the TS-820 with their RF negative feedback. However, as we shall later see, the 530 is still a relatively clean transmitter in this regard.

THE TS-530S ON AIR

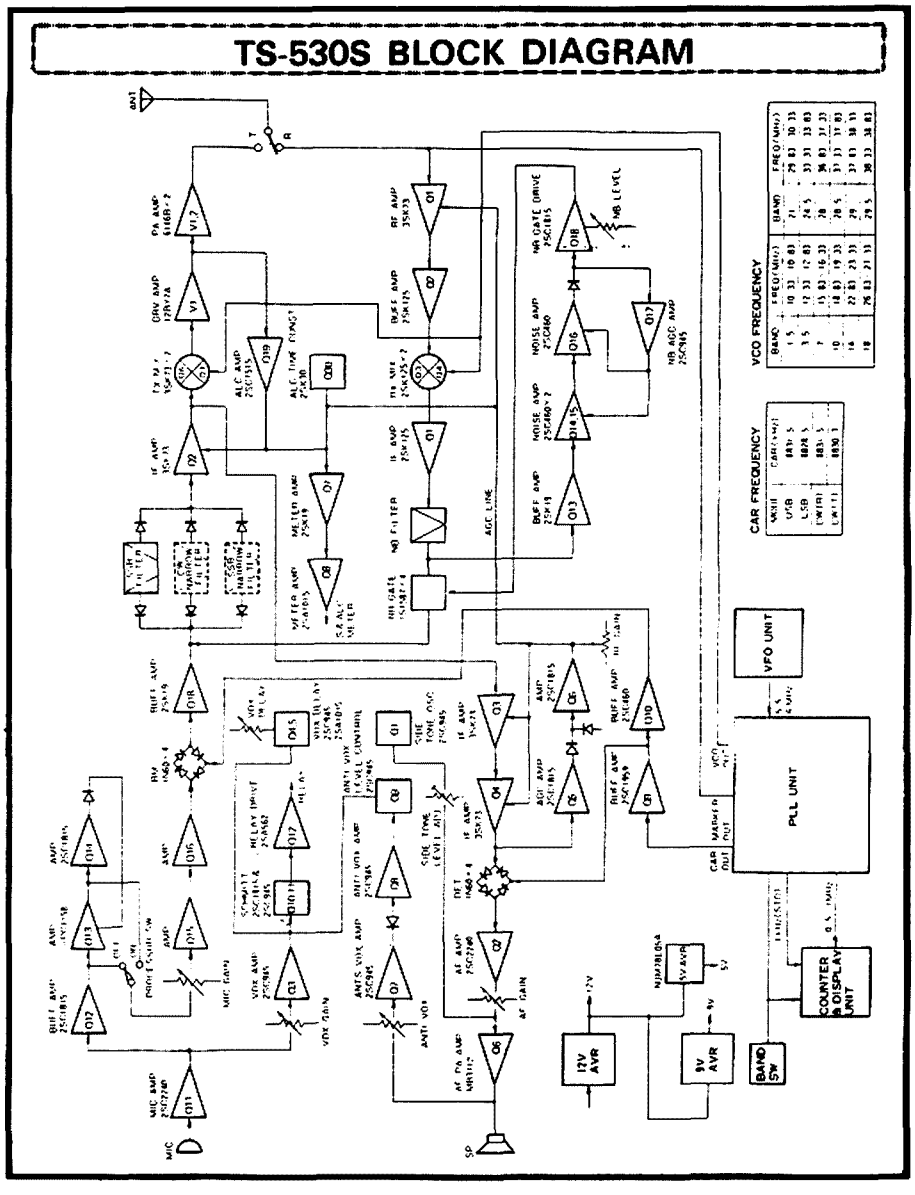
It must be said straight off that the 530 is a delightful transceiver to use. If you are used to using a fully solid state transceiver you might disagree with this, but I for one still find satisfaction in peaking up a final stage for maximum output.

The first test was the VFO. To check for drift, the 530 was placed out on the back patio for an hour or so to cool it down. Outside temperature was about 8.5 degrees C. Bringing it inside (about 18 degrees C), switching on and running for one hour, the total drift did not exceed 100 Hz. This must rate as excellent. Next the dial linearity was checked. I have yet to find a Kenwood VFO with spot on linearity, and this was no exception. Indexed at the first calibration point the dial readout varied by an estimated 2 kHz at the 100 kHz points. Of course it must be admitted that the digital readout was spot on, so perhaps this is an academic point. Incidentally, there is no way to actually set the dial scale to frequency. The tuning knob is graduated with 1 kHz marks, but I would find it hard to believe that anyone would use this. Tuning rate was one turn of the knob for 25 kHz, a little faster than many current transceivers. The TS-820, for instance, is one turn per 20 kHz. Illumination for the dial and S meter is in a soft cream colour. The digital display is blue and the figures are slightly larger than the TS-820 display.

The IF shift control was quite effective. Its ability to reject interference is limited to high frequency heterodynes mainly above about 1.5 kHz, it was however possible to pull through many signals that would have otherwise been unreadable. The noise blanker proved to be only fair in its operation. The blanking on household noises from cake mixers, fluorescent lamps, etc., was almost non-existent. Car ignition noise suppression was better but advancing the blanking control produced large amounts of distortion. There was no affect on the Woodpecker at all.

General receiver performance was excellent, sensitivity was as good or better than anything I had in the shack at the time of testing. AGC action was smooth but the S meter was rather lightly damped and gave a rather odd wriggle when reaching maximum on signals of about S8 or more. Strong signal handling ability of the 530S is excellent. We were unable to find a situation where the RF attenuator was required.

The transmitter was tuned up for maximum output on each band. There is no output on the new WARC bands. As stated in the handbook, a diode has been installed to inhibit transmission on these bands, however instructions are given on how to remove this. As the transceiver had to be returned after our test, this was not done. Output on 160, 80, 40, 20, 15 and 10 in the CW mode was measured at 150, 155, 125, 115, 105 and 100 watts. PEP output on SSB was essentially the same. However, when the speech processor was switched in, the PEP output dropped by about 5 per cent. In normal use, though, the pro-



cessor was quite effective but not up to the better RF clipper units.

The next test was to determine the amount of intermodulation distortion, commonly called splatter. This was done by working a station several kilometres away, which measured the strength of the distortion in relation to the wanted signal simply by swapping to the opposite sideband on the 530S. We then repeated the test using the TS-820 and got essentially the same figure. The actual ratio was S9 + 20 dB for the wanted signal and about S3 for the distortion products. The transmitted audio quality was rated as clean and smooth and probably more dependent on the microphone in use than the transceiver itself. We used a Kenwood MC-35S and a Shure 444, both with good results. VOX operation was smooth with just a small amount of clipping on the first part of the first word. While testing the VOX with a friend on air we got into a discussion on why VOX is, in general, not used. As a wise man once said, "Anyone can push the button on PTT microphone, but it takes an expert to let it go". Well maybe, but it is unfortunate that more don't use VOX. The transmit relay operation is relatively quiet.

The RIT, which operates on both transmit or receive, covers a range of plus/minus 2 kHz. Why, you ask, do we need offset on transmit? You are operating on 20m, working a weak DX station. You have the RIT on to help pull him out of the QRM. A strong signal comes up one or two kHz of frequency and asks if the frequency is in use. A quick push of the transmit offset button puts you on his frequency for your answer — very handy. RIT and XIT operation is signalled by individual LED indicators above the offset control.

Talking about indicators, above the digital display are four LED status lights to show operation of the speech processor, VFO on, calibrator on and RF attenuator on.

OPTIONAL ACCESSORIES

In addition to the filters mentioned previously, the following equipment is available to go with your TS-530S.

Two external VFOs. VFO 230 with digital display and five memories. VFO 240 standard external VFO with analog dial. AT-230 antenna tuner, which includes an RF power/SWR meter and antenna selector switch. SP-230 external speaker with built-in audio filters.

Other Kenwood equipment, such as linear amplifier, head phones, phone patch, etc., are compatible with the 530S.

It should be noted that a microphone is not included with the transceiver, but any of the Kenwood hand or desk microphones are suitable.

INSTRUCTION BOOK

A typical Kenwood instruction book with good operating information which is well illustrated. It covers all that most operators will require. On the technical side there is no description of the transceiver apart from a block diagram. Servicing is covered with basic alignment data plus individual circuits of the main printed boards and the overall interboard wiring.

Kenwood usually produce excellent workshop manuals for their transceivers and I look forward to seeing the one for the 530S.

CONCLUSIONS

At the advertised price of $779 from Andrews Communications and their dealers (see current advertisement in this issue), the 530S represents excellent value for money. If you take any of the current fully solid state transceivers and add a matching power supply you will finish up at a higher price. I predict the unit will be a top seller.

Homebrewing a Repeater Site

By the West Australian Repeater Group

The two major 2m repeaters in Perth have been co-sited for several years due to the lack of a suitable area north of Perth.

Early one Sunday morning in February, 1981, five members set out to explore an area to re-locate the channel 4 repeater. We found a rather nice hill (or small mountain — we don't have anything to shout about over here) and spent around two hours climbing it. At the top we discovered Kangaroo Ticks about our persons — most unpleasant as the large female can kill you — ugh! — we decided to call it Mount Tick or Tick Hill. Two weeks later a team took the portable repeater to the site with a 40 ft. antenna; a full day was spent with members of the group driving around giving signal reports which were plotted, and the resulting map showed Tick Hill would be ideal for our needs. The titles office was searched, the owners of the land located, and when approached gave us permission to use the site for an indefinite period.

The group already owns two free-standing towers, one for the wind-generator being 40 ft. and the other for the antennae being 40 ft. and the other for the antenna being 100 ft. high. One of our members is a structural consulting engineer, so we were fortunate to have his plans and advice on how to go about constructing concrete bases for the towers as the hill consists mainly of gravelly rock.

A 4-WD only track up the hill was ascended by around 15 workers for the next seven Sundays, clearing the site, digging the rocks, which proved to be larger than anticipated, so for the final three Sundays a jackhammer was hired. The construction gang soon grew fitter, muscles began to grow along with the enthusiasm! Pleas went out on the local news broadcast for galvanized iron and wood to make the forming, the amateurs of Perth were most generous, and finally the trenches were ready for the concrete.

The owners of the adjacent quarry had offered us the use of their stationary cement mixer, blue metal for free, water and a Hoff 80B front-end loader with a 4 c.m. capacity bucket to transport the mixed cement up to our site. The main problem was that the only accessible track was around 3 miles, 4-WD only, yet cruelly enough the main quarry road was but a few minutes down the steep side of the hill. We pointed this out diplomatically to the owners who did something wonderful — they put a road through for us which now allows a conventional vehicle to drive right up to the top; they also gave us access to their locked gate to make it possible to do this. We call this "Tick Highway".

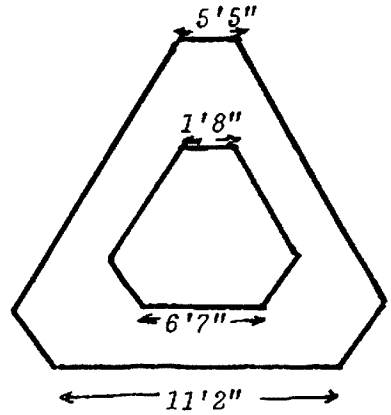
By concocting a rather good request letter and, aided by many phone calls, we have received donations of 130 bags of cement from two firms. with the aid of 4-WDs, trailers and a small truck these now are located under tarpaulin on site. 1000 feet of 1 in. reinforcing bar has been donated; some of this reposes in the trenches, whilst the rest will be placed between the double brick walls of the shack for security purposes. We will be forming the pad and "hat" for the shack when we pour the concrete, and would like to express our gratitude to the Cement and Concrete Association for their time and books and also to the Customer Service Chemist of another organization for his personal visit and literature. Weld mesh has been donated for the hat/pad and security; this has been cut up with borrowed bolt cutters and was ready for pouring day — "C" Day — the 6th of June. Sand has been ordered, an operator for the weigh batcher in which we can measure the quantities of cement — 16 c.m. of it — has volunteered, work has been done on the secondhand antenna tower with the bottom section being re-constructed and galvanized; both bases up to 15 feet now reside in the prepared trenches.

A worrying thing happened last week, we discovered that the firm had sold their cement mixer. Fortunately a tame cement truck and driver has been found for a reasonable amount of dB per hour; the truck will be able to pour directly into the holes whilst members shovel and vibrate it around. Another firm has donated the lifting hooks for the roof of the shack which, when cured and the brickwork completed, will be lifted with borrowed equipment on top. Another firm has donated the 6 dB gain co-linear antenna in exchange for some of our technical knowledge about cavities. All is in readiness for "C" day, which is in three days time; please cross your fingers that it doesn't rain.

To be continued. ■

WIND GENERATOR PAD.

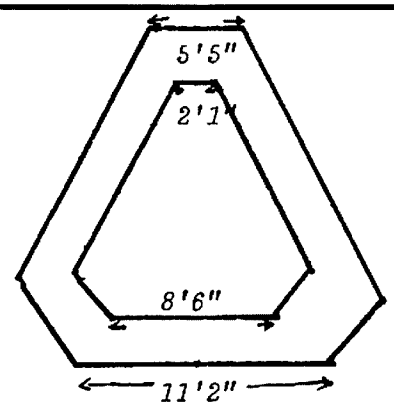
6.2 CU METERS OF
20 MPA CONCRETE.
EIGHTEEN INCHES DEEP.



BOTH TRENCHES HAVE
4 ROWS OF ONE INCH

ANTENNAE PAD.

6.0 CU METERS OF
20 MPA CONCRETE
TWO FEET DEEP.

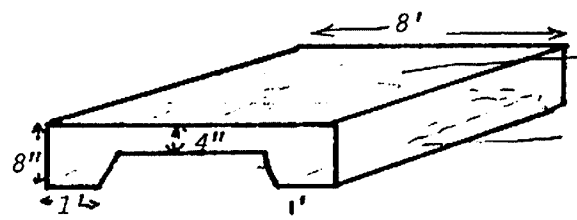


RE-INFORCING BAR
EVENLY SPACED AROUND
THE TRENCHES.

BOTH TRENCHES HAVE
SEVERAL EARTH STAKES
IN POSITION.

PAD FOR SHACK.

JUST LESS THAN
ONE CUBIC METRE OF
20 MPA CONCRETE.

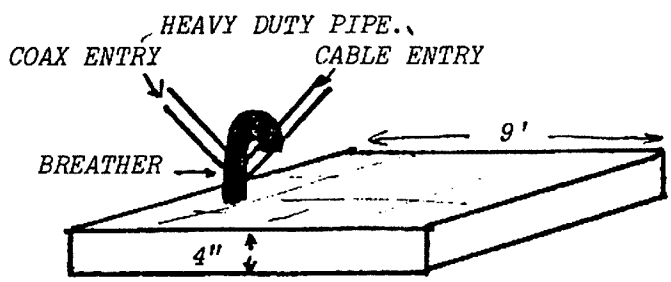


WELD MESH.

2 ROWS OF RE-INFORCING BAR.

"HAT" FOR SHACK.

APPROX .8 CU M OF
20 MPA CONCRETE.



--WELD MESH.

VHF-UHF
AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston, S.A. 5233

VHF/UHF BEACONS

Freq.	Call Sign	Location
28.230	ZL2MHF	Mt. Climie
28.260	VK5WI	Adelaide
28.262	VK2WI	Sydney
28.888	W6IRT	California
50.005	H44HIR	Honiara
50.100	KH6EQI	Pearl Harbour
51.022	ZL1UHF	Auckland
52.013	P29SIX	New Guinea
52.150	VK5KK	Arthurton
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.320	VK6RTT	Carnarvon
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
53.000	VK5VF	Mt. Lofty
52.370	VK7RST	Hobart
52.400	VK7RNT	Launceston
52.425	VK2RAB	Gunnedah
52.435	VK3RMV	Hamilton
52.440	VK4RTL	Townsville
52.450	VK2WI	Sydney
52.500	JA2IGY	Mie
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
144.010	VK2WI	Sydney
144.400	VK4RTT	Mt. Mowbullan
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.555	VK5RSE	Mt. Gambier
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.900	VK7RTX	Launceston
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.440	VK4RBB	Brisbane *
432.450	VK3RMB	Mt. Bunningyong

* Indicates a correction to previously listed frequency.

After being one of the first 2 metre beacons to hit the airwaves, VK5WI on 144.800 has finaly succumbed and is not operating at present. Current indications are that it may be off the air for some time as there seems a rather general apathy towards rebuilding. Anyway, I will do what I can to get it going again as soon as possible with its former good power output and on its new band plan frequency of 144.450 MHz.

BEACON DETAILS

There continues to be a general reluctance on the part of various beacon custodians to send me the requested information which I started asking for some months ago. So far information has come to hand from VK2WI, VK3RMV, VK4RTT and VK4RBB and VK5WI. If others have sent information then it hasn't got here. But it is not a very good response after six months, surely there is someone from the membership of the various clubs generally associated with the operation of beacons who can spend just five minutes and pen the following information to me: Call sign, carrier frequency, power (output or input), location, elevation, modulation, keying cycle, antenna (with gain if known), hours of operation, name of custodian. Plus any other relevant details you might like to include.

Once all this information is collected it can be published, and updated from time to time. On the present trends, on receipt of information, those who replied in the first instance will have "old" information before all the others have been collected. Shame on you all!

NEWS FROM VK2

Jeff VK2BYY, the VK2WI Property Officer, has sent along some more details of VK2WI, the first being the change in mode to A1 for their 28 MHz beacon, which is only 2 kHz from VK5WI.

Recently introduced SSB broadcast transmitters on 52.120 and 144.120 operate into the beacon antennae so the VK2WI beacons are off the air on Sundays during their broadcasts at 0100Z and 0930Z or 1 hour earlier during daylight saving.

Moves are afoot to shift the VK2WI 2 metre beacon to 144.420 and ultimately the 6 metre beacon to 52.420 to clear the way for the VK5WI beacon to use that frequency in due course. A 70 cm beacon on 432.420 is on the way, largely waiting for DOC to get through the paperwork!

Neville VK2QF also writes from NSW reporting more than 1300 DX QSOs on 6 metres since 19/10/80 to 10/4/81. Countries worked total 15 with 10 confirmed. Worked VK9ZD on 11/5 at 5 x 9, JAs on 18/5 also P29ZFS broke into a local contact at 0655Z at 5 x 9; 19/5 KG6.

SIX METRES RTTY

Les VK5ZW and Rod VK5AN have been active on RTTY despite a limited number of active participants to work. Worked VK4ZME on 21/12/80 at 0011Z on 52.085 559; VK2BQN 28/12/80 0840Z 52.100 599; VK2YIL 28/12/80 0810Z 52.100 599; they ask if these are first VK2 and VK4 contacts using that mode? Rod also worked JE3KKC on 17/3/81 at 1315Z on 52.014 at 599, believed to be first VK5 to JA contact of this type. All contacts with about 15 watts output.

SIX METRE DX STANDINGS

You should be able to remember in June 1981 issue a request via Bill W3XO of "QST" regarding 6 metre DX standings. I remind you again that Bill would like the information by 1st September, or you may send the details to me by 20th August and I will send it over along with other info I regularly send to Bill. Information required: Your call sign, date of application, country, station worked, 6 metre 2 way/crossband 6 to 10, date worked, QSL received yes/no, propagation mode, e.g. F2, Es, tropo, EME, MS, aurora, etc., transmission mode, e.g. SSB, CW, AM, FM, any remarks, your latitude and longitude, and address.

Off the cuff I could name at least ten operators who have a very good tally of countries worked, and another ten doing quite well also.

To start the ball rolling, **Steve VK3OT** has sent me his DX countries list, which should place him very close to the top for VK if not right at the top. His list shows 26 countries worked with 25 confirmed! Because his list is so good I am sure he will not mind it being published, and it might stir up some of the others with good scores to send them along so we can at last show "QST" there are other areas working under difficult circumstances (2 MHz split) which have amassed good tallies. Here is Steve's list:—

Australia, all States; New Zealand, all districts; Lord Howe Is., VK2BKE; Macquarie Is., VK0WW; Norfolk Is., VK9ZNG; New Guinea, P29GR; Fiji Is., 3D2AZ, 3D2DB; Western Samoa, 5W1AR; Chatham Is., ZL3LN/C; Japan, all districts, WAJA Award; Korea, HL9WI, HL9TG; Guam, KG6DX, KG6JDX, etc.; Minami-Torish, JH1KSB/JD1; New Caledonia, FK8AB, CR, BG, AX, etc.; New Hebrides/Vanuata, YJ8ZV, PD, KM, PH; USA, W6XJ, WB6NMT; Mexico, XE1GE, XE1TIS; Hawaii, KH6NS, IAA, HI, JJI; Alaska, WA4TNV/KL7, KL7FBI; British Virgin Is., VP2VGR; Hong Kong, VS6BE, VS6FX; Brunei, VS5DX, TX, LH; Solomon Is., H44PT, DX; American Samao, AH8A; Willis Is., VK9ZG, ZD; Philippines, DU1GF. Contacts which have been missed KX6QC, KH3AB, FO8DR, DL3ZM/YV5, ZF2DN, VP1A, N6CT and YB0X. Good work, Steve.

Now it's over to some of you other boys. Like VK4RO, VK4DO, VK8GB, VK5RO, VK5KK, VK2DDG, VK2BYX, VK6WD, that's just for starters! Let's get the lists in and push out some of the W stations!

BRISBANE WORKS DX

It's a fact! Despite channel 0 there are stations in Brisbane who do work 6 metres DX. **John VK4ZJB** sends a letter outlining

the type of activity going on there. 11/4: Bill KH3AB, Johnston Is., at 1820Z to VK4ZJB, VK4PU, etc. Bill advises when he goes on to 52 MHz he can only muster 6 watts! Signals were good enough however. 19/4: VK4ZNC worked 6 "W" stations. 25/4: 2058Z XE1GE 5 x 9 on 50 MHz but no sign of him on 52 MHz. That confounded 2 MHz problem again. Geoff XE1GE does have a problem it seems in getting on to 52 MHz after 28885 liaison, takes a little time, and conditions can change in between. Same day, 0114Z, Brunei VS5DX finally, after listening to him working everyone else around Australia! VK4PU, VK4WQ and others involved also. 0145Z Jay AH2K on Guam. John asked Jay to try 2 metres and see if he could get anyone else on the air, and was successful in getting KH0AB Saipan to come on 6 metres for a new country. Also worked by VK4PU, VK4WQ, etc. 25/4 also an excellent opening to JA with more than 50 stations worked. 16/5: KG6JDX, which is late for Guam area. Last JAs heard 14/5.

John advises that **Des VK4ZMI** is a newcomer to 6 metres and is very keen. He also passes on the view of the Sydney University that there is likely to be a large increase in solar activity with the soon to occur 179 year conjunction of the planets. If this is so then 1981-82 might well be a very good 6 metre year, and the Spring equinox is not far away. Thanks, John.

MY FIRST CONTACT WITH ZL ON 432 MHz

Occasionally letters to me get delayed for no apparent reason. One which finally turned up was written at the end of February and is from Barry **VK2AHE** and gives details of what he had to do to make his first contact to New Zealand on 432 — it shows what you can achieve if you are sufficiently motivated and therefore being of interest is included here for your reading.

"Monday night, 26/1/81 whilst listening on channel 6 repeater, heard the ZLs were coming through. I listened for over an hour on 144 and 432 to no avail. There's a large hill in the way from my QTH and with an 80 foot tower, two 5 elements on 144 and four 14 elements on 432, it was just not enough!

Next evening, 27/1, news there again — ZLs still being heard, but nothing at my shack. Called Peter VK2ZRT and found he had a spare "J" beam available so we decided to go portable to Mt. Sugarloaf, which is 1300 feet a.s.l. but 10 miles inland.

"Took my IC 451A plus 100 watt linear, 9 element 2 metre beam and joined up with Peter's equipment to produce gear for 144 and 432. Reaching the destination, it was 10 p.m. local and the ZLs were still loud and clear. Called on the ZL repeaters on 2 metres asking for 432 contacts, back came Bill ZL1TMS, John ZL2ARZ and Malcolm ZL3TFM on 2 metres. Finally, Ray ZL2TAL was located but the 2 metre repeater channels were mixed. We were listening to Channel E (ZL) with an output of 145.7 and Ray was listening to Channel 8 (VK) 147.0. We rectified this by listening to Channel E, which is the same input frequency.

"Ray put a signal on 432.2 SSB but after searching plus or minus 5 kHz could not find him. Eventually located him on 432.208 at S9! Thoroughly excited and with shaking hands we reached tor the 2 metre mike and with great emotion said 'Ray, we've got it!'. We then had a 43 minute contact at 5 x 9; Ray was still able to copy my signal with a screwdriver in the antenna socket! Ray was portable at Port Taranath Lookout, 150 feet a.s.l., and running 35 watts to a 10 over 10 skeleton slot antenna.

"As we were signing at 11.33 local, John ZL1BVA called us from Mt. Maunganui, running 10 watts to two 15 element quagis at 24 feet. He was much weaker and signals varied from S1 to S8 for the 18 minute contact. Our biggest disappointment was that we had not taken along some 1296 MHz gear, but in our rush to the mountain we completely overlooked this possibility.

"With QSLs posted and received John ZL1BVA added it may be a 432 MHz record for New Zealand, distance calculated was 2282 km. The distance to ZL2TAL was 2140 km."

Good work and thanks for writing, Barry.

WORKED FROM NEW ZEALAND

May 1981 "Break-In" carries some mouthwatering contacts on six metres, chief participants being Bill ZL2CD and Cliff ZL1MQ but many others at various times. Most contacts were during the local mornings from as early as 2100Z. 3/3: K7NV, W6GGV, many JA. 8/3: W6XJ, JA7, JA8. 9/3: XE1GE and W6, with W6 again on 14/3, 15/3 and 16/3. On 18/3 W1HOY/KP4, KP4AAN, AA6S. 19/3: N6AJ, WB6BMB, WA6PZL, KA6HXV, DL3ZM/YV5, WA4TNV/KL. 21/3: JA. 22/3: DL3ZM/YV5, W1HOY/KP4. 24/3: WD4NMV, *WB2MAI. 28/3: ZF2DN, VP1A, VP2VGR,* KV4FZ, KP2A, NP2AE, W1HOY/KP4, KP4AAN, KP4EKG. 30/3: FO8DR.

"April 1, 2, 3 and 4 saw backscatter propagation throughout ZL with ZF2DN on every day and working almost every ZL available in all districts! The contacts over the period 28 to 30/3 saw many new countries worked on 6 metres. Puerto Rico (KP4), Bahamas (C6), English and American Virgin Islands (ZF2 and KV4), Belize (VP1), Jamaica (6Y5), Martinique (FM7), Dominican Republic (HI8), Mexico (XE1), plus of course the W and JA stations.

"Many contacts were between 50.095 and 50.120 with Caribbean area contacts utilising a sunrise path. ZL2CD comments FO8DR would probably be single hop F2, while Caribbean stations were double hop F2. All the above shows that the privilege of being able to use 50 to 50.150 MHz during non-TV hours is paying off in New Zealand.

"Ed Tilton W1HDQ comments in 'QST' that good results have been observed on long transequatorial paths late in every solar cycle since World War 2. North-south paths seem to be affected more by geomagnetic activity as shown by high A and K indexes, than by elevated solar-flux readings. In fact, he recalls some of the best USA to South American openings have occurred with solar flux readings in the low 130s.

"Exotic but not impossible calls workable from ZL are EI2W, EI6AS, EI9D, all in Europe. Italian station I5TDJ has permission to operate on 6 metres, as does SU1DH using the call SZ3DN. 5B9AZ in Cyprus may use 50.110 on CW only and TF3SG Iceland is active in the 50 MHz band international frequencies. Closer home but equally hard to work from ZL are ZS6XJ, ZS5TR and ZS3E and many others.

"Back in the Northern Hemisphere, GB3SIX beacon runs 25 watts to a four element beam pointing west, and is operational 1200 to 1930Z from April to September, and one hour later for the rest of the year. A new Canadian beacon has appeared on 50.077 with the call VE3RDL."

NEW ZEALAND REPEATERS

As most of you are aware New Zealand is in the process of changing all their repeaters to a 600 kHz split, and they will then be known by name and frequency only, using the last three digits of the output frequency with the decimal point ignored. VK stations will be able to identify what the actual split is by the numbering attached to each repeater. Repeaters 700 and below are —600 kHz transmit offset, while repeaters above 700 are +600 kHz offset. All this, of course, means greater compatibility with equipment in use in Australia and will lead ultimately to more *contacts* being *made* across the Tasman. By the time you read this the change to 600 kHz split should be virtually complete in New Zealand, in plenty of time for familiarization before next January/February, which is often prime time for long distance 144 and 432 MHz contacts to New Zealand and throughout VK.

STRAY BITS

A stray bit I missed in an earlier letter from **Tony VK6BV** was that the contact on 22/2/81 at 1408Z between Wayne VK6WD and VS5DQ on 52.035 simplex was the first VK6/VS5 six metre contact, and at that time the only other contact for Graeme was with VK8GB. This also would be one of the earliest contacts to Brunei from VK.

The Liverpool and District Amateur Radio Club Newsletter has arrived on my desk and I note from it a comment from **Rodney VK2CN** that the second Newcastle repeater channel 27 on 433/438.675 will soon be moved to a new location on Mt. Sugarloaf, 1349 feet a.s.l., with a 100 watt linear added and an improved aerial system giving 250W ERP. (I just wonder what Barry VK2AHE will think about that!) The antenna is to be mounted on the NBN TV tower, giving reasonable all round radiation except to the south-west (Lithgow)

area. The repeater expected to be operational from about mid-June.

Thanks to **Nev VK2ZBQ** for sending the "Bullsheet" as it is known!

576 MHz EQUIPMENT

June issue of AR carried an advertisement from me for 476 MHz equipment! This was a printing error and should have read 576 MHz equipment. I hope the advert will be repeated correctly this month, but these few lines are to draw your attention to the fact that I am getting interested again in 576 MHz. Several years ago I sold my 576 gear, a move I now regret. If anyone has items which are usable at that frequency I would be pleased to hear from you. It will save me having to spend a lot of time building up fresh equipment for limited usage if something already built is available. Please have a look through your dusty shelves and see what you have that could be made available.

That's all for this month, as you can judge from what is written there hasn't been much VHF activity of any consequence, not an unusual state of affairs for the winter months.

Another reminder to send the beacon information please.

Closing with the thought for the month: "The pace of events is so fast that unless we can find some way to keep our sights on tomorrow, we cannot expect to be in touch with today."

73. The Voice in the Hills. ■

MELBOURNE 2 METRE SCRAMBLE RULES AND SCORING

The objective of a scramble is to contact as many stations as possible within a time limit, giving out RST report plus a scramble number 001, 002, e.g. 59001, etc.

CITY STATION

A city station is a station located within 100 km from the Melbourne GPO, corner Elizabeth and Bourke Streets, Melbourne.

COUNTRY STATION

A country station is a station located more than 100 km from the Melbourne GPO.

SCORING

City to city: 1 points per contact.
City to country: 2 points per contact.
Country to city: 3 points per contact.
Country to counry, less than 100 km: 1 point per contact.
Country to country, more than 100 km: 3 points per contact.

City stations should operate between 144.150 and 144.180 MHz for city to city contacts and 144.180 to 144.200 MHz for city to country, and vice versa and country city to country, and vice versa for country to country contacts. The winner of a scramble is allocated 4 points towards the Bail Electronics trophy at the end of the year, the second placer 3 points, third place 2 points, and any other station participating 1 point.

A city winner becomes the control station for the next scramble and is allocated 3 points if he turns up. A winning country station is allocated 4 points for winning, but a second place or third place city station controls the next scramble.

Scrambles are held every two weeks at 8.15 p.m. EAST on Sunday nights. ■

SIX METRES IN SRI LANKA

Sri Lanka is one of the few developing countries in ITU Region 3 that permits its amateurs to use the 50-54 MHz band.

At the present time, the principal activity on six is by Ernest Amarasinghe 4S7EA. Over the past twelve to eighteen months Ernest has worked over 200 different Japanese stations, YB0X and VU2ST.

His station details are as follows:—

10 watts to TS600 transceiver with HB linear using pair 6146s available. Antenna is a CL6 DX 6 element yagi 38 ft. high. Principal transmitting frequeny 50.120 MHz.

Ernest is aware of the normal Australian and New Zealand allocations on six, but finds difficulty in working into these areas.

It should be noted that 4S7EA cannot normally operate between the following times:—

0630-0800 hrs. local time (0100-0230 hrs. GMT) and 1500-1900 hrs. local time (0930-1330 hrs. GMT).

This is due to power cuts in Colombo caused by shortage of water in the hydro-electric water storage reservoirs.

Ernest's address is 161 Colombo Road, Divulpituja, Boralesgamuwa, Sri Lanka. Telephone 073 2466.

Interested 50 MHz operators could contact 4S7EA at the above.

David Rankin 9V1RH/VK3QV. ■

INTRUDER WATCH

Graeme Fuller VK3NXI

The following is the text of a lettter dated 22.6.1981 received by the WIA from the Minister for Communications (see July AR, page 8):

You recently wrote to me concerning interference to radio transmissions suspected of being caused by signals emanating from Over the Horizon Radar (OHR) systems located in the Union of Soviet Socialist Republics and other matters related to Intruder Watch issues.

The Intruder Watch Co-ordinator usually presents to my Department at Intervals of approximately two months a list of radio stations observed by members of Intruder Watch operating in the amateur bands.

A study undertaken in my Department shows that of the entries listed as intruders, no action can be taken in the majority of cases for one or more of the following reasons:—

(a) the offending transmissions emanate from countries which are not signatories to the International Telecommunication Union (ITU) and therefore not subject to control by the ITU;
(b) the identification is not sufficient;
(c) inability to verify reports;
(d) the apparent intrusion in the amateur band is due to a design fault in the amateur's receiving equipment, known as image interference and in some cases cross-modulation.

It is appreciated that interference to amateur frequency bands is a cause for concern. However, I understand that the Amateur Service, by its nature, has the ability to defer its operations, or to conduct a particular communication in another nortion of the spectrum while the interference exists.

The article in the International Radio Regulations, "Procedure in a Case of Harmful Interference" indicates that in the settlement of harmful interference problems, due consideration be given to all fatcors involved, including relevant technical and operating factors such as the adjustment of frequencies.

From the evidence available to my Department, it would appear that the Interference in a number of cases is of a spasmodic nature,) dependent upon the operating conditions at the time. Before making an official approach to another nation a complaint must be on substantial and specific grounds having due regard to the operating conditions of the services concerned. Accordingly, the Amateur Service must be seriously affected before I would initiate any formal negotiations with another Administration. You may be assured that any interference from Australian services will be given the normal prompt attention by my Department that has been provided in the past.

As you are aware, there is increasing pressure on Government Departments to maximise the effectiveness of their operations as part of the current policy of reducing the size of Government, and in this regard it is necessary to establish priorities concerning workloads. Accordingly, it is not possible to provide for a detailed investigation of each of the stations listed in the Intruder Watch reports but my Department will endeavour to investigate reports of persistent intruders which do not fall into the categories previously listed. My Department is particularly concerned if harmful interference disrupts the operation of essential radio communications services and I would hope that you can appreciate this situation.

In relation to OHR, I should mention that the responsible authorities for safety communications in Australia have not observed any circumstances of significant interference on any of the internationally recognised radio distress channels. On the other hand, there has been some observation recently of OHR signals occurring on the Australian safety frequency 27.880 MHz,

though the extent has not been serious. However, on the basis of these observations, my Department has initiated communication with the USSR seeking their co-operation in avoiding interference to the 27.880 MHz safety channel.

It is hoped that the above information puts the situation in its correct perspective. You may be assured that further official action will be forthcoming if and when it is deemed that the circumstances, based on specific cases of harmful interference to Australia radio services, warrant such action. ■

The Intruder Watch in Australia

Since its inception in 1967 the Intruder Watch has steadily grown in importance and in volume of reporting, until now it is comparable with all other countries.

The Intruder Watch was originally formed in an attempt to preserve the few remaining frequencies available to the Amateur Service, so as to come into line with the European and American institutions. We now have Co-ordinators appointed in every State throughout the Commonwealth (list below), and we have a very good liaison with our Department of Communications. Reports are forwarded to them for filing or for action monthly. Summaries of intruders reported are also forwarded to ARRL and to RSGB.

The aims of the Intruder Watch Service are:—

1. To encourage amateurs and shortwave listeners to regularly submit accurate and detailed reports about intruder transmissions heard in the amateur bands.
2. To educate observers and potential observers through magazine articles, personal instruction and through regular on air nets.
3. To present intruder reports and summaries to the Department of Communications for possible action by our Government, and general co-operation with DOC in regard to intruder matters.
4. To exchange intruder information with the organizations of other nations.

Reporting of intrusions that are perpetuated by commercial or Government stations, whether they be broadcasting, CW, RTTY or facsimile, is a necessity so as to let these commercial and Government interests know that we, the Amateur Service, are aware of and are documenting their intrusions into our bands. However, unless WIA members rally around their Co-ordinators by reporting all signals heard of an intruding nature the IWS is ham-strung and not able to do anything about having the intruders removed from our bands.

In the past the IWS has been instrumental in reporting and having some removed from our bands, the latest being "The Radio of the Koran", which for some time was using 21345 kHz as their broadcasting frequency. They have now gone to 21945 kHz.

Report forms and instructions are available from your Divisional Co-ordinator, and an identification tape is also available for the purpose of educating members in identifying the modes of intruder signals. A blank cassette to the undersigned will ensure delivery.

Alf Chandler VK3LC,
Region 3 IW Co-ordinator.

Co-ordinators are:—

Federal — Graeme Fuller VK3NXI, PO Box 156, Healesville, Vic. 3177.

VK1 — Frank Robertson-Mudie, PO Box E288, Canberra, ACT 2600.

VK2 — Bill Martin VK2PFH, 33 Somerville Road, Hornsby Heights, NSW 2077.

VK3 — Frank Gardiner VK3VAV, 1 Pine Street, Kinglake, Vic. 3763.

VK4 — Gordon Lovedale VK4KAL, "Aviemore", Rubyvale, Old. 4702.

VK5 — Leith Cotton VK5LG, 64 Weroona Avenue, Parkholme, SA 5043.

VK6 — David Couch VK6WT, 9 The Grove, Wembley, WA 6014.

VK7 — Frank Beech VK7BC, 37 Nobelius Drive, Lagana, Tas. 7251.

VK8 — Henry Andersson VK8HA, PO Box 1418, Darwin, NT 5794. ■

CONVERSION DETAILS FOR AWA CARPHONES — JUNE AR

Thanks to P. W. Campbell VK2AXJ for supplying the formula for 6m (low band) conversions mentioned in the first paragraph:—

Tx: F/24.
Rx: (F + 2)/5

EDUCATION

Brenda Edmonds VK3KT has recently taken on the position of Federal Education Co-ordinator. She is looking for help!

Please send ideas, requests, criticisms, complaints, etc., to her, QTHR.

Any matter relating to education is fair game, but comment about emphasis and degree of depth for the existing novice syllabus would be particularly welcome. ■

VK-ZL CHAPTER

Royal Signals Amateur Radio Society (VK-ZL Chapter) "nets" are held regularly on the days and frequencies detailed below:—

Daily: 21.170 at 12.45 GMT for G and VE members.

Every Wednesday: 3.605 at 10.15 GMT for VK and ZL members.

Every Saturday: 28.450 at 23.00 GMT for VK, ZL and VE members.

(Remember that Saturday, 23.00 GCT, is 9 a.m. Sunday in Sydney.)

The first Monday of every month the Club Station VK2DRS is activated, usually using CW, around 21.135 at 12.00 GMT. Up till now, the station has only operated from VK2 land and VK4 land. We are looking for operators in other States to use this station on a portable basis. Are there any takers? ■

FORWARD BIAS

THE VK1 AWARD

The VK1 Division has for some months now had its own award. Full details relating to this award have been published in AR and in a number of other local and overseas publications.

To date 21 VK1 awards have been claimed, the latest being by UK2RDX, the Talin Radio Club in Estonia.

Basically the award requires that VK amateurs make 20 contacts with VK1 stations, and overseas stations 10 contacts. The Award Manager is Fred VK1MM (QTHR), and the cost to claimants is $2.

The certificate is a most attractive piece of paper designed on a background picture of the magnificent Telecom Communications Tower on Black Mountain in Canberra, and would be a very acceptable addition to your existing wallpaper.

There is a VK Award Net operating on 21.150 MHz each Saturday morning at 9.00 a.h. (AEST), and a second net on 28.480 MHz each Wednesday night at 8.30 p.m. (AEST).

As there are only some 200 odd VK1 amateurs and only about 25 per cent of these are active on the HF bands, the VK1 Award might test your endurance. This factor will, however, make it all the more worthwhile.

MORE WOODPECKER

Surely the prize for the most inane reply to a question in the House must go to a member for his recent statement regarding OTHR interference to the amateur bands.

This gentleman, while acknowledging some interference on the 14 MHz band, suggested that amateurs might shift to another frequency when interference from the woodpecker is experienced.

It seems to me that this is rather like being advised to sell your house and move to another suburb when your neighbour decides to set up a panel beating business in his back yard.

The woodpecker and other illegal users of our frequencies will not just go away, and the longer we tolerate their interference the more of it we can expect to hear. If you want to hear one of our bands drowning in interference just listen to 7.0 to 7.1 MHz at night.

It appears that we must help ourselves in this matter — SUPPORT YOUR INTRUDER WATCH.

WICEN ACTIVITIES

The VK2 WICEN group was activated by the NSW Police Department mid-June to assist in passing urgent "welfare" traffic during the Telecom dispute.

Although the number of messages of this type passed was not high it was very obvious that WICEN and certain other nets have the capability to provide a valuable community service in urgent communications when other means fail.

Perhaps the powers that be will in time come to recognise WICEN and amateur radio in general as a valuable resource for Australia-wide communication during times of emergency.

It is significant, however, that while the NSW Police Department saw fit to activate WICEN in that State, they completely forgot to notify their country stations and the interstate Police Forces that they had done so. The net result of this was that messages received interstate via the WICEN net were treated with something more than reserve in those States. The Australian Federal Police Force in Canberra in fact teleprinted the NSW Force to confirm that the first such message received by them from the VK1 WICEN net operator was genuine. One cannot of course blame them for their caution but this would have not been necessary had NSW been a little more on the ball.

There are obviously many aspects of WICEN operation in emergency conditions that need to be discussed in detail with the various Police Departments and State and national disaster organisations if WICEN is ever to assume the role it is capable of filling in times of emergency.

The June 1981 lessons are plain — for best impact what needs to be done must be done now.

AUTHOR'S NOTE

The views expressed in the foregoing items are those of the author and do not necessarily reflect the views of the Executive or general membership of the VK1 Division.

73. VK1KV. ■

VK2 MINIBULLETIN

COUNCIL REPORT

At the June meeting Council received a reply from the Special Broadcasting Service to our request for curtailment of daytime transmissions of the test pattern on TV Channel 0. SBS advised "We have had a lot of pressure from the industry to maintain prolonged test transmission to assist them with the installation of new aerials and also the adjustment of receivers for the reception of this new channel". As advised by SBS, Council has now written to DOC, Sydney, requesting that the Channel 0 test pattern be turned off during the day to allow amateur operation on 6m.

WICEN have been allocated a room at Atchison Street for storage and other uses. Congratulations to all those who took part in the handling of messages during the Telecom dispute. Don't forget the WICEN net held each Thursday night at 9.30 p.m. local on 3600 kHz. The Affiliated Club net is held immediately prior to the WICEN net on Thursdays at 9 p.m. local on 3600 kHz.

At the June meeting, the Divisional Secretary reported to Council on the investigation by the Corporate Affairs Commission into the affairs of the Division as a result of many complaints from members in the past and the qualification of the accounts in 1979. Two officers of the Investigation Division called at the Divisional office on Tuesday the 9th, and Friday the 12th of June. They advised they would be visiting the Division's auditors and writing Council a letter about the results of their investigation.

The UHF repeater application from Summerland ARC on channel 8675 was recommended by Council for DOC approval.

Council decided that both morning and evening broadcasts be conducted from Dural. Council also recommends to all those submitting items for the broadcasts that they be limited to three minutes duration, with a maximum of five minutes. The Broadcast Officer has the discretion to edit any item submitted for broadcast. If you would like to assist the broadcast as either an engineer or announcer, please contact Divisional office.

The appeal for donations to the Tower Fund has reached $1600. Many thanks to those who have donated recently (to 29/6/81): M. Hort $5, S. Porch $25, P. Fitzherbert $25, Liverpool ADARC $31, Griffith RC $25, A. Brown $5, N. Mattick $5, D. Harding $5, H. Wright $20, Gladesville RC $220, D. Walters $10, L. Smith $10, P. Stuart $15, G. Burge $15, W. Dowling $7, V. Everitt $5, J. Brinkman $5, Manly Warringah DRC $50, G. Archibald $10, J. Copley $10, K. Blume $10, W. Hayes $15, A. Gee $25, J. Bender $5, E. Mutch $5, Bathurst ARC $20, P. Campbell $10, A. Andrews $10, South West ARS $25, R. Lopez $20, L. Kowald $10, D. Cowle $10, D. Bell $15, N. Stewart $20, G. Davey $10, W. Stuart $15, R. Purdie $10, L. Cartwright $5, R. Clark $25.

DURAL FIREWORKS NIGHT

The Dural Committee organised yet another successful fireworks night at the Divisional transmitting site, Dural, in June. 370 people came for the barbecue of five sheep and 60 chickens on the spit prepared by John VK2BBC and his three assistants. People came from as far afield as Ryistone, Gosford, Camden and Newcastle. Many people helped make the night a success by assisting with the car parking, foor preparation and serving (under the able supervision of Jan Henley) and provision of other services. The grand display of fireworks, which lasted for 45 minutes, was viewed by 435 spectators. The display concluded with the set fireworks piece depicting the station's call sign VK2WI. The hardworking Dural Committee is to be congratulated for an excellent evening's entertainment.

FIELD DAY

Tamworth Amateur Radio Club are proud to announce the 2nd Noel Taylor Memorial Field Day, to be held on the 12th and 13th September. The Saturdays events will be at West Tamworth Scout Hall, while the Sunday events will take place at Duri Hall just outside Tamworth. Events include 2 x 2 Tx foxhunts on 146 MHz, 2 x 40 metre foxhunts on 7.05 MHz, 2 scrambles, a 2m foxhunt on 146 MHz, 2 x 10 metre foxhunts on 28.48 MHz, 2 talk in events and a 2m pedestrian foxhunt. Squeezed in between all the events will be a disposals market, trade displays and barbecue lunches and teas. If you would like a programme, please write to Tamworth ARC, PO Box W107, West Tamworth 2340.

Details of a club affiliated with the NSW Division:

ARMIDALE AND DISTRICT AMATEUR RADIO CLUB, VK2DGZ

Meetings: Organic Chemistry Building, University of New England, on the last Wednesday in the month.

Net: Last Wednesdays at 7.30 p.m. on 28.495 MHz (prior to meetings).

President: M. McGregor VK2NXU. Vice-President: K. Ward VK2YFW/NOI. Secretary: D. Boundy VK2BAE. Other Committee: J. Rogers VK2ACW, N. Johnson VK2NWJ, K. Merideth VK2VCB, R. Hansen VK2VUX, F. Hansen VK2IZ, V. van der Drift VK2VCC, J. Wolfenden VK2AZA.

The following clubs are at present affiliated with the NSW Division:—

Armidale ARC, Avondale ARC, Bathurst ARC, Blue Mountains ARC, Castle Hill RSL ARC, Central Coast AR, Coffs Harbour ADARC, Goulburn ARC, Griffith RC, Gunnedah ADARC, Hornsby ADARC, Illawarra ARS, Liverpool ADARC, Manly Warringah DRC, Mid South Coast ARC, Moree ADRC, North West ARG, Novice ARG, Orange ARC, Oxley Region ARC, Parkes ADARC, South West ARS, Southern Highlands ARS, Summerland ARC, St. George ARS, Taree ARC, Tumut ADARC, Wagga ARC and Westlakes ARC. An invitation is extended to those clubs not affiliated to join with the 29 other clubs and participate in the Conferences of Clubs held twice each year. The next Conference will be hosted by Illawarra ARS on Sunday, November 1st. If you would like details of the requirements for affiliation, please write to the Divisional Secretary, Box 123, St. Leonards 2065.

COMING EVENTS

All VK2 amateurs are invited to participate in the Remembrance Day Contest this year. VK2 has won the contest only once! See elsewhere in AR for the rules, dates, etc. Last year VK2 moved up one place on the previous year, so join in the "friendly contest" this year and see if we can improve again.

12-13th September, Saturday and Sunday, Noel Taylor Memorial Field Day, Tamworth.

All NSW members and clubs are invited to submit news for inclusion in this column. Please submit it to Box 123, St. Leonards 2065, two days before the end of the month prior to publication, e.g. by 29th August for October AR. ■

QRK5

A monthly transmission from the Victorian Division WIA.

DELIBERATE INTERFERENCE

For some months now, interference on 2 metres has been widespread and persistent. Some of it is quite innocent (viz., the incident of the 28th April where a transmitter was locked on accidentally thereby blocking the WICEN repeater on Mt. Macedon for about four hours). Some of it is deliberate and malicious and is causing concern to the WIA and to the DOC.

It is evident that some of the interference is the same as that suffered by the UHFCB repeater. What may not be evident is that much effort is being made to locate the offenders.

The DOC has demonstrated its willingness to co-operate with the WIA by its response to interference calls.

Recently a business located in the Kew area was using 144.48 as a communications channel. An active amateur reported this to the DOC and since the 4th of May nothing has been heard of the interfering signal.

This demonstrates that where the amateur is being interfered with by fellow amateurs or pirates the DOC is putting as much effort (sometimes more, we feel) into helping us with our problems, as those who are suffering with TVI, etc.

A word of warning for those who are causing interference. You will be the last person to know that you have been identified. Where possible, prosecution by the DOC will follow when sufficient evidence is available for a conviction. In future it will be policy for such convictions of amateurs to be published in these columns.

This is not a persecution of the innocent and unintending offenders. The innocent clear themselves because they only do it once. However continual interference will result in an unpleasant visit from the DOC.

N.B.: If you have definite information of offenders please contact the DOC on 26.6921 and report the offence. This is for our total good.

Pete Drury VK3JN. ■

QRM

NORTHERN NOTES

Meeting held Friday, 8th May, a record attendance indeed. During the evening a film was screened on the JARL-7 JIRL DX-pedition to Okino Torishima. An open discussion followed.

Certificate No. 1590 was presented to VK7NB (Northern Branch), being for combined Phone and CW. First place in Tasmania for participating in the RD contest.

Approval has been granted by the DOC to relay the WIA Sunday evening broadcast from 2 metres, repeater 8, to 10 film was screened on the JARL-7JIRL DX-metres 28.550. Time 1930 EST/0930Z. VK7NB would appreciate all reports whether SWL or licensed amateur, especially with solar activity on the decline.

One event that was hot on the line after screening of 7 JIRL DXpedition was the Flinders Island DXpedition hosted by DX-ers none other than VK7RC and Phil Rosco VK7ZEN. Equipment used was an IC551, IC211 and IC701. All bands were continuously monitored 24 hours a day. Numerous contacts were logged both on HF and VHF from Walkers Lookout. QSL info as listed in 1980 Call Book, VK7RC and VK7ZEN. Dates of contacts were from Saturday, 6th June, to Monday, 8th June. Congratulations, gentlemen, a surprise indeed.

Another victory to Norther Branch. Congratulations go to Brian Yeoman VK7ZBY, Bob Grant VK7ZRF and "Bill" Alan Bower VK7NAC. The event was the Athol Johnson Memorial VHF and UHF Contest. Location was radio station 7EX (1010 on your dial) hill, approximately 10 miles east of Launceston. All bands VHF and UHF and modes were used to win the above contest.

Heard and seen on repeater 8 near the Greater Launceston area were West Australian visitors Neil Renfold VK6NE and daughter. QTHs who responded with cordial Tasmanian hospitality were Col Wright VK7LZ, Andre Everts VK7AE, Frank Beech VK7BC and Den Kelly VK7DK of Perth, Tasmania. A safe journey home was wished by all from VK7. See you next trip, Neil.

SOUTHERN NOTES

None has been received as yet, but I do believe Barry Fraser has now upgraded to a full call. Congratulations, Barry.

NORTH WEST NOTES

Meeting was held on May 12th and a visitor was welcomed, Max VK3AWM.

Peter VK7BQ, our Federal Councillor, discussed various matters relating to the last Federal Convention, and it was pleasing to note that 576 MHz is going to be available in the foreseeable future.

A film was screened during the evening, "Hospitals Don't Burn Down". Several beneficial factors were brought to the minds of the 31 guests of this meeting after the above screening.

Vince VK7WH did an excellent job in convincing amateurs how to purchase radio spares and equipment at an impromptu auction later in the evening.

Jim VK7KOW (ex VK7NOW) has submitted further information on his NZ (ZL) expedition, which shall appear in next month's issue.

Have also noted that VK7WK Kel Williams (ex VK3BWK) has been activating repeater 8 a little more successfully lately; QRP 800 mW. The local Perth Lions Club (Tas.) has invited Kel along to lecture on amateur radio and its beneficial points to the community. Good luck, Kel.

73. VK7AN (ex VK7NAB). ■

VK4 WIA NOTES

VK4 WIA NOTES

This is a bulletin from the **VK4 Division.** The Division may be contacted via Box 638, GPO Brisbane 4001. For up-to-date information on Divisional matters, listen to the WIAQ News and Information Service.

GENERAL MEETING

The August Annual General Meeting of the Division will be held on Friday, 21st August, in the Playground and Recreation Association Building at the corner of Love and Water Streets, Fortitude Valley. The doors open at 1930K and visitors are welcome. As usual, the QSL Bureaux and the book shop will be available at the meeting. An interesting lecture nas been arranged — hope to see you there.

ADMINISTRATIVE REVIEW

Your Council is examining ways of updating procedures so as to lighten individual workloads and to ensure that it spends adequate time considering policy matters affecting future activity and the wellbeing of members.

There are many aspects of Divisional activity that need not necessarily be carried out from Brisbane. For example, at the moment Intruder Watch, Contests and participation in Slow Morse Broadcasts are all carried out by non-metropolitan members. We all have different talents, so if you feel you can assist in any activity, get in touch and help us to help you. There are some areas where it is difficult or inconvenient to decentralize due to practical considerations — we thank Cairns Club for their recent offer of assistance with QTC insert, however Council decided to decline with thanks (there were problems with distance, freight and timing).

INTRUDER WATCH

Bob VK4LG has offered to present a trophy for excellence in IW reporting. The aim of the trophy is to improve the quality and quantity of reports to the VK4 Intruder Watch Co-ordinator Gordon VK4KAL. Bob and Gordon are working out the rules, so why not contact them in the VK4 Intruder Watch Net (Wednesday, 3540 kHz, 2000K)? Help to keep VK4 the premier State in Intruder Watching.

REMEMBRANCE DAY CONTEST

By now you will have brought your station to a high degree of efficiency during the recent Sunshine State Jack Files Memorial Contest. Now that all systems are "go" — get ready for the RD Contest on 15th and 16th August. Every contact counts and every log is important — it's about time VK4 won again, so we want a scoring log from every VK4 amateur.

NORTH QUEENSLAND CONVENTION

For travelling amateurs Queensland now has a chain of 2m repeaters up the coast (Gold Coast, Brisbane, Sunshine Coast, Bundaberg, Gladstone, Rockhampton, Mackay, Townsville and Cairns). Why not work through them all on your way to the North Queensland Convention to be held

in Townsville on 26th and 27th September. For more details contact the TARC, via Box 964, Townsville.

JOTA

It is time now for you to contact your local Scout troop and make arrangements for this year's Jamboree on the Air.

MEMBERSHIP

By now all clubs will have received membership forms and recruiting information. If you know any non-members, why not introduce them to the forms? Responsible amateurs should all be members of the Institute.

1982 RADIO CLUB WORKSHOP

Motions for this meeting are now being sought from all affiliated clubs. This is your opportunity to input ideas and thoughts on the policies and aims of the WIA in VK4 and Federally. Put your thinking caps on and contact your club secretary.

UP-TO-DATE NEWS

Listen to the Divisional News and Information Service each Sunday morning, 0900K, on most bands. Remember, the news is only as good as the news input from members, so keep the News Co-ordinator (Jack VK4AGY) informed of amateur happenings in your area or club. ■

THE WA BULLETIN

Hi there! Here we are again, trying desperately to catch up on old man time.

At the Annual General Meeting several amendments were made to our Memorandum and Articles of Association — Constitution to you! These have now been officially registered as follows:—

Article 1: The number of members of the Institute is declared not to exceed 1000.

Article 22: A Federal Councillor and Alternate Federal Councillor shall be elected annually by the Council in sufficient time for the Federal Convention.

Article 28: Membership of the Institute shall be of two grades as follows:—

(a) **GRADE "A" MEMBERS** — bona fide experimenters or those interested in the scientific study of radio communication or electronics who shall have attained the standard equivalent to that necessary for the issue of either a Limited Amateur Operator's Certificate of Proficiency or a Novice Amateur Operator's Certificate of Proficiency. An Associate Member not possessing either certificate, who has rendered valuable service to Amateur Radio, after not less than five years as an Associate Member and after nomination by two Grade "A" Members, be granted voting rights. The Council shall have power to investigate qualifications of all applicants for membership in Grade "A" and its decision shall be final.

(b) **GRADE "B" — ASSOCIATE MEMBERS** — Those persons interested in the objects of the Institute who are not eligible for membership in Grade "A".

Before you start hacking this issue of AR to pieces to insert these amendments into your copy of the Constitution — **don't.** Copies have already been printed and will be inserted in AR next issue.

For those of you who have not been to a meeting for some time, it might be interesting to note that a new format will be tried as from the July General Meeting. The usual "cuppa" will now be available BEFORE the commencement of the meeting, so come along and have an eyeball with your mates, collect your QSLs (don't forget to queue down the left-hand side of the hall) and then settle down to enjoy the business side of the meeting.

What a busy crowd this WA Repeater Group is, undertaking quite a comprehensive project at Tick Hill, east of Perth, but I'd better not elaborate or steal their thunder as a full story will soon unfold.

Quiet a lot of discussion lately about the forthcoming RD Contest, so look out all you other Divisions!

The WICEN group continues its good work, the communications caravan providing a challenge to the skills of various members. Working bees are the order of the day, and some exercises in the near future, too. Good news for the group is that the concrete base for a free-standing 100 ft. — oops, wrong measurement — tower has just been cast at SES Metro HQ, and good to see WICEN Co-ordinator Syd Jenkins and SES Area Co-ordinator Ken Hutchison making the scene in the daily newspaper with the VK6WIE call sign prominently displayed. Bewdy!

Ten out of ten for the YL's Luncheon Group who on June 25th celebrated their second anniversary. Congratulations, ladies.

That loud snorting noise in the background probably originates from the Old Timers' Group, who have also been meeting regularly and who extend a warm welcome to visitors with the old advertising slogan "See you at the Savoy".

As previously promised herewith some news of the newly formed Peel Amateur Radio Group — PARG. The name Peel originates from the Peel Inlet and encompasses an area from Rockingham south to Waroona and east through Pinjarra to Dwellingup. Already the Group boasts 17 members. The office-bearers are: Chairman, Lance VK6LR; Vice-Chairman, Jack VK6NLS; Secretary/Treasurer, Ann VK6AG; WICEN Co-ordinator, Pat VK6PH.

Annual subscription is a modest $5 and meetings are held on the first Friday of each month, commencing at 7.30 p.m. The meeting place is on a round robin basis, being held at the QTH of each member in turn. July meeting will have as an added attraction an introduction to "fox hunting" for new members.

For those interested the Group also conducts a net on 10 metres after the Sunday news broadcast. The time 10.15 a.m., the frequency 28.380. Also on Saturdays evenings at 2000 hrs. on 3.55 working crossband to channel 40 on 2 metres. It Is hoped to have an ATV net operational soon.

Talking about 10 metres, it is proposed to operate the new Perth beacon on 28.264 with a power of 150W, it is to be sited at the QTH of VK6QB.

Hey, don't forget to get into the habit of using the Institute's new postal address. It is PO Box 10, West Perth 6005, WA. The old Box N1002 may also be used until next March, but please use the new one and save the Secretary the frustration of looking for a parking spot in the city.

Cheers for now — see you next issue.

Ross Greenaway VK6DA. ■

QSP

SATELLITE WAC

"You can't work all continents via satellite" was a challenge to Nick W0CA. Having determined it could be done it took Nick 13 months to do it using 10W of power. As a result he qualified for the IARU WAC Award on production of the QSL cards concerned. He was the first qualifier for the award and as a result IARU/ARRL HQ is planning to issue special plaque awards to the first 10 amateurs qualifying for the IARU WAC via satellite endorsement for satellites orbiting at no greater altitudes than 1500 miles.—QST March 1981. ■

MR. AVERAGE AMATEUR

A survey carried out for the ARRL by the Florida State University in 1980 amongst 8895 amateurs in the USA and Canada from a random selection in the RA Callbook was reported in QST March 1981. The first mailing produced a usable return of 48.7 per cent from the USA and 63.1 per cent from Canada and the reminder to those who did not send in a return raised the response figure to 62.9 per cent overall (71 per cent for Canada). 147 questions were asked grouped into 36 topics and this issue of QST tabulates some of the results for the use of their Long-Range Planning Committee. Looking at overall averages (Canadian figures in brackets) it appears that the US expenditure on amateur gear was $1651 ($2073) per station, with an annual expenditure of $308 ($347). The "typical" amateur spends 6.1 hours per week on amateur radio and his on-air time is spent rag-chewing, mostly on HF, but followed closely by VHF, FM and, believe it or not, HF CW. If an amateur radio issue comes up which he thinks is important he will express his opinions on the air (58 per cent) or at local club meetings (34 per cent). Amongst non-ARRL members 41 per cent said they just did not bother to join or re-join, 28 par cent said they were inactive, 24 per cent thought ARRL dues too high, and 23 per cent thought QST not as good as some other magazines. Some 77 per cent of ARRL members said they were basically satisfied with ARRL but in the remainder, complaints showed reasons for dissatisfaction as the need for ARRL to do some public relations, in solving problems at the local level and in representing amateur radio at the national level (28 per cent of members thought ARRL's representations before FCC, etc., were "excellent" and 35 per cent rated them "good"). 46 per cent of the US amateurs surveyed were ARRL members (32 per cent in Canada), the highest percentages being recorded from the old-timers (pre-war licensees), 49 per cent said they first got involved in amateur radio through a friend or co-worker, 39 per cent from short-wave listening, 26 per cent from a book or paper, 20 per cent through a relative and 16 per cent through a local or school radio club. Only 11 per cent thought the CW requirement should be dropped and only 6 per cent of the overall respondents were female. ■

YOU and DX

Ken J. McLachlan VK3AH
PO Box 39, Mooroolbark 3138

We welcome as our new DX editor Ken McLachlan, VK3AH, who is well known on the HF bands, particularly 20 metres.

Writing the monthly column is an onerous task, and we express extreme gratitude to Nick VK6XI lor his assistance over the last 12 month. The success of this column depends a lot on the input of readers, and we would appreciate as much assistance as possible to ease the load from the DX Editor.

Observations and information should be forwarded direct to Ken, VK3AH, P.O. Box 39, Mooroolbark, Vic., 3138. Many thanks for stepping into the hot seat, Ken.

Now over to Ken's report. — (VK3UV)

A couple of months ago in this column Nick VK6XI announced that his twelve month stint was coming to an end and asked for someone to take over his duties.

As usual in these situations, there were no volunteers and to keep the segment in the magazine I am willing to correlate as much information that is received and write it up together with my own observations.

It is virtually impossible for one person to monitor both modes in all the bands between 160 and 10 metres. Therefore I appeal for further assistance from shortwave listeners, novice and general class operators alike who listen to the bands to jot down the interesting call signs and frequencies, together with times, etc., and let me have them so they may be shared by others interested in the DX scene.

BURMA

Band conditions in June have generally been very good and particularly on 20 metres phone (where I spend 70 per cent of my time). However the surprise of all time was the appearance of XZ Burma, which has been inactive for a long time.

Jin JA6BMK appeared on 15 metres in late May, using a TS130S and a dipole. Jin had about 4,000 QSOs, mainly orientated to North America and JA, Europe and the Pacific getting very little of the action.

On leaving Burma, Jin left his equipment for Sanplo, a local, to use and he appeared early in June using the same call.

He runs a list operation with JA8BMK in "control" on 14.170 and 14.225 MHz, and it is quite apparent that the VKs and ZLs are left out in the cold, with most of the operation being directed towards Stateside and JA. One frustrated ZL waited some 20 hours to get his call registered on the list.

For what it is worth, JA8BMK is also the QSL Manager and has forwarded a copy of the original licence to ARRL for accreditation. For those lucky enough to work him we hope it will be a good one. However with the soliciting of donations and equipment that is going on, Newington may have other ideas.

Just prior to the deadline for this column Sanplo had erected a Nagura 351 5 element tri-bander beam and it is fixed on the eastern States of America; also W7PNO had donated a Clipperton GL1000 linear amplifier which was being airfreighted out — therefore a big signal.

Perhaps some "VK" or "ZL" should donate a rotator and we might get a slice of the cake some day.

DX JOTTINGS

Warrick ZL3AGH/A is fairly active despite rotator problems. Warrick is scheduled to stay on Campbell until November, but has asked for an extension to April 1982 which, if granted, will allow him to have a few months holiday before going to the South Pole for twelve months. QSL to Art ZL2HE.

WILLIS ISLAND

Dave Shaw VK9ZD, after an extended stay on Willis Island, left in late July, and will be replaced by VK9ZG. QSL also to Steve VK3OT.

Dave will be returning to Victoria for a holiday, after which he will take up a new position and promotion to Equipment Training Officer at the Melbourne Weather Bureau.

Congratulations, Dave, and best of luck.

TOKELAU

The Tokelau DXpedition operated by Jim P29JS, now VK9NS signing ZM7JS, Ray VK2BKD, signing ZM7KD, and Harry VK2BJL, using the call ZM7ZR, got off to an early start. Judging by QRM when they were working split, it was a huge success and should take it off the much wanted list for a time to come. There were a few grizzles from Europe that they weren't getting enough of the action. QSL in each case to the home call.

Those lucky enough to work Arthur G3JKI/5A and QSLed direct to Ann F6CYL should have their cards by now. However don't submit them yet for ARRL DXCC as Newington are still awaiting further documentation.

Don VK2DXH, ex VK2VPM, a very keen DXer and antenna enthusiast, has erected a fine beam which is up about 14 metres above the ground.

The beam, which gives Don such a big signal, comprises 4 detla loops on 10 metres, 5 yagi elements on 15 metres and 3 yagi elements on 20 metres. All up weight is around 67 kg and, Don, that must be some tower to keep it up there.

Those still wanting some of the rarer islands in the Antarctic may find some interest in the following listings:—

South Shetlands: HF0POL (7001/00Z), VP8AEO/CE9 (28.550/00Z).

South Orkneys: VP8ZR (21.240/20.00Z), LU1ZA (14.220/01.00Z).

South Georgia: VP8AEN (14.250/19.00Z).

South Sandwich: LU3ZY (14.220/01.00Z).

Most stations are using the commercial transmitter, so you should be able to hear them, and don't be despondent if they can't match the report you give them.

Nice to hear VK3UX, VK4DX and VK7DK operational again amongst the DX after having a spell in hospital. You were missed by many, gentlemen.

Vic T12VVR, who often operates T19FAG and has given many a DXer a new country, reports that BY1PK could be operational in August 1982. However don't overlook the Trade Fair in China scheduled for September; this could bring activity.

COMING EVENTS

St. Peter and St. Paul Rocks — PY0.

PY0AQ has indicated that he will be taking a group of operators to St. Peter

and Paul Rocks in early August. They anticipate to work all bands using usual DX frequencies, both CK1 and phone.

SAN FELIX CE0X

Eventually it looks like activity from this area, which is very high on the wanted list. San Felix houses a military installation which is controlled by the Chilean Government, and it is very difficult to obtain a permit to operate. However permission has been issued to SV1BV, SV1IW and CV1JG. The call sign will probably be W1DQ/CE0X and the planned duration will be between five and ten days. This will bring smiles to many faces, bigger smiles however if they work them, and if you're lucky QSL to the individual operator. Good luck.

Heard around the bands and their QSL Managers:—

T5TI, QSL Alex I0SSW.
Paul C3IVK, QSL F6EXV.
VU2BBJ, QSL ASU, Box 21, Maduri, India.
G3NUV/CE0, QSL Elliot G3NUV.
JA1JWP/JA1, QSL Hiro JA1JWP.
JT0WA, QSL OK1DWA.
George F0WV/FC, QSL ON4TJ.
XT2AT, QSL OE8ENK.
Anthony 9L1GA, QSL Father A. Guitta, Catholic Mission, PO Box 1, Makeni, Sierra Leone, Africa.
Les 7Q7LS, QSL Box 24, Mtaka Taka, Malawi, Africa.
Jim ZL0AAB, QSL VK9NS.
A4XIY, QSL WB2JST.
SV0BV/SV5, QSL PO Box 564, Athens, Greece.
Doug ZL2UW/C, QSL ZL2UW.
Bob YS9RVE, QSL WA0JYJ.
Jin JA8BMK, QSL PO Box 150, Asahigawa 070-91 (Call Book spelling incorrect).
DL7RT/EA6, QSL DL7RT.
Desocheo KP2A, QSL AF2C.
SP2AOY/OA4, QSL SP2UU.
VQ9QA, QSL N3QA.
N6YIC/VP2A, QSL N6NK.
XN3LSS, QSL VE3GCO.

Before concluding I would like to thank Nick VK6XI on behalf of all the DXers who enjoyed his columns as I did. Thanks for the time spent, Nick.

Till next month good DXing.

Listening around the CK1 bands with Eric L3-0042.

40 METRES

CM6AL, KP4KK/DUZ, Desecheo KP2A, YO3AAS, YV5HL, ZM7JS and 5Z4YU.

20 METRES

DL7RT/EA6, FG7AM, FM7AV, HI3PC, HP1XEK, JT1BH, PZ9AB, VP2AZG, N6YK/VP2A and VQ9OA.

15 METRES

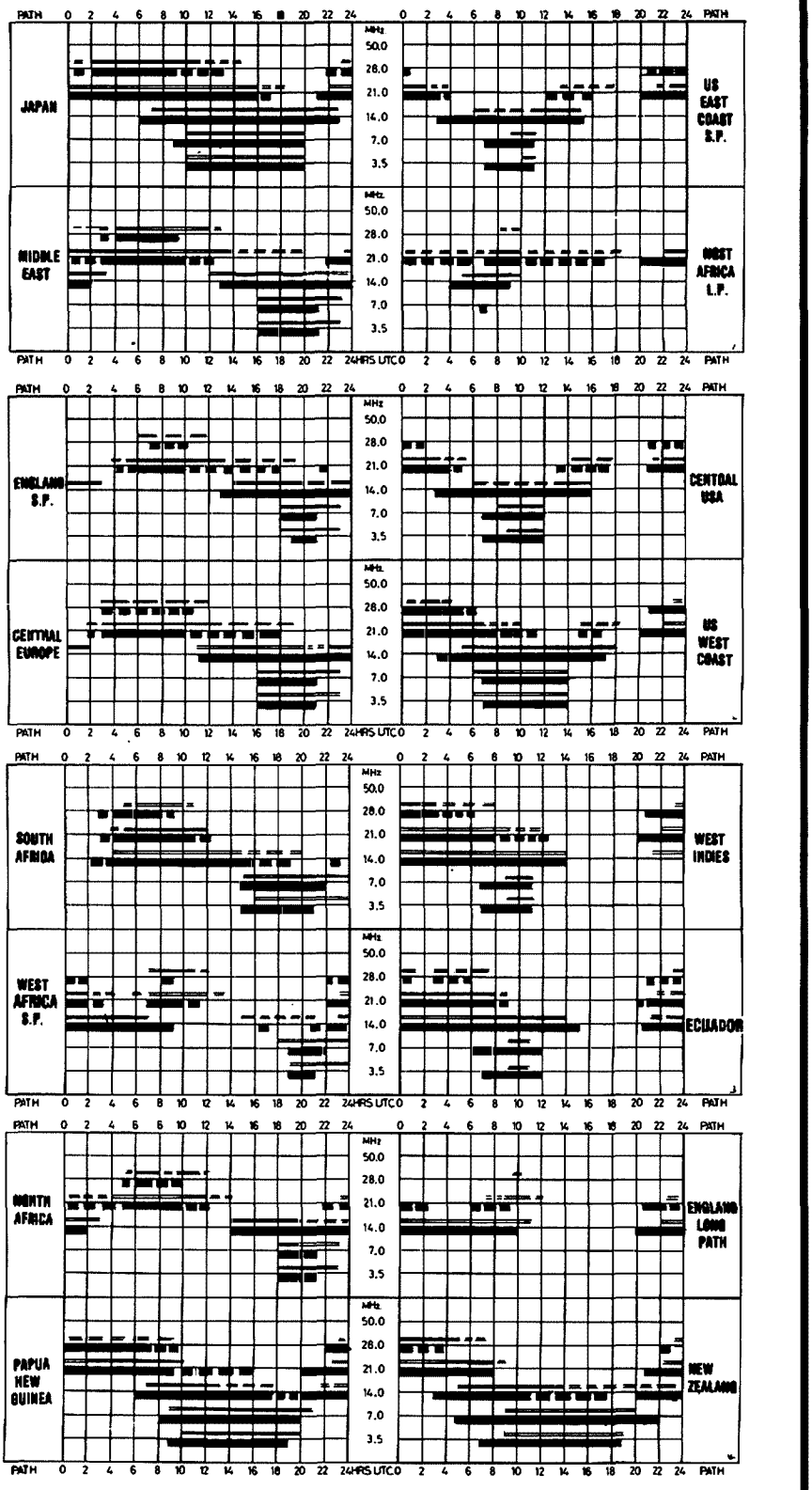
EA6DD, HI8XGE/YV5, KM3AB, K6XT/NH9, SP2AOY/OA4, W6TOZ/AM, YC0BRT, VK2BGD, ZM7JS and ZL2UW/C.

10 METRES

FK8DD, FO8HA, VS5RP, YC0BRT, YC0VK and YU5AIE. ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

National EMC Advisory Service

Tony Tregale VK3QQ
Federal EMC Co-ordinator

This is the age of the electronics boom. During the next few years there will be more and more electronic gadgets and devices poured on to the domestic market. The forecast for the last half of this decade:—"Appliances respond to vocal commands: Total ambience control for home audio systems, linked to computer data network: TV screens grow to wall size: Kitchen computers and holographic TV appear" — to name but a few.

Amateurs should, for their own safety and peace of mind, take the basic RFI precautions. No matter how good your amateur equipment, you should take the necessary steps to ensure that your own domestic equipment is clean and free of RFI.

Consider the following cases:—

(a) This case was brought by a neighbour who was experiencing breakthrough of the amateur's HF band transmissions to his audio and television equipment. Despite evidence from the P. and T. investigator that the station was being operated in accordance with the licensing regulations and that the trouble lay in the design and/or construction of the neighbour's equipment, the neighbour decided to claim reimbursement or, alternatively, compensation for alleged nuisance caused. The final outcome was that the plaintiff's music centre was cleared after a simple modification carried out by the maker's technical liaison officer. The same advice was given by the amateur to the plaintiff in the first instant, but he chose to ignore this advice.

(b) This case reached the legal stage, and the results could have far reaching implications for amateur radio. As a result of a suit filed by a neighbour an amateur was ordered to cease operating his station because of TVI and stereo interference. The problem had surfaced a year earlier when, without previous warning, the amateur received a letter from the neighbour's solicitor, stating that he would be sued if he didn't stay off the air. Since the suit began, technical experts for both sides have agreed that a proper TV antenna plus filters would solve the TVI, and a properly designed stereo system would eliminate the problem in that area. This suit has so far cost the amateur $7000, and an appeal is estimated at another $10,000. However, this United States amateur is willing to continue the fight if there are indications that the amateur movement is behind him.

Law suits and legal battles can be very expensive items in any country. Most amateurs would agree that the money could be better spent.

One of the aims of the WIA National EMC Advisory Service is to try and ensure that an interference problem does not get to law.

Very good value for money should be the new Interference Book from ARRL by William R. Nelson WA6FQG; Editor, William I. Orr W6SAI; 247 pages; US$8.95. "This timely handbook covers every type of RFI problem and gives you the solutions based upon years of practical experience. It emphasizes amateur radio, CB radio and power line FRI problems — and how to solve them. Power line interference is covered in depth — how to locate it, cure it, work with the public, safety precautions, and much more. TVI, AFI, telephone, CATV, computer problems. Case histories and profusely illustrated, this handbook is packed with practical authoritative information. Written by an RFI investigator with 33 years of experience."

This most useful addition to your technical reference library should be available from the Federal office in late September. ■

WICEN

R. G. HENDERSON
Federal WICEN Co-Ordinator

MESSAGE FORMS

Last month I indicated that I would provide a message form based upon the SES/Civil Defence form and suitable for general amateur radio use, including third party messages. Keen WICEN operators will note that unnecessary boxes on the standard SES form have been blanked out without destroying the standard layout.

It is strongly recommended that this message format be used to avoid confusion in emergency situations.

WICEN HANDBOOK

My deputy, Ray Roche VK1ZJR/4, has noted the need for a National WICEN handbook, setting out those matters which do not vary from State to State and also providing guidance for Divisional and other co-ordinators. Ray reports that photocopies of earlier AR WICEN columns are popular for voice procedure training.

I have reviewed the WICEN column material from the past few years of AR and find that, with some additions on the organization, management and duties topics, it provides the basis for a handbook. It's my intention therefore to produce those missing sections, initially as AR columns, and compile a master copy of the handbook. It's here that the problem starts, for the master copy will be a cut and paste up of previously published columns and will probably need some editing before printing; and that printing can only be done if there is sufficient demand to make it a cost effective venture.

The draft table of contests is as follows:

PART 1

Aims of WICEN.
Responsibilities, duties of Co-ordinators.
Regulations.
Affiliations — accreditations — powers of command.
Call out procedure.
Emergency plans.

PART 2

Simplified guide.
Date-time groups.
Voice procedure.
SIGCEN procedure and logs.
Message writing.
Map reading.
Planning and exercise.
Mobile/field station check list.
Registration/equipment records.

WICEN ACTIVATION JUNE 1981

At the time of writing these notes it is too early to analyse the WICEN activation in NSW as a result of failure of Telecom circuits, however it is useful to note that WICEN and the National Third Party Net existed side by side, each servicing their respective clients.

A recent VK2 braodcast summarised the situation well, each has their role; in WICEN's case it's to support the disaster/emergency service authorities; in this situation the NSW police and the "pool of trained operators with equipment were deployed" for just that purpose. ■

MESSAGE FORM

NOTE: Shade this area for CUSMS use only.

PRECEDENCE | DATE TIME GROUP | ORIG NO

FROM

TO

NAME | SIGNATURE | DATE

FOR OPS USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE	TIME	SYSTEM	OPERATOR

MESSAGE FORM Number

FOR COMM CEN/SIGNALS USE

PRECEDENCE | DATE—TIME—GROUP | MESSAGE INSTRUCTIONS

FROM

TO

ORIGINATOR'S NUMBER

FOR OPRS USE	R	DATE	TIME	SYSTEM	Operator	D	DATE	TIME	SYSTEM	Operator	SIGNATURE

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
5 Helen St., Launceston, Tasmania 7250

Well, August has come around again, and that means Remembrance Day is here again. This year's contest is scheduled for August 15-16. All the pertinent details are found in the July issue of Amateur Radio. I would urge all SWL participants to read the rules carefully. I am hoping that many of them will be participating in this annual contest which is held in memory of those amateurs who made the supreme sacrifice in the Second World War. Some of you will possibly be assisting hams as log keepers, and know the comradeship and enjoyment experienced during the 24 hours of the contest.

Industrial disputes and strikes have certainly been in the headlines over the past couple of months. Two major international broadcasters have been plagued by recurring industrial trouble, namely Radio Canada International in Montreal and Kol Israel in Jerusalem. Radio Canada International has been without any newscasts since October 1980 due to a journalists' strike, and in May the technical operators at the studios of all CBC stations walked out. As a consequence, there are no programmes being aired from the studios.

The International Service has been suspended and it does appear that it will be a prolonged dispute. Do not be surprised if RCI's programme policies alter when and if they come back on the air. The CBC, the parent organization similar to our ABC, has been in conflict with the Federal Government in Ottawa for many years over funding for the International Service, and because of the prolonged absence only network programming for Canadians abroad could be aired.

Meanwhile, the technicians at the transmitter site at Sackville, New Brunswick, who are not involved in the dispute have about exhausted all of their standby programming, and I am informed that the Sackville relays of the BBC World Service and Deutsche Welle, as well as the Daventry relays of RCI, have been suspended as well.

Radio Kol Israel in Jerusalem has been plagued by wildcat strikes as well over recent weeks. One does not know from day to day whether there will be a news broadcast or not. If it is not the journalists on strike, it is the turn of either the announcers or the studio technicians. Israel has a galloping inflation rate and there has been a rash of disputes and walkouts by the employees in the Public Sector, trying to catch up. Meanwhile, the Israeli Government has been putting out SSB feeders around 14.7 and 18.3 MHz with news bulletins from the Israeli Army Network, which is unaffected by the industrial conflict within the Israeli Broadcasting Authority (IBA).

Recently, as I was tuning across the 25 metre band, I came on to one of the rarer International broadcasters. It is Radio Ulan Bator in Mongolia, and can be easily heard at 1220 GMT on 12070 kHz, which is just above the allocated band. The station's English programme lasts for 30 minutes, Monday through to Saturday, and is also aired from 1715 to 1745 GMT. It is at quite good strength as early as 1100 GMT, when the Chinese language programme is aired, and at 1130 when a Mongolian transmission, presumably for the sizable Mongol minority within the People's Republic of Chine, goes out. From when the Mongol transmission ceases and the commencement of the English programme at 1220 no modulation is present on the carrier. However, I did hear Radio Moscow's interval signal underneath the conclusion of the Mongol programme, which leads me to wonder if the source of the transmission is also within the confines of the USSR, similar to many of Radio Kabul's outlets.

Incidentally, you will find that the announcers have a very rapid-fire delivery, and you will have to listen very hard to follow what they are saying. The programmes are very pro-Moscow and are slanted heavily against their big neighbour, which of course Is China.

Many years ago, in 1973 in fact, I worked my first Mongolian station on 14 MHz CW. It is now over eight years since that QSO, and although I sent a card via the QSL Bureau, I have yet to get confirmation of JT. More experienced DXers have told me if and when it turns up, I could be waiting for up to 10 years. The majority of hams within Mongolia have been mainly from East European countries involved in developmental projects in the remoter regions of the country, and have probably left the country by now to return to their native lands. My only hope being that they did keep a log, and will eventually dispatch QSL cards. Unfortunately, JTs are very rarely heard, and occasionally can be heard working UAs. I suggest you ask if they have a home call. If they don't, it might be a native Mongolian, in which case it would have to go via the Bureau anyhow. Anyway, Radio Llan Bator does confirm their transmissions within three months and seem anxious to have listener feedback to their programmes.

Radio Australia has re-introduced a programme specifically for those interested In shortwave communications. Called "Spectrum", the first edition was broadcast on Sunday, July 5th. It is proposed to be aired on the first Sunday of the month and the only two releases that I am aware of are at present 0610 and 1210 hours GMT. The programme's compere is Dick Speekman, who formerly was at Radio Nederland and was at one time host of the "DX Jukebox". It is being co-ordinated by the Australian Radio DX Club and the Victorian Branch of the Southern Cross DX Club, both located in Melbourne. The dates for the next broadcasts will be August 2nd and September 5th.

Although possibly too late for inclusion in this issue, on the weekend of August 1-3, handicapped and disabled amateurs throughout the world will endeavour to make contact with each other, and with other amateurs as well. This idea has come from members of the Exeter Amateur Radio Society in Devon, England. As part of the International Year of the Disabled, the Devon *Sports for* the Disabled Association will be staging an international meeting at St. Loy's College for Training the Disabled in Commerce and Industry.

The Exeter Amateur Radio Society will be operational from the College grounds concurrently with the sports gathering, with two special calls, GB2IYD and GB8IYD, and will be on all bands from 3.5 MHz through to 2 metres from 0900 to 2000 hours GMT. The participating stations in this weekend will call "CQ DE IYDP . . ."

The Handicapped Aid Programme in Australia has commenced two amateur nets to allow disabled hams to call in and chat, as well as those volunteers who wish to provide technical and practical assistance and advice. These monthly nets have been divided into two — one primarily for International contacts, and the other for local communications. The International HAP Net will be held on the first Sunday of the month on 14290 ± QRM at 0700 GMT, and the second net will be on 3610 kHz on the third Sundays at 1200 GMT. In both cases I will be acting as net control station for the time being. The respective dates are August 2nd, August 16th, September 6th and September 19th.

Well, that is all for this month. All the best in the RD contest. 73 and good listening! — Robin L. Harwood. ■

INTERNATIONAL NEWS

Resulting from experiences in recent earthquakes in Italy, the ARI (Associazione Radioamatori Italiani) has felt the need for an exchange of opinions and experiences under an administrative and operational point of view about the important problems of emergencies.

Consequently a meeting has been arranged from 9th to 13th September in Cefalu (Clcily), to be attended by as many amateurs (especially Region 1) as possible.

The venue is the Hotel Costa Verde. The WIA regretted Inability to attend but provide ARI with details of our WICEN organisation.

Details of the 22nd All Asian DX Contest arrived a little late, as the phone section was on 21/21 June, but the CW section is from 00.00Z on 22nd August to 24.00Z on 23rd August. This contest is managed by JARL.

The WIA voted In favour on the admission of the Fiji Association of Radio Amateurs to IARU Region 3 organisation. ■

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

ALARA extends sympathy to Austene VK3YL and OM on the loss of their only son, and to Heather VK2HD and OM Rod on the loss of Rod's son recently.

The skeds on Monday nights are very well attended now, with 13 YLs on sked last night, 29th June. All but one with her own call and Helen is studying for her novice call — good luck! After the net was closed a number of girls went to CW to gain points for the ALARA award on CW. Mavis VK3KS and Freda VK2SU have CW skeds on 7040 MHz Monday, Wednesday and Friday at 0230Z and would welcome any YL to join in, so girls, get out your key, dust it off, and give them a call, it's good fun. If you are a novice and want some CW practice ask on a Monday night and we will organise a frequency and time to suit you all.

ALARA's aim is to foster amateur radio among YLs, so members will do all they can to help with any problems you may have and also offer encouragement. If you are thinking of sitting for your own call, get your OM to call in for you and you will be warmly welcomed. It is a great achievement to go back to study after a number of years and pass an exam and be able to join in such an enjoyable hobby. You meet so many people from all walks of life, all with the common bond of radio. And as well the bonus of armchair travel, too. Stamp collecting is also a sideline enjoyed by many YLs.

THE STORY BEHIND THE GREETING "33"
From BYLARA Newsletter, June 1980.

One things which puzzles some YLs and most OMs is the meaning of the YL greeting "33". This was originated by CLARA member W8KYR now W2RUF (silent key) and means "Love sealed with friendship from one YL to another YL" as the formal definition. Warmer than the conventional 73 but does not encroach on the YL/OM greeting 88.

I have had several queries on this since it appeared in AR. No, it has nothing to do with age!

Good luck to all who are sitting for exams in August, and look forward to meeting you on air soon.

33/73. Margaret VK3DML. ■

AROUND THE TRADE

Vtcom International Pty. Limited has announced that it has moved its Head Office to new premises located at 57 City Road, South Melbourne.

The Company has announced the move as part of its expansion program Into military and satellite communications.

The new premises will cover 8,000 sq. feet and include management, warehousing and computer operations.

Vicom has enjoyed record profits and sales for the last financial year and is expecting the growth rate to continue for the next twelve months. ■

750th JIL SX-200

GFS Electronics Imports of Mitcham, Victoria, recently delivered their 750th JIL SX-200 microprocessor controlled HF/VHF/UHF programmable scanning monitor receiver to be sold in Australia since its initial release in May 1980.

Shown receiving SX-200 number 750 from Greg Whiter, proprietor of GFS Electronic Imports, is its purchaser Mr. Peter Walsh of Glenroy, Victoria. Peter, a blind radio amateur and avid shortwave listener, will be adding the SX-200 to his already comprehensive range of radio equipment.

The JIL SX-200's popularity has, for the most part, been due to its unique design and performance. Covering a frequency range of 26 to 88, 108 to 180 and 380 to 514 MHz, it uses a keyboard entry programming technique providing a selection of over 33,000 channels available to the user. Up to sixteen frequencies may be placed in a non-volatile memory to be later selected individually or scanned in part or total. Scanning can be carried out over a specific frequency range by programming upper and lower frequency limits into the SX-200. Unique squelch circuitry is employed, having three modes, allowing the receiver to (a) stop scanning with open audio on carrier only, (b) to stop on carrier with closed audio until modulation is applied to the carrier, or (c) not stop at all until carrier and modulation is detected. This feature overcomes the frustrtaing problem that a number of other scanning receivers suffer from, of stopping on carrier only or spurious signals.

A front panel mounted fine tuning control ensures that all Australian allocated two-way radio frequencies are covered. AM or FM reception is possible on all bands. Direct operation from 240 volts AC or 12 volts DC is provided for. Two scanning speeds with three scan delay periods of 0, 3 and 6 seconds as well as a built-in digital clock are available to the user.

One additional useful feature is the inclusion of a squelch triggered output

which may be used to operate a tape recorder or some other form of auxiliary equipment.

The wide frequency range of the SX-200 encompasses a number of useful bands, including the 27 MHz and UHF CB bands, 10, 6, 2 and 70 centimetre amateur bands, low and high VHF as well as UHF two-way bands, aircraft band, VHF satellite band and, with the addition of a small very low frequency converter, the frequency range of 5 to 500 kilohertz.

The SX-200 sells for $499 including sales tax. For more information contact the Australian distributors, GFS Electronic Imports, 15 McKeon Road, Mitcham, Victoria 3132. Phone (03) 873 3939. Telex AA 38053 GFS. ■

CONTESTS

Reg Dwyer VK1BR
PO Box 236, Jamison 2614

We welcome Reg Dwyer as the new Contest Manager and columnist. Reg has taken over from Wally Watkins VK2DEW, who so ably ran this important area for the past three years. Many thanks to both of you.

Contest information should now be forwarded direct to Reg, as above.

AUGUST

8/9	European CW Contest	
15/16	Remembrance Day Contest	AR 7/81
15/16	Seanet Phone Contest	CQ 7/81
22/23	All Asian CW Contest	

SEPTEMBER

12/13	European Phone Contest	
19/20	VK Novice Contest	AR 8/81

OCTOBER

3/4	VK/ZL Phone Contest	AR 5/81
10/11	VK/ZL CW Contest	AR 5/81
17/18	Jamboree on the Air	
24/25	CQ WWDX Phone Contest	

NOVEMBER

1	Czechoslovakian Contest	FCM
28/29	CQ WWDX CW Contest	

EXCHANGES

VK NOVICE

RST and QSO number starting 001.

EUROPEAN DX

RST and QSO number from 001. 3.5 to 28 MHz, 15 minutes minimum working time per band. Only 36 out of 48 hours to be worked in a maximum of three periods.

CZECHOSLOVAKIAN CONTEST

0000 to 2400 UTI. Phone: RS and zone number. CW: RST and zone number.

CATEGORIES

(a) Single operator all bands.
(b) Single operator one band.
(c) Multi-operator all bands.

Results of XXIV Czechoslovakian Contest 1980, VK Region:—

VK3AEW, 1st all bands, 11,070 points.

VK5OU, 1st 14 MHz, 45 points.

The Novice Contest has been rescheduled to September 19/20 to avoid clashes between other major events, i.e. JOTA. Good luck to all participating.

YOUR COMMENTS PLEASE

I have received a suggestion from the VK4 Division that the John Moyle Field Day Contest date be moved to late May. The present date is in the wet months for the Division and creates numerous problems with accommodation, access to operating sites and equipment.

With a view to the contest calender, late May or July are the only months which don't obviously clash with major DX contests. However, I would appreciate your thoughts and helpful suggestions.

Best 73. Reg. ■

Australian Novice Contest RULES

The contest will take place from 0800 GMT 19th September to 0759 GMT 20th September, 1981, for all novice and full call amateurs.

OBJECTS OF THE CONTEST

To encourage contest working between amateur stations in Australia, New Zealand and Papua-New Guinea during a 24 hour period with special emphasis on contacts with novice and radio club stations.

STATIONS ELIGIBLE

Only stations in VK, ZL and P2 call areas may enter. No stations outside these areas is permitted to be worked or enter a log. Except for radio clubs, no multi-operation working is allowed. Stations in your own call area as well as other call areas may be worked.

CONTEST BANDS

Only the novice allocations on 80, 15 and 10 metres may be used. This applies to full call stations as well. No crossband operation is allowed. Contacts should be Phone or CW.

SCORING — TRANSMITTING:

For contacts with a novice station — 5 points.
For contacts with a radio club station — 10 points.
For contacts with a full call station — 2 points.

SCORING — LISTENING:

Novice/Novice contact — 5 points.
Full Call/Novice — 2 points.
Novice/Full Call — 2 points.
Full Call/Full Call — 2 points.
Any contact with a radio club — 10 points.

CALLING PROCEDURE

Phone call "CQ Novice Contest" and on CW "CQN". Stations may be worked only once per mode per band.

EXCHANGES

Phone, RS report plus three figures. These three figures may start anywhere between 001 and 999, but when 999 is reached you must start again at 001. CW, RST report plus three figures on the previous basis. Radio club stations will add the letter "C" after the number above.

CONTEST SECTIONS

(a) Novice/Full Call Phone.
(b) Novice/Full Call CW.
(c) Listeners.

LOGS

Logs must show GMT time, station worked, band, mode, NR sent, NR received, score claimed and score tally for each page.

A front sheet must be attached showing the following:—

Name of operator, call sign, address, section entered and points claimed.

Logs are to be sent to the Federal Contest Manager, Box 236, Jamison, ACT 2614, and must be postmarked no later than 12th October, 1981.

CERTIFICATES

Certificates will be awarded to the highest score from Novice Phone, Novice CW, Radio Club Phone, Radio Club CW, Full Call Phone, Full Call CW, Listener Phone and Listener CW.

A trophy to be known as "The Keith Howard VK2AKX Trophy" will be awarded to the entrant with the highest aggregate score in the (a) and (b) sections and will be held by the winner for a period of 12 months.

The decision of the Federal Contest Manager Is final and no correspondence will be entered into regarding such decision. ■

Amateur Licence Fees

From 1st July 1981 the amateur station licence fee rose from $15 to $17 and the Novice amateur station licence fee rose from $10 to $14. The principle is that the user pays, said the Minister in media release 81/24 of 1st July. ■

HF, UHF and VHF ANTENNAS BY ATN

15/11/10 mx			Price
ATN 20-30-1 rotary dipole			$36
10/11 mx model	**Gain dbi**	**Boom**	
ATN 28-30-3 or 27-29-3	9.7	3.5M	$85
ATN 28-30-5 or 27-29-5	12.0	6.5M	$145
ATN 28-30-6 or 27-29-6	13.2	8.3M	$189
6 mx			
ATN 50-52-5	11.9	3.5M	$90
ATN 50-53-8	14.2	5.5M	$140
ATN 50-53-11	16.2	9.0M	$175
2 mx			
ATN 144-148-8	12.7	2.2M	$50
ATN 144-148-11	14.6	3.8M	$60
ATN 144-148-16	17.0	6.3M	$80
ATN 144-148-13WS	17.3	7.0M	$80
70 cm Model (N Conns)			
ATN 420-470-6	10.2	0.6M	$40
ATN 420-470-14	13.7	1.5M	$55
ATN 420-440-11	16.7	1.85M	$60
ATN 420-440-15			$70
ATN 432-16LB	17.2	3.7M	$80
UHF CB (N Conns)			
ATN 47-5	9.2	0.65M	$42
ATN 47-7	10.2	0.7M	$45
ATN 47-11	17.0	1.7M	$55
ATN 47-15	17.8	2.8M	$65
Amateur TV Translator			
ATN 580-14 (N Conns)	17.5	2.0M	$60

ALL LISTED HF ANTENNAS use top grade 6063-T83 seamless tapered and swaged tubing elements with non-brittle ABS tough weather resistant insulators. Booms are 2" OD (longer booms use guys supplied) and elements taper from ⅞" OD or ⅝" OD depending on length. Longer elements use positive rake on insulators to reduce unsightly sag. The best possible materials have been chosen to suit tough Australian weather conditions.

TRAPLESS TRIBANDERS, 13-30 MHz, Continuous Coverage (Includes new WARC & CB) (LOG PERIODICS)

Model	Elements	Boom (metres)	Gain dbi	Price with Balun 200W	1 KW
13-30-6	6	6.0		$259	$279
13-30-8	8	8.5		$389	$409

TRAPLESS DUOBANDERS, 20-30 MHz, Continuous (Includes new WARC & CB) (LOG PERIODICS)

20-30-6S	6	4		$169	$189
20-30-6L	6	6		$199	$219
20-30-8	8	8.5		$279	$299

MONOBANDERS — For 14 and 21 MHz

14-14.4-4	4	1	10	$239	$259
21-21.5-4	4	6	9.9	$179	$199
21-21.5-5	5	8	11.2	$269	$289

Also available power dividers/couplers, quarter wave sleeve baluns and matching harnesses for stacks of two or more arrays; also 200 W 1:14 4:1 baluns and insulators for homebrew or for Oscar.

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- 1 to 2 Watts in — 15 to 30 Watts out — Excellent for HTs
- Automatic internal or external relay keying

SPECIFICATIONS

Frequency Range	144 to 148 MHz
RF Power In	200 mw to 15 Watts
RF Power Out	80 Watts nom. (10 in - 80 out)
Modes	SSB, FM and CW
Receive Preamp	10 db gain min. 2.5 db ± .5 db noise figure
DC Power	13.6 VDC 10-12 Amps
Size Weight	5.375" x 3" x 8", 3 lbs.
WARRANTY	**5 years (1 year RF Power Trans.)**

B108 2 METER AMPLIFIER
10W IN — 80W OUT

Amateur Net $239

DUAL PURPOSE — H.T.s or Transceivers

B 23	2 Metre Amplifier	2 W in, 30 W out	$119
B 1016	2 Metre Amplifier	10 W in, 160 W out	$359
B 3016	2 Metre Amplifier	30 W in, 160 W out	$299

Average and Peak Reading Wattmeter/SWR

Model MP1	HF	$159
Model MP2	VHF	$159

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P.O. BOX 23 SPRINGWOOD. N.S.W. 2777
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Telephone: (047) 54-1392.
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SPECIAL OF THE MONTH **— KYOKUTO FM-2025 A Mk 2 transceiver 2 M FM 10 memory 25 W scanning. $325**

ANTENNAS

TET HB35C log/yagi 10-15-20M 13' boom	$360
CUSHCRAFT A3 yagi 10-15-20M 14' boom	$260
HY-GAIN TH3-JR yagi 10-15-20M 12' boom	$220
HY-GAIN GPG-2 2M vert. 5/8W 3-4db gain	$22
HF Helical whips 10-15-20-40M each	$25
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SPECIAL PRICE for set of whips w/bumper mount and spring base	$120

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DT-810 LCD readout 16 ranges colour coded	$95.00
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CC-01 Carrying case	$4.00
UP-11 hFE Probe	$3.00
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UP-13 Universal test lead kit	$5.00

MULTIMETERS - ANALOG

DT-1313 19 ranges colour coded	$30
DT-1314 38 ranges colour coded	$35
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ACCESSORIES

CNA-1001 Daiwa 250W auto ant. tuner	$250
MK-1024 elect. keyer w/programmable memories	$195
JACKSON CURRENT SENSING CAR BURGLAR ALARM	$45
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ADAPTORS 3/8 stud	.25c
ADAPTORS DOUBLE MALE 3/8"-5/16"	.40c
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COAXIAL 3-way push button switch	$15.00
DUMMY LOAD 30W to 150 MHz	$12.00
5-SECTION LP FILTER KENWOOD & SIMILAR	$25.00
YM-37 YAESU 8 pin standard mic	$15.00

ROTATORS - All rotators complete w/bottom mast bracket and for 28V AC operation

KEN KR-400 MEDIUM DUTY brake pwr 1300 in/lb	$120

CABLES & BALUNS

RG8/U quality coax cable 50 ohm per metre	$1.25
RG 213/U quality coax cable 50 ohm per metre	$1.50
RG58A/U quality coax cable 50 ohm per metre	50c
RG 58C/u quality coax cable 50 ohm per metre	60c
6 core rotator cable per metre	.75c
BN-86 balun 50 ohm 1:1 1KW	$25.00
HI-Q balun 50 ohm 1:1 1KW	$15.00

TRANSCEIVERS RECEIVERS ACCESSORIES

Yaesu Musen, Trio-Kenwood and Icom equipment available plus accessories. Ring, write or call in for information brochures and prices.

KYOKUTO FM-2025A Mk 2 transceiver 2M FM10 memory scanning	$340

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JD-140 Antenna matcher 100W 25-40 MHz	$15
JS-171 SWR/PWR/FS 1.5-144 MHz	$30
JS-175 SWR/FS ant/matcher 1.5-144 MHz	$30
JD-176 SWR/PWR/FS/Matcher 1.5-144 MHz	$35
JD-178 SWR/PWR/FS/MOD/MATCHER 1.5-144 MHz	$40
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2W 3 ch. hand-held w/crystals	$70
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PL-259 RG-8U and RG-58U types each	.75c
SO-239 1, 2 or 4 hole mount each	.75c
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T-CONNECTOR 2 x SO-239, 1 x PL-259	$2.00
PL-258 Double female 2 x SO-239	.75c
DOUBLE MALE 2 x PL-259	.75c
UG175/U reducer for RG-58U coax	.20c
UG176/U reducer for RG-59U coax	.20c
ADAPTOR RCA male to SO-239	.75c
LIGHTNING ARRESTOR PL-259/SO-239	$2.00
MLS RIGHT ANGLE PL-259 to RG-58U	.75c
GLP RIGHT ANGLE SO-239 to RG-58U	$1.00
M-RING car body mount 2 x SO-239	$1.00
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CABLE PLUG for RG-213 cable	$4.00
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UG88/U male in-line plug for RG-58U	$2.00
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CWR-685

- ★ Fully self-contained with built-in green screen monitor and keyboard
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- ★ 323 W x 276 D x 127 H mm in size
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Shortwave Listeners enquire about CWR-680 receive only unit

Other features:

- Automatic CW speed adjustment on receive.
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- 6 transmit and receive speed on RTTY & ASCII
- Output for external monitor if required
- Built in interface for hardcopy from inexpensive dot matric printers
- Similar keyboard layout as a standard typewriter with automatic function insertions
- 32 character x 16 line per page
- Two page memory called up via keyboard
- Noise filter helps prevent garbled display during signal intermission
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- Keyboard correction or erase of buffer memory
- Correction facilities for transmitted messages
- Buffer can be loaded while unit in transmit mode
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- Built-in demodulator for High and Low shifts on 170 Hz, 425Hz, 725Hz all with fine tuning
- Echo functions
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AH BRIAN VK4-AHD TEL (07) 341 4767

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.

P.O. Box 332, Currie,
King Island, Tas. 7258

The Editor,
Dear Sir,
Having seen the advertising war in the competitor's magazine I have been pleased that this magazine has steered clear of doubtful advertisements until the June edition, where a major company had a full page ad. offering massive discounts on equipment.

Upon receipt of the June issue I saw the ad. and immediately contacted one mentioned agent and was told that he (the agent) had not been informed by the head office and no such stock was available at the advertised price (this was on 2/6/81).

Thus I request that to maintain the high standard of ads in AR the following checks be made: That any equipment advertised must be available by the publication date (this does not apply to private "ham ads" for obvious reasons). That any company practising bogus tactics should not be allowed to desecrate the pages of AR. Honesty and service to amateurs MUST override quick revenue earning!

Another good idea would be to ensure that the PRICES BE ALWAYS SHOWN not the "super tx/rx for S11??" as sometimes seen

Applying the above criteria will ensure honesty is maintained and the pages of AR are carrying open, frank and reliable advertising.

Yours,
B. P. Oilworth VK7BD. ■

EDITOR'S NOTE
It is the advertiser's responsibility to ensure that his advertisement complies with the provisions of the Trade Practices Act. Refer to the WIA disclaimer on page 3 of each issue.—Ed.

P.O. Box 50,
Sandgate, Old. 4017
11th June, 1981

The Editor,
Dear Sir,
The Intruder Watch Service (IWS) is a service instituted by the Executive of the Wireless Institute of Australia (WIA). Appointments to the more senior positions in the IWS are made by the Executive. State IW co-ordinators are appointed by the individual State Divisions of the WIA. All positions are honorary, with operating expenses met from Executive funds. In the case of Queensland, the Division has met some additional expenses for the sake of expediency and encouragement of the service.

The aims of the IWS appear to be:—

1. Encourage amateurs and shortwave listeners to regularly submit accurate and detailed reports about intruders' transmissions on the amateur bands.
2. Education of observers and potential observers through Amateur Radio articles, personal instruction and through regular nets.
3. Presentation of intruder report summaries to the Department of Communication for possible action by the Australian Government.
4. General co-operation with DOC in regard to intruder mailers.
5. Exchange of intruder information with the IWS of other nations.

For many years the IWS has provided a steady stream of intruder complaints to the Australian communication authorities. It seems that up to, and including the present time, these years of reports have not been acted on by the Government. No doubt there will be found isolated instances of action, but this cannot indemnify gross inactivity.

It is indeed most fortunate that the Australian IWS has shared its intruder summaries with the IWS of sympathetic nations. These nations have been able to use our intruder data to alert them to intruders and also to confirm their own reports. These nations include USA, UK and New Zealand.

The increasingly blatant use of the exclusive amateur frequencies for non-amateur traffic is most troublesome. The worst offenders are the Chinese Peoples Republic and the USSR. Prompted by this increased intruder activity, the IWS is developing a new determination. It is hoped that recent minor responses from the DOC and the Government will result in meaningful action. This would make it unnecessary for amateurs to open their own direct line of communication with foreign governments. Ineffective represenation at this level by our own authorities could ultimately force amateurs to represent themselves overseas.

The IWS can no longer tolerate inaction on quality reports. It is obvious that such an attitude would strain considerably the relationship with OOC, but the IWS must take a courageous stand. DOC is the servant, not the master.

Because of the self-regulatory nature of the amateur service, it is not unreasonable for amateurs to take responsibility for intruder alerting. DOC is apparently not involved in this on our behalf, and readily accepts the role of the IWS. Given that the IWS knows about Government inactivity to date, and that it is a dedicated service, it is obvious that initiatives will continue to be made to ensure success.

There seems no indication of co-operation between our Government and those of other sympathetic nations. Co-operation such as this could assist the IW cause. I for one am looking forward to evidence of a reasonable degree of activity by all concerned in the elimination of intruders from the amateur bands.

Robert McKernan VK4LG. ■

RADIO AMATEURS GROUP VK3APU
The Editor,
Dear Sir,
This extract is from Radio Communication, March 1981, RSGB magazine.

The International Year of Disabled People is to be acknowledged by the amateur radio fraternity with an "INTERNATIONAL WEEKEND ON AIR FOR THE DISABLED" from the 1st to 3rd August, 1981. It is hoped that disabled operators all over the world will contact each other and exchange greetings and QSL cards. It is suggested that stations should call CQ IYDP from their station(s). The date has been chosen to coincide with the opening of the International meeting of the Devon Sports Association for Disabled Persons at St. Loye's College for Training the Disabled for Commerce and Industry, Exeter, Devon. The Exeter Amateur Radio Society will operate stations from St. Loye's College over this weekend on all amateur frequencies from 3.5 to 28 MHz; VHF and UHF between 0900 and 2000 hrs. GMT using the call signs GB2IYD and GB8IYD.

Further details may be obtained from G. Draper, 1 Carlyon Close, Exeter, Devon. The Radio Amateur Group VK3APU will participate in this activity; it is hoped that all our volunteer/supporters (able bodied) amateurs will be on air to promote "AMATEUR RADIO FOR THE DISABLED".

73. Lindsay S. Dykes,
Activities/Information Manager. ■

Lot 6, Mooloolah Road,
Mooloolah, Old. 4553

The Editor,
Dear Sir,
Having been a member of WIA and being an avid reader of AR each month for a while now, I would like to express some points of view through your columns if I may:

Firstly, I wonder if other amateurs have wondered, as I have, at the very poor reproduction evident on radio of interviews and news stories carried out in a mobile situation, that is away from the station itself. I am amazed that such poor quality audio is still with us when we think of the state of the art. I cannot help thinking that either very poor quality mobile equipment is used, or the operator is too lazy to operate it correctly.

Also I read with amusement the many and varied comments, arguments, beliefs, etc., that are expressed in "Letters to the Editor", and can only think that it is all to the good for amateur radio, because no matter how stupid or ridiculous the ideas propounded may be, they at least get some bods thinking often enough to write to your columns. And any activity is good for the hobby I reckon.

Regarding so-called bad manners of amateurs I can only say that after two years or so of operation I have received nothing but courtesy or help from others, so one can only speak as one finds, but we must remember that bad manners to one person may well be the norm for the other, as we all have different standards. For instance, do you open the passenger's door for your wife every time she enters or exits your car? Well there are a lot of men in this world who consider this mandatory and to not do so is the height of bad manners; check your own habits out and maybe you won't be so quick to jump on somebody *for* an imagined "wrong thing to do" situation next time round.

From my QTH here for the last three months I have found 10 metres very good most evenings from around 8 p.m. until 11 p.m. Also 15 metres has been quite good. I cannot comment on 80 metres very much because every time I put up a dipole it falls down on me or breaks or something, so there we are.

I would like to commend the persons responsible for the compiling of AR. It is almost always full of interesting articles and, most importantly, it caters for all amateurs in a clear and easy to read fashion, and I sincerely hope that they are able to keep to the high standards that have been in the past.

Yours sincerely,
Don Houston VK4NBQ (formerly VK7NLH). ■

28th April, 1981

The Editor,
Dear Sir,
Re the new bands, it will be interesting to see if my 80 metre dipole will load up on all three — 10, 18 and 24. This is due to the fact that these new bands will cause the 80 metre dipole to resonate approximately as 3, 5 and 7 half waves.

I may not need any new aerials at all.

J. Kitchin VK6TUP. ■

Sandringham
20th May, 1981

The Editor,
Dear Sir,
I am preparing to move to Saudi Arabia. You probably know that it is very difficult for foreigners to get a licence there, but I hope to be on the air from the MARS station at Dhahran. Visited Saudi last month and some friends were very interested in our Youth Radio Club Scheme as they are short of technically trained nations. Will try to get a YRCS going there and help amateur radio in Hz.

If you have space could you run this letter in AR so I can say 73 to my friends in VK? Will keep an ear out for them from HZ1AB.

Best wishes,
Leo Powning VK3BSX (ex VK5ALP). ■

PO Box 89, Springwood, NSW 2777
18th June, 1981

The Editor,
Dear Sir,
The telecommunications dispute in June brought about chaos experienced by all Australians. In the midst of it all amateur radio operators sought to provide a service to the community; WICEN was activated by some, whilst others participated in the passing of third party traffic. Clearly all concerned wanted to lend a helping hand and, amongst other things, to help allay anxiety and distress experienced when families and friends are isolated not only by great distances but by lost communications.

Tonight I tuned to the Third Party Traffic Net on 80 metres to find a large number of operators (throughout Australia) participating in what each obviously believed to be a worthwhile effort. True, it could be said of many of the messages that they were not of monumental importance, but quite a few carried messages of hope or good cheer as well as advising of serious illness and mishaps which had befallen people. I was disgusted to find that the activities of the group were severely hampered by illegal and malicious interference

from unidentified sources intent on creating chaos and havoc during the ninety minutes at least whilst I listened.

This interference obviously could only be caused by either licensed operators or pirate intruders. Because of the varied and often quite sophisticated means used to blot out legitimate transmissions I share the view expressed by others that this interference most likely was caused by amateurs. All that was lacking was vulgar profanity and obscenity, and this lends support to my belief that it was one or more of our own brethren whose basic instincts prevented him or them from resorting to such a final and absolute degradation of the frequency. Notwithstanding, a very savage blow was struck against amateur radio in VK-land and we must all have been made to appear as something less than gentlemanly to any overseas operators or shotwave listeners.

I am aware that the legalising of third party traffic procedures has brought with it a degree of disapproval from some who feel that it is no part of the amateur service. Those of that mind are entitled to express that view, just as those who participate in these nets are entitled to do so as a legitimate exercise of their operating rights. After tonight's disgusting performance I would hope that even the most ardent opponents of this innovation will join in condemning those responsible for this frequency anarchy and that there will be a united effort to detect the offender(s), who should not be spared and who should be dealt with appropriately by the authorities as being undeserving of licence privileges.

It is my understanding that third party traffic activity overseas has long been favoured. The ARRL in its origins expressed a desire to perform such a community service. Here in Australia the plain and simple fact is that such an activity is now proper, albeit innovative and in its infancy. On the other hand those who act in such a moronic fashion as to shamefully interfere with any legitimate transmission are behaving not only illegally, but in a most reprehensible fashion.

Australia is now awakening from the nightmare of chaos caused by equally irresponsible persons (fortunately in the minority) who misbehaved similarly on the Citizens Radio Service frequency. The distinction between amateur radio and Citizen Radio Services is far from clear in the minds of the community. The beneficial effects of passing third party messages, particularly *in times of communication breakdowns*, should never be underestimated or denigrated. What harm can it do when properly conducted?

As individuals we are each entitled to our own opinions. We are neither forced nor obliged to espouse the new traffic procedures. If we disapprove we may move to another frequency. If persons of good intent behave in a responsible and approved fashion to provide a helping hand to others they should be allowed to operate unhindered by malcontents.

Let us give way to our basic Australian instinct and give the Third Party Traffic Net a fair go.

73. John Dunn VK2VJD. ■

22/6/81

The Editor,
Dear Sir,

TELECOM STRIKE — PROPOSED PHONE PATCHING

In relation to amateur activity during the recent Telecom phone strike, I would like to congratulate the amateurs who took part in handling messages, etc., *for the general* public, people *who would* normally have not come into contact with amateur radio.

To attract more members to the amateur ranks and effectively be useful during such a strike I believe gave an excellent boost to the amateur image in the community. I may be wrong but I think this type of active community aid creates much goodwill and a more professional attitude to this aspect of amateur radio as a hobby.

I would also like to thank the Department of Communications and WIA for allowing amateurs to pass third party traffic.

However, I, and many others, would be very interested to hear what the main objections to amateurs using either on line or audio coupled phone patch facilities during an emergency or similar Telecom strike in the future.

I am rather disappointed that DOC has not approved this type of activity which is allowed in many other countries. Even if it meant obtaining a special licence classification, qualifying licence held period, and/or DOC endorsement, inspection and confinement to certain frequencies only. It would certainly be advantageous to allow those amateurs with an interest in aiding the general public to perform such a service.

Agreed that many arguments could be put forward against this type of activity, but I sincerely believe the overall advantages of goodwill and enormous public relations with media and general public would be a great bonus for the amateur ranks.

When Cyclone Tracy hit Darwin and the amateur frequencies were used for some time to handle messages/traffic almost exclusively, I could not believe that this fact was not presented to the public in a much more wider media and amateur radio promotion campaign, as a great public service.

Most amateurs knew this fact but few of the general public were aware. It is OK to preach to the converted, but to gain new amateurs much goodwill will create public interest in amateur radio. I believe it is almost essential to the overall growth of amateurs and the survival of this hobby, in addition to keeping our frequencies in this countr.

I would be very interested to know what are DOC and WIA's latest thoughts and/or developments (?) regarding on line or audio coupled phone patching by amateurs.

It would be interesting to hear from other amateurs with their thoughts and ideas for gaining Australia-wide approval.

Sincerely,
James Goodger VK2JO, QTHR. ■

58 Prospect Terrace, St. Lucia 4067
28th June, 1981

The Editor,
Dear Sir,

Tonight, after a customary enquiry as to whether the frequency was in use, and a wait, I called CO only to be greeted with a rather rude "Go away whoever you are, this frequency is in use by a group in contact with a G". A discussion then ensued about the "intruder" who was described as "unwell".

Yes, I do happen to have a speech impediment and it does require some slight concentration from the listener to read me. I happen to have cerebral palsy (spastic), not that it bothers me too much. I have generally found amateurs most understanding and gentlemanly. However, we do apparently have a few around on the band who are intolerant of anyone who does not speak as finely and as clearly as they themselves do.

In the International Year of the Disabled one should hope that some of its message would get through the QRM. I write this not so much to vent my own spleen, but in the hope that the message of IYDP might be aided by drawing attention to examples of lack of thought by otherwise, I am sure, worthy gentlement amateurs.

L. R. Newsome, B.Sc., Ph. D., VK4LR. ■

EMC

(ELECTROMAGNETIC COMPATIBILITY)

If radio frequency interference is causing you a problem you are reminded that — "Advice on all types and aspects of interference (PLI, TVI, AFI, etc.) is available from the National EMC Advisory Service".

FORWARD DETAILS TO VK3QQ,
Federal EMC Co-ordinator, QTHR.

TECHNICAL CORRESPONDENCE

R. D. Champness VK3UG
31 Helms Court, Benalla,
Victoria 3672
11/5/81

The Editor,
Dear Sir,

I read with interest Ian Hunts's (VK5QX) comments (December 1980) on my article (August 1980) on antennas, such as the popular 5/8 wavelength 2 metre unit. I agree in general with Ian's dissertation on the ideal method of testing antennas for gain and radiation pattern, and I would like to have such facilities to be able to test antennas. One point I did not make clear concerned the tilting of the various antennas to determine, at least in my mind, and many others, that the 5/8th wavelength antenna had a radiation peak at about 30 degrees above the horizon. All the other antennas were tested in the same way, the whole attenna and ground plane structure was tilted, keeping the feed point of each antenna the same distance from the remote antenna. I was well aware that my antenna testing "range" was far from perfect and to overcome this problem I did in fact conduct three tests in different environments to overcome as nearly as possible the variables likely to occur in a less than perfect testing environment. These facts were produced in the article.

The testing of the alteration of the radiation pattern of a mobile antenna that bends back with speed is not as hard as Ian believes and can be reasonably accomplished by tying thin nylon fishing line to the tip of the antenna and maybe at other sections of the antenna and pulling it back with the lines horizontal to get the correct amount of bend in the antenna. Certainly some of this would have to be a bit cut and try to get the correct bend to correspond to any particular speed. An occupant of a car running paralell to the test car could photograph the antenna on the car and when it is stationary on the test range the antenna could be manipulated to produce the same degree of bend tor any particular speed as evidenced by the photographs. However, I don't have the time at the moment to conduct tests on the radiation pattern changes with bending of vehicle mounted antennas. I don't believe that *my comments are contradictory* as Ian suggests that they might be.

I would suggest that anyone who has read my article should also read both references I mentioned, F. C. Judd G2BCX, who wrote in "Practical Wireless" for April 1978 about the "Slim Jim", and has a large number of other antenna articles to his credit, and "The Amateur Radio Vertical Antenna Handbook" by Captain Paul Lee K6TS (published by Cowan, a "CQ" Technical Series).

I agree with Ian that antennas and getting the best out of them is in many cases a case of SIAS, or Suck It and See, which is precisely why I conducted the tests. I had been a great believer in the 5/8th and wondered why it didn't do all that the glowing articles on it said it should. There are many people experimenting with antennas but few ever bother to present their findings for others, which is most disappointing. I hate re-inventing the wheel. Incidentally radar absorbency material is ideal material to coal aircraft and missiles with so they can't be tracked by radar.

Yours faithfully,
Rodney Champness. ■

QSP

24th JOTA 1981

The dates are 17th/18th October, 1981, starting 00.01h local tiem on Saturday 17th, terminating 23.59h local time on Sunday 18th. Each station is free to select its own time and periods for operation. Official World Scout frequencies are (3740), 7090, 14290, 21360 and 28990 kHz. ■

SILENT KEYS

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

Mr. J. L. O'CONNOR	VK5JQ
Mr. B. A. V. ELLIOTT	VK5AVE
Mr. J. W. YOUNG	VK4JY
Mr. T. R. BRVCE	VK4ZN
Mr. H. A. REID	VK3RH

OBITUARIES

JACK YOUNG VK4JY

Coorparoo, Brisbane.

Jack was active on the air on the HF bands over 50 years. Since his railramant, Jack operated his gear almost every day when health permitted.

He had been a member of the WIA since the war, although ill-health prevented him from attending meetings.

Jack joined the Silent Keys on 4th March, 1981. He will be remembered with affection by all his friends on the air.

Sympathy is extended to his wife and family.

Royce Hazlett VK4ZRH. ■

JOHN O'CONNOR VK5JQ

Amateur Radio is the poorer by losing one of its well known and respected members, a man known for his helpful and friendly advice to newcomers and perhaps even better known for his ability to fabricate the most incredible yet highly successful circuitry, one of the last of the real "home-brew" specialists. Such a person was John O'Connor of Ridgehaven, South Australia, VK5JQ, or as he so often used his own phonetics, "VK5 Juicy Quinces". Operators on most bands have heard his cheery call, particularly on 160 metres; it was on this band that John was a master at using low power, at times mere milliwatts, but his attention to getting the utmost efficiency from his antenna systems was the perfect example of a dedicated amateur of "the old school"; for the greater part of his operating, VHF and 180 metres were his main interests.

Becoming interested in amateur radio at an early age, John graduated from "Mod Oscillators" and "Super-regens" through to the latest modes, only in more recent years did he acquire a "Black box".

His "home-brew" copy of a very famous transceiver stood him in good stead, it was not interior to modern equipment, a tribute to his very thorough construction and ability to get maximum results with a minimum of outlay, and with less gimmickry.

That solidly modulated signal from VK5 Juicy Quinces will be sadly missed by his very large number of friends who knew him both "on air" and personally; at 48 years of age his passing has left a gap in the amateur ranks, but he will long be remembered by those to whom he was a real friend. The numbers are legion across the land. Vale! OM.

John Button VK5ZBU.

Colin Moore VK5RO. ■

The Tamworth Amateur Radio Club

PO BOX W107, WEST TAMWORTH, NSW 2340

The Tamworth Amateur Radio Club is proud to announce the second Noel Taylor Memorial Field Day.

This year the Field Day will take place on the 12th and 13th of September. We would like to invite you to attend and enjoy the weekend. For further information please do not hesitate to contact us.

Trent Sampson,
Field Day Organiser ■

1981 SWARS 29th Convention

At Tumut, 3rd and 4th October, 1981. Hosted by Tumut and District Amateur Radio Club. Enquiries to Secretary, TADARC, 93 Lockhart Street, Adelong 2729. (069) 46 2181.

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

Deceased Estate: Aluminium tubing 33 ft. mast, two 18 ft. al. lengths, $90; KW-EZ antenna tuner, /20; Barlow-Wadley XCR30 Rx, $100; leader LSG-11 sig. generator, $50; D104 mic. and stand, home-brew noise bridge, G5RN antenna, etc. VK3AUC, QTHR. Ph. (03) 99 2470.

Collector's Items: BTH magnetic pick-up, red diamond crystal detector, Edison "Diamond Disc" motor, turntable and acoustic pick-up, Philips battery charger, 2-4-6V, type 1453. Offers. VK3SV, QTHR. Ph. (03) 60 2330.

VHF Equipment Sell-out: Will sell lot as bulk deal, $400, or separately as priced below — IC22S (20 channels wired into matrix), book, mic., brackets,, leads, exc. cond., $175; FTV250 transverter, hardly used, $200, ONO; Ringo ARX2 2m ant., good cond., $40; Hy-Gain 2m yagi, 5 el., good cond., $25. Arthur VK3LJ, QTHR. Ph. (053) 45 2031.

Yaesu FT-2FB 15W output 2m FM Txcvr., with 8 channels and matching Yaesu FP-2 power supply, speaker, nicad battery charger, exc. cond., with manuals, $195. VK2JO, GPO Box 5076, Sydney 2001, NSW. Ph. (02) 799 7655.

Transmitting Tubes, new and secondhand, e.g. 813s in waxed sealed cartons, 100 good tubes 75 per cent octal, 2 sets new tubes KW2000, 1 set secondhand tubes for KW, 1 set tubes for No. 122, set 1 complete AM xmitter (160m to 6m) 829B in final. VK5LC, QTHR.

Duo Bandar 3 el. Yagi, 10 and 15m, plus modified Stolle rotator, $200. Jef VK2NXH, QTHR. Ph. (02) 93 4571 from 1800K. Will give an-air demo.

Yaesu FTT2 all mode 2m Txcvr., $550; Trio 9R-59DS Rx, $100; Realistic DX-160 Rx, $120; all new cond. and orig. cartons. H. Bailey VK2ZHQ, QTHR. Ph. (049) 68 1306.

7-vahro Tx., incl. power supply for bands 80 to 10m, with some crystals, $45. VK5IX. Ph. (08) 271 4831.

TS520D, mint cond., just overhauled by Kenwood agent, new finals, DC/DC power supply, DG5 adaptor, plus mic., manual, spare finals, excel. performance. VK4AIF. Ph. (07) 284 9230.

Key, Hi Mound HK-702, $20; Yaesu guttermount mobile whip base, 2m stub, resonators for 80, 40, 20, the lot for $40; textbook "Introduction to Microprocessors" by Leventhal, $10; "Inegrated Circuits and Semi-conductor Devices: Theory and Application" by Deboo and Burrows, $5. VK2DET, QTHR. Ph. (042) 84 3400.

FT200 External VFO, new, unused, $75; Palomar R-X noise bridge, unused, $45; Shure 444 desk mic., $50; Heath HW32 20m monoband tx, incl. 12V PS and mobile whip, $80; miniature GE JocketMate 2m tx, 2 chnls., nicads, $70; valves, siggen, old 6m gear, odds and sods, free to YRCS or battler. VK3BSX. Ph. (03) 598 1034.

4 el. yagi duo band 10.15m, good cond., Beta match included and ready for use, $85. Steven VK3NNH, QTHR. Ph. (03) 547 5894.

Kenwood TS8020S HF Txcvr., hand mic. and manual, extra new driver and finals, A1 cond., $740. VK7NKD, QTHR. Ph. (002) 43 8972.

Icom IC 502 6m portable SSB, good cond., sell $150 or swap IC 202, cash diff. VK6AM, 10 Julianne Street, Busselton 6280. Ph. (097) 55 4106.

Drake TR4C Txcvr., with noise blanker and spare sets of matched final tubes, RV4C remote VFO and power supply, MN4 antenna, matching network, all handbooks, exc. cond. $650, ONO. VK2ANJ. Ph. (02) 529 3409 evenings.

50 ft. Hills Wind-up Tower, unused (the two heavy bottom sections of a 75 footer with ladder on the lower section), complete with tilting base bracket, transports on a Kimbo roof rack, $275; cage for heavy duty rotator bolts to top of above tower, weight reduced, cadmium plated and fitted with new thrust bearing for 2 in. piper, unused, $50; Waiwa 7600 rotator, complete, fitted in above cage with shock mountings and pipe clamp, unused, $260; Europa B transverter, 28 to 144 m/h., exc. rx, 200W PEP input, internal aerial switching, meter, plugs into rear socket of Yaesu gear for all power, makes two metres come to life, unused spare, $190. VK3DS, Ballarat. Ph. (053) 32 3226.

Video Camera, ASCA B/W, RF and video out, 240V, 8 months old, $280, ONO; Velbon tripod, $45; both in exc. cond., used for ATV. Contact Frank VK3ZO, QTHR. Ph. (03) 478 5972 around 6.30 p.m.

Swan 350 Txcvr., with 12V power supply, PTT mic., 3 helical whips for 40m, 20m and 15m, $275. Jim VK4AJG. Ph. (075) 38 0270.

Yaesu FT-200, FP200 power supply, exc. cond., will stand any test 10-80, incl. 11m, new finals and driver, $370. Peter VK3NNK. Ph. (03) 555 4489.

Eddystone Rx EC10, 0.5 to 30 MHz, complete with handbook, single conversion solid state, mint cond., $130; Drake Rx SSR1, 0.5 to 30 MHz, complete with handbook, solid state, good order, $220. Jack VK3EB, QTHR. Ph. 82 1769.

FT-227R, good cond., $250. VK2KCS, QTHR. Ph. (02) 477 3932.

FT207R(A) Yaesu, synthesised 2m FM hand-held, 800 channels, 10 kHz steps/5 kHz switch, scanning, 4 memories, priority channel, 0.5/2.5W output, 6 months old, v.g.c., $275; TRC449, 11m, 18 channel, SSB/AM, Tandy's best mobile, Uniden 858 chip, suitable for conversion to 10m with 200-400 channels, unused, in carton, $170; Midland IW 2 channel walkie-talkie, $30. VK1ZLW. Ph. (062) 41 6046 AH, (062) 49 4597 BH.

IC215 2m FM Txcvr., as new, repeaters 2, 3, 5, 8, 40 and 49, $250; also class C power amp. 30 watts output, diode switching, $50; Multipalm II 2m FM txcvr., repeaters 2, 3, 5, 8, 40 and 50 with nicads, charger, leather case and DC lead for motor vehicle, $200. VK3BNJ. Ph. (03) 743 6708.

FT101E with YD148 desk mic., as new cond., orig. packaging and manual. no mods., $600. Brian VK3NYS. Ph. (03) 369 1649 AH.

Kenwood TS120S Txcvr., with mic., 12 months old, as new, little use, $525. VK2PCT. Ph. (02) 86 4596.

Drake R4C Sherwood Filter, full accessory crystals, T4XC 160-10m, AC4 power supply, MS4 speaker, Shure 444 mic., all exc. cond., sell complete, $1250; Drake CW filter, 250 Hz, for R4C, near new, 60; NB4 noise blanker, $45. P. Nesbit VK3APN. Ph. (03) 211 8979 AH.

Yaesu Rx FRG7, $235; txcvr. FT101B, $545; Hy-Gain antenna, 14 AVQ, $65; no mods., mint cond., manuals and orig. cartons, VK2II, QTHR. Ph. (02) 99 3993.

18AVT WB Trap Vertical Antenna, very good cond., /65; electronic research audio active filter, SL-56, SSB and CW, 12 poles, 60 dB notch filter, 12V DC or 230V AC, $45. VK3ARZ, 3 Tamar Court, Mentone 3184. Ph. (03) 93 9512.

FT101Z with fan, mic., etc., excellent order, $575; Icom IC21A 2m/FM AC/DC, with 10 ch., $150. VK3QM, QTHR. Ph. (03) 560 9215.

Entire Shack: FRG7, only few hours use, $250; bird RF power meter, 3 elements, $310; FT901DM, about 2 hours use, $1100; "Standard" 2m, trx., FM, 10W, with CPU, scan, incl. mount kit, $370; FT707, 100W, $650; AF sig. gen., Trio, $70; digital multimeter, Hioki and Sanwa, both new, $90 and $150; big variety others; gen. enquiries only. VK3ZJB. Ph. (03) 397 6470.

4 el. Yagi, Swan TB4HA, very neat tribander ruggedly built with lock-keys and superb clamps, start marauding 20-15-10m, $200. George VK1GB. Ph. (062) 54 1985 pte. or (062) 47 3296 bus.

Yaesu FT101E, mic., DC/AC fan, cords, etc., orig. carton, $560; MFJ verso tuner, 941B, 300W meter and balun, $140; Rx, Realistic SX190, commercial and amateur bands, $160; vertical ant., G5RV, 10-60, $75. Phil VK4VCP. Ph. (076) 93 6543.

Equipment sale for the late VK3RH includes: Yaesu-Musen carphone, FT227R, plus mic., with memorizer, $165; Yaesu-Musen FT101B, with mic., $450; Two 3-way aerial coaxial terminations, $5 each; "Osker" power meter, 0-20, 0-200W, plus SWR, $20; Heathkit oscilloscope SB610, 3 in. tube, $55; disposals 2 in. oscilloscope, 1945, $25; disposals rx, 600 KC-20 m/cs, $15; BWD oscilloscope, model 509B, 4-5 in. tube, 230-115V, $165; frequency meter, "Leader" LSG II, $35; "Rapar" AC bridge, condenser tester, BR8, $15; "Teck" grid dip oscillator, model TE15, $35; "TCC" transistor checker, model C3/023; disposals field strength meter, $5; two "Sinclair" Z-50 fidelity amplifiers, 40W; digital frequency meter, Dick Smith Electronics; various of computer equipment; car tester set of gauges, $25; CB mobile tx., "Eversonic", 23 channel, $45. Please enquire to address in current Call Book.

IC5510 100W 6m Txcvr., as new, in carton, with 5 el. LPY, 9 dBd gain, both 4 months old; also DX300 digital frequency readout communication rx. What offers? Alan. Ph. (047) 51 4050.

Kenwood TS820S, CW filter, MC50 mic., $775; Kenwood TV506 6m transverter, as new, $160; Kenwood TR9000 2m all mode, as new, $485; Tono 7000 communications computer, exc. cond., $660. Jim VK2AZF. Ph. (067) 25 8728 after 7 p.m.

Collins HF Txcvr. 618S, with rack, controller, plugs and circuit, $225; valves, 2 x 6L6GC, 2 x 5U4GB, 2 x 6BG6GA and 2 x 6336A, $3 each. VK3BFB. Ph. (03) 93 1638.

Kenwood TR7400 2m FM Txcvr., 25W, 800 channels, complete with mobile mounting bracket, hand mic. and operating manual, perfect cond., no mods., $240. Ian VK2BVN, QTHR. Ph. (02) 498 5617.

Telequipment DB CRO 3 in., requires repair, offer; Sanwa transistor tester, $20; DC to DC converter, 550V/250V, $30; VTVM HB, requires calibrating, 10; 2 transformers, 240-500V CT, 500 V 250 mA, 240-400V CT, 400V 150 mA; meter and chassis dies, 3, 2, 1½ 7/8 in., whip antenna, ex tank, VK2SC, QTHR.

Icom IC202 2m SSB/CW Txcvr., handbook, etc., orig. packing, exc. cond., $160; Yaesu FT2FB 2m FM mobile txcvr., $130. VK6HQ, QTHR. Ph. (09) 291 7908.

FOR SALE

New Kenwood TS600, all mode 6m, trans., 0445; new Kenwood TR7800 2m trans., $395; Kenwood TS520 trans. Rx, needs repair, not serious, $300; TR2400 2m hand-held, $275; mobile charger, $35; PS20 power supply, $65; SP100 spkr., $20; rare opportunity, brand new Collins S line, still in cartons, manuals, etc., 32S3A Tx, 75S3C Rx, Rockwell supply, 312B4 console, $3500; Collins S line 32S1 Tx, 75S3B Rx, power supply fan, manuals, etc., mini cond., $1250; Collins S line, late model, round emblem, 32S3 Tx, 75S3C Rx, 312B4 console, manuals, etc., mint cond., $1750; Collins YWM2 transc., round emblem, mint cond., manuals, etc., $750; Collins 30L1 linear amp., 2000W, in mint cond., etc., $900; Icom IC701, with power supply, manual, etc., needs repairs, $495; FT101E transc., in as new cond., all plugs, etc., $575; Drake TR4B transc., AC/DC supplies, manuals, etc., /425; Drake TR4C transc., AC/DC supplies, manuals, etc., mint cond., $450; Drake R4C Rx, in mint cond., full set xtals, manual etc., $375; Tono 7000E trimode RTTY with monitor, in as new cond., all books, etc., $900; Leader LB0310 Hamscope, as new, carton, books, etc., panadaptor, $300; Icom IC211, all mode 2m base, or mobile, as new, carton, manual, etc., $500; Kenwood TR9000 all mode 2m mobile rig, carton and manual, etc., $450; Higan 10/15m 3 el. yagi, still in carton, $200; Tandy TRS80 computer, hardly used, green screen, with loads of programmes, $1000; Kenwood HS5 phones, in cartons, new, $25; Leader RF sig. gen., new, $95. Cliff Coverdale VK2VK, in the bush. Ph. (065) 52 4477 Bus., (065) 59 1508 AH.

Kenwood TS520S, 160-10m, little used, as new cond., $550, ONO. VK3VWS, QTHR. Ph. (03) 580 1183.

2m Linear Amp (solid state), approx. 60W output, FM and SSB, exc. cond., $120. VK3KEG. Ph. (03) 99 5759 AH.

Icom IC22E, 2m FM, 6 mths. old, little used, as new cond., $265. T. Pitman VK3KEG. Ph. (03) 99 5759 AH only.

Tokyo Hy Power Labs Antenna Coupler, model HC500A (500W), 160-10m, exc. cond., $75. B. Bathols VK3UV, QTHR. Ph. (03) 580 6424 AH.

WANTED

Transistorized HF Rig. Alan. Ph. (047) 51 4050.

576 MHz Equipment: Tx, Rx, Txcvr., converter, prefer solid state, but valves considered. Details, incl. state of equipment, price, etc., to Eric Jamieson VK5LP, QTHR. Ph. (08) 389 1204 around 2230Z or 0930Z.

FL2100B Linear Amp. or similar, also dummy load. Eric Vass VK5AEV, 10 Shaftesbury Terrace, Marino, SA 5049. Ph. (08) 296 2340.

HF SSB/CW Txcvr., working or not working, write or phone stating condition, age, cash price, etc., for quick reply; Tx/Rx separates OK also. VK2JO, GPO Box 5076, Sydney, NSW 2001. Ph. (02) 799 7655.

WANTED

Amateur Radio, December 1997, will pay $2.50. VK3AYY. Ph. (03) 725 8770.

TH6DXX or TH3JR Antenna, in reasonable cond.; Kenwood SP520 speaker. Gordon VK3DBU (was VK3NVO), QTHR. Ph. (050) 83 2211, ext. 235.

Traeger Model T-70 HF-AM-SSB Txcvr., with tunable Rx. Ph. (097) 65 3075,or write to RMB 205, Boyup-Brook, WA.

A cassette recording of Tony Hancock's "The Ham Operator", will supply a couple of good blank cassettes or another recording of same artist for your favour. Paul VK6NPW, QTHR.

R390, R390A, R392 Rx, any cond., good quality valve tester, signal generator up to 30 MHz, also portable oscilloscope. VK5QQ, QTHR. Ph. (08) 263 6377.

5BP1 CRT for EA wideband CRO or information on suggested modern replacement tube, length unimportant. Lin Rhodes VK2IB, QTHR.

Valve type 8236 to replace 6DQ5 in early Swan txcvr. VK3QM, QTHR. Ph. (03) 560 9215.

Circuit and/or Handbook of HF sig. gen., type SG-103/URM-25F, will pay good price for copy or original. Gilchrist, PO Box 631, Dee Why 2099, Sydney, or phone 94 7034 after 5 p.m.

Any old radio and electrical books, radio equipment, presto disc cutting head, for Museum of Applied Arts and Sciences, Sydney. G. Campbell VK2ZQC, QTHR. Ph. (02) 81 2143.

2m xtal controlled Tx, freq. 6800 if possible, required for WIA news rebroadcast. QTHR. Box 129, PO Bundaberg, for Bundaberg Amateur Radio Club.

Collins R391 Comm. Rx., modules, parts, tools and/or information on same. VK3BFB, QTHR. Ph. (03) 93 1636.

TRADE HAMADS

New CB Radios, W65, 18 ch. SSB/AM, built-in power, mic., noise blanker, very sensitive, 0.25 uV, 10 dB SSB, $179; 40 ch. AM with scanner, 5 stage noise blanker, $99; disposal sale, FT901D, $895; MLA 2500 2 kW linear, $895; 23 CB, $49; 18 CB, $69; UHF FM320, $259; walkie-talkies, 23 AM 5W, $89; 18 AM 5W, $110, etc; Eddystone UHF 146-500m Hz Rx, 240V, $250; serviceable, $120; 1700 ch. Collins Tx, 240V, $95; different rigs coming in each day, all tested like new before despatched to you. When in Sydney drop into Park Disposals, 32 Park Street, Sydney 2000, near Town Hall railway. Ph. (02) 264 7515. Rigs posted anywhere in Aust., NZ, PNG add $5; 27/28 MHz helical, $8.50; FRG7 $295.

Amidon Cores — Large range of ferromagnetic cores for all receiver and transmitter applications. Send large SASE for data/price list to: RJ & US Imports, Box 157, Mortdale, NSW 2223.

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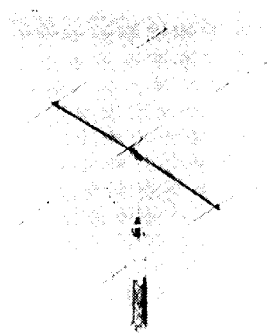
HIDAKA

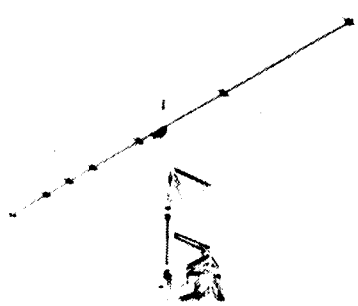
TOP PERFORMANCE ANTENNAS

We stock a range of the renowned HIDAKA antennas for HF, VHF and UHF. These rugged antennas come as easy to assemble kits and baluns are included with beams.

VS33	14. 21. 28 mHz	3el beam	8db	2kw
VS4I/80KR	3.5. 7. 14. 21. 28	Vertical	—	2kw
VS15CL	21	3el	8db	2kw
VS20CL	14	3el	8db	2kw
VS2GH	144	G.P.	3.4db	500w
VS6GH	50	G.P.	3.4db	500w
LB607	50	Log	12.8db	1kw
VS2GL	144	7el	10db	200w
VS73GH	432	5/8WGP	7.8db	200w



LB 607



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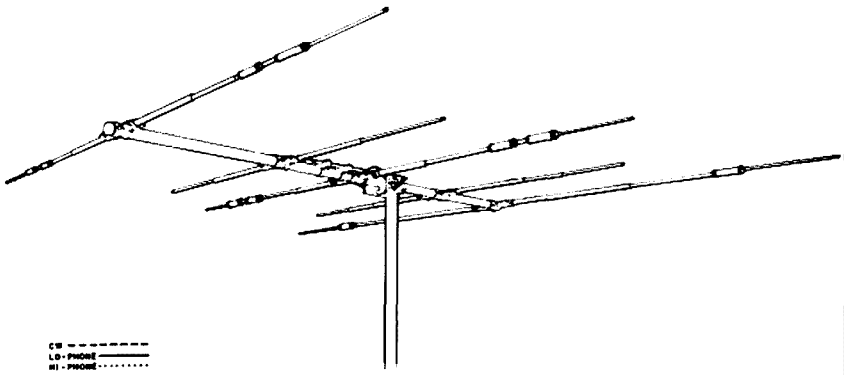

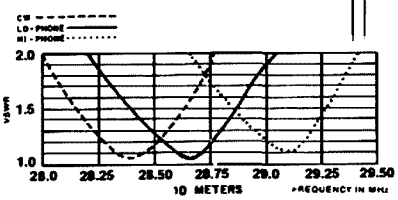

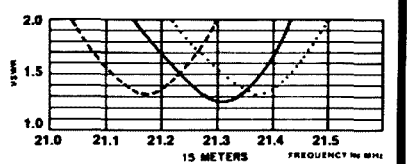

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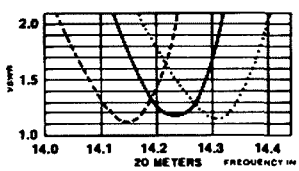

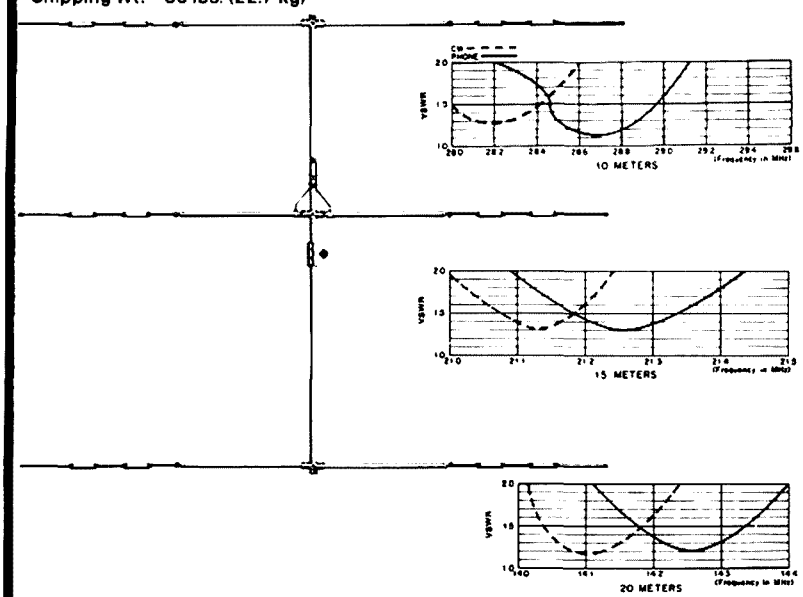

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amateur radio

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VOL. 49, No. 9 SEPTEMBER 1981

FEATURED IN THIS ISSUE:

- ★ A PRACTICAL BFO AND BUFFER TO OPERATE CRYSTAL CONTROLLED CB UNITS ON 10m
- ★ SOLAR CELLS
- ★ A REPORT ON THE ACTIVATION OF BURMA STATIONS XZ5A AND XZ9A
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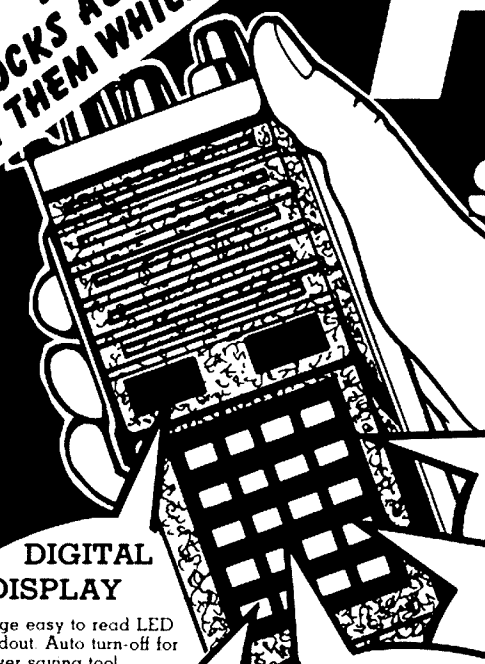

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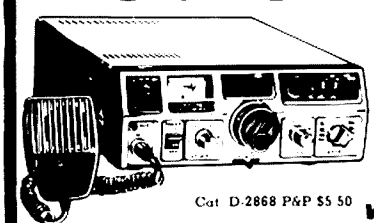

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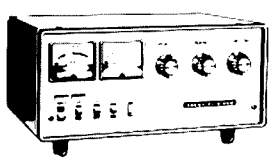

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Material should be sent direct to **P.O. Box 150, Toorak, Vic., 3142, by the 25th of the second month preceding publication. Phone: (03) 528 5962.** Hamads should be sent direct to the same address by the **1st of the month preceding publication.**

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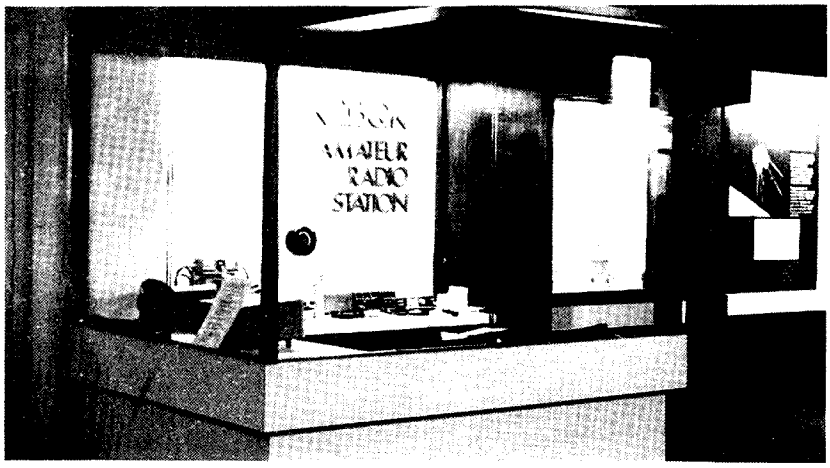

Radio has played a major role in Australia's development. The vastness of our land necessitated early development of long distance communications and radio broadcasting. A number of museums give considerable space to displays relating to these developments — Wireless Hill, Perth, the Melbourne Science Museum, the Telecommunications Museum, Adelaide and the Sydney and Brisbane Science Museums. Amateur Radio has a special place in some of the museum displays. This photograph shows the Amateur Station at the Sydney Science Museum.

(Photo from Chris Long)

QSP —

Letter from Transport Australia

The Editor,
Amateur Radio,
PO Box 150,
Toorak, Victoria 3142.

7th July, 1981.

Dear Sir,

Through the pages of your journal, I would like to thank all the amateurs who provided invaluable assistance to the Australian Coastal Surveillance Centre on the night of the 20th June. For those who have never heard of it, the Australian Coastal Surveillance Centre (formerly the Marine Operations Centre) is the Commonwealth Government's Marine Search and Rescue Authority. We are responsible for the largest marine SAR area in the world — half way to Africa, half way to New Zealand, south to Antarctica and north to the PNG/ Indonesian islands chain. We operate 24 hours per day throughout the year, are staffed by professional mariners and were involved in 1564 SAR incidents last year.

On the night of the 20th June the yacht "Lady Johanna" caught fire whilst in the vicinity of Willis Island, some 450 km east of Cairns. The skipper broadcast a distress call on 14.332 MHz and within a very few minutes our phones were ringing with reports from all over Australia and relayed reports from New Zealand, Canada and the USA. Shortly afterwards the fire was extinguished and the distress call was cancelled, this too was relayed to us instantly.

It was a great effort on the part of amateur radio operators and only the most recent example of the excellent assistance you have provided over a long period of time. Whilst the incident is still fresh in our memories I would like to take the opportunity of suggesting a few ways of improving your co-operation even more.

When a distress call is received from a marine craft either phone the police or make a reverse charge call to us in Canberra (062) 47,5244. Don't hesitate to make it a reverse charge call for during the "Lady Johanna" incident we kept the phone line open for quite a long time and we don't want you worrying about your STD bill!

If there are several of you on the circuit when a distress call is heard, try and decide (briefly) between yourselves as to who will phone us — a minor problem the other night was that though we have five dedicated SAR phones, there were only four of us on duty and the calls were coming thick and fast.

Bear in mind that in a distress situation the boat skipper is under tremendous pressure, is probably frightened (I speak from experience) and may well be in a bit of a panic. A calm voice (yours) at the other end can be very reassuring. Don't badger the skipper; you should listen a lot and not say very much, but do try and obtain the following information:—

NAME POSITION NATURE NUMBER

NAME of the craft, call sign (official and/or amateur)

POSTITION

NATURE of the distress situation

NUMBER of persons on board

then if there is time, a description of the craft, its safety equipment and any other information would be most useful to us. If possible make a tape recording of the communications, in the heat of the moment you might forget exactly what was said and it is very useful to be able to play back.

If you receive a distress call from any source outside Australia's area of responsibility, say from the USA, Asia or Europe, then please phone us. We will discuss the report with you and then immediately pass it on to the appropriate overseas SAR authority.

Once again, our sincere thanks to you all for your most recent effort.

Yours faithfully,

J. P. BARR, Controller,
Australian Coastal Surveillance Centre. ■

"Lady Johanna" — PA2RNM/MM

Mr. and Mrs. Noordermeer and family coming ashore at Cairns from the rescue vessel "Jenny" of Freeport, Indonesia.

WIANEWS

PORTABLE REPEATERS

The conditions relating to the operation of portable WICEN repeaters have now been accepted — see AR March 1981, page 7.

CBRS

During July the Minister for Communications issued a media release on the CB Inquiry which he said should become available for further public comment towards the end of August. He listed the six key recommendations. Amongst these are:—expansion from 18 to 40 channels on 27 MHz, maintenance of 'short distance" concept of the CBRS for communications within Australia (though in some ionospheric conditions it was possible for CB communications to extend overseas — but this, he said, was not intended) and permission for one-hop UHF repeaters (a Committee to be set up to work out conditions).

CABLE TV

In July last year the Australian Broadcasting Tribunal announced an Inquiry into Cable and Subscription TV Services and matters relating thereto. The Institute made a submission inviting the Inquiry to bear in mind the possibility of interference if common frequences were used and urged the Inquiry to recommend that frequencies used by cable TV be those not allocated to the amateur or other services that are likely to operate transmitters distributed throughout residentail areas.

In May 1981 the Tribunal announced that the terms of reference of the Inquiry had been expanded to include a more detailed consideration of radiated subscription TV services and consequently extended the date for receiving further written comment. The Federal Technical Advisory Committee has prepared a further draft submission.

WIANEWS

CALL BOOK 1981/82

This year's Call Book shows promise of being a bumper issue full of reference material — much more than in the 1979 issue. At the time of closing copy all the repeater and similar details were expanded and up-dated. It was disappointing that many clubs (etc.) failed to send in their own details, but even so, the clubs listing is reasonably comprehensive. On the other hand, the Federal Managers and Co-ordinators did a splendid job, as you will see when the Call Book comes out. The call sign listings this year were more up-to-date than in any previous year, thanks to the Department of Communications and the response of individuals. The book should be available from your Division by the time you read this — cover price $3.95, but if you want it posted add postage for the "250 to 500 gram other articles" rate when ordering from your Division or direct from Magpubs. Last year the Call Book was already sold out when it was distributed, so the print run for this issue has been moderately increased. ■

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1930 **local**. 52.12, 52.525, 144.12 MHz, Rptr. Ch. 6650 Oberon, 6750 Gosford, 7000 Sydney, 8525 Sydney. Relays on 160, 80 and 10 metres.

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Broadcasts— 1840, 3600, 7135 kHz — 53.032 AM, 144.2 USB and 2m Ch. 2 (S) repeater: 10.30 local time.
Gen. Mtg. — 2nd Wed., 20.00

QLD.:
President — Mr. D. Laurie VK4DT
Secretary — Mr. A. J. Aarsse VK4QA
Broadcasts— 1.825, 3.580, 7.120, 14.342, 21.175, 28.400, Rpt. Ch. 6700 and 7000 Sundays from 0900Z (Sat. 2300 UTC).
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President — Mr. J. B. Mitchell VK5JM
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Broadcasts— 1820, 3550, 7095, 14175 kHz; 21.195 28.470 and 53.1 MHz, 2m (Ch. 8): 09.00 S A T.
Gen. Mtg. — 4th Tuesday, 19.30.

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President — Mr. B. Hedland Thomas VK6OO
Secretary — Mr. F. Parsonage VK6PF
Broadcasts— 3560, 7075, 14100, 14175 kHz. 28.47, 53.1 MHz. 2 metres Ch. 2 Perth, Ch. 6 Wagin. Time 0130Z.
Gen. Mtg. — 3rd Tuesday.

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VK7 — OSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — OSL Bureau, C/- VK8HA, P.O. Box 1418, Darwin, N.T. 5794.
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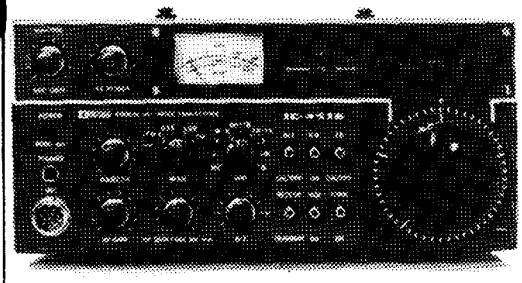

IC-251A: 2M ALL MODE FIXED OR PORTABLE: Frequency: 143.8 MHz-148.2 MHz.

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A Practical VFO and Buffer to operate Crystal Controlled CB Units on 10 m

Norm Hird VK6NKR
80 Verne Street, Gosnells, W.A. 6110

I became a "ham" on the 30th Jan.. 1980, using a Pearce-Simpson Bengal unit with VFO control only. I have been asked many times about the VFO which I built, and promised to publish it in Amateur Radio as soon as I was satisfied with its performance. Now I can satisfy all those who are waiting for the information.

The oscillator is a Hartley type using a FET with only 12 per cent feedback which keeps the drift very low. The tuning circuit is different from most circuits as it is series-padded.

$$C_{total} = \frac{1}{\frac{1}{C1} + \frac{1}{C2 + C3}}$$

Where C1 = series padder.
C2 = variable capacitor.
C3 = fixed shunt capacotor.

Bear in mind you will only require a few pF swing to cover the frequency you wish to use, i.e. 8.400 to 8.650 MHz. The main tuning capacitor used is a 10 to 415 pF small single gang type (Roblan). All capacitors should be polystyrene or NPO; silver mica types can be used as third choice. These all have low temperature coefficients keeping drift small and warm-up time short.

The cap in parallel with the tuning gang must be large and the series cap small so the swing in C is small. When considering the L and C of the oscillator, it is best to make the L large and the C small, as this also affects drift.

After finding what frequency is needed, the L and C can be calculated from the following formulas:—

$$\frac{25330.154}{f^2\ C \text{ or } L} = L \text{ or } C,$$

and with a combination of L and C use this formula:—

$$\frac{159.1545}{\sqrt{LC}} = f\ (MHz)$$

C in pF, L in microhenries (uH)

And to find the number of turns of the inductance, Wheeler's Formula can be used from the ARRL Handbook, as follows:—

$$\sqrt{\frac{(9a) + (10b)}{a^2}} = N\ (turns)$$

where a and b are coil radius and length (in inches).

These are all the formulae needed to calculate the tuning circuit of the oscillator, but do not forget the bandset trimmer cap.

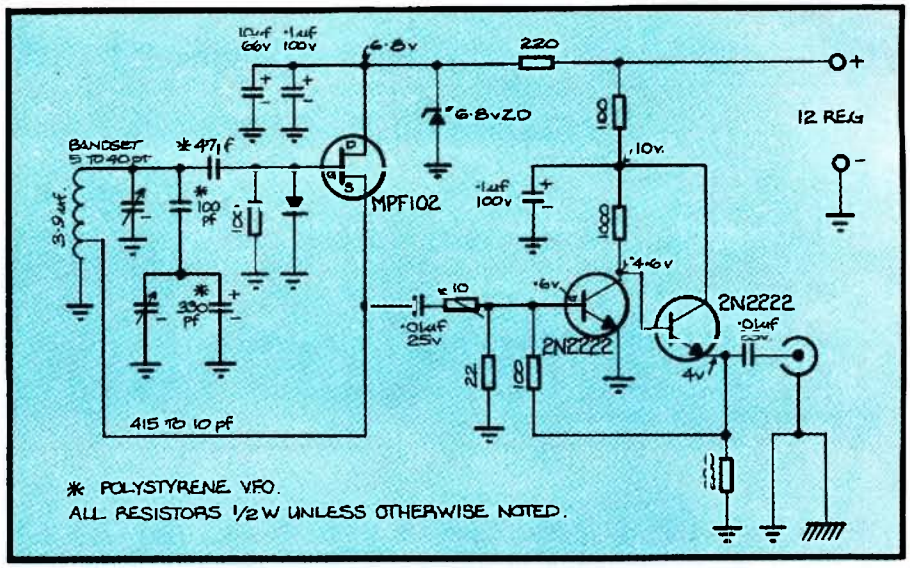


FIGURE 1

The tap of the coil is at 12 per cent from the earth end of the coil. DO NOT slug the coil as this will cause drift, and is the reason for the bandset trimmer. The coupling cap should be as small as possible to reduce detuning effects on the L and C, but not too small, causing the FET to oscillate weakly or not at all. The gate leak resistance must be high enough to have very little loading effect and the diode is to control positive sine wave on the gate. It acts as a clamp keeping the junction from heating up, which will affect the internal capacitance of the FET. The drain is RF grounded, but the DC supply must be regulated and between 4.5 and 6.8 volts. The output is taken from the source, via a coupling capacitor which can be from .01 uF to 560 pF.

As can be seen there are many parts in the oscillator circuit, but care must be taken when building this section of the VFO. Keep all leads short as possible and the mounting of the tuning condenser rigid. More of this later.

The coupling capacitor feeds a building-out resistance which is a trim pot for adjusting drive and load from oscillator to buffer. If loading of the oscillator is heavy the base resistors can be changed to reduce it. In the first buffer circuit built the base divider used 10k and 2.2k, but these have now been increased by ten times. Two things change, the base current is reduced and the input impedance is increased, thereby reducing the load to oscillator. The base voltage of the first transistor is around 0.7 volt and on the collector about 4.6 volts, connected directly to the base of the second transistor. The collector load of the first transistor is 1000 ohms fed from the 12 volts supply via 100 ohms and a 0.1 uF bypass cap. The collector of the second transistor is connected to this point, where there should be around 10 volts (see circuit). The emitter of the second transistor goes to earth via 330 ohms and provides the DC feed to the base of the first transistor as well as the RF output which is via a 0.01 uF cap. The emitter DC is around 4 volts. The RF output voltage, depending on the amount of drive required, can be set by the trim-pot. Both VFO and buffers may use one PCB, but care and time must be taken when working out the layout.

POWER SUPPLY

The VFO/Buffer must have its own power supply and regulator set for 12 volts. The current drain is less than 20 mA, so a small current power transformer will do the job well as long as it can supply 15 volts AC. A full wave bridge rectifier should be used filtered by not less than 1000 uF at 25 volts working. The regulator is a simple circuit, using a 12.7 volt zener diode and a 2N3055 transistor. The regulator circuit must be on a separate PCB.

All earths are at one point, at the coax output socket only for chassis earth. The tuning gang must be insulated from the chassis and its earth returned to the PCB close to the oscillator circuitry, i.e. the earth point of the coil.

Both of the PCBs, tuning gang and power transformer are mounted on a chassis which is attached to a panel which is the

front plate. Holes may be cut in the chassis for the PCB mounting. No extra shielding is required as the cabinet will be sufficient. Mount the tuning gang as close as possible to the VFO section of the PCB and make sure the mounting is rigid. Remember it cannot be too rigid!

All the calculations have been left to you to work out as not everyone has a Pearce-Simpson Bengal, but it must be a crystal-controlled set and not a PLL type.

Now a run-down on how the Pearce-Simpson was put on 10 metres. Remove the 10 kHz spaced crystals (6) and the 20 kHz spaced crystals (2) and then move a RFC to the foil side of the PCB and add a tag strip. Change to DC supply wiring and add a DPDT toggle switch and coax socket, plus three small lengths of coax. Study of the circuit of the unit shows it can now be made to operate on VFO or crystal. Most sets can be modified this way, but possibly some cannot.

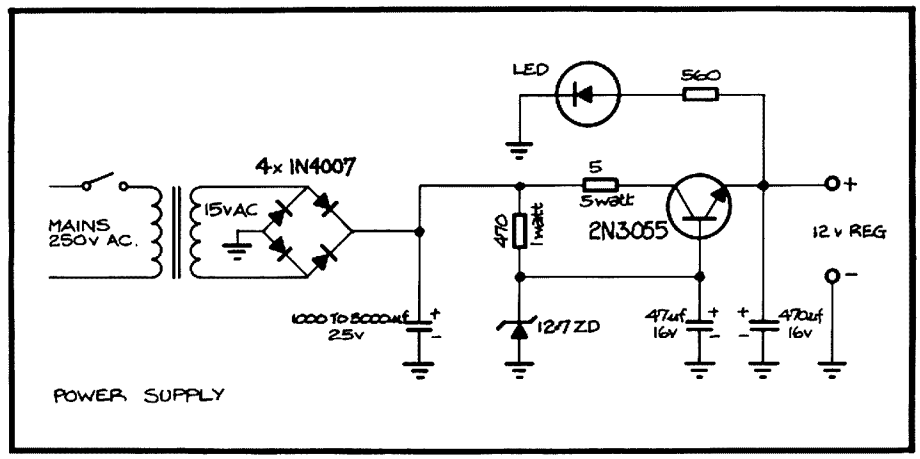


FIGURE 2

CALCULATIONS

It was found that the frequency required is 8.4938 MHz to 8.7438 MHz. The calculations gave 3.9 uH and 90 pF at 8.4938 and 85 pF at 8.7438, a swing of 5 pF required. Calculations show that the values given on the circuit will give rather more than this capacitance swing assuming the bandset to be at about 30 pF. Thus the desired frequency range is adequately covered.

Now for the coil. What are the number of turns needed and l/d? Assume former diameter ¼ inch and winding length ½ inch. Now, with Wheeler's Formula, you should get these figures.

Coil radius a = 0.125 and a^2 = .015625. The length of the winding b = 0.5, so 9a + 10b = 6.125, divided by a^2 = 392, then 392 × 3.9 = 1530. Now find the square root of 1530 = 39.1 turns. 12 per cent is 4.7 turns, which is the tap on the coil. In practice 39 turns in ½ inch tapped at 4 turns is close enough, giving less than 3.9 uH, but remember the band set trimmer condenser will correct the oscillator's frequency. The most important thing is patience. Don't be in a hurry or try to short cut, it does not work and brings disappointment. Good luck with your project! ■

Visiting a Ham . . .

John VK2ATT
In "The Lyrebird", Issue No. 14, Autumn 1981

Do not write or ring first; this gives him time to think up a refusal — just call round. Knock up a spot of CW on the bell push; it may wake the baby but why should you worry? (You cannot be expected to know that the brat's only just gone to sleep.) When he opens the door say "73", just like that. It is possible to get an idea at this stage how good a ham he is — he may say "Good evening" and at one strike give himself away for a lid. Should he be a dyed-in-the-wool ham with all the gen, he will immediately say "88". Then introduce yourself and step in, asking him the way to the shack. Precede him all the way if you can guess where he keeps his gear; this will give you a large measure of moral superiority and is well worth the risk of wandering into the wrong room. Once in the operating room (sorry — shack) you should immediately sit yourself in the operating chair, tilting it on its back legs and surveying the gear the while. If you can get a mildly surprised look on your face then it is permissible to say "Nice little place you have here", if not say "Hm".

At this stage a strong line is to begin looking for the Tx main switch, remarking how inaccessible it is. Then switch on. Good manners are shown by asking the owner before actually calling, but do not be put off by his mumbles about "TVI" and "After 8.20"; tell him he must be firm with the neighbours — then get on the air and call CQ. Phone of course; it is only beginners who have to use the key. Let him know that you can send at 30s and that you have not bothered to learn receiving as you do not intend to use CW anyway when you get your ticket. (Here comes a good opportunity to tell him what call you are going to ask for from the DOC.) If by this time he has managed to fight his way to the transmitter and switched it off, turn your attention to his auxiliary gear. Should he be tuning his receiver, it does not require a great deal of elbow work to get at it yourself. All the better if it has carefully adjusted flywheel tuning. Give the dial a good hearty spin; the stop should be made solid enough to stand the bump. You might mention here the various disadvantages of his particular receiver. If he has a frequency meter, then give that a look over. In case the xtal does not oscillate, give the case a bang on the bench; that is also a good test of the frequency stability. The ham you have favoured with your visit will also be immediately grateful when you tell him his receiver is out of alignment — take a look inside and ask him for the trimming tools. You know exactly how easy it is to trim the thing on a signal. Not for one moment can you hope for the trimming tools to be forthcoming, hams are awkward people, but do not be dismayed, a small screwdriver or a penknife blade will do the trick. When the instrument is working to your satisfaction, the time should be about 11.30 p.m. This is the moment to aks him for his QSL card and exchange it with one of your own. The more livid your own card is, so much the better. What may appear to be a wince on his face is only chagrin at the poor showing his own card is making. It is as well to mention that you do not get your cards from the printer mentioned on his cards — their printing is so lousy. Your own card can be one that you have already filled up to send to another "G" — don't waste a new card on him. Then, do not overstay your welcome. Make your way to the front door and stand just outside for half an hour or so. It always adds to the pleasurable feeling you leave behind if you can start an argument — in a loud voice of course. Take no notice of windows opening and closing in the neighbouring houses. They are not your neighbours anyway. As you proceed down the garden path shout "73 OM" and "88 to the XYL" together with a promise to come again soon. You can be sure he will look forward to your next visit. ■

Solar Cells

By Robert Ravensberg ZS1FF
(From Radio ZS, November 1980)

FABRICATION

Most solar cells available today are essentially P - N diodes whose photovoltaic characteristics have been optimized. A solar cell has a very simple structure as shown in Fig. 1.

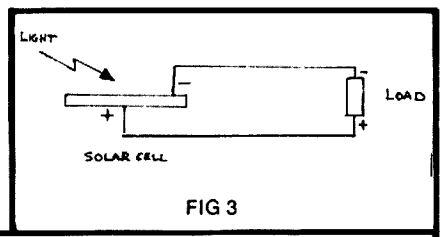


FIG 3

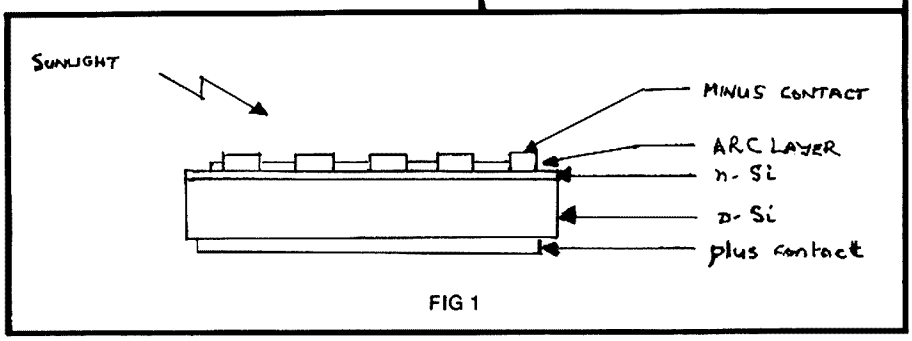
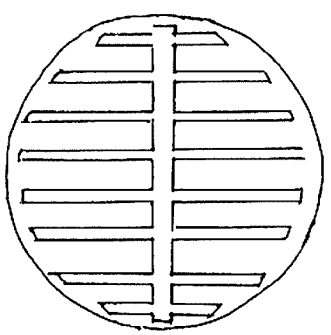


FIG 1

Each cell is comprised of a very thin slice (0.3 mm) of positive doped silicon (p—Si) underneath a layer of negative doped silicon (n—Si). The square blocks (Fig. 1) are cross sections of the negative metal contact "fingers". The number of fingers and their thickness is a compromise between the width of the metal (obstruction of light) and the series resistance. In order to reduce the losses due to reflections, an anti-reflective coating ("ARC") is sprayed between the "fingers". The light therefore falls directly on to the cell. The positive reverse side of each cell is completely covered by a layer of metal which does not allow light to pass through it.



TOP VIEW OF SOLAR CELL
FIG 2

OPERATION

The principle of operation can be briefly explained as follows: The light causes electrons to be released when it comes into contact with the silicon atoms in a cell. These "free" electrons in the p—Si are attracted to the n—Si and thus the "finger" contacts. By placing a load across the + and — terminals a path for the electrons is established (see Fig. 3).

EFFICIENCY

In full sunlight (approximately 100W per square metre) a solar cell typically delivers 25 mA per square centimetre at a voltage of 0.5V. This is 125W per square metre. The efficiency is therefore 12.5 per cent. The theoretical maximum is around 20 per cent. Higher voltages are obtained by placing a number of the cells in series. Normally one can get standard solar cell panels of 3V, 6V, 12V, 24V . . . with currents of 150 mA, 300 mA, 600 mA and 1.2A, etc.

Most manufacturers of solar panels give the ratings in "peak" power. This is the maximum power obtainable under optimum conditions. The average power capacity, however, is determined by the actual location of the solar cell.

The efficiency of solar cells is temperature dependent, with more power being generated at lower temperatures. This offsets some of the losses experienced during the shorter solar days in winter. The electrical data for a typical solar panel is shown in Table 1 (courtesy of AEG-Telefunken type PQ 5/40/0 solar generator).

OPERATING COSTS

For solar panels of 20W peak power or more the average cost at the moment In South Africa is between R20 and R30 per peak watt. (R1.00 equals $1.06 approx.) Prices vary considerably between the different manufacturers.

If the average solar radiation Intensity for South Africa is 2000 kWh/m² per annum, and assuming a typical efficiency of 12 per cent only 240 kWh/m² is available per annum. From this an operating cost of 50c per kWh is obtained, which is about 8-12 times greater than the mains generating cost at present. The solar panel lifespan was taken as 20 years and 3 of Motorola type MSP 43A 40 40W solar panels at R800 each were assumed. No account was taken of the fact that a storage battery would probably be required.

The cost/kWh could be considerably reduced by keeping the cells orientated in the correct position. This, however, would involve other costs, e.g. sun tracking equipment costs.

An interesting fact is that the present generation of solar cells apparently consume more energy during the manufacturing process than they can produce in their entire lifespan ("Negative energy conservation"). Ideally a solar cell "factory" should derive all its power from solar cells.

STORAGE DEVICES

A battery of some type is almost always used. The capacity must be large enough to carry the system through extended periods of poor weather. Battery capacity is relatively independent of array size.

High capacity lead acid automotive batteries should be avoided, since they are designed to provide large amounts of current for short periods of time. High leakage currents occur in this type of design on account of their low internal impedance. Gelled electrolyte or lead-calcium batteries are a better choice. Nickel cadmiums are not recommended on account of their temperature characteristics.

Care must be taken to ensure that the battery is not damaged by excess charge. A simple voltage regulator was described in Ham Radio Magazine, December, 1978 (courtesy Solar Power Corp.). See Fig. 4.

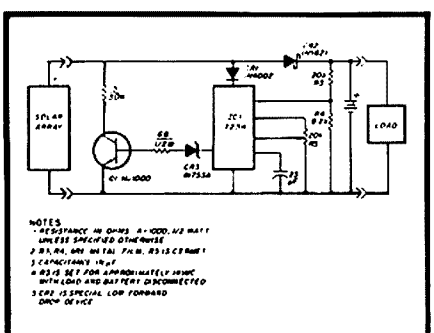


FIG 4

INSTALLATION

Proper orientation of a solar panel is required to provide maximum power output throughout the year. Peak output occurs when the sun's rays are at normal incidence to the plane of the solar panel/array. To obtain maximum output, the array is orientated true North and inclined from the horizontal to an angle approximately equal to the latitude at which the solar panel is located.

In principle a solar panel does not require maintenance. However, air pollution could be a problem in some installations. Physical shocks to the panel should be avoided.

ELECTRICAL DATA

Characteristic values (AM1 - 100 mW/cm²)

	Operating temp. 0°C	25°C	60°C
Open-circuit voltage (V)	23.9	21.7	18.6
Shirt circuit current (mA)	582	591	603
Current at maximum power (mA)	534	539	547
Max. Power (W)	10.4	9.4	7.9

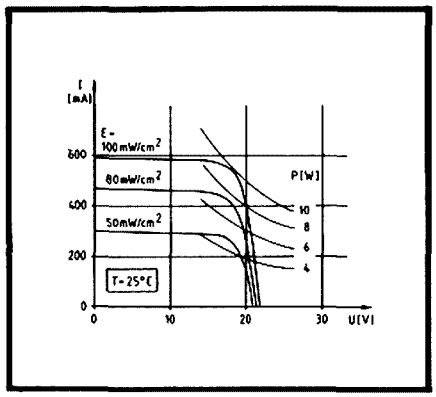
Voltage, current and power data as a function of temperature:

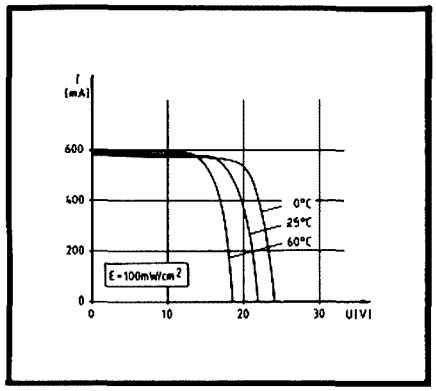
Voltage —
increases below
decreases by 0.41%/°C above 25°C

Current —
increases above
decreases by 0.06%/°C below 25°C

Power —
increases below
decreases by 0.44%/°C above 25°C

CURRENT/VOLTAGE CHARACTERISTICS





FUTURE DEVELOPMENTS

Since the advent of the first solar cells produced in 1954 by Bell Laboratories, there has been considerable progress in the development of more efficient and cost-effective cells. Approximately 10,000m² of solar cells were produced in 1978, which, when operating at a conversion efficiency of 10 per cent could produce about one million peak watts from solar energy. The greatest effort in research and development has been placed on silicon, largely because of its availability, being the second most plentiful element in the earth's crust. According to an article in Design Engineering (June 1980) Westinghouse has developed a new process in which silicon is produced automatically in the form of a continuous ribbon or web of material (which they call a "silicon dendritic web"). Thanks to this new process the era of low-cost silicon cell solar arrays is in sight. Although the development is still in its early stages, they expect to go a long way towards meeting the United States Department of Energy's (DOE) goal of 50 US c per peak watt by 1986.

ACKNOWLEDGEMENTS

1. Electron, February 1980, p. 81-83.
2. Ham Radio, December 1978, p. 28-33.
3. AEG-Telefunken Solar Generator data sheet.
4. Design Enginering, June 1980. ■

Post World War II Army Radio Set

I. J. Connell VK8CO
Box 40441, Casuarina, NT 5792

The A510 wireless set is a lightweight, manpack transmitter- receiver for operation principally by long range infantry patrols. It has facilities for either voice or CW.

The specifications are listed below:—

Antennae: 8 ft. rod, adjustable dipole, 135 ft. end fed with counterpoise.

Power supply: Consisted of two dry batteries, HT — 90/7½ volts, LT — 1½ volts.

Battery life: 14 hrs. at a 1 : 5 send/receive ratio.

Power output: Voice 0.15 watts, CW 0.5 watts.

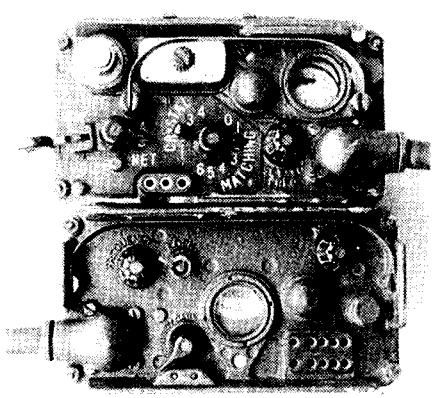
Weight: 22 lb., including batteries.

Frequency range: Crystal locked 2-10 MHz.

The receiver is a conventional 5 valve reflexed superheterodyne with one stage of tuned RF amplification. There is sufficient power output to drive two pairs of headsets in parallel.

Netting is obtained independently of the distant station simply by tuning the receiver to zero beat against the transmit crystal.

The transmitter is a four valve crystal oscillator grid modulated power amplifier transmitter.



The Rx and Tx were carried on the front of the web belt and tied around the chest. It was comfortable once one became used to it, but the "getting used to" stage always tended to rub a lot of skin off the hips.

One compensation in carrying this radio was the tunable Rx. Many a pleasant hour was spent lying in the bush listening to the ABC or Radio Australia. It was notorious for drifting off frequency and had to be checked often.

Today the batteries are impossible to obtain even from Eveready USA, but it should be possible to build an AC supply or even an inverter into the base of the transmitter to enable it to run from 12 volts.

I remember this radio with a certain amount of affection as it was these experiences that led me to Amateur Radio. The set proved reliable and by careful antenna design, respectable distances could be worked. One obtained a great feeling of achievement when contact was made, be it ever so weak.

The station comes in a transmit box with the following CES:—

2 pouches, carrying; 2 aerials, flexible, 8 ft.; 1 inductor tuning, 8 ft. flexible aerial; 1 telephone handset; 1 case, carrying, flexible aerial; 1 aerial, end fed, adjustable, 135 ft.; 1 counterpoise; 2 cords, aerial, weighted; 1 feeder, aerial, 70 ohm; 2 aerials, lightweight, 68 ft. (dipole); 1 microphone and receiver headgear assy.; 1 key, CW; 1 satchel, signals; 1 chart instruction; 1 user handbook; spare lamps, crystals. ■

How the Other Half lives — Two Metres in Asiatic Russia

Very little information is published on the activities of amateurs in Asiatic Russia — UA0 land. The following information appeared in the Russian journal "Radio" late last year and should be of interest to two metre operators in Region 3.

"With the Ultrashortwavers of the 0 Call Area", by S. Bubennikov, Master of Sport of the USSR. (Translator's note: S. Bubennikov UK3DDB writes the VHF/UHF/SHF (VHF/UHF/SHF is ultrashortwave in Soviet amateur parlance) column in "CQ-U".) In recent years Soviet amateurs have been successfully bringing into use the ultrashortwave bands, and there are practically no blank spots left in the European part of the country. Centres of activity are springing up in Siberia and the Far East as well — in particular on Sakhalin and on the Eastern seaboard. The development of ultrashortwave has proven to be no simple matter, due to the fact that there are not all that many amateur stations in the area and due to the very significant distances between stations. The first ultrashortwave contacts in the Far East took place within cities. Only in 1977 did a group of hams from Sakhalin — G. Korenchenko UA0FAM, A. Leont'yev UW0FZ, N. Shchelokov UA0FBE, A. Lubenets UW0FM — try.

DX QSOs. G. Korenchenko led the way, contacting JA8UA. This inspired others, and soon JA8 became a common prefix in Sakhalin hams' logs. These were regular tropospheric QSOs. The Es-propagation season brought new success to the Sakhalin hams, who succeeded in working most of the call areas of Japan. And this was not easy, as many Japanese ultrashortwavers do not know telegraphy and have a very poor command of the English language. The next big step was the establishment of a beacon, UK0FAI, operating around the clock and assisting in the tuning of equipment and in determining propagation conditions. The beacon helped in setting up DX tropo contacts with Japanese stations. But in the course of two years of intensive operation ultrashortwave enthusiasts only achieved a distance of 450 km. (This apparently refers to monitoring of the beacon. Translator.) Was this because of mountainous terrain? But why were the signals from the beacon received two S-units stronger in Japan than by anyone from among the local ultrashortwavers? Photographs of the antennas of Japanese stations provided the answer. They had vertical radiators in contrast to our horizontal ones, and the UK0FAI beacon antenna had vertical polarization. The conclusion was to change the position of the antenna during tropo propagation. But why was everything normal during Es-propagation? The reason is that during Es-propagation antenna polarization is not so significant since the polarization of a radiowave can change, for example from vertical to horizontal.

The ultrashortwavers from the Eastern coastal area had a harder time making QSOs with Japanese stations, which is natural since there are about 700 km between Vladivostok and the nearest stations in Japan. The Far East coastal hams are planning to conduct DX tropo QSOs with the cities of Ussuriysk and Arsen'yev.

Many have already had Es-QSOs with JA. A. Serba RA0LAN, the brothers V. Shchelkunov and B. Shchelkunov RA0LFK and RA0LFI, A. Zorin UA0NL and A. Grigor'yev RA0LCM have worked all Japanese call areas. When I was in Vladivostok, I met A. Prokolov UA0CCO, Chairman of the Radio Sport Federation of Khabarovsk Kray. He related that the first steps toward the opening up of ultrashortwave have been taken in Khabarovsk, that UA0CAA, UA0CBO, UA0CAF and RA0CCM are communicating within the city, and that attempts are being made to establish DX contacts between Khabarovsk and Birobidzhan. In general, the plans of the Far Easterners are vast, and include establishment of meteor contacts with Siberia, opening up 430 MHz and establishing a network of ultrashortwave stations all over the Far East. Plans are to get work going in Kholmsk, Petropavlovsk-Kamchatskiy, Magadan, Okha, Komsomol'sk-na-Amure, Sovekskaya Gavan', Vanino, Khabarovsk, Birobidzhan, Blagoveshchensk, Ussuriysk, and Artem. In a number of cities ultrashortwavers are already preparing to go on the air.

CHRONICLE

More than two years ago the beacon UK0FAI in the city of Yuzhno-Sakhal went on the air. It transmits on 144.090 MHz, giving its call sign and then 15 seconds of carrier frequency. Five watts of power and a non-directional, vertiacIly-polarized antenna are used . . . Recently another beacon appeared in Primorskiy-Kray — UK0LAS, operating from the city of Arsen'yev on 144.900 MHz and also transmitting its call sign and a 15 second carrier. Its power is 4 watts and its antenna is non-directional with horizontal polarization

Submitted to AR by D. H. Rankin
9V1RH/VK3QV
Secretary IARU Region 3 Association

The following article appeared in the USSR publication "Radio", No. 10 of 1980. It gives a very interesting insight into how the major USSR contest stations are set up. Dex Anderson K3KWJ provided the summary translation.

D. H. Rankin 9VIRH/VK3QV

"Two Years on Expedition", by V. Uzun UB5MCI, Master of Sport of the USSR. In major international contests the battle for first place is often waged between stations with special call signs that have gone out on expedition for the period of the contest. The present article describes two expeditions, organized by the Voroshilovgrad Radio Sport Federation in 1978 and 1979 for participation in the CQ WW DX Contests, in the category collective station with one transmitter. Both times the expedition went to the settlement of Kodzhori, near Tbilisi (Georgian SSR), situated at an altitude of about 1500 metres above sea level. In 1978, using call sign RF6F, the collective took second place in the world on phone (4900 QSOs, 7.4 million points) and first place on CW (4260 QSOs, 5.9 million points). The 1979 results are not yet confirmed, but the operators of R6F (the 1979 call sign) did significantly better with 9,000,000 points on SSB and 8,000,000 on CW, so high places can be counted on. How were these results achieved? First of all, it should be noted that plans for carrying out radio expeditions had been brewing for many years and that preparations began a year before the date of the contest concerned. This was not an undertaking of some isolated group of operators, but a planned activity of the oblast' RSF, supported by the DOSAAF oblast' committee, the Central Committee of the Ukrainian DOSAAF, and the Radio Sport Federation of the USSR. A wide range of matters had to be decided upon: Selection of a site, the make-up of the team, permission to use a special call sign, preparation of equipment and antennas, financial arrangements and vehicles, and training of the operators.

Why was Georgia picked? Simply because it is the nearest part of Asia to Europe, and according to the contest rules a contact from Asia to other continents counts 3 points; the large quantity of stations in Europe and the triple count of points for working them was one of the decisive factors in the success of the operation. The choice of the specific location was occasioned by its excellent topographic situation and the availability of commercial electricity and convenient

buildings and antenna sites. The team In both cases was composed of the best operators of the oblast', chosen on the basis of the sport experience, the stability of their scores, and their active volunteer work. The backbone of the collective consisted of UY5LK, UB5MCD, UB5MDC, UB5MNM, UB5MOA, and others — 12 to 17 persons in all. All were masters of sport of the USSR. The organizer and chief of the expedition from beginning to end was the chief of the Voroshilovgrad DOSAAF Radio Technical School, I. Kupershmidt UB5EC, meritorious trainer of the Ukrainian SSR. The Radio Sport Federation of the Georgian SSR agreed to the expedition and provided assistance of any kind; the most active of the Georgian shortwavers was R. Maniya UF6HV.

The training plan for the operators included participation, up to the limits of their ability, in all major contests throughout the year; under the guidance of the most experienced operators, the trainees developed or strengthened on-the-air operating speed.

To provide back-up, the expedition carried along a dual set of equipment: Several transceivers, two R1250M2 receivers with the transceive accessory, several output and other auxiliary pieces of equipment, keys, compressors, etc. Only vacuum-tube equipment was included on account of its superior reliability compared to transistorized. Prior to leaving on the expedition about 50,000 contacts were made using this equipment. The schematics of the R-250 receivers and electromechanical filters were installed in the IF circuit. A preselector with a Q-multiplier was used at the input. The transmitted signal was compressed.

The greatest amount of attention was devoted to antennas. There were two separate antennas for each high-frequency band and three for each low-frequency band (for 160m, only a dlpole). In all there were 13 antennas, making use of 10 masts including one disassembleable one 30 metres in height. Each of the high-frequency antennas was a 3- to 6-element beam with a remote beam-heading control. Of the low-frequency antennas, the following proved to be the most effective:—

A 3.5 MHz vertical, a 3.5 MHz pyramid, and a 7 MHz beam consisting of 3 verticals. The last of these antennas proved amazingly effective when the distance between stations exceeded that of one hop. Using this antenna, 1100 QSOs were made in the 1978 contest. A similar atenna can be used on 3.5 and 1.8 MHz. To shorten somewhat the dimensions of the verticals and the systems formed from them, approximately a quarter-wave portion should be made from the loop vibrators, leaving a large distance between the sides of the loop. All the antennas were prepared and tuned before departure, so that only assembly and checkout were necessary on site.

The radio expedition was housed in a building of a pioneer camp. Aside from equipment and antenna measuring equipment, instruments, radio parts, wire and cable, stoves for preparing food and for heating and a supply of food, were brought to the camp. All of this, weighing several tons, was brought to Kodzhori in two trucks. The equipment and the sportsmen arrived in Kodzhori a week before the beginning of the contests.

Regarding organizational aspects of the operation, first of all safety precautions were observed in the strictest fashion. All equipment and all of the operators were divided into two groups: Basic and multiplier-hunting. The groups were placed at opposite ends of the building about 40 metres apart and used a field telephone to communicate. The basic groups tried to make as many contacts as possible. Operators spelled each other at two-hour intervals, a procedure that fully justified itself and enabled them to make up to 180 QSOs an hour. How can such a rate be attained? First of all by keeping QSOs as short as possible, by being able to pick out a station quickly from the mass of stations calling, by hearing and remembering its call sign from the beginning to the end of the QSO, and also by making log entries right during the QSO. Log entries should be kept at a minimum and should consist of three columns: Time (only the minutes and an entry only at the beginning of each minutes), call sign of the station worked, and the control number received (which is written down only if It differs from 599 or if it is transmitted by a station in a territory divided into several zones. You can't let up during operation and permit pauses. It's necessary to be able to hear and remember several call signs at once.

The choice of bands was based on propagation predictions made beforehand, with corrections being made in the course of operation. Band-changing took only a few seconds at the basic position.

The multiplier-hunting position had had separate equipment and antennas for all bands needed at the particular time, so there was no need for band-switching. There was a separate operator at each position. The excellent organization of the multiplier-hunting position to a great extent accounted for the successful results of the expedition. Special attention was directed toward the search for multipliers on the lower-frequency bands. Thus, on the 3.5 MHz band it was possible to accumulate up to 23 zones and 65 countries. This was made possible by a knowledge of propagation theory that permitted calculation, within ± 15 minutes, of the optimal time for contact with a given territory. Thanks to this, contact on this difficult band was as a rule established on the first call. In addition, use was made of methods such as split-frequency operation on 160, 80 and 40 metres and QSYIng from the higher-frequency to the lower-frequency bands by agreement with the other station (for multiplier credit).

Co-ordination between the two positions was performed by a special secretary-dispatcher. A running multiplier count was maintained at the basic position by the secretary-dispatcher and at the multiplier position by the operators on duty. To give a general idea of how well the operation was going, totals were tallied every hour. There were two logs for each band. Repeat contacts were crossed out when doing the totals.

In coming to a realistic conclusion about the results achieved, it should be noted that, in the first place, they had special permission to use the additional frequency 3795 kHz and, in the second place, they had permission to use increased transmitter power on all bands except 160 metres. It should also be borne in mind that all of the operators had many years of experience in sport competition on the air and had earlier been victors or prize-winners many times in various competitions.

Moral qualities and willpower were emphasized in the training. Just how important this aspect was is shown by something that occurred in 1979. At 2100 MSK, before the start of the contest, a wind blew up unexpectedly with hurricane force, cutting wires and plunging the camp into darkness. Around midnight the wind reached such force that it tore off roofing and blew glass out of windows. There followed a devastating gust of wind that turned the whole antenna installation into scrap metal. And at that point the contest began. That night a party-komsomol meeting of the team was held and a decision taken: Immediately start repairing the antennas so as to be able to start making contacts at dawn. The work took place by flashlight. The icy wind made skin literally stick to metal. At sunrise they began to repair the electrical lines. By 10.00 the basic antennas were restored and the electrical power turned back on. Without resting after the sleepless night, the team joined in the contest, which had been going on for seven hours. Using all their skill and willpower, the team conducted 5648 QSOs in the remaining 41 hours, received a multiplier of 548, and "earned" about 9 million points.

Building on the rich experience gained in these two contests, our sportsmen now want to try their hand in the multi-transmitter category.

A closing word: For unexplainable reasons, teams such as the above cannot earn the fully justified title of Master of Sport, International Class.

At the present time, an instruction has been worked out on the issuance of special call signs and radio expeditions. Those interested should consult the instruction in good time at the Radio Sport Federation of the USSR. Naturally, such a privilege is accorded only to the most worthy and promising sportsmen and teams, those having many years of successful experience on the air. ■

Foxhunts at 1981 Melbourne Convention

Writer: Ian Bryce VK3BRY.
Photos: Graeme Scott VK3ZR.

The most competitive and active events at the convention were the Hidden Transmitter Hunts of various kinds. I suspect Ewen VK3BMV and myselt Ian VK3BRY lost more friends than we gained though, in encouraging competitors to swim the Yarra, run four kilometres in 36 degree heat, drive over rough dusty roads in outback Yarrambat, and fall into the Latrobe moat!

Two sessions of conventional direction-finding hunts were held, closely contested by four of the usual monthly foxhunt teams. Tracking down the fox proved fairly straightforward in the daylight, with only several minutes separating the hounds.

We first hid the fox in Banksia Park on the east bank of the Yarra (naturally the "far" bank). Three teams arrived on the west bank after a run through Warringal Park, only to find to their anger that they were so near and yet so far. A "volunteer" from each team was forced at sniffer point to strip down to his jocks, fight through the blackberries, and swim across the Yarra.

The winner, Dick, of the VK3YJK team, was only a minute ahead of Peter from the VK3ATM team and Geoff VK3YRE. Four minutes later Paul V3YRS arrived on the correct side nice and dry.

Meanwhile the remainder of the VK3ATM team resumed the hunt by car, in case their swimmer was unsuccessful, or drowned. In the takeoff a door slammed on the antenna cable, and cut into it.

Now this would not normally be a serious thing. But Daryl's borrowed Austin 1800 generates positive earth, whilst their two-metre converter requires negative earth. The converter case, co-ax and antenna had all been carefully insulated for the car's earth. And the converter naturally had a fuse only in its positive lead. Get the picture?

Dick of the VK3YJK team braved blackberries and the Yarra to get to the fox.

Smoke poured from the burning power lead. Daryl grabbed the sidecutters kept handy for such emegencies, and was able to remove the power.

Its power leads beyond repair, the converter had to be retired. A spare IC202 was brought into service, and the antenna cable was spliced.

To let the hounds dry out, we next walked along an abandoned railway line in Macleod, and lowered the transmitter into a hole under a rusty sheet of iron. All teams arrived together and milled around in confusion until Daryl of the VK3ATM team peeped under the iron, then walked away before yelling the team's callsign. However, the others knew where he had been and the secret was out.

We held a "talk-in" foxhunt on the Saturday afternoon, a type we learned at the 1977 Convention in Canberra. Since only a transceiver on the 2m repeater is required, there were as many as 8 hounds, many of whom were not foxhunters. No direction-finding was allowed, only asking questions such as "Are you north of Grimshaw Street?" or "Can you see a cricket match?" to which we answered yes or no. Since we were evacuating 807's on an almost inaccessible easement, those working from a Melway were suitably confused. Geoff VK3YRE sprinted to victory with Peter of the VK3ATM team hot on his heels, then a 13 minute gap and a thrilling struggle for placings.

Sunday morning's conventional foxhunts caused unexpected visitations to a rocky knoll beside Whittlesea tip. VK3ATM won narrowly from VK3YRS. Geoff VK3YRE arrived exhausted on foot from Lalor. Since his team and car had still not arrived when the next hunt started, he hitched a ride with VK3ATM, who again won narrowly.

The afternoon's Pedestrian Foxhunts proved very popular, with many regular team members and a few newcomers. Honed to top performance by preceding hunts, the starts resembled 100 metre sprints. We had to resort to skulduggery at the finish to delay discovery until most had arrived.

We had planned to suspend our new miniature transmitter beneath the steel grill of an outlet of the moat, but alas, Ewen found the water had risen since our plans were laid. The pipe we had tippy-toed along was now submerged! We had to settle for a large plantation of tall reeds, which (as the hounds discovered unexpectedly) was growing in a metre of water, with a solid-looking tangle floating on top.

The cut antenna cable is repaired by Peter and Carlo. The quad antenna was later crunched into little pieces by a low branch.

For the second hunt, the eager hounds stampeded down the east and south sides of the moat. This caused much alarm among the artists of the Australian Sculpture Triennial, whose macabre creations littered the lawns and banks. After a tight-rope walk across a dam wall, the hounds who think in three dimensions realised the fox was on an elevated walkway above them. Daryl VK3YOU followed by Roger VK3YCL were first to find the way there.

For the third hunt, I found that the transmitter slipped neatly behind a layer of ivy clinging to a brick wall. To test the powers of suggestion, I awaited the hounds' arrival on an overlooking balcony. I was soon surrounded by panting hounds with whining sniffers running up and down the stairs! Roger VK3YCL followed by Peter VK3YPV (now VK3KAI) undertook a more methodical search and found it first.

The Direction-finding and Talk-in foxhunts were won overall by VK3ATM, followed equally by VK3YJK and VK3YRE. In the Pedestrian hunts VK3YCL excelled, with VK3YPV and VK3YOU coming equal second. ■

QSP

CLUB NET

The Redcliffe Radio Club Net will be held on 3.612 at 0930 GMT every Sunday. The first 30 minutes will be devoted to Club business and general discussion and afterwards the members will be available for contacts toward the Redcliffe City Award. An announcement will be made if Redcliffe Club members find it necessary to QSY to another frequency. ■

'AR SPECIAL

A Report on the Activation of Burma Stations XZ5A, XZ9A

This report has been written from information supplied by Jin Fukuta JA8BMK, and was sent to Ken McLachlan VK3AH at his request.

Although a little disjointed in parts, the report was initially written in Japanese-style English, but we have retained this style partly to give the operator's point of view as he reports it.

It would appear that military supervision was evident at all times, and finally the "expedition" ended up with the military operators taking over.

In any event, the operation was factual, and as a result may help to introduce amateur radio activities to Burma after a long period of silence.

Our thanks to Ken VK3AH for passing on this information.

(VK3UV — Ed.)

"Burma" sounds so far away to me. Of course I know where it is on a map. In spite of its situation in the same Asia, it reminds me of a remote country.

I had realized the consequence of my expedition trying to break 16 years silence of radio activity. But little did I dream that my activity should come true until the very moment.

It was April 22nd when I left Asahikawa, where surrounded by mountains still covered with snow. Arriving Tokyo, I found the early summer had already come. Then a JAL jet plane at 1600 JST from Narita brought me to **KAW THOO LEI**[1] (a state of Burma) in Burma after 36 hours. I arrived in a tiny town, which is situated 100 km from Moulmein, the second biggest city of Burma. It exists on so called "the visionary Asia Highway". There is no motor way at the moment, but only **Karen people-** and Indian merchants travel this road taking three days and nights on foot to reach Moulmein. The border between KAW THOO LEI and Thailand is a small river one hundred metres wide. As it is in a dry season, there is little water, while in a rainy season the bridges are all carried away into the muddy river. I reached here with the help of Chinese and Indian merchants, the Thai and the Japanese who have remained in this area since the end of World War 2.

Even the correspondents of the army as well as the Karen living there had never come across the word "HAM". Under such circumstances it was a week later when we were able to get rid of their suspicion. Afterwards they become friendly and talked on modern electronics with each other. And at last they said, "While you stay here, we want to try the amateur radio activity".

In due course they brought some boxes like suitcases into the room. When I opened and looked at one of them I was shocked. What I saw in there was a Collins (US made) receiver, a Drake transmitter, a doublet antenna and even a microphone/key. I could not tell the model of Collins

Jin JA8BMK (with glasses) in readiness to commence operating XZ5A to bring Burma onto the amateur bands for the lirst time in 16 years. The watchful eye of the Burma military looks on.

Sanplo XZ5A's new and permanent operator.

because the label was off. As far as I saw, it is very similar to 75A4 receiver. The transmitter was obviously a T-4XB, which was a bit rusty. Setting up the antenna, I tried those two items. The receiver immediately began functioning and caught their military correspondence. But, unfortunately, the transmitter turned out to be impossible for practical use. There were no repair parts.

They were all operators of military correspondence. Some of them were good English speakers. I suppose that they mastered this language under the reign of English. They have a good command of radio engineering, too. The only thing they were lacking was the knowledge of how to do QSO. They had an ARRL Amateur Handbook, 1975 issue. It must have been the Bible for their knowledge of electronics seeing the cover was worn out completely. I wondered how often they consulted that scripture.

They learned a pattern of QSO and decided their call sign as XZ5A. The president and the minister of the country looked very enthusiastic. A **Voice of KAW THOO LEI**[1] (broadcasting on 7 MHz) got into trouble, it was a year since the station had been on air. This would be the first broadcasting after a long interval.

But I was totally at a loss because the transmitter was out of order. They said they would be able to find a new one within weeks. We doubted if it was really possible. There was a very strict check by the frontier police near the border. Even a transistor radio would be found by them. At any rate, we had to leave there till the chance would come as our visas were nearly over.

While we were waiting, we visited 8Q7 (Maldive Is.), 4S7 (Sri Lanka) and VU (India). We had a good opportunity to meet fantastic people. And really enjoyed the beautiful nature there. Above all, we cannot forget a row of houses and streets made of coral reef, and the deep blue of the sky and the beautiful sea coloured light blue. I am not exaggerating to say there was a Garden of Eden we human beings have forgotten. It is very attractive to all HAMS coming here from other countries in the world because as long as one has a licence copy of his country, one can obtain any call sign as one likes in half an hour. It took me only ten minutes to get the call sign 8Q7BM. There are over 2,000 islands, where there are nice resort hotels.

The homebrew 3 element yagi being erected for XZ5A.

The dreamy surrounding made us forget time passing by. It was May 22nd when we came back to KAW THOO LEI. My face was bronzed by the strong sunlight. As soon as we came back and saw the Burmese, I was astonished to find amateur radio equipment. To our great surprise, it was a Kenwood TS-130S. "How on earth did they get it?" We could not believe our eyes. According to them, many Japanese CB radios are brought into the black markets of Burma. However, they are all used for military use.

Montage of Kawthoo Lei's President and well read ARRL Amateurs Hand Book.

Before leaving Japan we had promised JA1BRK (one of the famous JA DXers) that we would be on air by the end of April at latest. But there was a long delay in the starting time to operate from Burma. After 12 hours since engaged time, everything was ready to go. At any rate, I turned on the transceiver with hesitation. It was almost twelve midnight on Friday. What came out immediately was a small pile-up of some JA stations calling a certain DX. In the meantime, I tried to call JA1BRK "TAC" at 21.270 MHz and succeeded in getting through. This QSO turned out a "first ever" rom XZ5A. Then there was a great pile-up, I found it impossible to catch stations calling me. I made an announcement to them so as to distinguish each station easily in their spreading a few kiloHertz In the band, but most calls were focused on one frequency.

It was easier and faster to pick up some stations away from the net, though they were weak. I somehow managed approximately 250 stations within two and a half hours. The speed to work DX itself was much slower as compared with 9N1BMK DXpedition in 1979. Afterwards USA stations began to appear in the band and we then worked only them for a while. The signals were generally very weak. The maximum was 5 by 4, normally 3 by 4. Around daybreak, European stations came up. They were strong enough to copy. We went QRT at 2130 UTC on May 22nd on the first day.

During the first day, we were successful in having QSO with about 700 stations on SSB on 14/21 MHz. We were very tired from great excitement. We went to sleep until the noon of that day. No sooner than we got up, we remembered that we could work only 10 US east coast stations or so. So we decided to build up a full sized

3 element yagi on 14 MHz. It was a paralleled wooden boom with aluminium elements. Desperately necessary materials were obtained from the black market run by the Indians. From the evening with this antenna I tried to call USA at 14 MHz but in vain. It seemed there was no propagation at that time. On the third and fourth day, XZ operation's focus changed to Sanplo and Laydoh on the spot. They are both experts of CW. The light of barracks went out at 0900 Burma time every night. After that time a generator (Honda 500 watts) began to operate, but we were careful in stopping our operation by midnight, because we were afraid that the generator was making a terrible noise in the quiet forest and disturbing our neighbours. Also every day several QRTs were inevitable during the military communication hours.

That was how we had QSO with about 3,500 stations in total. You may well think the number was not so large. It is because our purpose was not to make DXpedition in Burma but we hapenned to get a chance to operate rigs when we went to KAW THOO LEI. Actually our operation time was from 7 to 8 hours a day and two-thirds of it was done by Karen operators. Now this station, VZ5A, has been registered as a club station, together with XZ9A. Those two stations have also been operating recently.

NOTE:

1. KAW THOO LEI . . . The name of Karen state in East Burma by pronouncing of Karen language.
2. Karen people . . . About 7 million population at present.
3. Voice of KAW THOO LEI . . . In 1980, for almost 1 year this broadcast could be heard on 7.15 MHz, running 10 kW output.

POSTSCRIPT

The following is an extract of a letter dated 12/7/81) from Jin JA8BMK to Ken VK3AH which gives the current situation of Burma amateur radio operations.

"Sanplo (XZ5A) is 34 years old and Laydohmoo (XZ9A) is 37. Both are married with children, are well educated and speak good English.

"XZ5A is using a TS130S, VFO 230 with 14 and 21 MHz dipoles. Maybe the antenna will be changed to a 4 element tri-bander (TA-351) and they will have a linear amplifier by July 20. QTH is about 100 km east of Moulmein, and XZ9A is 200 km north-east of Moulmein.

"XZ9A Is also using a TS130S and will soon have a TA33JR tri-band antenna.

"Both stations are operating under the licence of the Kaw Thoo Lei Government (Karen State of Burma)." ■

CONFIRMING OUR QSO

RADIO	DATE	UTC	RS(T)	FREQ. MHz			2WAY
VK3AH	MONTH May DAY 24 19 81	0429	59	☐ 1.9 ☐ 3.5 ☐ 3.8	☐ 7 ☐ 14 ☒ 21	☐ 28 ☐ 50 ☐ 144	☒ SSB ☐ CW

XZ5A

EQUIPMENT :
KENWOOD TS-130S
NAGARA TA-351
DIPOLE

OPERATORS :
SANPLO (XZ5A)
LAYDOHMOO (XZ9A)

QSL verified by

XZ5A QSL MANAGER JIN JA8BMK 73

XZ5A/XZ9A QSL cards.

QSP

A SHIP IS A SHE

The word "ship" liself is from the Anglo-Saxon "scip" or Gothic "skip", both meaning boat. In the Royal Navy we draw a distinction between ship and boat, the latter being a smaller vessel usually without decks, which is carried aboard a ship. Certain exceptions exist: submarines, out of a sense of friendly rivalry, are often referred to as boats, and we refer to passenger ships as boats, though possibly not as a compliment. A ship is a she because: it is always feminine, hard to handle, needs men to run her, requires gilding and painting, comes into port and heads for the buoys, likes to show her topside and hide her bottom, is obstinate and perverse, is an object of affection, and whenever she sinks she takes a lot of good men down with her —"RNARS Newsletter." ■

QSP

REGION 1 BANDS PROPOSALS

At the IARU R1 Conference in Brighton at the end of April the gentleman's band plans for the new bands were considered and agreed as follows:— **10 MHz** — 10100-10140 kHz CW only, 10140-10150 CW and RTTY (SSB usable only in emergencies and as specified) — power not exceeding 250W mean output power — no contests — no credits for awards or diplomas. **18 MHz** — 18068-18100 kHz CW only, 18100-18110 kHz CW and RTTY, 18110-18168 kHz CW and phone. **24 MHz** — 24890-24920 kHz CW only, 24920-24930 kHz CW and RTTY, 24930-24990 kHz CW and phone. **CW EME** recommended frequencies were agreed as 144.000-144.015 MHz, 432.000-432.015 MHz and 1296.000-1296.015 MHz.—Rad. Comm., July 1981. ■

Reciprocity of AR Licences

Do you anticipate a visit to an overseas country with some hope of operating from there?
Have you been asked by an overseas amateur coming to Australia if he can obtain a licence in Australia?
This is a complex subject but a selection of information from WIA sources may be found useful.
This article takes into account the provisions of formal reciprocal licensing agreements in addition to the ever widening trend towards "guest" licensing FOR VISITORS. The former usually applies where a change of residence occurs and the latter applies as a separate concession only for bona fide visitors. Some countries apply both, whereas other countries will not issue any licence without there being a reciprocal licensing agreement in force between the licensing Administrations concerned. Australia operates both and has reciprocal licensing agreements with U.S.A., Canada, New Zealand, U..K, Switzerland, Malaysia, Singapore and India (nothing however for Novices except New Zealand).
As a membership service, the WIA Executive Office, P.O. Box 150, Toorak, Vic., 3142, can often offer additional information on request.

1. General

All details given below assume the ownership and production of a valid and genuine amateur radio licence (or certified true copy in lieu) and evidence to prove identity and citizenship, visiting (or other) intentions and sometimes additional evidence, such as Morse speed proficiency and an address in the country for which a licence is required. In general terms, the grant of a licence would not confer a higher licence grade than you enjoy in your home country and there must be compliance with all the operating conditions for amateurs in the country concerned. There is a varying degree of delay country by country in obtaining a licence, if one is obtainable at all. Advance application and completion of appropriate application forms may be successful after a wait of up to 3 or even 6 months or more, depending on the country. In other countries a personal application on arrival will succeed even to the extent of over-the-counter service if your papers are in order. Licence fees vary from nothing in the USA to as much as $20 or $30 in other countries, even for a short term licence. Some countries may not recognise short-term licences issued in another country which is not of your citizenship. In many countries a licence expires in one year or when the home licence expires if earlier. Do not send the original of your licence through the ordinary mail (you require it at home anyway).

2. Australia

Personal application can be made at Department of Communications State Managers' offices (see DOC Directory for addresses). Applications in advance (3 months) should be sent to "Licensing Policy and Operations Branch, Department of Communications, GPO Box 5412CC, Melbourne, Victoria, 3001". Licences are granted to any overseas amateur on a bona fide visit to Australia not exceeding 12 months duration. For an overseas amateur coming to Australia permanently a licence is obtainable against a valid licence issued to a citizen of a country with which Australia has a reciprocal agreement; failing this, an Australian licence is only obtainable by passing the necessary Department of Communications amateur examinations in Australia. The licence fee is $A17 ($A14 for novice licences). Licence call signs are issued only in the normal VK series. Completion of secrecy declaration required. "Australia" includes Cocos and Keeling, Christmas, Willis, Norfolk Is., Mellish Reef (etc.), and Australian Antarctica (Casey, Mawson, Heard and Macquarie Is.).

3. U.K. (and dependencies, Hong Kong, Gibraltar, etc.)

Apply at least 30 days in advance to — "Home Office (Radio Regulatory Department), Waterloo Bridge House, Waterloo Road, London, SE18UA, England" (or to appropriate Posts and Telecommunications Radio Licensing Branches in capital cities of dependencies). UK licences fee £8. Call signs in G5 plus 3 series or G8 plus 3 (VHF only). The UK has reciprocal agreements with over 25 countries. Full call Morse 12 w.p.m.

4. New Zealand

Personal application for over-the-counter licensing to NZ Post Office Engineering offices in Auckland, Christchurch, Dunedin and Wellington HQ (Wakefield Street). Applications in advance (2 weeks) to Wellington PO HQ. Call signs for Commonwealth visitors in ZL0 series. Full call Morse 12 w.p.m. New Zealand has reciprocal agreements with Australia, USA and France.

5. U.S.A. (and dependencies)

Fill in FCC Form 610A (obtain from FCC or ARRL) and mail, at least 60 days in advance, to "Federal Communications Commission, Box 1020, Gettysburg, PA 17325, USA" for a permit to operate. A permit for aliens is granted only to amateurs from countries with which the USA has reciprocal agreements (now over 50 countries). Call signs — your own home call/W1, W2, etc. Regular USA licences only obtainable by passing FCC exams. No licence fee. Applications by aliens to FCC field offices will still be routed to Gettysburg.

6. Canada

Apply in advance to "Director-General International Telecommunication Branch, Berger Building, 100 Metcalfe Street, Ottawa, KISOV8, Canada". Canada has reciprocal agreements with nearly 40 countries and British Commonwealth countries. Special arrangements in force with USA for visiting amateurs.

7. Papua New Guinea

Apply in advance or in person to "Manager, Radio Branch, Department of Public Utilities, Postal and Telecommunications Services, GPO Port Moresby, PNG". Similar examinations, grades, operating conditions, etc., as in Australia.

8. Singapore and Malaysia

Many months delays after arrival Visitors' licences not known to have been issued.

9. Others

(a) Amateur radio is banned or allegedly inoperative in Afghanistan, Bangladesh, Burma, Khmer Rep., N. Korea, Malawi and Vietnam.

(b) No visitors' licences are known to be obtainable by Australians in Greece, Italy and Japan — also, probably, Indonesia and the Philippines.

(c) In India it is understood no licence is obtainable until after one year's residence.

(d) Short-term visitors equivalent licences in W. Germany (for 3 months — apply 6 weeks in advance) are obtainable — write to "DARC International Affairs, Postfach 1155, D-3507 Baunatal 1, Fed. Rep. of Germany". Fee and costs DM 15. Different procedure for intending residents.

(e) Short-term visitors' licences are understood to be obtainable in Belgium, Botswana, Brazil, Fiji (France?), Rep. of Guinea, Israel, Kiribati, Luxembourg, Morocco, Nigeria, Portugal (30 days max.), Swaziland, Rep. of South Africa, Sweden, Tonga (Vanuatu?), Zimbabwe.

(f) Negotiations are currently being conducted towards reciprocal licensing agreements with Costa Rica, Denmark, France (includes New Caledonia), Greece, Japan and W. Germany.

(g) Third party agreements exist between Australia and Canada (USA applied for but not yet finalised), between Canada and some 20 countries and between USA and some 30 countries. Phone Patch traffic in Australia has been applied for but was not granted at time of going to press.

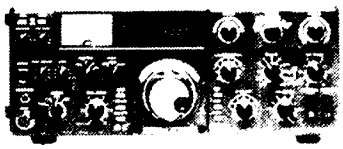
(h) Licences for Maritime Mobile operations can only be used in home waters or on the high seas.

All information given is the best available at the time of going to press, and has been condensed due to print space. ■

Andrews Communications Systems

HAVE WE GOT A DEAL FOR YOU!

KENWOOD TS-530S



- 160-10m inc W.A.R.C., SSB/CW modes.
- I.F. shift, VOX, N.B., RIT, XIT, mic gain

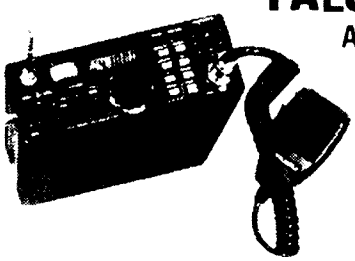
BONUS OFFER!
THE PRICE
$779
inc MC-10 & FREE TVI FILTER

MORE CHEAP KENWOOD . . .

★TS-830M HF SSB Transceiver **$999** (TS.830S **$930**)
★ TS-130S SSB HF mobile. Now only **$650** to clear.
★R-1000 Receiver (no FM or optional memory) **$429.**
TR-7850 40 W min. FM 2m Transceiver **$420**
★TR-7730 new 2m FM 25w Transceiver available at **$329**
★ TR-9500 new UHF all-mode Mobile available at **$595**

WE WILL NOT BE UNDERSOLD ON KENWOOD

YAESU FT-290R



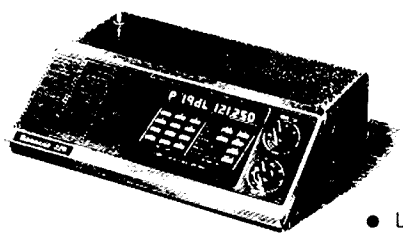
All-mode 2m portable
$349
PLL with LCD display and 10 mem. channels. SSB/FM/CW 2.5 w. Supplied with scanning mic. (FT-690 R 6m version avail. **$339.**)

SUPERB YAESU HF-VHF-UHF EQUIPMENT

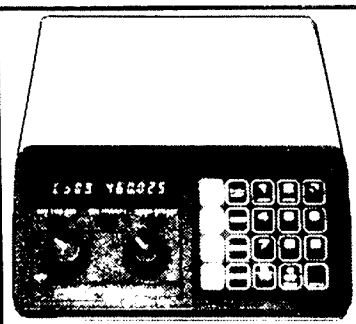
★FT-707 Best selling HF SSB transceiver **$685** cash.
★FP-707 power supply $160, FC-707 tuner **$130**
★FTV-707 R transverter, opt. 6m or 2m or 70 cm **$145**
★FT-101ZD HF SSB T'cvr, new model, rejection. **$800**
★FT-107M /DMS inc AC, due in soon at only **$1150**
★FT-208 R New LCD 2m FM hand-held due in at **$345**
★FT-708 R UHF LCD FM hand-held, available at **$355**
All-mode FT-680R 6m, FT-480R 2m, FT-780 R 70 cm.
Transceivers available on order at low prices.

Bearcat 220 FB

20 ch. Scanning Receiver
Compare to SX-200
$475



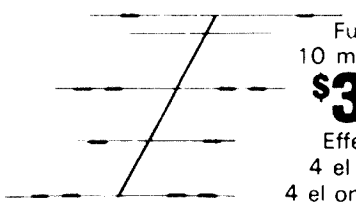
- AM/FM, AC/DC
- 66-88 MHz
- 118-136 MHz
- 144-174 MHz
- 420-512 MHz
- Lockout/Priority/Delay
- Preprogrammed Marine & Aircraft bands



REGENCY
"TOUCH" M400E
DIRECT IMPORTER
$419 FREE P&P

★ 30 Ch VHF/UHF scanning receiver!
★ EXCLUSIVE 5 kHz Channelling on VHF Bands! (M100E $365)
* Variable search steps!
★ Covers 66-90MHz, 144-174MHz & 440-512MHz
★ Touch tone programming. AC/DC. Digital clock, etc

NEW CE-35LX TRIBANDER!



Full size 10 m reflector
$319
Effectively 4 el on 10m 4 el on 15m and 3 el on 20m
Maximum gain on 22'6" boom

CHIRNSIDE BEAMS

- New CE-35DX 5 element tribander, 19' boom. Effectively 4 el on 10 m, 3 el on 15 m, 3 el on 20 m, only **$299**
- CE-42, CE-33, CE-36 beams and CE-5B vertical in stock.
- CE mobile helicals available.

SOLID-STATE HF LINEAR AMPLIFIERS

TP-500, 500w pep o/p, rx. pre-amp, only 10-20 w/drive needed 3 levels, **$450**
TP-350, 350 w pep o/p, rec pre-amp, required 10-30 w drive, 3 pwr. levels, **$325**
TP-200, 200 w pep o/p, rec. pre-amp, compare to HF3-100L2, only **$185**
Palomar TX-200, 4 levels, pre-amp, **$219**

CALL (02) 349 5792 or 344 7880 NOW!

SHOP 7, GARDEN ST, MAROUBRA JUNCTION, SYDNEY N.S.W.
(near corner of Garden St. and Maroubra Rd)

THE MAIL ORDER SPECIALISTS Write to: P.O. BOX 33, KENSINGTON N.S.W. 2033

FORWARD BIAS

THE VK1 COMMITTEE

It is now just over six months since you, the members of the VK1 Division, elected the present Committee. Do you remember who they are, and the various tasks they perform on your behalf?

In case you have forgotten, and to inform our many new members, the complete list is published below.

President:	
BILL MAXWELL	VK1MX
Vice-President, also Broadcast Manager, Repeater Group Contact:	
ANDREW DAVIS	VK1DA
Vice-President, also Alternate Federal Councillor, Intruder Watch Co-ordinator, VK1 Awards Manager:	
FRED ROBERTSON-MUDIE	VK1MM
Secretary and Publicity Officer:	
THEO VIDLER	VK1KV
Treasurer:	
KEVIN OLDS	VK1OK
Education Co-ordinator:	
IAN COLEMAN	VK1NDI
Book Sales:	
KEN PYETT	VK1NDK
Meeting Activities Co-ordinator:	
CEC MALONEY	VK1NCX
Federal Councillor and Federal WICEN Co-ordinator:	
RON HENDERSON	VK1RH

Apart from the above list of elected officers there are a number of other tasks carried out by non-elected members:—

Property Officer:	
GAVIN BERGER	VK1NEB
Federal Contest Manager:	
REG DWYER	VK1BR
VHF Repeater Manager:	
PETER SMITH	VK1DS
UHF Repeater Manager:	
EDDIE PENKIS	VK1VP
Class Instructors:	
DAVID BOEHM	VK1UD
OWEN COOK	VK1CC
WICEN Co-ordinators:	
ROB APATHY	VK1ZAI
IAN DALWOOD	VK1ZAG
DICK ELLIOTT	VK1ZAH
QSL Manager (Inward):	
MORI FOSTER	VK1MF
QSL Manager (Outward):	
TED PEARCE	VK1AOP
Public Officer:	
REX ROSEBLADE	VK1QJ

Ours is by far the smallest Division, having only about 170 members out of a total of 308 licensees in the Territory. And yet from these 170 members we elect or appoint 21 members to carry out the administrative functions of the Division. Perhaps it would be easier for all If we could recruit those other 138 non-members to the Institute.

THE VK1 UHF REPEATER

Eddie VK1VP has advised that the new UHF repeater VK1RUC will be placed on test in Canberra in the near future. The input frequency will be 433.52 MHz and output frequency 438.525 MHz, this being the prime UHF FM repeater channel as is used In Sydney, Melbourne and other capital cities.

Following the test period and with the return of a negotiable road in the spring the new repeater will be co-located with our VHF repeater VK1RGI on Mount Ginini, where it will feed into a coaxial colinear antenna having a gain of 5-6 dB. Power into the antenna will be 5 watts. With an expected radiated power of approximately 20 watts from its location on Mount Ginini, about 5800 feet above sea level, it is expected that VK1RUC will provide UHF communication over a considerable area of southern NSW and hopefully beyond.

REMEMBRANCE DAY CONTEST 1981

By the time you read this column the RD Contest will have taken place. For full details see your July copy of AR, page 53.

Competitors should note that the scoring system has been changed this year to the extent that each contact scores 1 point only on AM, FM and SSB, and 2 points only on CW/CW, SSTV/SSTV and RTTY/RTTY, with no special allowances for contacts with distant States, ZL or P29, as was the case in past years.

A limited supply of copies of the recommended log sheets Is available to VK1 members from Theo VK1KV, phone Canberra 88 1767 (AH) or 45 3254 (BH). Alternatively, you should ensure that your log sheets and the cover sheet are in accordance with the examples shown in the July AR.

President Bill has intimated that the RD trophy would make a very nice addition to his trophy case for the next 12 months (at least).

73. VK1KV. ■

VK2 MINIBULLETIN

COUNCIL REPORT

Two new positions were created within the Division at the July meeting of Divisional Council. Jim Saunders VK2BNY was appointed VK2 WIA Co-ordinator of the Disabled and Wally Watkins VK2DEW (Alternate Federal Councillor for NSW) was appointed VK2 Contest Publicity Officer. Jim's position will entail co-ordination of information and advice on aspects of disabled persons' involvement in amateur radio, citizens band radio and shortwave listening. Interested persons can write to Jim at his call book address with Information or requests. Wally is well known in contest circles as the immediate past Federal Contest Manager and can also be contacted at his call book address.

To encourage NSW participation in the Remembrance Day Contest, the NSW Divisional Council will award Merit Certificates to those stations operating in NSW who gain a first, second or third place in all sections of the contest each year. The certificates have been designed by Divisional Councillor Steve Pall VK2VPH.

At the July meeting the recommendations of the Fourth Conference of Clubs were discussed by Council. Many of the recommendations were adopted, including the one recommending investigation of the sale of Atchison Street and replacement with a property in the Parramatta area. The suggested fox hunt frequencies of 144.3, 146.55, 28.47, 7.04 (rather then 7.05 144.3, 146.55, 28.47, 7.04 (rather than 7.05 which is a primary WICEN frequency) and 439 MHz were adopted. The motion that K calls be allowed to use CW on 6m and up will be presented as a VK2 motion at the next Federal Convention. Henry Lundell VK2ZHE will organise the details for a VK2 Home-brew Contest. The concept of affiliated clubs who relay Divisional broadcasts conducting 5 minutes of local news at the conclusion of each broadcast was adopted and permission is now being sought from DOC. The motions requesting repeaters from 29.5 to 29.7 MHz and increased deviation on 10m have been referred to FETAC for investigation of feasibility and desirability. Several contest matters are either being referred back to clubs for more specific details or passed on to the Federal Contest Managers.

Council received and discussed the DOC statistics for the February AOCP and supplementary novice Morse exams. The strikingly low NEW results in all exams (except AOCP theory) are being queried by our Federal Councillor Tim Mills VK2ZTM.

Perhaps some of you have noticed a difference in recent Divisional broadcasts. They are now all being conducted from Dural. The new facilities at Dural offer a number of advantages, including separate soundproof booths for announcer and engineer, automatic selection of broadcast transmitters, remote clarifier for SSB receivers, push button selection of audio source and a high quality tape deck. Each booth has its own console which may be operated independently allowing two sets of callbacks to be taken simultaneously or linked together for broadcasts so that only the engineer need worry about transmitter selection, audio levels, etc. Each console is fitted with a digital clock. Initially only the announcer's console is available for use, but the second console should be operating soon. If you would like to be included on the roster for broadcasts, even if only once or twice a year, please write to Divisional Office, Box 123, St. Leonards 2065, specifying whether you wish to be announcer or engineer on either the morning or evening broadcasts or both. A new crystal for the 2m beacon at Dural has been ordered and the beacon will soon be moving to 144.42 MHz In accordance with the beacon bandplan. Work on the 160m transmitter is slowly progressing,

HF, UHF and VHF ANTENNAS BY ATN

	Gain dbi	Boom	Price incl. balun
15/11/10 mx			
ATN 20-30-1 rotary dipole			$36
10/11 mx model			
ATN 28-30-3 or 27-29-3	9.7	3.5M	$85
ATN 28-30-5 or 27-29-5	12.0	6.5M	$145
ATN 28-30-6 or 27-29-6	13.2	8.3M	$189
6 mx			
ATN 50-52-5	11.9	3.5M	$90
ATN 50-53-8	14.2	5.5M	$140
ATN 50-53-11	16.2	9.0M	$175
2 mx			
ATN 144-148-8	12.7	2.2M	$50
ATN 144-148-11	14.6	3.8M	$60
ATN 144-148-16	17.0	6.3M	$80
ATN 144-148-13WS	17.3	7.0M	$80
70 cm Model (N Conns)			
ATN 420-470-6	10.2	0.6M	$40
ATN 420-470-14	14.2	1.5M	$55
ATN 420-440-11	15.7	1.85M	$60
ATN 420-440-15	16.7	2.85M	$70
ATN 432-16LB	17.2	3.7M	$80
UHF CB (N Conns)			
ATN 47-5	9.2	0.65M	$42
ATN 47-7	10.2	0.7M	$45
ATN 47-11	17.0	1.7M	$55
ATN 47-15	17.8	2.8M	$65
Amateur TV Translator			
ATN 580-14 (N Conns)	17.5	2.0M	$60

ALL LISTED HF ANTENNAS use top grade 6063-T83 seamless tapered and swaged tubing elements with non-brittle ABS tough weather resistant insulators. Booms are 2" OD (longer booms use guys supplied) and elements taper from ⅞" OD or ⅝" OD depending on length. Longer elements use positive rake on insulators to reduce unsightly sag. The best possible materials have been chosen to suit tough Australian weather conditions.

TRAPLESS TRIBANDERS, 13-30 MHz, Continuous Coverage (Includes new WARC & CB) (LOG PERIODICS)

Model	Elements	Boom (metres)	Gain dbi	Price with Balun 200W	1 KW
13-30-6	6	6.0	7.5	$259	$279
13-30-8	8	8.5	9.0	$389	$409

TRAPLESS DUOBANDERS, 20-30 MHz, Continuous (Includes new WARC & CB) (LOG PERIODICS)

20-30-6S	6	4	7.5	$169	$189
20-30-6L	6	6	8.5	$199	$219
20-30-8	8	8.5	10.2	$279	$299

MONOBANDERS — For 14 and 21 MHz

14-14.4-4	4	7	10	$239	$259
21-21.5-4	4	6	9.9	$179	$199
21-21.5-5	5	8	11.2	$269	$289

Also available power dividers/couplers, quarter wave sleeve baluns and matching harnesses for stacks of two or more arrays; also 1:1 and 1:4 baluns in 200W or 1 kW and insulators for homebrew.

ATN ANTENNAS

56 CAMPBELL STREET, BIRCHIP, VIC., 3483
PHONE (FACTORY) (054) 92 2224 (OFFICE) (054) 92 2264

ALSO AVAILABLE FROM: **VIC. (03) 873 3939** **TAS. (002) 47 6674** **W.A. (09) 328 9229** **QLD. (07) 397 0808**
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Introducing **MIRAGE** *Communications Equipment*

AS REVIEWED IN AR, MAY 1980

FEATURES:

- Built-in Receive Preamp
- Adjustable delay for SSB
- Remote control operation with optional RS-1 Remote Head
- 1 to 2 Watts in — 15 to 30 Watts out — Excellent for HTs
- Automatic internal or external relay keying

SPECIFICATIONS

Frequency Range	144 to 148 MHz
RF Power In	200 mw to 15 Watts
RF Power Out	80 Watts nom. (10 in - 80 out)
Modes	SSB, FM and CW
Receive Preamp	10 db gain min. 2.5 db ± .5 db noise figure
DC Power	13.6 VDC 10-12 Amps
Size Weight	5.375" x 3" x 8", 3 lbs.
WARRANTY ON ALL MIRAGE PRODUCTS	**5 YEARS (1 year RF Power Trans.)**

B108 2 METER AMPLIFIER
10W IN — 80W OUT

Amateur Net $239

DUAL PURPOSE — H.T.s or Transceivers

B 23	2 Metre Amplifier	2 W in, 30 W out	$119
B 1016	2 Metre Amplifier	10 W in, 160 W out	$359
B 3016	2 Metre Amplifier	30 W in, 160 W out	$299

Average and Peak Reading Wattmeter/SWR

Model MP1	HF	$159
Model MP2	VHF	$159

ATN ANTENNAS

56 CAMPBELL STREET, BIRCHIP, VIC., 3483
PHONE (FACTORY) (054) 92 2224 (OFFICE) (054) 92 2264

although there are still problems with the HT interlocks. Transmitters used at present for broadcasts and callbacks include 80m AM, 40m AM, 40m SSB, 10m SSB, 6m SSB, 6m FM, 2m SSB, 2 x 2m FM and 70 cm FM. Broadcast frequencies and times are published each alternate month in the WIA Directory in the front of AR.

TOWER APPEAL

The appeal (see past ARs for details) was heard on Tuesday, 21st July, in the Land and Environment Court in Sydney. Three Divisional Councillors attended the court. A total of six witnesses gave evidence; the Campbelltown City Council Town Planner and two neighbours of Mai Martyn VK2VWG gave evidence in opposition to the tower application, while Mr. Martyn, a Town Planning Consultant and a Broadcasting Engineer gave evidence in support of the application. Much evidence in the form of statements, maps and photographs was tendered. Having heard submissions for a full day, the court deferred judgement until after the assessor had seen the proposed tower site and other towers of similar construction as proposed by Mr. Martyn. To date (31/7/81) no decision has been handed down.

Many thanks to those who have written to Divisional Council supporting this case. Recent donations are gratefully acknowledged from: B. McNeil $5, G. Myers (wife of late VK2VN) $10, R. Gandevia $10, F. Tam $20, R. Dolphin $3, M. Black $50, I. Chappel $2, P. Jeremy $10, E. Breen $10, S. Cooper $5, B. Grainger $5, J. Swan $10, W. Watkins $25, G. O'Brien $20, A. Bauer $5, B. Watt $25, H. Hart $50, J. Saunders $20, L. Greenwell $10, Margaret $5, J. Gaynor $10, W. Moore $10, H. Freeman $10, I. Baker $20, Orange ARC $100, R. Alford $20, K. Claffer $20, A. Efimov $10, A. Topp $5, G. Camp $10, Taree ARC $43, K. Kimberley $10, A. Sullivan $5, A. Lundy $10, Central Coast ARC $50, J. Faulkner $10, B. Turnbull $10, L. Connolly $5, B. Connolly $5, M. Connolly $5 and Mid-South Coast ARC $25. To date (31/7/81) $2,171 has been donated to the appeal. If you would like to donate to this appeal, please send cheques made out to WIA Tower Fund to Box 123, St. Leonards 2065.

SOUTH WEST AMATEUR RADIO SOCIETY 29th ANNUAL CONVENTION

The 29th Convention of SWARS is to be held at Tumut on the long weekend, 3rd and 4th October.

The venue for the Convention is the Tumut Racecourse, which is a very good location for a Convention of this type, as the grounds are safe for children and have plenty of shade and shelter.

A programme of field events has been arranged and also bus and car trips to the many scenic areas in the Tumut district.

On the Saturday a conducted trip to the Buccleuch State Forest is planned to see the many facets of the timber industry in the area with some of the biggest timber harvesting operations in Australia.

The trip will also go to the 4000 feet Mt. Tumorrama, to the east of Tumut, to see the best view in the south and work the VHF DX.

On the Sunday a bus trip has also been arranged to take visitors to Batlow, to Blowering Dam and the Blowering Forest parks, then to Talbingo power station and back to Tumut via the eastern shores of Blowering Dam.

The Blowering parks are now famous for their many animals and birds, and for recreation.

For a programme and accommodation bookings contact:—

The Secretary Tumut Amateur Radio Club, Ted Dean, 93 Lockhart Street, Adelong, NSW 2629.

Please note that accommodation bookings must be made by the forwarding of $20 per room before the 19th September, as accommodation in Tumut is at all times at a premium over any holiday weekend.

VK2DLZ Tumut.

The VK2 QSL Bureau, now housed at Westlakes Amateur Radio Club, York Street, Teralba, is open each week on Wednesdays from 9 a.m. to 5 p.m. and Saturdays from 1 to 6 p.m. The Bureau is also open at other times during the week and the Club can be contacted at any time on (049) 58 1588. QSL information is now stored on a computer programme designed by one of the regular sorters, Milton VK2DCW.

COMING EVENTS

12-13th September: Noel Taylor Memorial Field Day, Tamworth.

15th September: Closing of agenda for 5th Conference of Clubs.

19-20th September: Amateur radio display at Orange Blossom Festival, Castle Hill.

A view of the shelves containing sorted cards (at rear). L. to R. Keith VK2AKX, Eric VK2KEB (both standing), Milton VK2DCW and Trevor VK2KAQ.

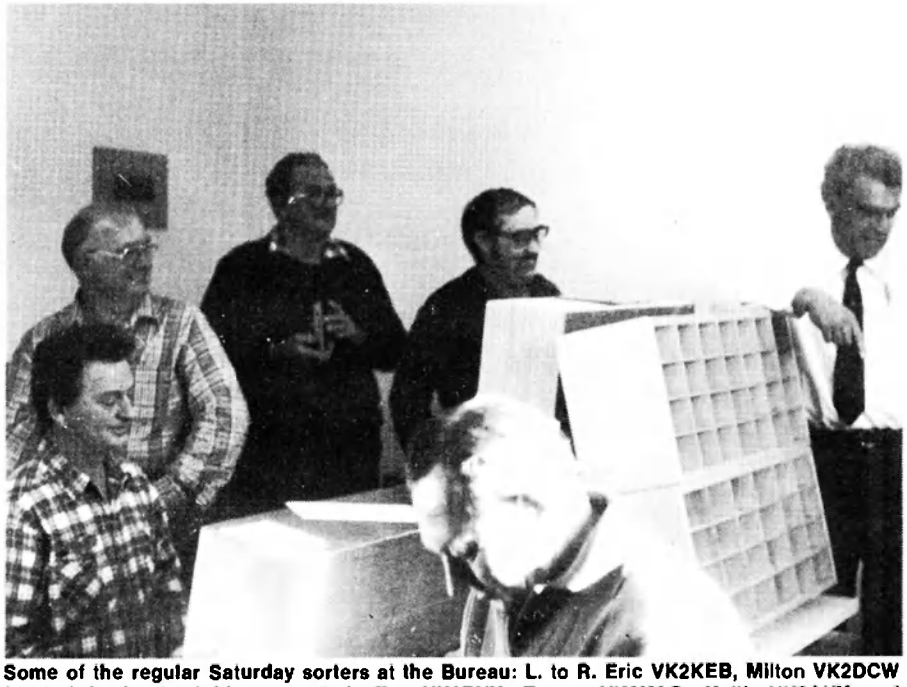
Crestwood ARC. Contact David VK2KDS on (02) 624 2636.

3-4th October: SWARS Field Day at Tumut.

1st November: 5th Conference of Clubs hosted by Illawarra ARS.

NSW clubs and members are invited to submit news for inclusion in this column to Box 123, St. Leonards 2065, by 28th September for November AR.

Susan Brown VK2BSB. ■



Some of the regular Saturday sorters at the Bureau: L. to R. Eric VK2KEB, Milton VK2DCW (seated in front of his computer), Ern VK2BVY, Trevor VK2KAQ, Keith VK2AKX and Wal VK2BZK (in front).

VK4 WIA NOTES

QSL CARDS
Your Divisional Council has again been able to negotiate with the Queensland Tourist and Travel Corporation for the supply of an additional issue of QSL cards. A limited number is available to members for the price of postage and arrangements have been made public over the weekly News and Information Service. The cards feature the logo of the 1982 Commonwealth Games Foundation and will prove ideal for over-printing with the AX prefix during September 1982.

SUNSHINE STATE CONTEST
The results of the 1981 Contest should be available next month. Over 25 shires and about ten cities and towns were activated during the contest, including some relatively rare ones. Thanks to Bill VK4XZ for a well run contest.

WORKED ALL QUEENSLAND AWARD
Council has approved some updates to the rules for this popular award. Thursday Island has been deleted from the "Cities and Towns" list, whilst Logan City has been added. Logan and Burrum Shires have been deleted from the "Shires" list, whilst Arakune, Mornington and Torres Shires have been added. Amended rules are available on request from the Secretary. Listen for rare shires each week on the Queensland Net (Thursdays 1930K on 3605 kHz).

SLOW MORSE BROADCASTS
The Division sponsors the running of slow Morse training broadcasts for the benefit of listeners in Northern Australia. The sessions are held every Monday to Friday at 1930K on 3580 kHz. All amateurs are requested to try to keep this frequency as clear as possible — remember your own learning difficulties.

JOTA
Have you been in contact with your local Scout or Guide group yet? JOTA always seems to go better if you can visit the group prior to the weekend and give them a little training in what to say and how to say it. This is one of the few opportunities we have to present our hobby to the general public — make the most of it.

CLUB LIAISON
Planning has commenced for the 1982 Radio Club Workshop and clubs will have received the first requests for input. This is your opportunity to partake directly in policy decisions, so don't let it pass. Be involved at your Club meetings. If you live away from club areas, send your thoughts to Council direct. The Club Liaison Net is held each Tuesday at 1930K on 3605 kHz.

GENERAL MEETING
General meetings are held in the Playground and Recreation Centre, corner of Love and Water Streets, Fortitude Valley, Brisbane, on the third Friday of the month. Visitors are most welcome and doors open about 1930K. ■

QRM

NORTH-WEST NOTES
Again another well attended meeting. Special guest for the evening was the member of State Parliament, Mr. Roger Groom, M.L.A. Mr. Groom spoke briefly on draft frequency allocations. Members were asked to forward submissions to him and these would be conveyed to Mr. Sinclair, Minister for Communications.

A lengthy discussion took place on the re-allocation of TV channels 5A and 0. Further discussion during the evening relating to CB and repeaters culminated an excellent format. Thanks for the notes, Jim.

NORTHERN NOTES
During the evening a motion was moved by Northern Branch members that we purchase a portable generator for Northern Branch members envisaged usage in VK7 and islands, for DXpeditions, both VHF and HF. The motion was carried unanimously in favour. The meeting was well attended, with Frank VK7BC, well known DXer, announcing that an educational evening had been arranged in the form of a visit to the recently completed Aust. Maritime College. Approximately 60 attended, leaving many a member chatting with envy at the equipment available for students during their period of training.

SOUTHERN NOTES
Further notes supplied by Bill Tanner VK7TE regarding the famous Sewing Circle Net 3590 kcs. 0700Z, Monday to Sunday.

The above net originated many years ago (date unknown) when a batch of crystals were purchased, frequency 3590. Some early participants were Jack Batchler VK7JB, Bob O'May VK7OM, Ray Conrads VK7TR, Crosby Wadch, John Milne VK7AG, Lloyd Chapel VK7LC, Poly Clark VK7CK, Merv Conway VK7CL, Pat Geeves VK7GV, Bill Tanner VK7TE, Bill Carter VK7AK, Joe Brown VK7BJ, Maurice Glover VK7MG, Alan McKercher VK7AT, Alan McKeown VK3YZ and also VK3AJA. Jack McKercher VK7NJK, a member unknown to many amateurs, first licensed 1978 and now a silent key. Mr. Jack McKercher VK7NJK was a very active amateur for a short period. After many years of studying with a permanent disability (arthritis) and understanding tutors, persevered with success, enabling VK7NJK to be communicating with other amateurs world-wide. After only 6 months on the bands Jack VK7NJK passed away in 1979, leaving his son Alan VK7AT. Incidentally, Alan VK7AT is still residing at Stieglitz via St. Helens and his warm hand of friendship is extended to all visiting amateurs. Jack's experience in radio goes back to the 1920s, at which time he manufactured one of the first AC radios.

DX-PEDITION TO NEW ZEALAND
Remember Jim's VK7KOW (ex VK7NOW) recent DXpeditlon to New Zealand? Well — I had hoped to bring back news how ZL of the 1906 Marconi Spark Station which was used in 1906 at East Devonport, Tasmania, together with a sister station at Queenscliffe in VK3, to demonstrate to the then Australian Government that this new thing "Wireless" would work. The demonstration, the first in Australia, was most successful.

The Tasmanian station later went to Christchurch for display at the big exhibition in 1907. Since then all trace of it has been lost.

I visited MOTAT in Auckland (Museum of Transport and Technology) and was shown all the communication gear by the Assistant Director, who referred me to some people in Wellington. I spoke with the Chief Engineer of the NZ Broadcasting Service, who kindly gave me some important photocopies of pictures and reports of the early radio transmissions in ZL.

He then referred me to Tom Clarkson ZL2AZ, the NZ Post Office's First Engineer. Tom told me that he knew of the old Marconi station, but thinks that it may have been "dumped". He also talked to me about the first half kilowatt spark station that he installed for the post office.

If readers would like to see actual photos of this very first station, I have three excellent photos showing the antenna, transmitter building and the transmitter and receiver, plus associated gear.

73. VK7AN/NAB. ■

QSP

ANTI-JAMMING MILITARY RADIO
The first military radio with anti-jamming capability to go into production will enter service in Europe with NATO forces in the next three months.

Called the Jaguar-V (standing for JAmming GUarded Radio — Very high frequency), the equipment has been developed by Racal, which forecasts that it will bring orders worth hundreds of millions of pounds sterling in the 1980s, the majority from overseas defence forces which see a threat to their military communications.

The advantages of Jaguar-V lies in its frequency hopping — that is, changing its transmitting frequency through the complete range many times a second, thereby depriving an enemy of the opportunity of jamming available with equipment that stays on a single identifiable frequency.

Racal says that Jaguar-V is urgently needed because of recent improvements in jamming techniques. The British Army has ordered the equipment for extensive trials.

Radio communications, for both military and civil markets, are one of Racal's two main areas of activity. The other is data communications. The group, with headquarters at Bracknell, west of London, has sold to more than 150 countries and in 1979 its exports were worth nearly $190 million. In April it won the British electronics industry's Toble Award as "Exporter of the Years". (News Release, British Consulate-General, Sydney, 3/6/81.) ■

CALL SIGN CAUTION
It has been noted from time to time that there is a tendency to use partial call signs, especially on VHF, such as "XYZ" instead of "VK2XYZ". Sections 6.34 to 6.44 of the regulations apply to call signs, and the information therein should be noted and adhered to.—From VK2TTTY broadcast, 3rd May, 1981. (Propagator, June 1981.) ■

Explanatory Information on the New Method for Designating Emissions

(This Information was released to the WIA by the Department of Communications)

INTRODUCTION

The designation of emissions is one of the fundamental tools of radio frequency spectrum management, providing essential information to the spectrum manager. The objective is to record accurately and concisely the significant characteristics of emissions.

The ready availability of this information assists the radio spectrum manager in planning the protection of services from mutual interference; the availability of a concise system facilitates the exchange of accurate information in both the national and international environment.

The new method of designating emissions is the result of about 20 years of effort on the part of the International Radio Consultative Committee (CCIR) in collaboration with the International Frequency Registration Board to improve the present method, which was developed many years ago and was becoming increasingly inadequate to cater for new and more complex emissions.

Australia, as a member country of the International Telecommunication Union, is obliged to adopt the new method in its International dealings and as a consequence intends to implement the new method for national use.

The following information will serve to explain to interested persons the method to be adopted.

The new method will come into use on a world-wide basis on 1 January 1982, but Australian licensees are requested to commence using it as soon as possible.

SALIENT FEATURES OF THE NEW METHOD

Full designation of emissions will comprise a total of nine alphanumeric symbols, the first seven being mandatory. These nine symbols are divided in the ratio 4:3:2.

The first four symbols provide details of the necessary bandwidth which can range from 0.001 Hz to 999 GHz.

The next three symbols provide details of the basic characteristics of the emission.

The last two symbols, which are optional, describe any additional characteristics which may be useful in providing a more complete description of the emission.

THE NEW METHOD

The first four symbols:

The first four symbols provide details of the necessary bandwidth which is defined as:—

"For a given class of emission, the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions."

The necessary bandwidth shall be expressed by three numerals and one letter. The letter occupies the position of the decimal point; it represents the Unit of bandwidth and may be H for Hertz, K for kilohertz, M for Megahertz or G for Gigahertz. In order to avoid a given bandwidth being expressd in more than one way depending upon the choice of the unit, it is specified that the further character shall be neither zero nor K, M or G. It is further specified that the necessary bandwidth.

— between 0.001 and 999 Hz shall be expressed in Hz (letter H);
— between 1.00 and 999 kHz shall be expressed in kHz (letter K);
— between 1.00 and 999 MHz shall be expressed in MHz (letter M);
— between 1.00 and 999 GHz shall be expressed in GHz (letter G).

The next three symbols:

These symbols describe the basic characteristics of the radio emission.

The first symbol defines type of modulation of the main carrier;

The second symbol defines nature of signal(s) modulating the main carrier;

The third symbol defines type of information to be transmitted.

It is not possible to give the minimum required information on the emission without the use of all the three symbols.

1 First symbol — type of modulation of the main carrier.
1.1 Emission of an unmodulated carrier — N
1.2 Emission in which the main carrier is amplitude-modulated (including cases where subcarriers are angle-modulted)
1.2.1 Double-sideband — A
1.2.2 Single-sideband, full carrier — H
1.2.3 Single-sideband, reduced or variable level — R
1.2.4 Single-sideband, suppressed carrier — J
1.2.5 Independent sideband — B
1.2.6 Vestigial sideband — C
1.3 Emission in which the main carrier is angle-mondulated
1.3.1 Frequency modulation — F
1.3.2 Phase modulation — G
1.4 Emission in which the main carrier is amplitude- and angle-modulated either simultaneously or in a pre-established sequence — D
1.5 Emission of pulses[1]
1.5.1 Unmodulated sequence of pulses — P
1.5.2 A sequence of pulses —
1.5.2.1 modulated in amplitude — K
1.5.2.2 modulated in width/duration — L
1.5.2.3 modulated in position/phase — M
1.5.2.4 in which the carrier angle-modulated

TABLE 2

Necessary bandwidth	Present method of designation	New method of designation
100 Hz	0.1	100H
850 Hz	0.85	850H
5,450 Hz	5.45	5K45
25,450 Hz	25.5	25K5
16,000 Hz	16.0	16KO

	during the period of the pulse	Q
1.5.2.5	which is a combination of the foregoing or is produced by other means	V
1.6	Cases not covered above, in which an emission consists of the main carrier modulated, either simultaneouslyor in a pre-established sequence, in a combination of two or more of the following modes: amplitude, angle, pulse	W
1.7	Cases not otherwise covered	X
2	Second symbol — nature of signal(s) modulating the main carrier	
2.1	No modulating signal	O
2.2	A single channel containing quantized or digital information without the use of a modulating sub-carrier[2]	1
2.3	A single channel containing quantized or digital information with the use of a modulating sub-carrier	2
2.4	A single channel containing analogue information	3
2.5	Two or more channels containing quantized or digital information	7
2.6	Two or more channels containing analogue information	8
2.7	Composite system with one or more channels containing quantized or digital information, together with one or more channels containing analogue information	9
2.8	Cases not otherwise covered	X
3	Third symbol — Type of information to be transmitted[3]	
3.1	No information transmitted	N
3.2	Telegraphy — for aural reception	A
3.3	Telegraphy — for automatic reception	B
3.4	Facsimile	C
3.5	Data transmission, telemetry, telecommand	D
3.6	Telephony (including sound broadcasting)	E
3.7	Television (video)	F
3.8	Combination of the above	W
3.9	Cases not otherwise covered	X

The last two symbols:
These symbols describe any additional characteristics useful in providing a more complete description of the emission. The use of these symbols is optional; however, it is recommended these be employed when known.

The first symbol defines details of signals;

The second symbol defines nature of multiplexing.

Where these symbols are not used this should be indicated by a dash where each symbol would otherwise appear.

4 First symbol — Details of signal(s)

COMPARISON OF DESIGNATIONS OF TYPICAL EMISSIONS

Type of Modulation of Main Carrier	Type of Transmission	Supplementary Characteristics	Current Symbol	New Symbol
Amplitude Modulation	With no modulation	—	A0	NON
	Telegraphy without the use of modulating audio frequency (by on-off keying)	—	A1	A1A (for aural reception)
	Telegraphy by the on-off keying of an amplitude modulating audio frequency or audio frequencies, or by the on-off keying of the modulated emission (special case: an unkeyed emission amplitude modulated)	—	A2	A2A (for aural reception)
	Telephony	Double sideband	A3	A3E
		Single sideband full carrier	A3H	H3E
		Single sideband reduced carrier	A3A	R3E
		Single sideband suppressed carrier	A3J	J3E
		Two independent sidebands	A3B	B8E
	Facsimile (with modulation of main carrier either directly or by a frequency modulated sub-carrier)	—	A4	A3C
		Single sideband reduced carrier	A4A	R3C
	Television	Vestigial sideband	A5C	C3F
	Multichannel voice-frequency telegraphy	Single sideband reduced carrier	A7A	R7B
	Cases not covered by the above, e.g. a combination of telephony and telegraphy	Two independent sidebands	A9B*	B9W
Frequency (or Phase) Modulation	Telegraphy by frequency shift keying without the use of a modulating audio frequency: one of two frequencies being emitted at any instant	—	F1	*1st Symbol* F = Frequency modulation G = Phase F1A (for aural G1A reception)
	Telegraphy by the on-off keying of a frequency modulating audio frequency or by the on-off keying of a frequency modulated emission (special case: an unkeyed emission, frequency modulated)	—	F2	F2A (for aural) G2A reception)
	Telephony	—	F3	F3E G3E

Type of Modulation of Main Carrier	Type of Transmission	Supplementary Characteristics	Current Symbol	New Symbol
Frequency (or Phase) Modulation (continued)	Facsimile by direct frequency modulation of the carrier	—	F4	F3C G3C
	Television	—	F5	F3F G3F
	Four frequency diplex telegraphy	—	F6	F7B G7B
	Cases not covered by the above, in which the main carrier is frequency modulated	—	F9*	FXX†
Pulse Modulation	A pulsed carrier without any modulation intended to carry information (e.g. radar)	—	P0	P0N
	Telegraphy by the on-off keying of a pulsed carrier without the use of a modulating audio frequency	—	P1D	K1A (for aural reception)
	Telegraphy by the on-off keying of a modulating audio frequency or audio frequencies, or by the on-off keying of a modulated pulsed carrier (special case: an unkeyed modulated pulsed carrier)	Audio frequency or audio frequencies modulating the amplitude of the pulses	P2D	K2A (for aural reception)
		Audio frequency or audio frequencies modulating the width (or duration) of the pulses	P2E	L2A (for aural reception
		Audio frequency or audio frequencies modulating the phase (or position) of the pulses	P2F	M2A (for aural reception
	Telephony	Amplitude modulated pulses	P3D	K3E
		Width (or duration) modulated pulses	P3E	L3E
		Phase or duration modulated pulses	P3F	M3E
		Code modulated pulses (after sampling and quantization)	P3G	V3E (for example)
	Cases not covered by the above in which the main carrier is pulse modulated	—	P9*	XXX† (for example)

*In most cases the type of transmission indicated by the number 9 in the old method can be more precisely defined by the new designations.

†The use of the symbols XX which define the nature of signals modulating the main carrier and the type of information to be transmitted should be used only in exceptional circumstances.

4.1 Two-condition code with elements of differing numbers and/or durations A
4.2 Two-condition code with elements of the same number and duration without error-correction B
4.3 Two-condition code with elements of the same number and duration with error-correction C
4.4 Four-conditioned code in which each condition represents a signal element (of one or more bits) D
4.5 Multi-condition code in which each condition represents a signal element (of one or more bits) E
4.6 Multi-condition code in which each condition or combination of conditions represents a character F
4.7 Sound of broadcasting quality (monophonic) G
4.8 Sound of broadcasting quality (stereophonic or quadraphonic) H
4.9 Sound of commercial quality (excluding categories given in sub-paragraphs 4.10 and 4.11) J
4.10 Sound of commercial quality with the use of frequency inversion or band-splitting K
4.11 Sound of commercial quality with separate frequency-modulated signals to control the level of demodulated signal L
4.12 Monochrome M
4.13 Colour N
4.15 Combination of the above W
4.16 Cases not otherwise covered X

5 Second symbol — Nature of multiplexing
5.1 None N
5.2 Code-division multiplex[4] C
5.3 Frequency-division multiplex F
5.4 Time-division multiplex T
5.5 Combination of frequency-division multiplex and time-division multiplex W
5.6 Other types of multiplexing X

NOTES

1. Emissions, where the main carrier is directly modulated by a signal which has been coded into quantized form (e.g. pulse code modulation) should be designated under (1.2) or (1.3).
2. This excludes time-division multiplex.
3. In this context the word "information" does not include information of a constant unvarying nature such as provided by standard frequency emission, continuous wave and pulse radars, etc.
4. This includes bandwidth expansion techniques.

EXAMPLES

Necessary bandwidth

The present method requires the necessary bandwidth of an emission to be indicated in kilohertz by up to three significant figures, the last being almost always a nought or a five. Thus for emissions with necessary bandwidths shown in the first column of Table 2 the corresponding designations will start with the number shown in the second column:

SIDEBAND ELECTRONICS ENGINEERING

Proprietor: ROY LOPEZ VK2BRL

SIDEBAND ELECTRONICS SALES

Proprietor: PETER SCHULZ VK 2ZXL

All equipment advertised available from the following addresses:

P.O. BOX 23 SPRINGWOOD NSW 2777
213 HAWKESBURY RD. SPRINGWOOD NSW
TELEPHONE: (047) 54-1392
and by arrangement from:
33 ASPINALL ST. SHOALHAVEN HEADS NSW 2535

P.O. BOX 710 CROWS NEST NSW 2065
22 CLARKE ST. CROWS NEST NSW
Telephone: SHOWROOM – 438-4191
WAREHOUSE – 521-7573

THIS MONTHS SPECIALS

KYOKUTO FM-2025A Mk 2 2M FM transceiver **$325** while stocks last. TL-922 **$950**
TRIO-KENWOOD EQUIPMENT – TR-9000 **$550** TR-7800 **$400** TR-2400 **$340** TS-600 **$475** SM-220 **$350**
SBM TWIN METER SWR METER 3.5-150 MHz **$20** SBM MOBILE ANTENNA MATCHER 3.5-30 MHz **$25**

We specialise in Kenwood Equipment Sales and Service. Kenwood Equipment available at competitive prices.

ANTENNAS

TET HB35C log/yagi 10-15-20M 13' boom	$360
CUSHCRAFT A3 yagi 10-15-20M 14' boom	$280
HY-GAIN TH3-JR yagi 10-15-20M 12' boom	$220
HY-GAIN 411 yagi "10M" 5 el 17' boom	$110
HY-GAIN GPG-2 2M vert. 5/8W 3-4db gain	$22
HF HELICAL WHIPS 10-15-20-40M each	$25
HF HELICAL WHIP 80M	$30
SPECIAL PRICE for set of whips w/bumper mt & spring base	$120

MULTIMETERS — DIGITAL

DT-810 LCD readout 16 ranges colour coded	$100
DT-820 LED readout 16 ranges colour coded	$85
DT-830 LCD readout 30 ranges (Sept. del.)	$110
CC-01 Carrying case	$7
UP 11 hFE probe	$5
UP 12 IC Clip leads	$5
UP 13 Universal test lead kit	$8

MULTIMETERS — ANALOG

DT-1311 19 ranges 20K ohm colour coded	$30
DT-1313 19 ranges 20K ohm colour coded	$35
DT-1314 38 ranges 50K ohm colour coded	$40
DT-1316 36 ranges 50K ohm colour coded	$45

ACCESSORIES

CNA-1001 Daiwa 250W auto ant. tuner	$250
MK-1024 electronic keyer w/programmable memories	$195
POWER SUPPLIES 240V/13.8V DC: 2A regulated current limiting protection	$40
4A regulated short circuit protected	$70
6A regulated short circuit protected	$85
ASAHI type bumper mount	$6
STANDARD bumper mount complete	$5
HD SPRING MOUNT w/swivel ball mount	$15
HD SPRING MOUNT	$10
SWIVEL BALL MOUNT	$5
HD GUTTER MOUNT 3/8" 24 thread base	$8
MIRROR/ROOFBAR MOUNT w/base	$6
MAGNETIC BASE w/cable & plug	$16
MAGNETIC BASE w/out cable	$15
STANDARD MARINE BASE	$5
ADAPTOR 3/8 stud	.30c
ADAPTOR DOUBLE MALE 3/8 - 5/16	.50c
ADAPTOR DOUBLE FEMALE 3/8 - 5/16	$1.00
ADAPTOR 3/8 Male - 5/16 Female	$1.00
COAXIAL 3-way push button switch	$15.00
DUMMY LOAD 30W to 150 MHz	$14.00
5 Section LP filter KENWOOD & similar	$30.00
YM-37 YAESU 8 pin standard mic.	$15.00

MICROPHONE CONNECTORS

2, 3 & 4 pin plugs or sockets	each	$1.20
5 & 6 pin plugs or sockets	each	$1.50
8 pin plugs or sockets		$2.50

CABLES & BALUNS

RG8/U quality coax cable 50 ohm per metre	$1.25
RG213/U quality coax cable 50 ohm per metre	$1.50
RG58A/U quality coax cable 50 ohm per metre	50c
RG58C/U quality coax cable 50 ohm per metre.	60c
6 CORE Rotator Cable per metre	75c
BN-86 balum 50 ohm 1:1 1 KW	$25.00
HI-Q balun 50 ohm 1:1 1KW	$15.00

TRANSCEIVERS — RECEIVERS — ACCESS

Yaesu-Musen, Trio-Kenwood and Icom equipment available plus accessories. Ring, write or call in for information brochures and prices.

SWR/POWER/FS ETC. METERS

JD-110 SWR/PWR/FS (black) 1.5-144 MHz	$35
JD-111 SWR/PWR/FS (silver) 1.5-144 MHz	$20
JD-140 Antenna Matcher 100W 25-40 MHz	$15
JD-171 SWR/PWR/FS 1.5-144 MHz	$45
JD-175 SWR/FS/MATCHER 1.5-144 MHz	$40
JD-176 SWR/PWR/FSMATCHER 1.5-144 mHz	$55
JS-178 SWR/PWR/FS/MOD/MATCHER 1.5-144 MHz	$56
JD-181 SWR/PWR/FS 1.5-144 MHz	$20

NOTE: ANTENNA MATCHER RANGE 25-40 MHz ONLY

MARINE TRANSCEIVERS

2W 3 ch. hand-held w/crystals	$75
5W 6 ch. hand-held w/crystals	$115
5W 6 ch. mobile w/crystals	$135

CONNECTORS

PL-259 RG-8U and RG-58U types	each	$1.00
SO-239 1, 2 or 4 hole mount	each	.75c
RIGHT ANGLE connectors		$2.00
T-Connector 3 x SO-239		$2.00
T-Connector 2 x SO-239, 1 x PL-259		$2.00
PL-258 double female 2 x SO-239		.75c
Double male 2 x PL-259		$1.00
UG175/U reducer for RG-58U coax		.30c
UF176/U reducer for RG-59U coax		.30c
ADAPTOR RCA male to SO-239		.75c
LIGHTNING ARRESTOR PL-259/SO-239		$2.00
MLS RIGHT ANGLE PL-259 to RG-58U		.75c
GLP RIGHT ANGLE SO-239 to RG-58U		$1.00
M-RING car body mount 2 x SO-239		$1.00
UG363/U 2" feed thru D/F 2 x SO-239		$1.50
N SERIES CONNECTORS:		
N-type in-line plug		$5.00
N-type cable socket for RG-213		$9.00
BNC-CONNECTORS SILVER PLATED WITH TEFLON INSERT:		
UG88/U male in-line plug for RG-58U		$2.50
UG1094A/U panel mount socket		$2.50
UG89/U in-line socket for RG-58U		$2.50
UG914/U double female adaptor		$4.00
UG491A/U double male adaptor		$5.00
UG255/UBNC male to SO-239		$2.00
UG273/UBNC female to PL-259		$2.00
UG306/BNC Right Angle connector		$3.60

ROTATORS – INFORMATION ON REQUEST

All prices are NET, ex Springwood and Crows Nest, on pre-payment with order basis. All risk insurance is free of charge, allow for freight charges by air, road, rail or post, 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.

SYDNEY METROPOLITAN AREA DELIVERIES FREE

VHF-UHF
AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston, S.A. 5233

VHF/UHF BEACONS

Freq.	Call Sign	Location
28.230	ZL2MHF	Mt. Climie
28.260	VK5WI	Adelaide
28.262	VK2WI	Sydney
28.888	W6IRT	California
50.005	H44HIR	Honiara
50.020	GB3SIX	Anglesey
50.023	HH2PR	Haiti
50.025	6Y5RC	Jamaica
50.035	ZB2VHF	Gibraltar
50.036	HC1JX	Quito
50.038	FY7THF	French Guiana
50.040	WA6MHZ	San Diego
50.048	VE6ARC	Alberta
50.050	ZS3E	South West Africa
50.060	PY2AA	Sao Paulo
50.070	YVZZ	Caracas
50.070	VP9WB	Bermuda
50.080	W1AW	Connecticut
50.080	TI2NA	Costa Rica
50.085	WA6JRA	Los Angeles
50.088	VE1SIX	New Brunswick
50.089	WD4CEI	North Carolina
50.100	KH6EQI	Pearl Harbour
50.104	K4EJQ	Tennessee
50.105	KC4AAD	McMurdo, Antarctica
50.106	ZS6LN	South Africa
50.110	KH0AB	Saipan
50.110	KH0AB	Saipan
50.110	AL7C	Anchorage
50.120	4S7EA	Sri Lanka
50.144	KC6NI	Caroline Is.
50.498	5B4CY	Cyprus
51.022	ZL1UHF	Auckland
52.013	P29SIX	New Guinea
52.150	VK5KK	Arthurton
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.320	VK6RTT	Carnarvon
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.400	VK7RNT	Launceston
52.425	VK2RAB	Gunnedah
52.435	VK3RMV	Hamilton
52.440	VK4RTL	Townsville
52.450	VK2WI	Sydney
52.500	JA2IGY	Mie
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
144.010	VK2WI	Sydney
144.400	VK4RTT	Mt. Mowbullan
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.555	VK5RSE	Mt. Gambier
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.900	VK7RTX	Ulverstone *
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.440	VK4RBB	Brisbane
432.450	VK3RMB	Mt. Bunningyong

* Indicates a correction to location per Joe VK7JG.

The beacon listing is considerably longer this month. As we approach the equinox it seems fitting to have a more complete listing on six metres. It is interesting to note, however, that during periods when there is a possibility of contacts being made on six metres as a result of follow-up on 28.885 MHz, it is not uncommon for stations, particularly with keyers, to run them between 50.100 and 50.110. Cases in point were the South African stations, which were often heard around 50.107, so a listing of some of these keyers on a certain frequency should not be taken as definite.

Will someone please tell me if VK2RCW on 147.400 in Sydney is still operational? I removed it from listing once and was promptly told to put it back, so would appreciate some feedback on the position.

The only information to come in this month in regard to my request for beacon information has been from Tasmania via Joe VK7JG. Looks like it is going to take 12 months to get it all together. Shame on you!

FROM TASMANIA

We don't often have any reports from down under, but Joe VK7JG, when sending along the beacon information, mentioned that six metres was very quiet at the moment except for occasional winter Es opening to the mainland. However, on 29/3/81 heard VP1A beacon on 50.090 at 559, same day heard ZF2DN beacon on 50.109 599 for nearly 2 hours Worked KG6DX at 2252Z on 20/4, WA4TNV/KL7 at 0052Z on 24/4, H44PT at 2300Z on 26/4, FO8DR at 2328Z on 30/4. Joe has now worked VK, VK0, ZL, JA, KG6, W6, KL7, YJ8, FO8, XE1, HL9, HM, P29 and heard W7, W5, ZF2 and VP1. That's quite a good effort, Joe, why don't you get all the details together and let me have them so they might be forwarded to "QST" for inclusion in the 6 metre listings?

VHF/UHF STANDINGS

"QST" does it, why shouldn't we? There don't seem to be any real reasons why VK should not have its own listings covering areas worked. On 6 metres it could be countries worked, e.g. VK1 to VK8 inclusive would be classed as one country, ZL1 to 4 the same, also JA, etc. But separate islands having, say, VK9 call signs would be counted as separate countries, as would all the various island territories throughout the Pacific and other areas. VK0 would be a separate country in several places.

Information required: Your call sign, date of application, country, call sign of station worked, band (state if 52/52, 52/50, 52/58), date worked, QSL received yes/no, propagation mode (Es, FT, tropo, EME, m.s., aurora, etc.), transmission mode (SSB, CW, FM, RTTY, etc.), your address, and any remarks you may care to add.

For 144 MHz and above the details required would be: Your call sign, date of application, call area, call sign of station worked, band, date worked, QSL received yes/no, propagation mode (Es, tropo, EME, m.s., aurora, etc.), transmission mode (SSB, CW, AM, FM, RTTY, etc.), your address, and any remarks you may care to add. (Note: Different call areas required here.)

I don't mind giving it a try and from time to time publish the listings, they could be of considerable interest. I do, however, reserve the right to ask anyone for more details of any contact, and if you are asked to produce a QSL or similar would expect you to do so, or at least in the first instance a photocopy of it.

By the time you read this the Remembrance Day Contest will be over, so why not give your VHF/UHF standings some attention? As mentioned last month, we have the entry from Steve VK3OT for starters on 6 metres with 26 countries, with 25 confirmed. A good effort. Who can beat or get close to it? And what about people like Rod VK2BQJ with his mass of 2 metre contacts, including to ZL! I suppose there won't be any prizes on the end of it, but it might be interesting to find out who are our top DX operators on the various bands. So go to it!

WESTERN AUSTRALIA

Good to hear from Wayne VK6WD this month. He wrote firstly to comment on the rather large 6 metre opening between VK6 and VK3 and VK5 on 17/7/81. First seemed to start about 0556Z with a call on 52.050, which was answered by VK5AS, then followed by VK5KK, VK5LP, VK5ZWZ, VK5ZBU, VK3AUI, VK5ZDR, VK3AMQ, VK5AGM and VK5ZRO. Signals varied between S3 and S9+ as the opening waxed and waned throughout the two hours the band was open. One of the best winer 6 metre openings to VK6 for a long time.

During the opening Wayne mentioned the reception by Tony Mann of the Adelaide FM stations, details as follows: 0600Z 92.9 MHz, 0620Z 107.5 MHz, with both stations full scale on the meter using whip antenna! Both stations lost at 0640Z. No

sign ot Channel 5A or Channel 3 TV from SA. Looks like the MUF was really creeping up that time.

For your interest Wayne mentioned the Perth FM stations are on 92.1 MHz 6UVS, 96.1 6NOW, 97.5 6ABC, with Channel 5 TV sound on 107.750.

Wayne reports reception as follows from South Africa: 18/5 0809Z ZS6DN 50.054 5 x 1, beacon only. 0828Z ZS6LN 50.106 5 x 3 in QSO with VK5ZK; 0831Z worked ZS6LN (50.106) 5 x 1 with VK6WD (28.885) 5 x 4; 0849Z ZS6LN (28.885) 5 x 7, to VK6WD (52.005) 5 x 1 to 5 x 2; 0849Z ZS6LN (50.106) 519 to VK6WD (52.005), 519, unconfirmed. 0833Z ZS3AK 50.105 5 x x beacon only; 0915Z ZS2SS 50.112 5 x 1 very briefly. Good work,Wayne, at least you have been sharing in some of the contacts which had earlier been started in VK5. Wayne also reported no 6 metre DX between 19/5 when KH6EQI was 5 x 5 and the Es opening to VK3 and VK5 on 11/7, so obviously very quiet in the West. Thanks, Wayne, please write again.

MELBOURNE

Gil VK3AUI writes to say he has received a letter from Rolf PY1RO, who is temporarily off the air whilst relocating his station, and included details of the PY2AA beacon on 50.060, which runs 20 watts to a vertical antenna located on top of a tall building in Sao Paulo. The beacon was formerly that of Fred PY2XB, who has two phone numbers, viz., 5511-241-5695 and 5511-542-4364. Rolf PY1RO is 5511-222-8844. Fred PY2XB lives in the same town as the beacon and is active on 6 metres.

Gil also reports further FM reception having been made in Mar Del Plata, Argentina on 10/5/81 around 2345Z of the Melbourne station EON on 92.3 MHz. It seems the station has received a cassette recording of their signal which was submitted by a listener using an FM dipole and FM broadcast receiver. This may be the same listener who recorded signals from 3FOX in Melbourne at 0829Z on 13/9/80, as the Argentine area is the same. Interesting.

CHANNEL 0

My spies have informed me that Channel 0 in Brisbane has just recently bought a new transmitter! If correct, so much for any hope of one less 0 station. I note also CRUD 0 in Melbourne has shifted the sound frequency to 51.750 MHz, which is the same as that of the Brisbane station. Might be interesting to see what happens during an Es opening now. Or maybe the new Brisbane station will be using the offset formerly used by Melbourne; time will tell I suppose.

SIX METRES IN UK?

Graham VK6RO has sent me an interesting editorial from "Mobile News", the journal of the Amateur Radio Mobile Society in the UK. In part it reads: "SIX METRE MOBILE: British members may know that since May last year a beacon, GB3SIX, on 50.020 MHz, has been operating from the island of Anglesey in North Wales, between 0100 and 0830 local time, the restricted hours due to television broadcasting in Band 1.

"The latest development is that two dozen British amateurs have been offered permission to operate on the six metre band outside TV hours, a fact which emerged at the recent VHF Convention at Esher in Surrey. The way this information came to light has come in for strong criticism, particularly from many keen VHF folk who were unaware that anything was in the offing.

"Roy Stevens G2BVN, the RSGB's Telecommunications Liaison Officer, subsequently telephoned us to relate the authentic account and stated that, for its part, the Home Office seems quite willing to grant a six metre licence to all Class A licensees right away. However, the present encumbent of Band 1, the BBC, appears to be hanging on grimly to Its allocation, even though all Band 1 TV will be closed down by the middle of the decade.

"Roy explained that this is a foot-in-the-door approach and if, after a few months, thre are no complaints of interference, there would seem to be every possibility that the six metre band will be made available to all, initially on a restricted hours basis."

Good luck to the British boys, I hope they get their allocation, it may even lead to other countries in Europe following suit.

STATION ADDRESSES

Neville VK2QF asks about the considerable list of VK0 stations appearing in VK6XI column of AR and what their 6 metre capabilities may be. As far as I know there is not much being done in this regard, which seems a pity. I will ask around in the meantime.

Neville also asks for some QSL information to be published from time to time. That's quite a good idea in view of the quite considerable contacts made with overseas stations on 6 metres. Here are some addresses to start with from my pages.

KG6JDX: Joe Manusco, POB 20732, Guam.

KG6DX: Joel E. Chalmers, AFCF OL-AD (141), APO, San Francisco, California, USA 96334.

H44PT: Peter Taylor, PO 81, Honiara, Solomon Islands.

XE1GE: G. W. Lord, APTO No. 875, Cuernavaca, MOR, Mexico.

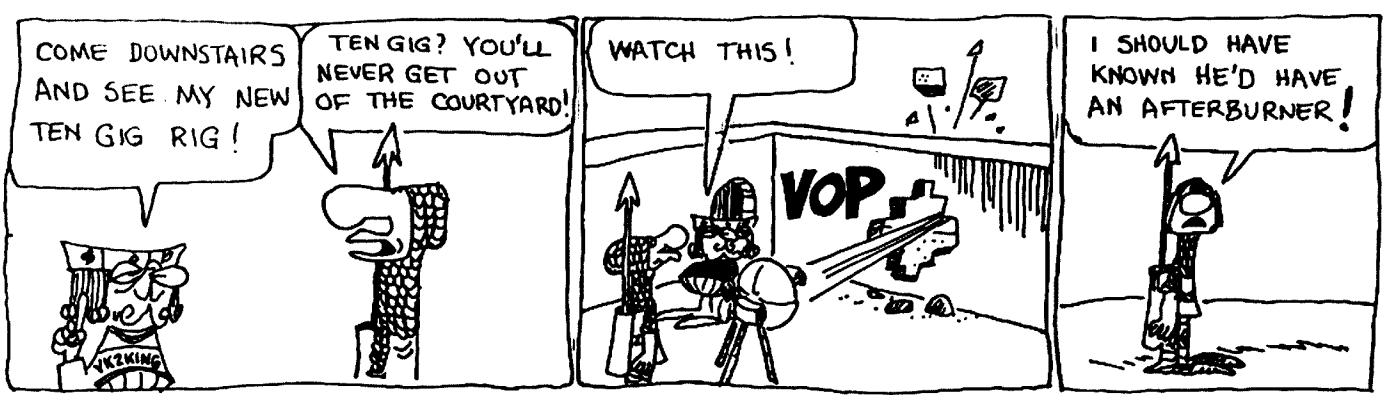
XE1TIS: Kenneth M. Price, PO Box 337, Irapuoto, Gto, Mexico.

FO8DR: Rene Del Amare, Route Del Pointe Venus, Mahina, Tahiti, French Polynesia.

Next month I will try and have a few more for you and this may assist in obtaining your QSL. Don't forget to include at least two IRCs, possibly three, for a prompt airmail reply, because the operator at the other end may not be that interested in you unless you are a rare contact for him. Most will reply providing you proceed properly and recognize that the load on his finances might be heavier than on yours because he may be a rarer contact. Play it safe if you really need his card by including adequate postage.

Neville makes a suggestion about slightly mutilating the postage stamps to ensure they get through the postal system at the other end. That's one possibility, I suppose, as I have lost some stamps from letters on route in the past. However, as a stamp collector I think I would prefer to take the chance and most times receive an intact stamp which can be safely removed than having a damaged one. Possilby the operator at the other end would feel the same about the stamps I attach to my letter!

The important point of all this of course is that if you badly want a card you will have to pay something extra In the way of airmail postage to get it. Certainly never



rely on a bureau as many overseas stations do not use them or do not have access to them, the direct QSL is the only way. The VK5LP return rate from overseas QSLs has been quite good, there are very few misses even *from* the JAs.

There are those operators of course who have QSL managers. Follow their instructions if this is the case and don't send direct. Often lists are shown in Amateur Radio and *Amateur Radio Action* of QSL managers for various stations — if you see one you have worked or want to work then write the details down safely otherwise when you want it you won't know where to look!

SIX METRES IN GENERAL

Most activity during the past month has been confined to occasional Es openings from VK5 to VK2, VK4, VK6 and VK7 and ZL. It is quite surprising the *number of* times ZL TV stations can be heard at quite good strength but no amateur signals. There is nothing to really report as being exceptional in any of these openings being the usual winter time Es.

It is significant to note, however, that even the Northern Hemisphere is taking a rest from their frenzied activities of the past two years, and having to be content in the main with their summer Es openings. Bill Tynan in "World Above 50 MHz" in July QST reports a number of good openings to Argentina during April from the USA, and comments that Peter YJ8PD had to wait two years to work the US on 6 metres, when he finally did on 12/4 with W6XJ, and on 16/4 to KD6R, WB6NMT, K6DYD and a number of other 6s. Good luck, Peter, but you are doing better than I am. I still wait for a contact confirmed to the US after many more years than two!

GEELONG AMATEUR RADIO CLUB

Congratulations to that very active body of amateurs in Geelong, and I mean active. Their July newsletter shows no less than 15 meetings or some other activity between 17th July and 2nd October, and the range of subjects covered is considerable, and should be capable of satisfying most of their members. The Club's activities list certainly puts to shame a city like Adelaide, where it is difficult to find anyone sufficiently interested to make a move to get the beacons back on the air, the work having to be left to the same ones every time.

CONCLUSION

These notes are being prepared several days in advance of the usual closing date to allow for a slow delivery by Australia Post due to industrial action. Thus anything which comes in the next day or two might not make the deadline.

I noted in the June issue of the South East Radio Group (Mt. Gambier) Newsletter a hint regarding a soldering aid. They say a dental pick makes a good de-soldering tool, you can relieve holes, clear tracks and prise the lead away from the board, etc. Ask your dentist for a worn out one.

Good DXing during the equinox, there should still be some good long distance six metre contacts around, especially in the mornings. And we do not yet know whether September/October might even be a better time than March/April for contacts between VK and Africa and/or South America. African contacts to the south will be late afternoon contacts (local time), so be alert. Watch out for the South Africans on 28.885 in the first instance, and for their keyers around 50.106 MHz.

Closing with the thought for the month: "Success without honour is an unseasoned dish; it will satisfy your hunger, but it won't taste good."

73. The Voice in the Hills. ■

CONTESTS

Reg Dwyer VK1BR
PO Box 236, Jamison 2614

CONTEST CALENDAR

September

6	Bulgarian CW	CQ 7/81
12/13	European Phone	CQ 6/81
19/20	VK Novice	AR 8/81

October

3/4	VK/ZL Phone	AR 5/81
10/11	VK/ZL CW	AR 5/81
17/18	Jamboree on the Aair	
24/25	CQ WWDX Phone	

November

8 & 22	Czechoslovakian Phone/CW	FCM
14/15	European RTTY	
28/29	CQ WWDX CW	

RULES

BULGARIAN CW CONTEST

Classes: Single operator, single/multi-band, multi-operator/club and SWL.

Bands: 3510-3590, 7005-7040, 14010-14090, 21010-21125, 28010-28125 kHz, CW only.

Exchanges: RST plus ITU zone.

Scoring: Six points for contact with an LZ station. One point for station on same continent and same country. Three points for stations in all other areas.

SWLs: Three points for report on both stations in QSO. One point if only report on one station.

Multiplier: Sum of ITU zones worked on each band.

Final score: Total QSO points multiplied by sum of ITU zones worked on each band.

A separate log is required for each band, together with a summary sheet showing the scoring and zones worked on each band and the usual declaration of participation is required.

Logs to be sent by 30 days after the end of the contest. Send to BFRA Contests, PO Box 830, Sofia 1000, Bulgaria.

Good luck.

73. Reg VK1BR. ■

AROUND THE TRADE

SCALAR INDUSTRIES RELEASES NEW PRODUCT FROM TEN TEC

The Scalar Group also advise arrival of a new Model 209 dummy load from Ten Tec. Technical details are:—

The new Ten Tec Model 209 air-cooled RF dummy load is an excellent accessory for the ham shack or test bench. It allows traismitter operation for testing or alignment without a disturbance to other amateurs on the air.

Model 209 is rated at 300 watts for 30 seconds with derating curve for extended use. VSWR is 2.1 : 1 maximum from 0-30 MHz, 1.5 : 1 maximum from 30-150 MHz. The dummy load is housed in a perforated aluminium enclosure, dark painted for excellent heat dissipation characteristics. SO-239 connector is built-in for convenient installation.

Specifications: Power rating — 300 watts for 30 seconds, derating curve to 5 min. VSWR — 1.1 : 1 maximum 0-30 MHz, 1.5 : 1 maximum 30-150 MHz. Size — HWD 1¾ in. x 2¼ in. x 6⅜ in. Weight — ½ lb.

For further information contact one of the Scalar offices in Melbourne, Sydney, Brisbane or Perth. ■

TEN TEC ANTENNA TUNERS FROM SCALAR INDUSTRIES

The Scalar Group announces that the two Ten Tec antenna tuners, Models 247 and 277, have been superseded by the release of 227 and 228.

Technical details are:—

A 47-tap toroid, two inches in diameter, with silver-plated 18 gauge wire and tap selector, is the heart of this tuner. Used in a wide range "T" network with variable capacitors, it permits vernier tuning for easy, accurate adjustment. A front panel five-position antenna select switch offers a choice of dummy load or one of three antennas. One antenna may be bypassed around the tuner circuits if desired. Also one may be a long wire. Model 228 will match the conventional 50-75 ohm unbalanced output of transmitters or transceivers to a variety of load impedances. A built-in balun converts one antenna to a balanced configuration if desired. Antenas such as dipoles, inverted "Vs", long random wires, windows, beams, rhombics, mobile whips, zepp, Hertz and similar types can be matched over a frequency range from 1.8 to 30 MHz. Power rating is 200 watts, RF, intermittent; 100 watts continuous. A built-in SWR bridge and meter indicates ratios between 1 : 1 and 5 : 1. Housed in an attractive aluminium case, Model 228 is an ideal accessory to any transceiver with input power up to 200 watts.

Model 227 Antenna Tuner

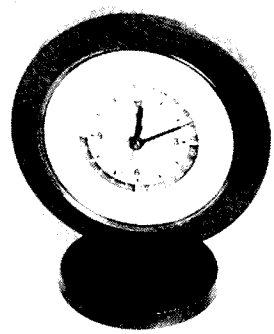
This is identical to the Model 228 but without the SWR bridge. Styled to match Ten Tec delta and omni transceivers.

For further information contact one of the Scalar offices in Melbourne, Sydney, Brisbane or Perth. ■

NEW PRODUCTS FROM DICK SMITH 24 HOUR QUARTZ WORLD CLOCK

This new Yaesu 24 hour quartz world clock enables you to know the time anywhere in the world at a glance. It is available from all Dick Smith Stores.

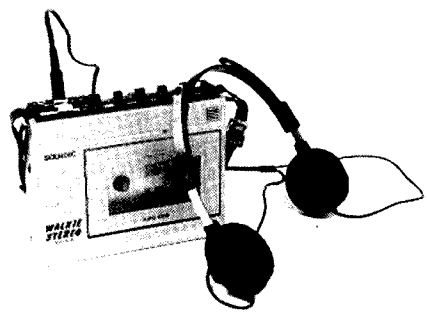
For amateur radio enthusiasts the 24 hour clock takes the guesswork out of trying to contact people overseas. It has an attractive simulated walnut finish and can be hung on the wall or attached to its supplied stand. It represents good value for money at $49.50. The Yaesu world clock uses one "C" cell battery, which is supplied and, of course, it is quartz controlled for accuracy. ■



WALKIE STEREO CASSETTE PLAYER

Now you can listen to your favourite prerecorded stereo cassettes wherever you are with this new compact player. The Dick Smith Walkie Stereo, Cat. No. A-4055, is supplied with super lightweight stereo headphones ideal for joggers, golfers, walkers or anyone on the go. And it has two headphone sockets so you can share this stereo sound with a friend. The neat little play unit has a tone selector to suit the listener and, to protect the tapes from damage, there is an auto shut-off mechanism.

The Walkie Stereo also incorporates a "Talk" button for when you want to talk to a friend — you can actually hear your friend's voice through the headphones. Cost $99.00. ■



SOUND TRIPPER I

This is not just a portable radio. Equipped with high quality, lightweight headphones, this little FM/AM receiver is ideal while walking, playing golf, working and even jogging. The clear, precise sound will keep you in touch with music or news wherever you are. The clip-on attachment saves the necessity of carrying the Sound Tripper I and with the dual volume control you can adjust the sound to suit your individual taste. A second set of headphones may be added so a friend can also tune in.

The Sound Tripper I, Cat. No. A-4330, is available from Dick Smith stores and costs $49.50. ■

HY-GAIN V-2

Audio Telex announce the new V-2 2m antenna.

SPECIFICATIONS

Electrical:

Of particular importance is the gain spec. The gain of 3 dB, using a dipole reference, and 5.2 dB, using an isotropic reference, is the best you can do with antennas of this size and type. The most common problem with an antenna design of this type is inadequate isolation of the coax shield. RF comes back down the shield of the coax, resulting in gain robbing distortion of the radiation pattern. Telex engineers have isolated the feedline shield by using the unique dual radial system. Electrically the V-2 is outstanding.

The bandwidth of the V-2 antenna is also signficant — at not less than 7 MHz under 2 : 1 VSWR. The entire 2m band is covered and no tuning is ever required.

Mechanical:

The mechanical design of the V-2 is also outstanding. It can be put together in about 20 minutes, and it will survive even the meanest thunderstorm. The feed point is weather protected and accepts a standard PL-259 connector. The mounting bracket clamps to any mast diameter up to 2 inches (51 mm). That means that it will easily mount on any commonly used tower mast.

The V-2 can be quickly taken apart at the centre by loosening one clamp. It is therefore easily transportable.

150 MHz Land Mobile Use:

The V-2 is supplied with dimensions for use from 138 MHz to 174 MHz. This covers the 150 MHz land mobile band.

CONCLUSION

The V-2 represents a great deal of thought and planning and should prove very popular. ■

THE NEW FT ONE

The Yaesu Musen Co. Ltd.'s new HF Station will be here soon. The new FT ONE is said to be the ultimate in design, functions and accessories — it "has everything".

For details, enquire from the Snowy River Company, PO Box 227, Greenacre, NSW 2190 — (02) 709 1557, and Andrews Communications Systems, PO Box 33, Keisington, NSW 2033 — (02) 349 5792.

TRY THIS

WITH THE TECHNICAL EDITORS

FULL BREAK-IN CAPABILITY (QSK) FOR 520S

Mr. G. Donk VK2VPD/7
Investigator Hall, Box 788, Launcaston, Tasmania 7250

When you send CW, and finally have a break because your arm is almost falling off, you will have found the annoying experience that the person at the other end lost you after the third word and wants a repeat. This of course does not happen if you are using split frequency and a separate receiver, but not many of us work in this fashion. If your transceiver were to switch back to receive every time the key was not held down, you would be able to hear him the instant he pushed his key when he tried to signal you to stop. In commercial traffic handling this is done, and the moment you hear a tone in between your dits and dahs that you know you didn't produce you stop and listen. But unfortunately most amateur transceivers when used in the VOX mode still have too long a delay constant even in the most sensitive setting when the VOX delay is at minimum.

This problem can be cured. I own a Kenwood 520S, and if you have one, too, you might like to make the modification shown. The VOX delay system works more or less on the principle of a time constant being produced by an RC circuit, and the length of this time constant (T) may be shortened by decreasing the value of either the resistor or the capacitor. The manufacturer has chosen to vary the delay by the use of a small potentiometer because it is easier and cheaper to put in than a variable capacitor. But this pot still has quite a large amount of resistance even when set at minimum, and unfortunately the pot cannot be substituted with one of a lower value because if the resistance drops too low then Q6 will take off.

What I did was to remove C10 on the VOX board (refer Fig. 22 in manual), the 3.3 uF capacitor, and replace it with a 1 uF cap. But one bit of care must be taken in selecting the right type. The existing cap is rated at 50V but when a smaller cap is put in its place the voltage across it increases somewhat. I replaced it with a 1uF greencap (250V) and this seems a little large in size at first but there is plenty of room in that part of the transceiver. If you do on the other hand decide to replace it with another electrolytic, then make sure that you observe the correct polarity.

I have been using this system for a number of months now and it has made the world of difference. I no longer have to repeat large slabs in CW because I now tell the other party that I have full QSK so that I can hear him the instant he butts in even if I am half through a single letter. Another advantage is that if a third party wants to join in he does not have to wait and wait for that elusive break In the conversation. If he puts his call in I will stop and listen.

The modification on the 520 only takes about 5 minutes when you have removed the top cover, and that is only held on with eight Phillips screws anyway. You will find the board in question just next to the small removable panel which houses the VOX controls on the left-hand side.

The number of the board is X54-0001-00 and the schematic diagram may be found on page 32 of the operating manual. To make things simpler still, there is a photograph showing the position of the VOX unit on the back of the foldout sheet. The diagram given should clear up most problems anyway.—(From the Propagator, June 1981.) ■

HOW'S DX

Ken J. McLachlan VK3AH
PO Box 39, Mooroolbark 3138

BURMA

The months of June and July as far as the Oceania DXer is concerned will probably be remembered in years to come as the period when you spent many hours monitoring a couple of frequencies to work XZ and, whilst doing so, were thoroughly educated in oriental psychology by their approach to list taking to a world-wide pile-up that appears when a country hasn't been active for nearly twenty years.

The Californian kilowatts roared into action, manners and operating ethics were thrown to the wind, back chat and obscenities were in excess of the contacts made, and the reports were very poor.

If your call sign came out in the lottery the four colour card will be in your hands or on its way by now. If you sent yours off direct (mine arrived late July), that is, if you weren't one of the unfortunate ones whose call sign missed the log and apparently it could have happened.

Accreditation as to whether XZ5A or XZ9A will be accepted for DXCC is a little cloudy due to a number of questions which have to be answered. Some of these are: Will the Central Administration of Burma recognise the Regional Government of Kow Thoo Lei, who issued the licence? The licence was issued to Mr. Fukuta (JA8BMK) and Mr. Shimaya (JA8BKM), so why Sanplo the operator? JA8BKM and JA8BMK being back in Japan. The licence was issued for 24 hours. Why was this exceeded? Are there additional permits or extensions or has another licence been issued? Sanplo and Laydoh speak excellent English and are both in the military operation over there, so it must be a joy to have such modern equipment to play with.

These and other questions have to be answered before any of us lucky enough to have a card can say that is one less in the paperchase.

To make life a little more interesting 9U5JM appeared with the ANZA net (21.204 MHz 5.00 UTC daily) in the middle of July. This was one of the stops by Professor Ed W4MGN of Georgia University during his whirlwind tour of Africa.

Some 155 VK and ZL operators made the grade, however the exercise brought the "best" in some participants to the surface.

There were the "queue jumpers", "Wanta work it on CW", "You missed me" operators talking over the top of Ed, which I feel is very discourteous, particularly to the DX station, and the person who is trying to run the list. Also it doesn't create any confidence in a prospective DX expedition thinking of joining the frequency in the future.

DX NET OPERATIONS

The popularity of DX net operation is on the increase, and the debate as to whether they are good or bad is also heating up. I am not going to enter into it in this column, however for those stations that partake or may wish to join a net, the following may help you and the net controller:—

DO:—

(a) Check in ONLY when your call area is asked for.
(b) Abide by the controller's Instructions.
(c) Make your calls smart, precise and give the signal report (5 and 0 is not a report).
(d) QSL your report by repeating it and pass it back to **NC**.
(e) Count the report only when necessary.

DON'T:—

(a) Tune on frequency (build or buy a dummy load).
(b) Call out of turn.
(c) Talk over control or a station calling.
(d) Call more than two stations.
(e) Repeat the signal reports of another station.
(f) Ask for QSL information until all the stations on the list are cleared.

Basing your operating technique on the above will allow you and other members to enjoy the time spent and work more efficiently, also relieving a lot of strain from the master of ceremonies.

POSTAL AND IRC COSTS

July 14 was price rise day for Australia Post, internal mail up 2 cents, external mail no change, but IRCs up 15 cents to 60 cents, surrender value 40 cents. In the USA IRCs are now 65 cents with a surrender value of 35 cents. US mail to VK is 40 cents.

Therefore it is a lot cheaper to us and more profitable to the DX station to receive a "green stamp". An American dollar, which is readily available, costs 84 cents and I have used this method for three years with a 100 per cent return.

QRM

Have you been QRMed whilst trying to work that rare DX station? Well administrations are doing something positive about it. The FCC just recently caught somebody doing just that and they relieved a W1 and W4 of their licence and equipment permanently, which was a very costly error. Also it is believed the ZL authority has made efforts to relieve tension and possible problems on certain frequencies.

DX JOTTINGS

VS9K: Very high on the wanted list, was due to appear on the 30th July. The proposed operation was in the lands of JA1AFD.

4W: Fact, fiction or straight out rumour, but a JA was reportedly due there for a stint in late July.

5A Libya: The G3JKI/5K card you received is still a no no at Newington, however there are hopes for an EA operator to go there in the near future. Prompt QSLing and being good for DXCC would make anybody that worked it very happy.

IA0KM: Knights of Malta. ARRL DX Advisory Committee recommended it as a new country, being number 319, however it is believed the Directors have put it aside for the present. Pity, as it is a very nice card.

VK4AFH/LH: Ron ZL1AMO was very popular during his stay ,which apparently was a big success, and CW took a big share of the log. QSL direct to Ron ZL1AMO.

ZL3AFH/A: Warrick has had his share of problems, the latest being his final tubes, but new ones are on the way via an air drop, also he still doesn't know if his time extension has been approved for his stay till next April. QSL route via ZL2**HE**.

VK9NYG: Frank on Cocos Keeling is getting into the swing of DX and keeping his QSL Manager, Neil VK6NE, occupied. Being restricted to the novice bands doesn't assist the eastern States as Frank is generally found on 28.480 MHz at 11.00, 13.00 and 15.00 UTC.

Neil VK6NE is looking to beg, borrow or preferably buy an external VFO to suit the FT101E which Frank uses in conjunction with a ATN log. periodic beam for 21 and 28 MHz. Any helpers with a VFO type FV101B?

Herik FR0FLO on 10 metres told me he was planning an expedition to Juan de Nova in September, with a duration of ten days.

Moussa 3B8AE/3B9 is using a TS120S and a two element beam at 20 feet for 20, 15 and 10, plus an inverted vee for 40 metres. QSL to the home call, replies will come when he returns, probably October.

C31WW was Gordon VK2DGS operating at TS130S, FL2100 and a multi-band dipole at 30 feet. Nice signals into VK and ZL on 20 and 15. QSL to home call.

RECIPROCAL LICENCES IN "G" LAND

Can be easily identified as they begin with a prefix of G5 and have a three letter suffix, whereas in ZL the figure 0 is used, followed by the allocated call; both are evidently irrespective of call area.

ROYAL WEDDING

GB2WED was one of the few special event call signs allocated for the Royal Wedding — another one being GB2RW. Both are believed to have special QSL cards.

Navassa HH2N: Very active on most bands, though rumours state no permit to land was issued by the Coast Guard who control that area — thus an illegal operation if you worked it. QSL to WD4JNS.

GOOF DEPARTMENT

7Q7LS quoted last month should have read 7Q7LW. Les has been around on 21.204 MHz, making quite a lot of VKs and ZLs happy.

MALAWI

Bob WA4SKE was to visit Malawi in the middle of August and hoped to present Les with new finals, also to operate from his QTH. It has been reported that amateur radio in Malawi is illegal under the present administration.

NORFOLK ISLAND

The Norfolk Island postal staff are slowly getting used to the popularity of Kirsti VK9NL and OM Jim VK9NS since they have got into gear, but the ZM7 QSLs will bewilder them as they arrive by the bag full.

Kirsti, prior to becoming an amateur a little over 12 months ago was a commercial operator, and now shares the Icom 720, linear and Wilson 6 element beam with Jim. also there is a phased four element vertical on 40 metres which makes the Europeans very happy according to reports heard.

Amongst other goodies in the shack there is some slow scan gear which they may press into service when space and time are available, but VK9N is really coming off the wanted list on CW and phone, and the prompt about turn on QSLs keeps the multitude happy and there might be some island hopping by the duo this month in the Pacific.

LIGHTNING STRIKE

The hard luck story this month must go to YS9RVE, patiently waiting his turn to work 9U5JM for a new country. A lightning strike took the power out; it came back on when all the action was over and Ed had gone.

Commiserations, Bob — better luck next time.

THINKING OF GOING ON A DX-PEDITION?

Well the West Coast DX Bulletin has done a survey for your interest. Here are the top 10 most wanted in North America:—

(1) China By, (2) Andamans VS9IC, (3) Burma XZ, (4 Albania ZA, (5) Laccadives VP/L, (6) Heard Is. VK0, (7) South Yemen 70 (due september 1981, further details later), (8) Kampuchea XU, (9) Crozet FB8W, (10) Bouvet (3Y). How many of these do you want?

If you worked a new country last month why not celebrate by joining up a new member for the WIA. There were a lot of new countries worked!

Thanks to VKs 2DPN, 2DXM, 6IH, 6FS, 6NE and Eric L3-0042 for their help and support.

Hope new ones come your way this month.

73. Ken. ■

LISTENING AROUND THE CW BANDS WITH ERIC L3-0042

160 metres: ZL1MY.

80 metres: KP4KK/DU2, KR6Q/OHO0, KS6O/OH0, SP5HJJ, UK1AFA, VA9CRF, VK4ANS/LM, VK9NL, W6PYV.

40 metres: C3INM, FM7BZ, FO8HA, HC4BB, HC7CM, HI3PC, HK3YH, HL5BAT, IT9ZGY, LU9EIE, XT2AW, ZS5MY.

20 metres: EA9EO, FB8YH, FO0NP, HC4WA, HK0ZO, LU8DQ, SP2AOY/OA4, VS5RP, VP2AZG, 3B8DB, 7X2SX, 9VITL.

15 metres: CR9UT, FO0FS/M, HL9TX, KP4V, ST0SA, SV0AA/5, VK4ANS/LH, VS5RP, VU2PAP, YB3MD, ZS5YN, 4X4VL.

10 metres: MA1XEK, KH6NO, VS5RP, YB0BRT, ZS5YN, ZS6AEI.

QSLs YOU MAY REQUIRE

9X5MH Ed, QSL WA4VDE.
9U5JM Ed, QSL WA4VDE.
VE1BL/1 St. Paul's DXpedition, QSL W3HNK.
DL2VK/ST3 Reiner, QSL DF9FM.
3D2FL Bert, QSL VK3HE.
A9XXD Jerry, QSL K7VDK.
EP2TY Paul, QSL JR3WRG.
SU1AA Eman, QSL Box 109, Giza, Egypt.
CO7AM Frank, QSL Box 44, Avil, Cuba.
CH2FOU, QSL VE2BCC.
TI9VVR Victor, QSL TI2EY.
TI9FAG Fernando, QSL Box 1, Hatillo 1300, Costa Rica.
A4XIU Brian, QSL G4FIR.
WB0ICS/KH7 Davie, QSL W6FBN.
N6YK/VP2A Guy, QSL N6NK.
VP2MDG, QSL W6FDG.
TU2HS, QSL DJ9HD.
VP2MH Arnold, QSL W8HM.
GU5DYP, QSL DL8FL.
CR9UT, QSL Box 798, Macau.
C3INM, QSL PA0GIN.
FO0FS/M, QSL KS6EV.
FO0NP, QSL OH2NP.
FB8YH, QSL F3KM.
HC7CM, QSL N5BET.
II7ET, QSL I7RJO.
HK0ZO, QSL PO Box 632, Cartagena, Columbia.
KR6Q/OH0, QSL K6TMB.
9K2FF Bob, QSL SV1TG.
EL2AG Ted, QSL WA4VDE.
HC8KA Ted, QSL HC5KA.
VQ9AA Reg, QSL AJ3N.

The photograph in August AR's column was NOT Ken, but Don VK2DXH, mentioned in text.

Sorry, Ken — but if you send us one of you, we won't do it again.

(VK3UV — Ed.)

AMSAT AUSTRALIA

R. C. Arnold VK3ZBB

There is no certainty on the operating status of OSCAR 7, which has not been heard since early June. There are some suggestions that some signs of the beacon have appeared at a lower than designed frequency but these have not been confirmed. Meanwhile, operations on OSCAR 8 have increased to make up for the loss of AO7.

OSCAR 8 is working well and is fully controlled according to its planned programme. Unfortunately, I have been unable to obtain and process updated orbital information in recent weeks, and forward predictions on the old data is subject to too great an error. Hence no predictions for September unless some figures turn up at the last minute.

UOSAT

The latest information is that the NASA Delta 2310 rocket (two-stage plus three solid castor — 11 booster) carrying a Solar Mesosphere Explorer spacecraft and UOSAT will be launched on September 15th at 11.41 GMT. An earlier date of launch is just possible but the time will be the same.

Separation from the Delta vehicle should take place over the Sudan, North Africa, at 12.52Z, assuming a nominal launch.

UOSAT is a complex amateur spacecraft which will require considerable post-launch activity to assess the performance of the on-board experiments and service modules. It is unlikely that the s/c will be activated for operational use for at least four weeks after launch.

The gravity gradient boom — some 18 metres long — will take three or four days to deploy and the manoeuvre to acquire gravity gradient "lock" may take three weeks.

Telemetry will be available on the two data beacons (145 and 435 MHz) during the commissioning phase, most probably at 1200 b.p.s. NBFM.

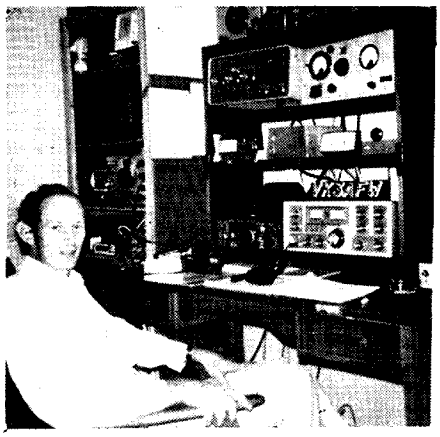
One area of uncertainty still remains on the SSTV experiment. It concerns the exposure settings for the CCD slow scan TV camera experiment. It appears that despite all the meteorological spacecraft launched to date, it has proved impossible to obtain quantitative data on the amount of illumination which may be expected from the earth below. Limited exposure control is possible through ground control once the s/c is in flight but it is desirable to preset the "stop" to a midway position for the anticipated illumination prior to launch. Detail courtesy AMSAT-UK.

The following predictions are based on the latest information available and should be reasonably accurate in September:—

SEPTEMBER 1981

	OSCAR 7			OSCAR 8		
Date	Orb. No.	Eqx Z	Eqx °W	Orb. No.	Eqx Z	Eqx °W
5	31118	0041	91.7	17849	0124	84.6
12	31206	0116	100.6	17946	0013	67.0
19	31294	0151	109.5	18044	0046	75.3
26	31381	0030	89.6	18142	0118	83.5

NOVICE NOTES



Edited by Ron Cook VK3AFW

Well we have a mixed bag this month. Firstly an aerial that offers the city-dwelling 80m operator a reasonable sized structure with useful efficiency. For those people who want an "invisible" aerial this might be the answer.

LOW COST LOOP

This aerial was first described by James E. Taylor in Electronics, April 12, 1971. It is built as a vertical loop and fixed to the side of a wooden building. RG8/U cable was used, not because it was coax, but just to provide a cheap large diameter conductor. The original aerial operated at 3.94 MHz and had a 1.5 : 1 VSWR bandwidth of 100 kHz. That is the operating frequency could be varied ± 50 kHz from resonance before the VSWR rose to 1.5 : 1.

The aerial may be thought of as a short half-wave dipole bent to form a loop and brought to resonance by a capacitor across the ends. This capacitor is made from 300 ohm feeder because this is a cheap convenient form of high voltage capacitor which can be easily adjusted by snipping a little off parts "a" and "b" in Fig. 1. The capacitor should be pruned until resonance is achieved at the required operating frequency. A dip meter will be found invaluable for this.

Once resonance is obtained the VSWR can be reduced if desired by varying the 2200 pF 500V capacitor which is in shunt with the feeder. There may be further adjustments required to the 300 ohm line as some interaction can be expected between the two capacitors. A VSWR less than 1.5 : 1 will give satisfactory operation. The dimensions shown are for a nominal 3.6 MHz.

Signals will be about 10 dB down compared to a full size dipole.

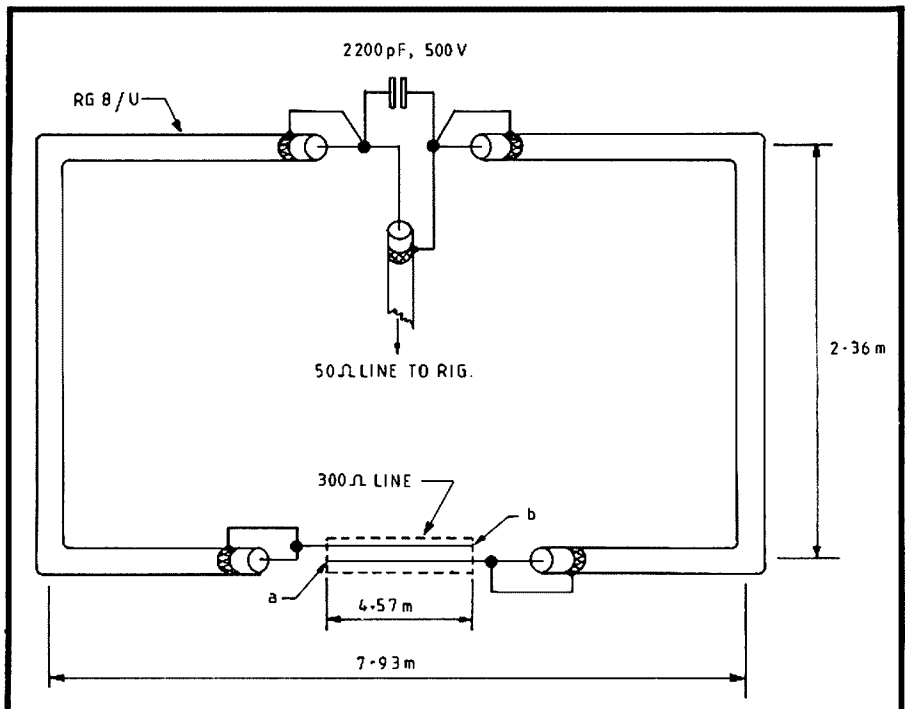


FIG. 1 LOW COST LOOP

F = 3·6 MHz. WEATHERPROOF ALL ENDS OF COAX WITH SILASTIC OR SIMILAR COMPOUND. PRUNE a, b, WITH SIDECUTTERS

SIMPLE METER CALIBRATION

To calibrate a meter first catch a meter calibrator. If you can apply known voltages to a voltmeter then the error can be determined — it is the difference between the applied value and the indicated value. If the errors are small they may be neglected but larger errors may be removed by adjustment or by applying a correction. The correction is the error but with the sign reversed so that when the correction is added to the reading the result is a more accurate measurement. The difficult part is in obtaining a reliable reference voltage.

In Ham Radio, July 1978, Bob Stein W6NBI describes a simple meter calibration system. What is presented here is a simpler system based on some of the information in Bob's article. The calibrators described here are for DC voltages from 0.1 to 10 volts only. If you have just built a voltmeter or want to check an old one this may help you.

Bob maintains that all new 1.35V mercury cells of the types given in Table 1 have a terminal voltage of 1.354V ± 0.002V (better than ± 0.15 per cent) when loaded to about 0.1 mA.

So for a calibrator covering 1 to 10V DC eight batteries may be wired as shown in Fig. 2. Higher voltages require a very large drain on the pocket or a more complicated circuit — most novices may find calibration up to 10 or 20V adequate. For voltages less than 1V a calibrated divider can be used as shown in Fig. 3.

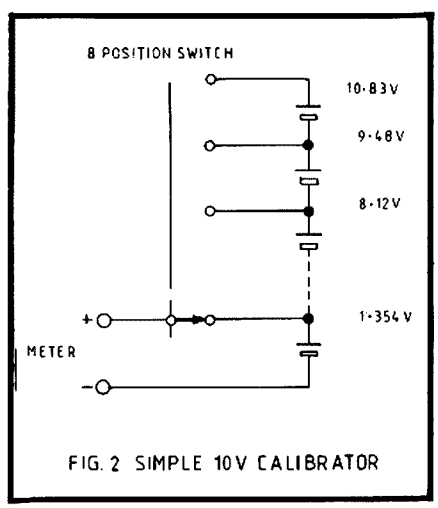


FIG. 2 SIMPLE 10V CALIBRATOR

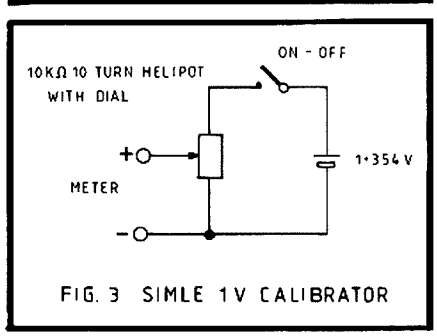


FIG. 3 SIMLE 1V CALIBRATOR

A word of caution. The current drawn by the test meter may cause errors. For example with the divider of Fig. 3 set at 5.0 at 20,000 ohm-per-volt meter on the 1V range has a resistance of 20 k-ohm. The current through the divider is 135 uA and the meter wants 25 uA. This upsets the unloaded ratio and results in the meter reading 20 per cent lower than it should. The error will decrease as the divider is moved away from the midway setting. A meter with a 10 M-ohm input resistance would cause a loading error of only 0.05 per cent. These errors are caused by the effective output resistance of the calibrator not being zero. Fig. 4 shows the battery voltage Vb applied across the two resistors Ro and Rm. Vm is the voltage seen by the voltmeter which has an input resistance Rm. Ro is the output resistance of the calibrator and is calculated by dividing the open circuit voltage by the short circuit current. When Ro is very small and Rm is very large the size of Vm is almost the same as Vb, so the error is then small. For our circuit Ro varies from 0 to 5000 ohms, the minimum value occurs at the ends and the maximum at the mid setting.

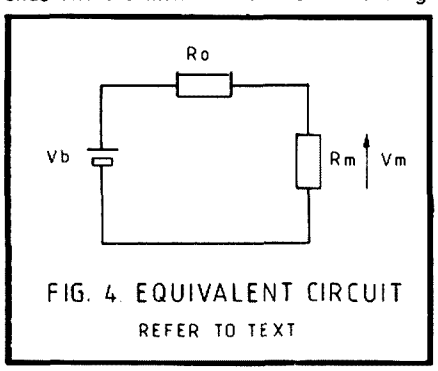


FIG. 4 EQUIVALENT CIRCUIT

REFER TO TEXT

Note that when measuring any voltage there are loading errors. One time where these will be found is when measuring the voltage at the base of a transistor. The circuit resistances may be some hundreds of thousands of ohms so even a 10 M-ohm meter will usually give a noticeable error.

For our calibrator the problem could be reduced by reducing the value of the divider but this might cause the cell's terminal voltage to drop too much. As the accuracy of the second calibrator depends on the accuracy of the helipot and dial combination choose one of sufficient accuracy (e.g. 0.1 per cent) but check the price first.

CHARGING NICKEL-CADMIUM BATTERIES

Nickel-Cadmium (Ni-Cd or Nicad) batteries are in common use in today's amateur equipments. These are usually of the sintered construction type so the following discussion applies specifically to this type.

A battery consists of two or more cells connected in series or in parallel. The series connection is far more common so we will restrict ourselves to this type of battery. Commonly the cells are of the AA size.

The cells are able to force electrons through an external circuit because of a chemical reaction that takes place inside. By forcing a current in the reverse direction these chemical changes may be reversed; this is called charging. Not all batteries can be recharged as sometimes the chemical changes are not reversible. Non-chargeable batteries are called primary batteries, chargeable batteries are called secondary batteries.

CAPACITY

The normal terminal voltage of a Ni-Cd cell is 1.20V but this may rise to 1.35V when fully charged or even to 1.45V during charging. See Fig. 6. Thus a nominal 9.6V battery may rise to 11.6V on charge or possibly even a little more. For this reason it is unwise to operate some equipment during charging.

Apart from terminal voltage another distinguishing feature of a battery is its ability to supply current for an extended period of time. This is called capacity and has the units of ampere-hours or, for smaller batteries, mA-hrs. The capacity is the product of the load or discharge current times the time that the current flows until the battery is discharged or flat. A cell is considered discharged when its terminal voltage falls to 1.0V. The capacity is determined from the 5 hour rate. That is a cell with a 450 mA-hr. capacity will supply 90 mA for 5 hours. If the cell is discharged at a faster rate the capacity measured will be less.

CHARGING

Charge rates are usually determined by dividing the capacity by 10, thus our 450 mA-hr. cell should be charged at 45 mA. Because the recharging process is not 100 per cent efficient the charge must be continued for some 12 to 14 hours. Fig. 6 shows a constant current circuit for charging Ni-Cds.

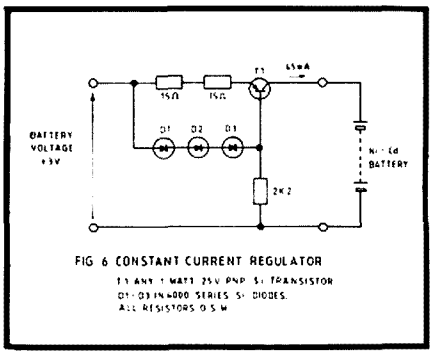


FIG 6 CONSTANT CURRENT REGULATOR

T1 ANY 1 WATT 25V PNP Si TRANSISTOR
D1-D3 IN4000 SERIES Si DIODES.
ALL RESISTORS 0.5 W

The constant current circuit woks as follows. Current flows through D1, D2, D3 and the 2.2 k-ohm resistor producing about 1.8V across the diodes. Because of the knee in the diode characteristic the voltage across the diodes is nearly constant. The base-emitter voltage, Vbe, of T1 is close to 0.6 volts when it is conducting and it also remains fairly constant. Now examining the circuit we see that the voltage drop across the two 15 ohm resistors is the difference between the diodes' voltage and T1's Vbe. As this is 1.2V the current through the resistors is 30/1.2 = 0.04A. Further this voltage across the resistors does not vary so the current through the resistors and therefore the collector current of T1 will not vary. In practice the current will vary 5 per cent or so and may be between 40 and 45 mA. Also if the collector circuit is connected to a resistor greater then 240 ohms then less than 40 mA may flow unless the supply voltage is greater than 13V.

The advantage of a proper constant-current source is that the battery is charged at a known and constant rate and so the full charge may be given by timing the process. I suggest that Ni-Cd batteries always be allowed to be fully discharged

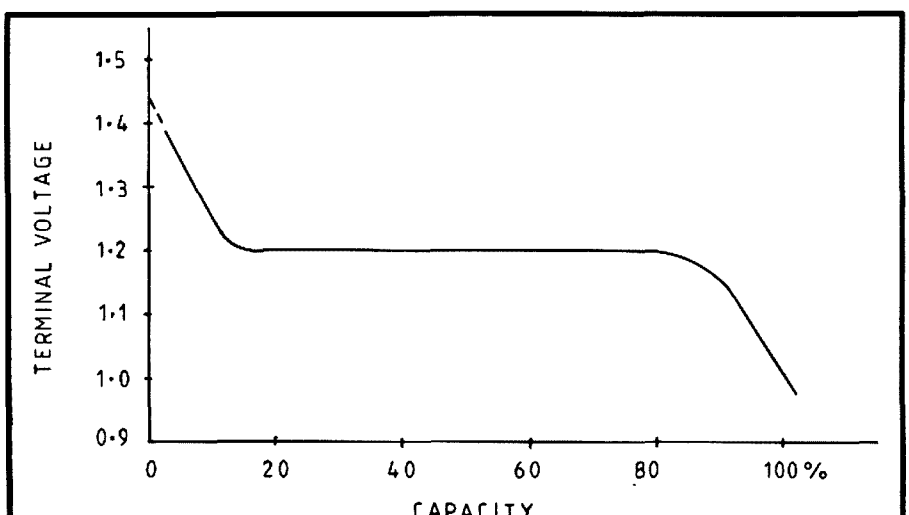


FIG.5 Ni-Cd DISCHARGE CURVE

450 mA-Hr CAPACITY AT 90mA DRAIN

before recharging — a reduction in capacity results from continual part recharges.

Many of you might want to charge a nominal 12V battery from a 12V nominal supply. It cannot be done with the constant current circuit as this would require about 17.5V input. Direct connection to a power supply or battery could result in the cells exploding and would certainly reduce their capacity. The fast charging that would occur would produce much heat and a considerable quantity of oxygen. If the cell vents you lose valuable chemicals and if it doesn't you may lose your hand! The internal pressures can be very high indeed! Special circuits are required for safe rapid charging of Ni-Cds.

The circuit in Fig. 7 shows an adaptor to allow 12V batteries to be charged at a constant current from a 12V source. A 555 IC timer is connected as an astable oscillator operating in the kHz region. The square-wave output from pin 3 feeds a voltage-doubling circuit using C4, D1, D2, C5. High frequency spikes are filtered by the 4.7 ohm resistor and a 0.01 uF capacitor. The output of this circuit is connected to the constant current circuit. A similar circuit was described by P. N. Butterfield in Rad. Com., May 1973, and gave very good results for input voltages between 11 and 15 volts.

CARE

Ni-Cds can be stored in any state of charge unlike most other secondary (rechargeable) cells, however they should not be discharged below about 0.8V per cell otherwise there is a possibility of reverse charging one or more cells in a battery. Reverse charging will reduce cell life. Overcharging will also reduce cell life, although a continuous "topping-up" charge of say 5 mA will do no harm.

If a cell appears to have lost capacity, or has been discharged for some time, two cycles of full charge, followed by full discharge, should restore the cells to a healthy state.

MALLORY	EVEREADY
RM 12R	E 12N
RM 4C1R	E401N
RM502R	E502
RM601R	E601

TABLE 1 SUITABLE CELLS

Some small crystals may form near the positive terminal. These are of no great significance but should be wiped off with a clean dry cloth and a smear of silicon grease wiped on to inhibit further growth.

Ni-Cds will slowly discharge if left alone, losing 80 per cent of their capacity at normal room temperature over five months. Higher temperatures speed up the process.

Do not short Ni-Cds as even small ones can deliver 10A or so and may heat the short to incandescence (OUCH!) and/or, because of internal gassing, may explode.

At the end of their life the cells are prone to developing internal shorts. WITH CARE these shorts can be temporarily removed using a power supply limited to 2A. The negative of the supply is connected to the negative of the cell with a heavy lead and another similar lead connected to the positive terminal. The power supply voltage is set to, say, 5V and the positive wire touched to the cell's positive terminal briefly (less than 1 second — otherwise . . .) three times. The short will probably be removed and the cell should accept and hold charge. I wear safety glasses when carrying out this procedure but extra precautions could be taken.

Look after your Ni-Cds and they will look after you.

73 de VK3AFW. ■

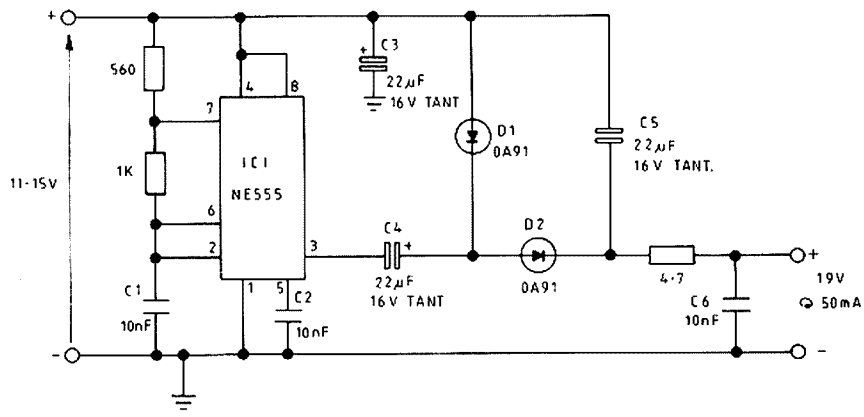


FIG 7. VOLTAGE SOURCE FOR CURRENT REGULATOR

IN914 DIODES COULD BE USED INSTEAD OF THE OA91 DIODES WITH LITTLE REDUCTION IN PERFORMANCE

Victorian Division WIA Western Zone Convention 1981

VICTORIAN DIVISION WIA
WESTERN ZONE CONVENTION — 1981

Location: Hamilton, Wool capital of the world.

Host Club: Hamilton and District Radio Club.

Date: Weekend Saturday, 31st October, Sunday, 1st November.

Venue: Hamilton Showgrounds.
All accommodation will be the responsibility of those attending.

Caravans: A limited number of private caravans will be available for families.

PROGRAMME

Saturday Afternoon: Registrations, trade displays, natter time (eyeball QSO), coffee and tea available (free), official dinner (7 p.m., BYO drinks), entertainment.

Sunday Morning: Limited number of challenging competitions, scenic bus tour, competitions for XYLs and harmonics, trade displays (all leading suppliers of amateur/CB/marine equipment represented).

Talk-in operating both days.

For further details contact the Secretary, Box 188, Hamilton. Phone (055) 72 3609. ■

LINGUISTS . . . Please Help

AR receives regular copies of overseas foreign language Society magazines on a reciprocal basis, such as —

VERON
CQDL
QTC
RADIO (USSR)
OZ
OLD MAN
JARL NEWS
RADIO AMATOORI

Copies of these occasionally contain articles and news which may be of interest to AR readers, but without proper translations cannot be used.

If any member is technically qualified as a particular language translator, could he please let us know so that his name may be recorded for any translation which might be needed in his language.

EDUCATION NOTES

From Brenda Emonds VK3KT

Trial Novice Examination papers will be available for distribution late in October.
Details will be in October AR.

AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

Here is a list of WIA Awards issued during the period 1st January, 1981, to 30th June, 1981, and the top DXCC tallies, new members and amendments as at 30th June, 1981.

WAVKCA AWARD

Cert. No.	Call Sign	Cert. No.	Call Sign
922	WA6DTG	939	Y53YF
923	GM4FIW	940	JH6WOC
924	VE3BZ	941	JA6XZS
925	VS6CT	942	JA2BXV
926	UK3AAC	943	KA5ASD
927	UB5CDF	944	VP2VBK
928	UA0CCW	945	I2JQ
929	UK6LEZ	946	JH1KYY
930	UQ2HO	947	JA7DLE
931	UA1MU	948	JA8IXM
932	S83T	949	W1BPM
933	JA1AUC	950	OK3KFF
934	W8LKG	951	DJ3ND
935	JH1XUP	952	SM6CST
936	K7VV	953	WB4FNH
937	KB7SB	954	WB3CQN
938	G3BII		

WAS (VHF) AWARD

Cert. No.	Call Sign
136	VK2QF
137	VK2BQN plus 3 additional countries
138	VK2BJC
139	JA6TEW
140	VK1ZAR plus 5 additional countries
141	VK2LM
142	VK3AUI plus 12 additional countries
143	VK3NM plus 10 additional countries
112	VK2ZGF (Amendment) plus 7 additional countries
128	VK3AWY (Amendment) plus 11 additional countries

HAVKCA (SWL) AWARD

53	UL7-023-107 Alex Chernyh

VHFCC AWARD

105	VK4SN (52 MHz)
106	VK4ZSH (144 MHz)
107	VK3AUI (52 MHz)

DXCC — TOP LISTINGS
(All at 275 and over)

PHONE

Call Sign	Tally	Call Sign	Tally
VK —		VK —	
6RU	317/263	4RF	300/310
5MS	317/359	6HD	298/305
4KS	316/348	4PX	397/312
5AB	315/345	3AHO	294/326
6MK	313/350	3AKK	294/296
3JF	308/320	2APK	293/313
6LY	307/321	4UC	293/306
4FJ	306/343	3OT	291/292
7LZ	306/323	5XN	289/302
4VC	305/316	4AK	289/298
7DK	304/319	7AE	289/291
3AMK	303/312	3RF	278/280
5WV	300/312		

CW

Call Sign	Tally	Call Sign	Tally
VK —		VK —	
2QL	309/347	3XB	286/314
2EO	309/346	2APK	283/304
3YL	308/336	3YD	281/313
4FJ	302/345	4RF	275/296
3AHQ	299/331		

OPEN

Call Sign	Tally	Call Sign	Tally
VK —		VK —	
6RU	317/362	2APK	301/329
4SD	317/348	2SG	296/314
4KS	316/352	4UC	296/310
3YL	316/348	3AKK	295/297
6MK	313/350	3AHO	294/236
4FJ	312/356	3OT	294/295
3JF	312/332	3XB	292/320
6HD	309/322	4AK	289/299
4RF	308/332	7BC	289/293
7LZ	307/339	5RX	282/313
7DK	305/320	2AHH	279/305
4PX	304/323	4DP	278/287
3AMK	303/312		

DXCC — NEW MEMBERS

PHONE

Cert No.	Call Sign	Tally
252	VK2BQS	100
253	VK4NLL	107
254	VK6UN	117
255	VK2PY	154
256	VK2VFT	138/139
257	VK2BDT	99/102
258	VK4NMW	101/102
259	VK5ABW	170/171
260	VK3VMW	130
261	VK3VFE	109
262	VK6HD	298/305
263	VK6OE	103
264	VK3AVY	121
265	VK3VDI	105
266	VK0PK	100/101
267	VK3ZB	113/118
268	VK2NUC	105
269	VK5BO	103

CW

Cert No.	Call Sign	Tally
113	VK3AKK	109
114	VK6HD	246/252
115	VK3BBT	100
116	VK1DH	113

OPEN

Cert No.	Call Sign	Tally
200	VK8BE	101/102
201	VK1DL	113/114
202	VK5MV	122/123
203	VK1DH	133

DXCC — AMENDMENTS

PHONE

Call Sign	Tally	Call Sign	Tally
VK —		VK —	
2SG	260/274	3NSR	194/195
2AFF	119	3VGD	185/186
2DPN	134	4BG	260/270
2NHV	133/134	5LC	251/261
2NQL	175/176	5OU	259/260
2VAB	203/204	5NVW	136
3DS	161/167	6IR	250/251
3VU	201	6AJW	208
3AHG	150/153	6NAT	178/179
3ALM	238/244	6NEP	184/185
3AWY	256/257	7BC	272/275
3NDY	249/250	3DFD	222/223

CW

Call Sign	Tally	Call Sign	Tally
VK —		VK —	
2SB	138/148	5BO	160/182
3JF	217/231	6HD	246/252
3KS	252/271	6RU	261/300
3RJ	255/281	7BC	137/138
4PX	104/112	7LZ	253/283

OPEN

Call Sign	Tally	Call Sign	Tally
VK —		VK —	
2AAC	158/161	5BO	212/244
3NDY	250/251	5ARA	129
4BG	269/282	6NAT	179/180

RTTY

Call Sign	Tally
VK —	
2SG	110/111

Good hunting. ■

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
5 Helen St., Launceston, Tasmania 7250

One of the easiest South American stations received here in Eastern Australia is Radio HCJB in Quito, Ecuador, whose signals have been consistently readable in the South Pacific for many years. Currently celebrating its 50th anniversary, it has been providing programmes to listeners in South America and beyond. It commenced operations on Christmas Day 1931 with a 250 watt transmitter from a site in Quito, the nation's capital. Operated by the World Radio Missionary Fellowship Inc., it is probably the world's first radio missionary station.

It is sited in a very good position, being located right on the Equator, as well as being high up in the Andes Mountains. Since its early days, HCJB has developed a close relationship with the Quechua people, descendants of the Inca nation. Today it broadcasts in several dialects of Quechua as well as in Spanish, which is the predominant tongue throughout most of the continent with the exception of Brazil. In the early days, when radio receivers were very uncommon in Ecuador, the station manufactured its own receivers tuned to its frequencies, which in turn were distributed to communities and villages free. However, with the advent of the mass produced transistor receivers in the sixties, there was no further need to manufacture these receivers.

Radio HCJB exapnded their operations in the forties to include programming to other areas of the globe. Because of Quito's relative remoteness from transport and communications with technical and industrial facilities in America, the engineering staff have had to improvise, and construct their own transmission systems, antennas, and even their own hydro-electric plant to power their facilities.

Did you know that the Cubical Quad, which many Hams have constructed and used on the higher bands, was developed by one of the HCJB staff? Clarence C. Moore was working on the problem of corona discharges from the antenna, because Quito's elevation is over 3,000 metres, and the atmosphere is rarefied. Out of this dilemma was born the Cubical Quad.

The majority of the shortwave and MW transmitters were built by HCJB's own engineers, only three being commercially manufactured. In February of this year, they installed a 500 kW transmitter, which was built to their own design in America by HCJB staff together with Crown Laboratories. It is a unique design, having one huge valve instead of many smaller tubes to provide comparable power. Since its inauguration, signals have been excellent from it, and when the steerable array is completed, it will add between 19 and 25 dBM, and should reach most areas of the globe.

Because of the inadequacy of their present power plant to service their 500 kW facility, there are plans to increase its size with the installation of a 600 kW generator and other ancillary equipment for an additional plant.

One of the most popular programmes from HCJB is the "DX Partyline". Until July of this year is was hosted by Clayton Howard, assisted by his wife, Helen. This is perhaps the most regular DX programme, with three separate editions each week. It is on the air to the South Pacific at 0900 GMT on Mondays, Thursdays and Saturdays on 6130 kHz. The other two scheduled channels to this region at this time carry other programming. Roger Stube, who did visit Australia last year, is the current host. Many of HCJB's worldwide listeners are members of the Andes DX International (AndeX), the "Partyline's" DX Club with over 4,000 members.

During the sunspot maxima of 1979-80, HCJB engineers were experimenting with a 100 watt converted Johnson-Viking Ham transmitter as a propagation exercise on 26020 kHz. Many heard these transmissions which commenced with a simple half-wave wire dipole. Later an 11 metre quad was tried and signals were quite good at times. However, when the 500 kW transmitter was installed, the quad had to be re-slted, and an 11 metre half-wave vertical has been employed since then. Nowadays, these signals are rarely observed because of the change in propagation patterns on these frequencies.

Other Latin American signals have been heard recently in south-eastern Australia. The 60 and 90 metre tropical bands have had several good catches from 0930 to 1015 GMT. Radio Sutatenza on 5095 is very consistent, although it is using 50 kilowatts! Radio Reloj Continente in Caracas, Venezuela, on 5030 Is quite audible at times as well. Some lower powered stations can be readily observed on the 49 metre band in our late afternoons and early evening hours. I mostly hear statlons from the west coast of South America, as Tasmania seems to be a dead spot for signals from Brazil and other east coastal regions.

Well, that is all for this month. Until next time, 73 and good DXing! ■

SUPPORT OUR ADVERTISERS!

Hamming in Brazil

The Marissa Amateur Radio Club has a new member from Brazil, Gerardo A. Vale PT7WVF. He is an exchange student at the Coulterville IL High School and speaks Portuguese and Spanish as well as English. His father is president director of an industrial company that makes 200 different products in South America.

Gerardo's first interest is in being a doctor or surgeon, second interest is in business administration, and he also enjoys the field of electrical engineering. When he returns to Brazil in March he will take entrance exams for one State and one Federal University.

In Brazil there are class "A", "B" and "C" licences. You can begin in class "C" from 14 to 18 years of age and operate CW on 40, 20, 80 and 160 metres. In class "B" you can opearte 2, 40, 80 and 160 metres in the phone portion. Class "A" can operate in all bands — 2, 10, 15, 20, 40, 80 and 160 in CW and phone. You can obtain the class "A" licence only after one year in class "B".

Their 2 metre repeaters have 600 kc splits with PLL for those with autopatch. A group of 10 or 20 amateurs buy the repeater and these are the only users. Radio clubs also have 2 metre repeaters but without autopatch, because then anyone can dial it up.

Gerardo talks across his entire State via his HT. They use only FM on 2 metres, no sideband.

In Fortaleza (city) there are two clubs, Labre PT7AAC with a membership of 2,000 and Casa do Radio Amador do Ceara, PT7CRC, membership of 1,500 (Amateur Radio Club of Ceara). Ceara is the State. You can have an associated membership in both clubs or just one, but you need to be a full member from one club.

Brazil has CW and phone contests. During the Pope's visit in Fortaleza, Gerardo and his dad PT7GAV helped the police on HF and VHF with security for the Pope via radio for three days. Then they had a contest during his visit to Brazil.

Every Saturday they have a meeting on the beach in a restaurant, eating and talking about radios, new contacts, etc. Once a month the clubs have a dinner and meeting.

Amateurs there help a lot of friends, too. When new amateurs have no radio or antenna yet, they loan equipment to them until they get situated. Clubs have their own radio stations and box numbers for Hams to write to the clubs.

Their department for amateur radio licences Is DENTEL, the Departmento Nacional do Telecommunlcao (National Department of Telecommunications).

By Tania Miller WB9TFC, from ARNS Bulletin, June 1981. ■

Amateur Radio Station VK6ACH
Carnarvon Senior High School, WA

Peter F. Scharf,
VK6APS

In July 1980, the school received a grant of $714.00 from the Schools' Commission. The money was used to purchase a high quality communications radio and an interface unit which coupled the radio to the school's computer. This enabled us to receive morse and teletype transmissions which were electronically decoded and displayed in plain language. Of special interest are the weather reports which can be received daily.

However, the project snowballed and by successfully winning a tender from the Harold E. Holt communications base at Exmouth, plans were made to establish an amateur radio sation at the school. The entire project has been assisted throughout by the people of Carnarvon. The mast was donated by Wolf Frost VK6WF, and the base was constructed with the assistance of Mr. Reddyhough's metalwork class and Mr. Sheffield's alternative class. When the Public Works needed plans of the mast, Roger Veen assisted by drafting suitable sketches.

The metalwork was cold zinc dipped by Ray Smith at ARCKO engineering and the mast was raised with the assistance of sudents and staff. Guy ropes were installed by linesmen from Radio Australia/Telecom, including Seve VK6YK, Ross Kearney and Dave Boab. The transmitters were inoperative when first purchased and with the assistance of Colin Coles VK6ZCC at OTC, the units became operational. Wolf Frost once again assisted with oddment parts. Perhaps the whole project would have come to a halt if not for Gary Westcott who obtained the appropriate service manuals from the United States.

Peter VK6APS with Ron, Shaun and Lawrence helping with dipoles. The 2 metre parabolic reflector is part of another project in which students are attempting to obtain photos from a weather satellite.

Year 11 students assisted on a Saturday morning to help put up the aerials and prepare them for the first test transmissions.

As with all things electronic, there is room for Murphy's Law! Here is Steve VK6YK with assistance from Ross re-arranging the concrete mounting block because it had been put in the wrong way round.

On Monday, June 29th, the station went on air with test contacts to Bunbury, a yacht in Fremantle harbour and a teacher on holiday in Queensland. In the afternoon Year 7 students from Central Primary and Year 10s from the high school spoke to students from Stella Maris at Geraldton and primary students at Northampton District High School.

On Friday, July 3rd, the station was officially opened by the Premier of West Australia, Sir Charles Court, with the call sign VK6ACH. During his address, Sir Charles stated that he hoped this exercise would bring about greater understanding between Australians and other nations and, in so doing, fulfill the broad educational objectives of this exercise. ■

Mast with guy ropes about half way up.

WICEN

R. G. HENDERSON VK1RH
Federal WICEN Co-Ordinator

In the last column I listed the major headings of a WICEN handbook now in preparation and said that it would apepar in parts in this column. This issue is devoted to the aim and duties topics. Please note that my duties are set by the Federal Executive, and I can only recommend the scope of duties for WICEN Co-ordinators within the States. I am indebted to Ken Ayres VK4KD for his memoranda which provided a basis for this month's column.

AIM

The aim of WICEN Amateur Radio Emergency Communications is to form a pool of trained licensed operators, with equipment, available for deployment to aid communications in an emergency.

FEDERAL WICEN CO-ORDINATOR

1. The Federal WICEN Co-ordinator is appointed by the WIA Federal Convention on the recommendation of the Federal Executive. He is an ex officio member of the Executive.

2. In practical terms, the principal duties of the Federal WICEN Co-ordinator are:—

(a) To act as the focal point of contact and co-ordination between the Amateur Service and the Natural Disasters Organisation with a view to ensuring that the Amteur Service is fully prepared and readily available to assist in times of national emergency.

(b) To co-ordinate any amateur communication facilities required on a national scale for disaster purposes.

(c) To co-ordinate and liaise with State WICEN organisations, and without thereby interfering with their internal affairs, to assist them in matters of common concern (such as frequencies, signalling procedures, training syllabi, and the like).

(d) As far as practicable, to maintain a record of the manpower and facilities likely to be available within, and from, each State for emergency purposes.

3. The Federal Co-ordinator is supported by a Federal WICEN Committee provided by the ACT Division.

STATE WICEN CO-ORDINATORS

4. State WICEN Co-ordinators are appointed by WIA Divisional Councils in accordance with local by-laws or rules.

5. Their duties should embrace the following matters:—

(a) To promote an awareness of WICEN within their Division amongst amateur radio operators, clubs and authorities.

(b) To liaise with the State disaster control authorities, normally SES, police, bushfire councils, at State management level and keep them aware of WICEN's capabilities.

(c) To maintain records of amateur radio operators who have declared their willingness to join and support WICEN.

(d) To conduct training classes, exercises and information networks/newsletters for WICEN members.

(e) To establish communications networks for disaster control authorities upon request, and notify Department of Communications of such activations.

(f) To maintain liaison with the Federal WICEN Co-ordinator and report regularly to their WIA Divisional Councils.

6. State WICEN Co-ordinators will normally be assisted in their duties by a State WICEN committee and by Regional and local Co-ordinators on a structure generally mirroring the State disaster authorities structure.

REGIONAL WICEN CO-ORDINATORS

7. Regional WICEN Co-ordinators (and deputies) will be appointed as necessary under State arrangements to bridge the geographical gap between State Co-ordinators and local Co-ordinators who are often associated with radio clubs.

8. Their duties could include the following:—

(a) To promote an awareness of WICEN within their region among amateur radio operators, clubs and the authorities.

(b) To liaise with the local WICEN Co-ordinators within the Region (as defined on regional map) and to ensure that each is active and constructive in his approach to emergency situations.

(c) To establish a good liaison with the Regional Operations Officer of the State Emergency Service. To ensure that each local WICEN Co-ordinator in the region has a good liaison with the local SES Controller and local Police Inspector responsible for Counter Disaster Organisation.

(d) To maintain records of local WICEN Co-ordinators and operators in the region with names, addresses, call signs, telephone numbers and any other relevant information.

(e) To ensure that all WICEN operators are trained and exercised in emergency procedures under the guidanec of their local WICEN Co-ordinator.

(f) To keep authorities informed of the existence and capabilities of the local WICEN groups.

(g) To monitor WICEN frequencies in an emergency and to assist if it should be necessary.

(h) The Regional Co-ordinator should be familiar with the regulations in the Handbook, particularly those affecting emergency operations.

(i) To ensure that their State Co-ordinator for WICEN is kept informed of any changes in the Regional organisation and networks.

LOCAL WICEN CO-ORDINATORS

9. Local WICEN Co-ordinators (and deputies) provide the link between WICEN, local radio clubs or groups of amateurs and local SES or other disaster control agencies. They will be appointed under State WIA arrangements.

10. Their duties could include the following:—

(a) To promote an awareness of WICEN within their area amongst the amateur radio operators and the authorities.

(b) To maintain a communication link into the WICEN network in the event of an emergency.

(c) To organise, if justified, a local emergency network to meet the requirements of the area. To organise regular practice exercises using correct WICEN procedures as laid down and generally supervise the running of such a network.

(d) To act as the liaison officer with the State Emergency Services in your area or other authorities as necessary.

(e) To maintain a close liaison with your WICEN Regional Co-ordinator and to act on such policies or suggestions that may be issued from time to time.

(f) To maintain a list of WICEN operators in the area with addresses, call signs and telephone numbers. Such information is to be lodged with the Regional Co-ordinator together with a plan for the local network and frequencies used locally.

(g) The local WICEN Co-ordinator should be familiar with the regulations in the Handbook, particularly those affecting emergency operations.

11. The aim is to establish a chain of responsible amateurs, with alternatives, to extend from State down to local level. ■

MAGAZINE REVIEW

Roy Hartkopf VK3AOH

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the novice.

BREAK IN April 1981
Elliptic Bandpass AF Filter (T). EME Considerations (G).

QST April 1981
Coaxial Cable (GT). Ohm Meter for Low Resistances (P). RF Attenuator (P).

ORBIT April 1981
General Amateur Satellite Information.

BREAK IN May 1981
Unusual Varicap Oscillator (G).

73 MAGAZINE July 1981
Non-standard Offsets for the IC-2A (C). Grandma Packs a Seabag (G). Amateur Telemetry (P).

August 1981
The DX Primer (GN). ■

National EMC Advisory Service

Tony Tregale VK3QQ
Federal EMC Co-ordinator

ISLAND DX

"Buy yourself an isolated Pacific Island" or "Clean up your own patch" — the world of electronic gadgets is closing in!

Your best protection against complaints of FRI is to ensure that your own home electronics and domestic entertainment equipment is free of all interference.

Not many of us have the privilege or the necessary cash to isolate ourselves with real estate. In the interests of the continued wellbeing of the Amateur Service, we should all make ourselves aware of the new electronics devices which are being poured on to the domestic market.

Every effort is being made to get domestic equipment manufacturers and agents to co-operate by providing assistance with electro-magnetic problems associated with their equipment. The production of an "Australian Directory of Assistance" is progressing, but speed is not on our side. On the flip-side of the coin, interference to amateur reception also gets its share of attention by the EMC team. Those of us who have been keeping up with the electronic press won't have failed to notice how close we are to teletext, pay TV and cable TV.

Reports from the USA and Canada indicate that cable TV systems are expanding rapidly in major urban areas, and are posing a potential threat to amateur radio operations. Since cable systems are supposed to be closed (non-radiating), many utilise the VHF spectrum from 50 to above 225 MHz for their multi-channel content, providing subscribers with continuous tuning converters to permit them to tune in cable channels outside the standard 12 channel VHF TV band. This procedure puts some cable-carried signals into the amateur (as well as aircraft and public safety) bands, and when the system leaks (an all too common occurrence, due to corrosion, loose connectors or cable damage) interference results.

Cable TV is very susceptible to external electro-magnetic energy. Subscribers who have paid to watch cable material being transmitted within an amateur band aren't likely to be very sympathetic when poorly shielded converters pick up amateur signals.

The effect of poor immunity and susceptibility of the average TV receiver, as seen by the DOC Canada, is outlined in a department summary: The DOC inspection workload has increased considerably over the last few years, due in the main to complaints from TV set owners that their reception was being disrupted by emissions from radio transmitters in the vicinity. Investigations have shown that most of these complaints were due to the inadequacy of most TV receivers to reject out-of-band radiation.

The National EMC Advisory Service has received very few reports or complaints regarding interference from home computers. We would be very interested to hear from anyone who has experienced this problem.

If you have any interference problems or answers, please don't sit on them, forward the details and help us to help you. ■

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

ALARA celebrated its sixth birthday with an on air sked on Monday, 27th July, with 16 YLs joining the frequency. VK2, VK3, VK5, VK6, VK7 and ZL represented. All wished ALARA continued success and also thanked the small band of "girls" who have kept ALARA alive and active.

The roster for Monday evenings is working well and has meant less work for Garaldine VK2NQI, who was net controller for two years. Also the editor of ALARA Newsletter. Thanks, Geraldine, for your support and contribution.

ALARA sked on Monday nights, 1030Z 3.570 ± MHz. Plans to have an ON AIR meeting on the 4th Monday of each month are being arranged and may be in progress when you read this article.

Congratulations to our "pin-up" girl Jenny VK5ANW (June cover of AR). On July 29th a number of YLs were on OPEN HOUSE, using the special AX prefix 2, 3, 5, 6, 8, 9, 0 participated and a lot of fun was had by all.

An up-to-date list of ALARA members is being compiled and will be published in AR to help OMs and non-member YLs in applying for awards and the contest to be held on November 14th. We are hoping for a good response for our first contest.

NEW ADDRESS for Geraldine VK2NQI is PO Box 39, Kemp's Creek 2171, NSW.

Our very grateful thanks to the committee of the VK5 Division of WIA for their very generous donation of their Gestetner duplicator machine. Marlene VK5QO wrote to the committee asking if the machine could be borrowed or purchased by ALARA. Marlene has accepted the position of Editor of our Newsletter, so thanks very much, Marlene, for taking this position and for your help in obtaining the duplicating machine.

So the new address for news for the Newsletter is Mrs. M. P. Austin VK5QO, PO Box 7A, Crafers, SA 5152.

Our new President is Geraldine VK2NQI. Thanks a million, Geraldine, for taking this position, we wish you luck and offer our help and assistance in the future. ALARA's continuation seems assured with the additional help and interest shown by the girls who are coming forward and offering assistance, taking office or guiding in the background.

Each Thursday at 1000Z on 3.570 ± QRM a sked will be held for any YLs who cannot make the Monday skeds and also for committee members to discuss items for newsletter or publicity for magazine, contests.

Good luck to all who are sitting for exams in the near future and congratulations to those who have passed.

Until next month 73/33 to all.

Margaret VK3DML, 28 Lawrence Street, Castlemaine 3450.

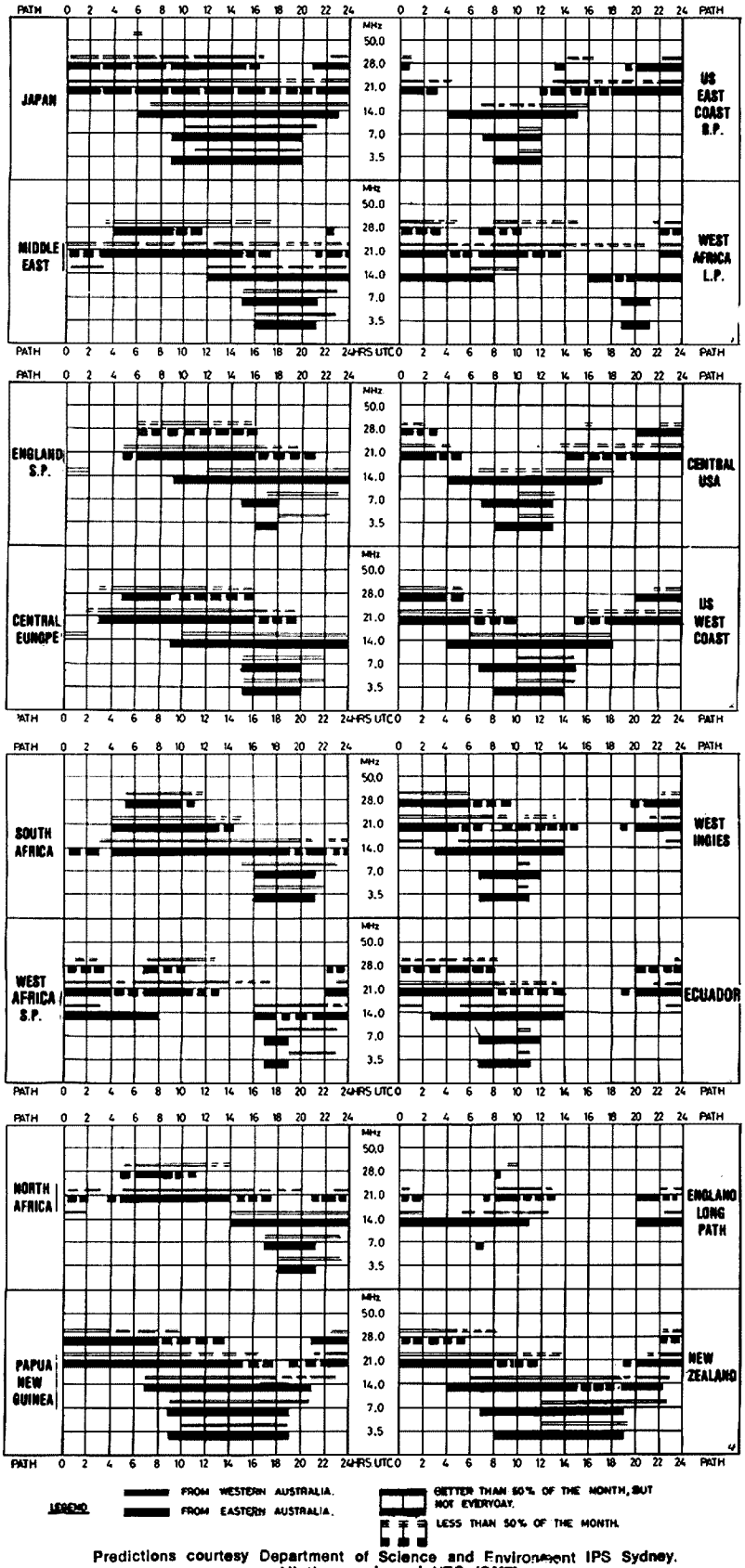
The ALARA Contest, phone and CW, over 24 hours, will be held from 0000Z to 2359Z on 14th November on all bands. Details from ALARA. ■

PHOTOGRAPHS FOR AR

Don't keep them to yourself
SEND THEM IN — NOW

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

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.

261 Collier Road, Bayswater, Perth 6053

The Editor,
Dear Sir,
I found the article on RTTY in July 1981 AR of great interest — the mode intrigues me for sure.

However I was more than a little peeved by the appeal for operators (other than RTTY) to avoid QRMing and RTTY transmission.

On the face of it, a very reasonable request and I support the pleas — up to a point.

As a regular operator transmitting slow CW under the call sign of VK6WIA on 3.555 MHz±, I have twice recently been obliged to QSY (with the group) due to RTTY operation — VK5AWI has had to do likewise — not good at all.

Whether RTTY operators consider novice phone bands I do not know, but I write to appeal to RTTY buffs to use perhaps CW band segments only and in so doing will further their cause of promoting RTTY.

As it stand now, I can only regard some RTTY operators with loathing (and I am not alone in this) and I must at a future date consider the possibility of a leisurely tune-up on a RTTY transmission — evil idea for sure, but what is sauce for the goose is sauce for the gander!

I would like to point out that with one exception (perhaps a VK2), phone operators will QSY upon request to allow VK6WIA programmes to proceed, but the same courtesy has not been forthcoming from RTTY operators for the simple reason that phone requests are unheard.

OK on RTTY idents but rarely do I hear them within the 10 minute interval (and I can read CW at 18 w.p.m.).

So I ask RTTY and other stations that WIA transmissions (CW) be given a wide berth. If that can be achieved, RTTY will not antagonise anyone and CW enthusiasts will not develop an anti-RTTY frame of mind.

Bert VK6NPM. ■

5 Quinn Street, Penguin, Tasmania 7316
7/7/81

The Editor,
Dear Sir,
In reference to the letter by VK4GY in July Amateur Radio, I would like to make several comments. Had it been printed before the recent widespread telephone service disruption there may have been some truth in some statements.

However time has proven the views expressed to be quite erroneous.

At short notice many amateurs not necessarily associated with WICEN formed themselves into a large net handling messages of a health and welfare nature to all parts of Australia.

The general feeling I received from message recipients was one of extreme gratitude after hearing from loved ones isolated for many days due to the Telecom dispute.

Was this really doing WICEN a disservice? I think not.

As for VK4GY's statement "A one man band", I doubt that a WICEN net has ever been so inundated with offers of assistance as was the third party net during this crisis. As there is no assurance that it will not occur again I believe there is a definite place for such a network.

WICEN isn't under threat from the national third party network as VK4GY seems to believe. Both offer a valuable service to the community.

My congratulations go to Sam VK2BVS for his initiative and the various net controllers for their hard work under such pressure.

Think again VK4GY, and let's move with the times.

Yours faithfully,
Winston Nickols VK7EM ■

THE PUBLIC EXPRESSES ITS THANKS TO AMATEURS

Hawkin Street, Artarmon

The Editor,
Dear Sir,
TRIBUTE TO SAM
There was a sudden death in my family during the Telecom strike.

My husband, who was away in Wagga at the time, was eventualy contacted through the efforts of Sam Voron and his fellow ham radio operators in Willoughby.

To those involved in sending the messages and in receiving them and passing them on, I give my thanks for their charity and concern.

Local "North Shore Times", June 24th. ■

93 Vicliffe Avenue, Campsie 2194
15/6/81

Radio Assistance,
Town Hall Annexe,
Victoria Avenue,
Chatswood, NSW 2067.

The Editor,
Dear Sir,
I don't know whether this address is correct — it seemed the best I could come up with from what I heard over Radio Station 2CH. Anyway, if this reaches you, it is just to say a great big "THANK YOU" to you and the rest of your helpers who have come to the rescue in helping out with important personal phone calls that cannot get through because of the Telecom situation.

In this day and age, where no one seems to care about anyone else, I really do think you are all making an absolutely wonderful gesture of concern and care . . . that is all I wanted to say, but I wanted to say it to YOU and the rest of your radio operators . . . FULL MARKS FOR A JOB WELL DONE and GOD BLESS YOU ALL.

Thanks again — most sincerely. I could kiss the lot of you and THAT in my book is really saying something . . . you can all take a bow!

June Miller. ■

CHATSWOOD EAST WARD PROGRESS ASSOCIATION

President: A. E. Shelley.
Secretary: E. Beaumont, 543 Mowbray Road, Lane Cove 2066.

17th June, 1981

Amateur Radio Club,
Chatswood.

The Editor,
Dear Sir,

Dear Members,
While members of this Association have not had the necesity to avail themselves of your services, we do appreciate your public-minded action in helping people disadvantaged by the "Telecom" dispute.

Yours sincerely,
E. Beaumont, Hon. Secretary. ■

EMC

(ELECTROMAGNETIC COMPATIBILITY)

If radio frequency interference is causing you a problem you are reminded that — "Advice on all types and aspects of interference (PLI, TVI, AFI, etc.) is available from the National EMC Advisory Service".

FORWARD DETAILS TO

VK3QQ,
Federal EMC Co-ordinator, QTHR.

SILENT KEYS

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

Mr. G. A. WALDOCK	VK2QU
Mr. C. R. PITMAN	VK6NFJ
Mr. F. E. BLACK	VK5AFB
Mr. B. A. V. ELLIOTT	VK5AVE
Mr. G. J. BOYD	VK2AML

OBITUARIES

GEORGE WALDOCK VK2QU

George Alexander Waldock VK2QU passed away in Lithgow District Hospital on 15/6/81, aged 66 years.

George was born in Lithgow and left school at 14 to enter the mining industry at Lithgow Valley Colliery. He obtained his call in 1934 and became skilled enough in the radio field to teach at the Australian Radio College after a move to Sydney in 1938.

George served with the AIF in World War 2, after which he held the positoin of broadcast engineer at Radio 2WG Wagga.

George and his family returned to Lithgow in 1950 and during the next three years, until his health tailed, worked at the State Mine, Lithgow Valley Colliery and Radio Station 2LT.

George's station was substantially home-brew and over the years he worked an impressive amount of DX using his transmitter which had an 813 final feeding to a zep antenna.

Although George did not enjoy good health for his final 27 years, he was always willing to help any aspiring amateur, and it was in this activity that I became privileged to meet George in 1977, when he cheerfully assisted me to obtain enough CW to pass my novice call.

I am sure all my fellow amateurs who met George on the air over the years will join me in extending condolences to his wife, Ena, and his family.

Yours faithfully,
N. R. Whipp VK2BYO. ■

B. A. V. (TIM) ELLIOTT VK5AVE

Bruce (Tim) Elliott, late of Port Lincoln, South Australia, a man with a fine community spirit, has passed on at the early age of 55 years, on 24th May, 1981.

During the last war he joined the army at 15 years of age and was promptly discharged. He later joined and served in the RAAF.

Among his many interests, he served as a Scout leader and attended a jamboree. He was a member and Secretary of the Motor Cycle Club, a player with the Tasman Football Club and, later, a Colts trainer. He was a member of the Pigeon Club and a surf lifesaver.

Tim was a foundation member of the Port Lincoln Game Fishing Club, and the foundation secretary of the Lower Eyre Peninsular Amateur Radio Club and an active member of WICEN.

He joined the WIA in January, 1972, and obtained his novice licence on 16th November, 1978, as VK5NEB. A little later, he obtained his limited licence as VK5ZEV, being very active on 2m.

In August, 1979, Tim sat for and passed the AOCP and received the call of VK5AVE. Tim was an enthusiast in everything he tackled. For example, after acquiring his novice licence, he was heard to say that he would throw away his key. Subsequently he became a member of VKCW QRPs Club, member No. 30.

Each year Tim was very active in JOTA, no doubt due to his earlier interest in Scouting. Tim leaves a wife, three sons and three daughters, and will be sadly missed by his family, his friends, members of LEPARC, members of his community and a wide circle of amateurs.

Inserted by VK5ET. ■

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

Kenwood TS120V Txcvr., as new, little used, $475. VK7TA, QTHR. Ph. (002) 34 5562.

Yaesu FT200 Txcvr., includ. FP200 mains supply and speaker, also includes mic., crystals installed for 28. 29.5 MHz, orig. carton and handbook, $300, ONO. Rob Jennings VK3AVJ. Ph. (03) 786 8067 home, (03) 792 0631 work.

Antenna Mast, 2 section 57 ft. telescoping tilt-over hot galv. steel lattice mast, $180. Pick up from Beverly Hills. VK2AOU, QTHR. Ph. (02) 53 9789.

Yaesu SSB Filter to suit FT401 series, type XF-3, freq. 3180 kC, new, $15; Grundig grip dip oscillator, 240V AC, 1.7 MHz to 250 MHz, good cond., $35; two Marconi V322A solid state cameras, good cond., with manual and circuits, with lens, $85, without lens, $60, spare vidicon, $10, first to buy gets manual; Geloso CW tx., 80-10m, 813 final and spare tube, fully metered, good cond., $70. Ph. (03) 725 9185.

Kenwood TS120V, exc. cond., no mods., in orig. cartons, with handbooks, service manual, MC35S mic., SP120 speaker and MB100 mobile mount, $500. Ron VK2VOE, QTHR. Ph. (042) 29 4480.

Yaesu FT75B Txcvr., 3 xtals on each band, DC and AC matching power supplies, plus manual, $450, ONO; Yaesu FT227RB 2m txcvr., plus manual, $280, ONO; Trio 9R-59D communications Rx., plus manual, $100, ONO. All serious offers considered. VK2NTY/YOC, QTHR. Ph. (080) 5285.

Yaesu FT101B, good cond., in orig. carton, $500, ONO; Kenwood TR7400A, 2m FM 800 ch. 25W, good cond., in orig. carton, $300, ONO. Ph. (02) 218 4945 (BH), ask for Peter.

Icom IC22A, complete with mobile bracket, manual and fitted with repeaters 2 to 8, simplex 40, 50 and 51, $160; Icom IC22S, as new, still in box, $290. David VK3ZSV. Ph. 596 3968.

Kenwood TS520S, as new, orig. packing, instruction manual, Turner desk mic. VK2LX QTHR. Ph. (043) 92 2390.

Icom 211 Txcvr., 144-148 MHz, FM&SSB, dual VFO digital readout, AC/DC, base/mobile, as new, $495, ONO; ARX2 Ringo 2m antenna, $35, ONO; lot $520, ONO. VK2DBJ, QTHR. Ph. (02) 634 2451.

TH3JNR Tri-band Beam, very functional, installation and operation instructions included, $120. VK3QP. Ph. (03) 598 4504.

Txcvr., Swan 350C, exc. order, with VOX, calibrator, complete set of new spare valves, spare mic., manual, $300. VK2CE, QTHR. Ph. (02) 871 7758.

IRC Coupons, 35c each or 30 for $10; s.a.s.e. please. VK6NE, QTHR. Ph. (09) 446 3232.

AX190 Ham Bands Rx., perfect order, in orig. carton, with instruction book, circuit diagram, $135; Icom 202 BHF SSB txcvr., same cond., $140; Heathkit TV sweep and marker generator, good order, $100. D. C. Stalker VK3KJ, QTHR. Ph. (052) 31 4716.

Ham Shack Clean-out: 803s and bases in g.c., various tension transformers, assorted output voltages, valve tester, 2 Rollo twin cone speakers, 12 in., small variable capacitors suit VHF, will trade for 6m gear or sell. Mal VK3NCE, 2 Thornton Ct., Mooroolbark 3138. Ph. (03) 726 8752 AH.

SHUTE HARBOUR

Yaesu FT200 Txcvr., mic., PS200 power supply and speaker (110V), DC200 12V power sup., manual, home spares, few hours, good cond., $410. VK4AQU, QTHR. Ph. (071) 45 1714.

Kenwood TR9000 2m all-mode Txcvr., $460; Siemens model 100 teleprinter, complete with tape perf, and reader, this unit is in perfect cond., with manuals, $275; XITEX ASCII baudot, $100; board, $180; ST5000 TU and demod., $200. Ian VK2AVV, QTHR. Ph. 653 2341 AH, 888 1133 Bus.

Quartz 16 FM 2m Txcvr., 16 sets xtals, new cond., 150, or swap for HF mobile unit, cash adjustment as necessary. VK3ABC, QTHR. Ph. (02) 451 1313.

Yaesu 101E, used mainly as Rx., as new, instruction manual and all leads, orig. packing, house renovations more important, $600, ONO. VK2NAZ. Ph. (048) 21 6272.

Drake SSR-1 Communications Rx., $180; Kenwood KP-202 2m txcvr., hand-held, ch. 2, 3, 4, 5, 6, 7, 8, simplex 40, 50, $100, Edward VK2CAQ. Ph. (062) 70 6240 BH, (062) 88 5609 AH.

Antenna Rotator, Archer(Stolle type), good cond., with indicator and good length cable, $80. Arthur VK3LJ, 130 Ballarat Road, Creswick. Ph. (053) 45 2031.

Kenwood TV-502 Transverter, unused, solid state, $160, OBO. Paul VK4SY. Ph. (07) 57 7756.

Daiwa Rotator DR-7500 with DC-7001 control box, all complete, very good cond., $150. John Brereton VK5NHB, QTHR.

Kenwood 7400 25W synthesised VHF Txcvr., professionally checked out and c/w cradle, mic., etc., $280; Kenwood 520G HF txcvr., bith built-in PSU and AC/OC converter, exc. order, $500; Yaesu FT2 auto AC/DC VHF FM scanning txcvr., simplex AB 40, 50, repts. 1 to 8, mobile bracket, v.g.o., no further use, $200. VK3GM, 15 Wendouree Parade, Ballarat 3350.

JIL SX200 Scanning Rx, 26-58 MHz, 58-88 MHz, 108-180 MHz and 380-514 MHz FM and AM, 16 programmable memories, $395; 2 Courier high band VHF FM txcvrs., unmodified, $40 each. VK2DKP, QTHR. Ph. (049) 94 9267.

Icom IC-211 SSB, CW, FM, 144-148 MHz Ixcvr., unmarked cond., very little use, $700; Heathkit HW-8 QRP CW txcvr., with AC PSU, $200; Tech TE-20D sig. gen., 120 kHz-500 MHz, $50; Philips 1676 carphone, 53.032 MHz AM, $20, valves, one of each, new unused, 813 $15, 830B $5. Ph. Edward (03) 439 1527 after 7 p.m.

ALBANY

ADVERTISERS' INDEX

MOE

Computer: 2116C Hewlett Packard with raytheon miniverter and 12-bit resolution, plus D/A multipexer by H/P; IBM MC72 magnetic card typewriter, assorted books and service manuals on above; may be possible to get going or great for parts, make an offer; Yaesu FR100B Rx with matching FL100B Tx., all in working order, $300, ONO. VK4NOD, QTHR. Ph. (077) 43 5668.

Yaesu FTV650 Transverter, $165; Icom IC22 2m FM, Ch. 3, 5, 6, 8, 40, $130; Yaesu 2m converter, $12; VTVM, $30; LSG11 sig. gen. FET-ised, $15; transformer, 600V/485V per side 250 mA, 105 V 72 mA, 13V 4A, $30; GDO Tech .4-280 MHz, $12; Vortex cassette tape deck, $10; Plessey B47 txcvr., tunable 38-56 MHz FM with circuit and homebrew linear, $20. VK2ZHR, QTHR. Ph. (049) 45 9373.

Yaesu FT480R 2m all-mode, 1 month old, plus 2m 10 el. yagi, includ. 15m of coax, the lot $500. VK3BXJ. Ph. (057) 21 3823.

Transformer, 135-0-1350V at 1 amp., suitable for big linear amplifier, $40, ONO. VK3XU, QTHR. Ph. 725 0824.

TS820S with 500 Hz CW filter, DC-DC converter and ext. VFO 820, all unblemished, no mods. and fully up to spec. (sale reason — house purchase), $865 the lot. Tim VK3BCN. Ph. (03) 370 6092 AH.

Yaesu FT101E Txcvr., v.g.c., full power, all bands, 16 0to 10m, includes full coverage, CB band, fan, processor, CW filter, mic., battery cables and instruction manual. Ph. (03) 570 4610.

Drake TV3300 Low Pass Filter, 1 kW, as new, $35; two 40m Reyco antenna traps and W2AU 1-1 balun, all 3 unused, $50. VK2BEK. Ph. (065) 52 2261.

WANTED

Two 3 or 4 in. Dials for ¼ in. Shafts, white preferred, similar to Millen, good cond. essential. VK2BEK. Ph. (065) 52 2261.

Service Manual and/or circuit diagram for Philips CRO, type TA155. VK3SV, QTHR. Ph. (03) 80 2330.

Ex RAAF Radar Stations WW2 List Personnel, all musterings, addresses if available, particularly 300 series stations, also forward interesting experiences, anecdotes for possible publication or reunions via Radar Association. Write Laurie Peasley VK2BLP, QTHR, or Norm Smith VK2AYU, QTHR.

Circuit, or handbook, or information for AWA CRO type IA56031 Rob L50536. Ph. (085) 68 2053 AH.

Crystals Repeater 2 146.100 Tx, 146.700 Rx, to suit Ken KP202 2m hand-held. VK2DKP, QTHR. Ph. (049) 94 9267.

Video Tape, 1 in. on 8 in. spool, with NAB hub. VK3KBQ. Ph. (058) 21 9458.

EXCHANGE

Crystals (HC6/U) 3536:3550:3565:3568:3600 kHz, for crystals on top end of 80m or on 160m. VK3SV, QTHR. Ph. (03) 80 2330.

TRADE HAMAD

Ham, CB, Military Disposal Sale: MLA2500 linear amp with large front panel, 2000W power output meter, 1.8 to 30 MHz, AM, SSB, CW, RTTY, SSTV, $750; FRG7 rx, 500 kHz to 30 MHz, $275; ex RAAF Pye aircraft transceiver, 110 to 140 MHz, $45; UHF FM320 transceiver, $259; new W65 18 ch. SSB CB radio, $179; new W65 40 ch., $195; 18 ch. walkie talkie, $110; 40 ch. CB with scanner, $99; 23 ch. CB, $55; 18 ch. CB, $69; 27 and 28 MHz 4 el. beam, $79; helical ant., $8.50. Different rigs coming in each day. When in Sydney drop into Park Disposals, 32 Park Street, Sydney, 2000, near Town Hall Railway. Ph. (02) 264 7515. Rigs posted anywhere in Australia, NZ, PNG, Pacific add $5.

Amidon Ferromagnetic Cores: Large range for all RF receiver and transmitter applications. Closed during November. Send large SASE for data and price list to: R.J. & U.S. Imports, Box 157, Mortdale, NSW 2223.

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D	118-130	140-150	70-80
E	140-150	150-160	118-130
F	150-160	160-170	118-130

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amateur radio

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FEATURED IN THIS ISSUE:

- ★ QRP SOLID STATE LINEAR AMPLIFIER FOR HF
- ★ WICEN AT THE 1981 SYDNEY AIRPORT EXERCISE
- ★ A REVIEW OF THE FT780R TRANSCEIVER
- ★ CHITARY MORIYAMA, AMATEUR EXTRAORDINARY

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WICEN at the 1981 Sydney Airport Exercise. Mike Richter VK2BMM, N.S.W. WICEN Co-ordinator, with Don Richardson VK2KDR, Sydney South WICEN Co-ordinator. See page 12.

Photo: Phil Watson VK2ZPW.

History . . .

Q S P

Amateur Radio magazine was first published in 1933 and has continued ever since. Even during WWII, when paper and resources were scarce, AR still appeared, albeit in the form of duplicated pages.

However "Amateur Radio" was not the only magazine to be "the official organ" of the W.I.A., especially in the early years. In those days a number of well known personalities were involved in the production of journals. Ross Hull, who later moved to the ARRL and QST, is perhaps best known — there were others.

Earlier Ross Hull was associated with "The Radio Experimenter" (later "Experimental Radio and Broadcast News"), first published in Victoria in 1924. From NSW came "Television and Radio Review", May 1931, and "Radio Monthly" later that year.

Australia also had its own "CQ" magazine, that was in 1927, and it was published by the Australian Radio Transmitters League of New South Wales. There were many other magazines published in those first 30 years which included articles relating to amateur transmitting. "Radio In Australia and New Zealand" 1922, and "Land, Sea and Air" were but two and of course there were other regular weekly and monthly papers like "Wireless Weekly" and later "Radio Hobbies", the "Listener In", etc.

These early magazines are of great importance to those researching the development of radio in Australia, including amateur radio.

The Institute's Federal Historian, and a Past President, Max Hull VK3ZS, is keen to obtain copies of the very early radio magazines, particularly associated with the Institute.

1985 is the 75th anniversary of organised amateur radio in Australia. Max needs as much help as he can get — especially from early reports — to enable him to piece together the history of amateur radio in this country. Can you help — even for a loan for copying?

P. A. WOLFENDEN VK3KAU,
Federal President. ■

WIRELESS INSTITUTE OF AUSTRALIA

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Executive Office: 3/105 Hawthorn Rd., Caulfield North, Vic. 3161. Ph. (03) 528 5962.

Divisional Information (all broadcasts are on Sundays unless otherwise stated).

ACT:
President — Mr. W. R. Maxwell VK1MX
Secretary — Mr. C. T. Vidler VK1KV
Broadcasts— 3570 kHz and 2m Ch. 6 (or 7): 10.00Z.

NSW:
President — Mr. A. D. Tilley VK2BAD
Secretary — Ms. S. J. Brown VK2BSB
Broadcasts— 1100 local 1.825, 144.12, 3.595, 7.146, 28.32, 52.12, 52.525, MHz, Rptr. Ch. 6650 Oberon, 6700 Orange, 6750 Gosford, 6800 Lismore, 7000 Sydney, 8525 Sydney.
1930 local. 52.12, 52.525, 144.12 MHz, Rptr. Ch. 6650 Oberon, 6750 Gosford, 7000 Sydney, 8525 Sydney. Relays on 160, 80 and 10 metres.

VIC.:
President — Mr. P. R. Drury VK3JM
Secretary — Mr. D. X. Clarke VK3DES
Broadcasts— 1840, 3600, 7135 kHz — 53.032 AM, 144.2 USB and 2m Ch. 2 (S) repeater: 10.30 local time.
Gen. Mtg. — 2nd Wed., 20.00.

QLD.:
President — Mr. D. Laurie VK4DT
Secretary — Mr. A. J. Aarsse VK4QA
Broadcasts— 1.825, 3.580, 7.120, 14.342, 21.175, 28.400, Rpt. Ch. 6700 and 7000 Sundays from 0900Z (Sat. 2300 UTC).
Re-broadcasts—Mondays 3.605 from 1930Z, Mondays 80 or 20m RTTY segment from 200Z.

SA:
President — Mr. J. B. Mitchell VK5JM
Secretary — Mr. W. M. Wardrop VK5AWM
Broadcasts— 1820, 3550, 7095, 14175 kHz; 21.195 28.470 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.
Gen. Mtg. — 4th Tuesday, 19.30.

WA:
President — Mr. B. Hedland Thomas VK6OO
Secretary — Mr. F. Parsonage VK6PF
Broadcasts— 3560, 7075, 14100, 14175 kHz. 28.47, 53.1 MHz. 2 metres Ch. 2 Perth, Ch. 6 Wagin. Time 0130Z.
Gen. Mtg. — 3rd Tuesday.

TAS.:
President — Mr. I. F. Ling VK7XL
Secretary — Mr. P. Clark VK7PC
Broadcasts— 7130 (SSB) kHz with relays on 6 and 2m Ch. 2 (S), Ch. 8 (N), Ch. 3 (NW), 09.30 EST.

NT:
President — Mr. T. A. Hine VK8NTA
Vice-Pres. — Barry Burns VK8DI
Secretary — Robert Milliken VK8NRM
Broadcasts— Relay of VK5WI on 3.555 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 48, Canberra, 2600.
VK2 — 14 Atchison St., Crows Nest, 2085 (Ph. (02) 43 5795 Mon, Tues & Thurs 9.45-13.45h). P.O. Box 123, St. Leonards, NSW 2065.
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 417 3535 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 — G.P.O. Box 10, W. Perth, 6005.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

Slow morse transmissions — most week-day evenings 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, P.O. Box 73, Teralba, 2284.
VK3 — Inwards QSL Bureau, Mrs. B. Gray VK3BYK, 1 Amery Street, Ashburton, Vic. 3147.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse VK3XY, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001
VK5 — QSL Bureau, Mr. Ray Dobson VK5DI, 16 Howden Road, Fulham, S.A. 5024.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK6HA, P.O. Box 1416, Darwin, N.T. 5794.
VK9, 0 — Federal QSL Bureau, Mr. N. R. Penfold VK6NE, 388 Huntriss Rd., Woodlands, W.A. 6018.

WIANEWS

CABLE AND RADIATED SUBSCRIPTION TV INQUIRY

WIANEWS in September AR foreshadowed the preparation of a submission by the WIA to the Australian Broadcasting Tribunal Inquiry into Cable and Subscription Television Services and related matters. This submission has been prepared and lodged. Research into the problems experienced overseas was conducted.

The Institute's position is that radiated pay-TV is the least desirable of the opitions insofar as the amateur service is concerned.

In connection with cable television very real problems are seen to exist in relation to interference both into and from such a service. The WIA therefore recommended the adoption of adequate standards under the control of a technically competent authority possessing proper powers of control.

Information from the USA in particular indicates that ideally and legally paid-TV cables do not permit leakage from the system or allow incidental RF energy and signals into the system. In reality, however, there are cases of radio-frequency interference blossoming throughout the USA as a result of inadequate shielding and connectors used in cable systems despite strict cable leakage by the FCC.

The terms of the Inquiry also included a reference to the optimum dates for the introduction of cable-TV having regard to the present state of development of cable technology, including fibre optics. The Institute believes that cable-TV transmissions by fibre optics is the desirable option if this system can become available within the time scale.

TOWERS

In the matter of an appeal by B. L. Usher and the Corporation of the City of Noarlunga and others, heard by the Planning Appeal Board in Adelaide (No. 539/1980), the appeal was allowed. The Board held that the appellant did not need planning consent and directed the respondent Corporation to revoke the notice of refusal. The appellant was an amateur and a member of the WIA SA Division, which rendered assistance in every possible way, as this was regarded as a "test" case. The combined height of the tower and antenna in question was 10.93 metres situated at his home.

In the appeal by M. Martyn against the Campbelltown City Council, heard in the Land and Environment Court of New South Wales (10148/1981), the Court dismissed the appeal in respect of a tower 17 metres in height for amateur purposes at his home in Macquarie Fields. The Court observed that the area of the rear yards behind the houses in the area was very small and that the antenna would cover about half the area of the rear yard. The Court was of the opinion that the proposed mast and large antenna would have a dominating and overbearing effect on persons in the adjoining properties in particular, and probably adjacent properties also. The proposed structure would be out of character with the development of these properties and would injure the amenity of the locality. The Council stressed that the new areas at Macquarie Fields have underground public utility services, hence there is an absence of ugly overhead wires and poles in the streets; the topography is flat and the locality is predominantly single storey dwelling houses with landscaped gardens. In this appeal the member concerned was assisted in every posible way by the WIA NSW Division.

WIANEWS

In Victoria the Department of Planning was allegedly approached by the Melbourne and Metropolitan Board of Works to impose limits of 8 metres (from the ground — or 3 metres above the roof line where the mast is attached to a building) in height and to limit the horizontal dimensions of an antenna to no more than 3 metres as the maxima permitted without a planning permit. The WIA Victorian Division actively opposed this and have now received a letter from the Minister for Planning in respect of this Amendment 115 Part 4 that he will not proceed with this provided the Institute takes a lead role in the development of non-statutory guidelines. For this purpose he has written to the Municipal Association of Victoria seeking the nomination of representatives to work with the WIA in developing such guidelines as are acceptable to all concerned. The WIA Victorian Division's representatives have given much time to this matter, which attracted the attention of the media, and are positively replying.

It is believe that some problems have surface in VK6 with amateur towers in residential areas.

The July issue of the VK4 Bulletin QTC contained an article being a summary of an address given to the VK4 General Meeting in May by an amateur who is the Deputy Town Clerk of a fairly large local authority. The article examines local authority by-laws in Queensland and gives advice on the best methods of proceeding with applications bearing in mind the possible provisions of the Standard Building By-laws and the possibilities that some local authorities have "amenity" by-laws as well. As in most places there are, he said, penalties for erecting towers/masts without a building permit.

GENERAL

David Rankin 9VIRH/VK3QV, the IARU Region 3 Secretary, was welcomed to the Executive meeting on 27th August during his short visit to Melbourne. David spoke about current IARU affairs, particularly relating to Region 3.

Several other items were discussed, including a review of the Federal budget for 1982 having regard to the recently imposed increases in Category B bulk postage rates for AR to come into effect in December and the possibility of AR attracting sales tax in the new year. ■

WIA FEDERAL DIRECTORY

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QRP Solid State Linear Amplifier for HF

Drew Diamond VK3XU
43 Boyana Crescent, Croydon 3136

INTRODUCTION

If the power output from a transmitter can be raised from say 1.5W to about 10 watts, a significant improvement in communications efficiency can be obtained. Circuits for solid-state broadband linear amplifiers have been around for some time now, but Australian experimenters have been frustrated by the absence of some of the more specialised components. Suitable transistors, although available, have been very costly. Also, the magnetic materials usually specified for the broadband transformers have been difficult to obtain.

Transistors such as the MRF475 have become quite cheap in recent years due to their popularity in CB equipment. These transistors were specifically designed for linear amplifier applications. Their cost at present is about $4 each.

The magnetic material generally employed to load the broadband transformers is ferrite, with permeabilities in excess of 800, and low loss factors to 30 MHz. The author has obtained satisfactory results using locally available toroids and balun cores with permeabilities of 50 and 220 respectively.

This empirically designed amplifier has the following characteristics:—

Signal Output Power: At least 8W CW (typically 10W), 10W PEP SSB.

Signal Input Power: 1.5W CW, 2W PEP SSB on 3.5 MHz; 2W CW, 2.5W SSB on 28 MHz.

Bands: 3.5 to 28 MHz.

Input SWR: Less than 1.5 on 3.5, 7, 14, 21 and 28 MHz.

Intermod. Distortion: Of the order of —30 Bd.

Power Supply: Nominally +13V at 2A.

CIRCUIT DESCRIPTION

The input signal is matched to the bases of Q1 and Q2 via conventional broadband transformer T1. The base to base impedance is about 12 ohms, so the turns ratio of T1 is 2 : 1, yielding an impedance ratio of 4 : 1. Gain levelling and input SWR reduction across the HF band is achieved with a simple RC correction network R1, C4 and R2, C5 in series with each base. Stability is enhanced by the inclusion of R3 and R4.

Forward bias for class AB operation is provided by clamp diode D1, which establishes a quiescent collector current of about 200 mA. The diode is sourced via R5 and R6, and bypassed for RF and audio by C1, C2, C3 and C17.

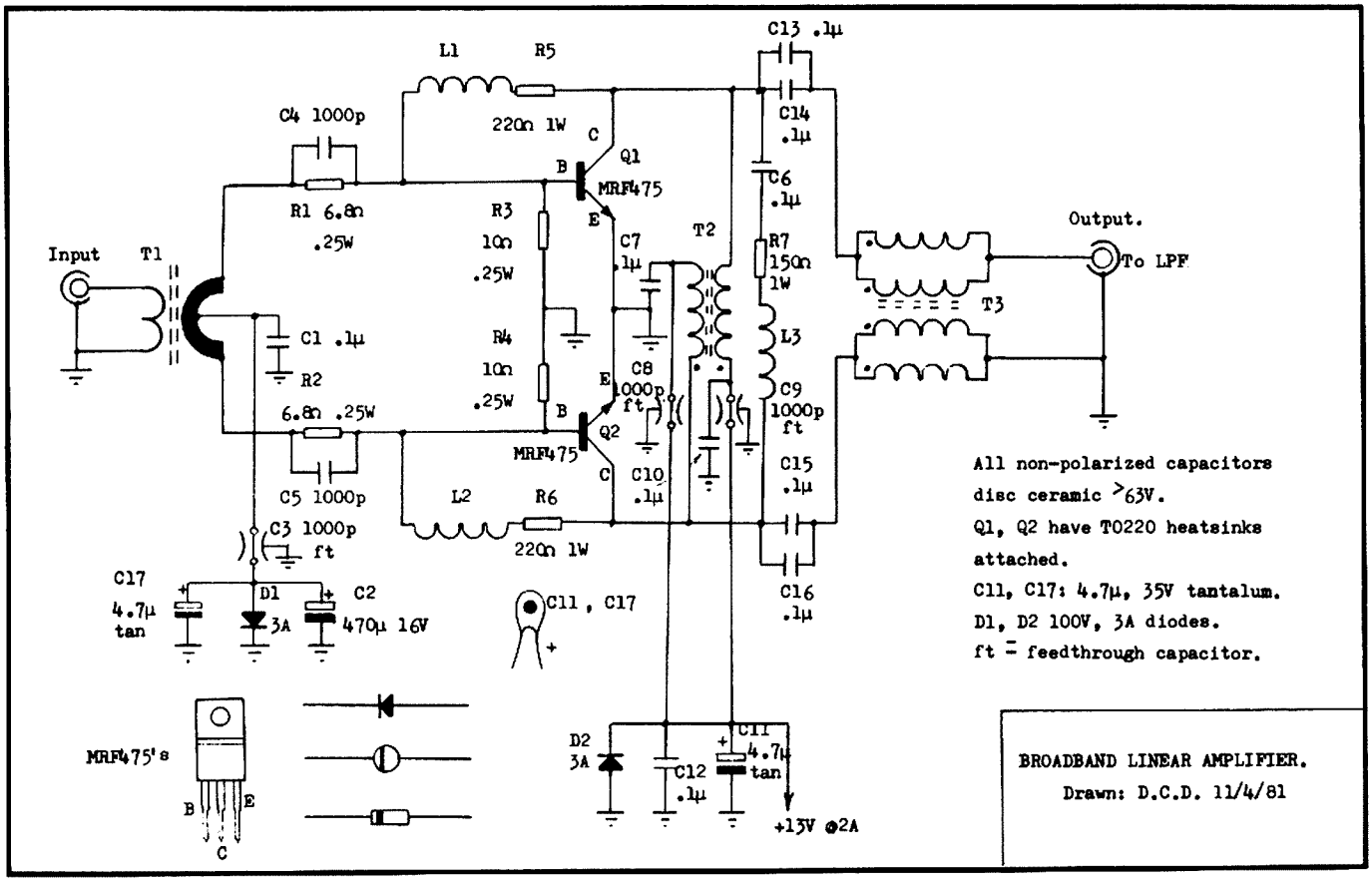
By using a 1 : 1 balanced to unbalanced transmission line transformer a reasonable collector match to 50 ohms is obtained and it works well in practice.

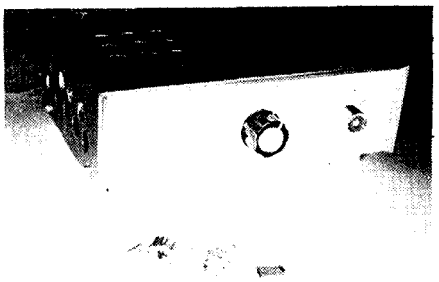
Stability is obtained by employing negative feedback around Q1 and Q2 with LR networks L1, R5 and L2, R6. The amount of negative feedback falls off in proportion to frequency due to the increasing reactance of L1 and L2, so the gain is a fairly constant 7 dB across the HF band.

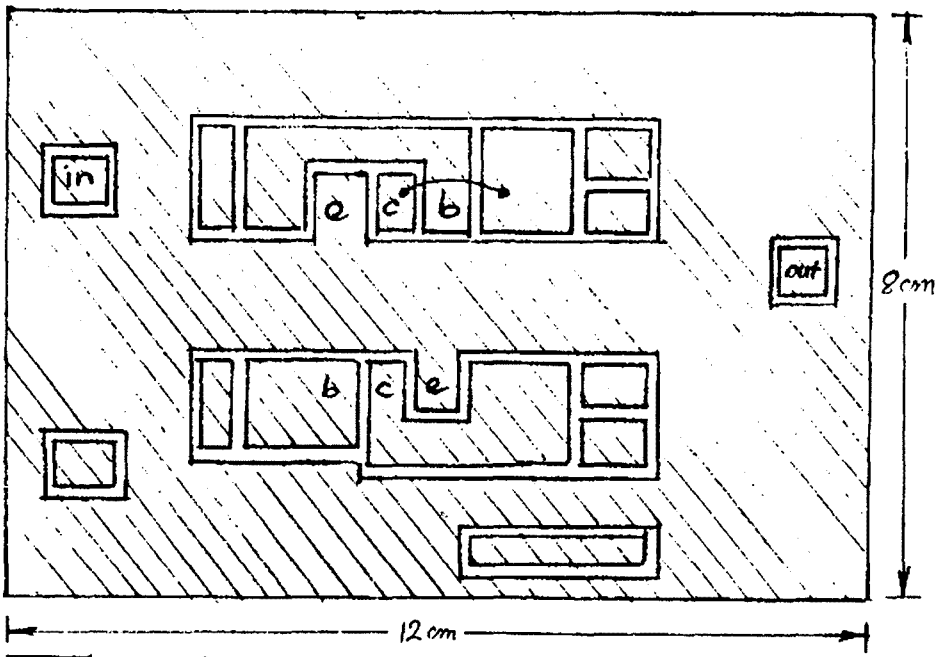
This type of amplifier has a tendency to oscillate at low frequencies when the output is terminated in a high SWR load. A very stable amplifier can be obtained by introducing artificial loss to discourage LF oscillation. So C6, R7 and L3 is included from collector to collector to provide this loss.

Collector current is fed via T2. The net DC flux is zero, but the two windings form a 1 : 1 transformer, and so provide an artificial centre tap for T3.

This push-pull arrangement also reduces the amplitude of even harmonics. As there is considerable odd-harmonic content, it is







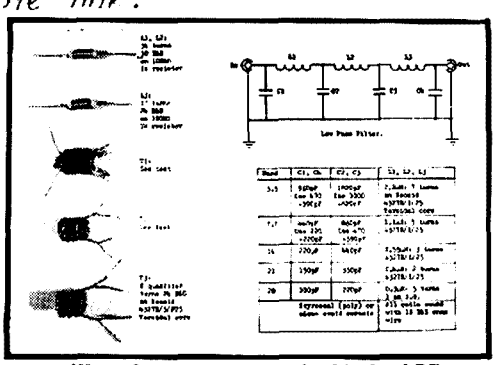
essential to follow the output with an appropriate low-pass filter in order to clean up the output waveform. The new 10, 18 and 24 MHz bands may be used with the 14, 21 and 28 MHz filters respectively. Antenna SWR should generally be held below 2.0 : 1 for correct filter operation.

CONSTRUCTION

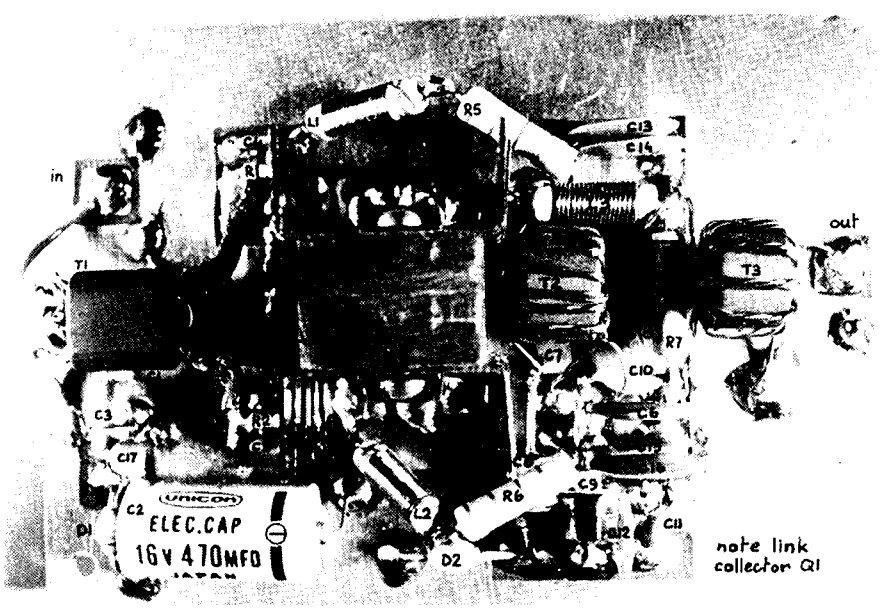
All components are mounted upon a double sided printed circuit board. The reverse side forms a continuous ground plane under the components. All components are soldered directly on to the copper pads except the junctions of L1-R5 and L2-R6 as shown in the photograph. Ideally, ceramic chip capacitors should be used for RF coupling and bypassing applications, but once again these are difficult to obtain. Ordinary disc ceramic capacitors will perform satisfactorily provided that their leads are made as short as practicable.

The secondary of the input transformer T1 has a single turn made from a 7 cm length of RG58 coax braid passed through the holes of a 1050/1/F14 balun core. A scriber is then carefully used to enlarge a suitable opening in the braid at each entrance. Two turns of 22 B & S enamelled wire or thin hook-up wire is then passed through the holes to form the primary winding.

The collector supply feed transformer T2 is a broadband 1 : 1 transmission line consisting of 14 loops wound upon a 432R/3/F25 toroidal core. To make the windings place the ends of two lengths of 24 B & S enamelled wire in a vice. Twist the other ends together and fix them in the chuck of a hand drill. Keeping the wires taut, turn the drill till there are about two twists per centimetre. Give the drill a tug to "set" the twists and remove the twisted pair. The quadrifilar winding for T3 is made in a similar manner, only four wires are used to form a 25 ohm transmission line. Use a multimeter to find the respective ends of each wire. The start of a winding is indicated on the circuit in the traditional way with a dot. It is important to observe the correct connections for these transformers.



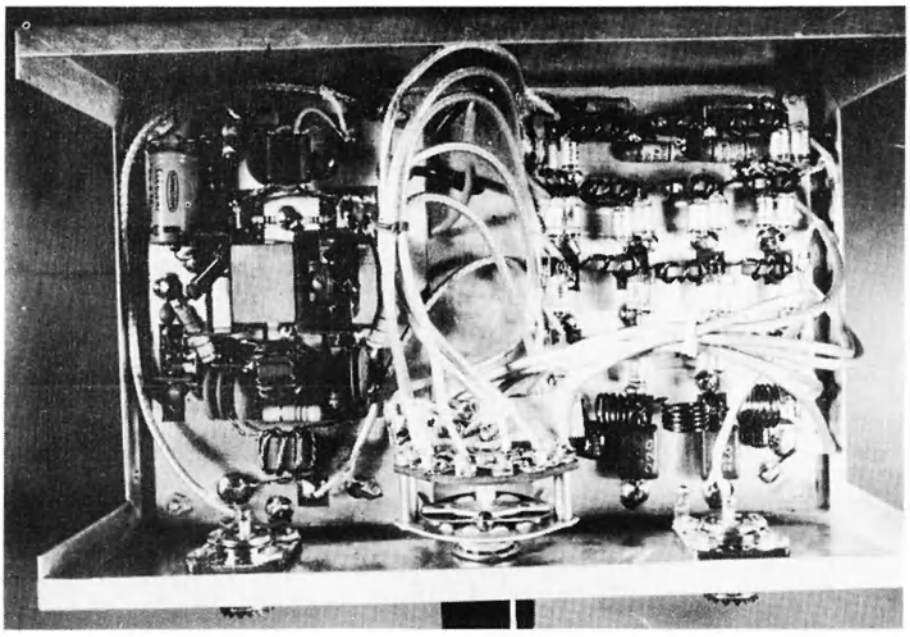
Wound components and table for LPF.



Component locations.

If it is planned to use the amplifier on all bands, a 2 pole, 5 position wafer switch may be employed to select the appropriate filter for each band. All connections to and from the filter should be made with miniature 50 ohm coax with the outer conductors grounded at each end.

The power supply may be implemented using the popular 78H12 regulator IC.



Suggested final assembly.

Applications information for this IC abounds in technical literature, and need not be repeated here. Alternatively, a battery supply may be used. A 3 amp fuse should be incorporated in series with such a hefty supply to protect the amplifier from damage should a fault occur.

Q1 and Q2 must have TO220 heat sinks attached to them in order to dissipate the heat that they produce. As the collectors are above ground potential, it is necessary to insulate them. The simplest and most effective method is to mount the transistors and heatsinks upon an insulated block which has been drilled and tapped. The completed amplifier assembly may be accommodated inside a metal case if adequate ventilation is provided in the form of holes in the sides and top of the case. The cores may be obtained from J. H. Magrath & Co. of Melbourne, or Watkin Wynne of Sydney. All the other components are available from any electronic shop worthy of that name. The author wishes to thank Nick Kane for the photographs.

REFERENCES

Motorola RF Data Manual.
Solid State Design — ARRL. ■

Decimal Time

Now that we have (almost!!) become accustomed to metrics in this country, it is proposed to extend the decimals further. We amateurs are supposed to be able to adjust to all types of change, therefore we should lead the way and really show the populace how "state of the art" time can improve our wellbeing.

It is proposed that, in the next few months, the whole of Australia (except Queensland) will be converting to metric time.

There will be 10 seconds to the minute, 10 minutes to the hour, 10 hours to the day, and so on, delineated according to the following table:—

Old Time	New Time
1 second	— 1 milliday
1 minute	— 1 centiday
1 hour	— 1 deciday (or millimonth)
1 day	— 1 day
1 week	— 1 decaday
1 month	— 1 hectoday
1 year	— 1 kiloday

The fortnight will be withdrawn.

Due to the fact that one new hour only represents 5/12ths of an old one, employees might be expected to work longer hours, viz., three and a third decidays or millimonths per day. However, as this is inconvenient for administration and payroll purposes, it is intended that the lunch break, if allowed, will be shortened by two-thirds of a new hour, thus making a total daily working time of four new hours.

It is not expected at this time that any compensatory uplift will be made to wages, except in the case of leap kilodays, where an adjustment will be built in at the end of the hectoday every 1.46 decamonths. The Pension Scheme will not be affected, but **superkilodayation** will be adjusted accordingly.

A further bulletin will be issued closer to Deciday with details of the filling in of time sheets, etc., but if you have any queries, please do not hesitate to contact the Salaries and Wages Section.

LEAVE

Holidays will be affected only so far as the change to Metric Time is concerned, and no one shall be worse off than before. Thus, if an employee was entitled to 22 days (old time) he will be entitled to 220 decidays or one hectoday plus 20 decidays for every hectoday over and above 20 kilodays service since the 10th deciday of the third hectoday of 1976. Further details will be announced later about relief days and holiday allowances for shift workers. Special holidays will accordingly be reduced to 5 decidays but 10 demldecidays will be added, where relevant to the Christmas break, which will be moved to the August Bank Holiday, to take advantage of the longer shopping decidays. The Spring Bank Holiday will be cancelled.

Simple isn't it?

The above article is a part reprint from "Jimmy", July 1981, and adapted for "AR" by VK3UV. ■

RSARS (VK/ZL CHAPTER)

HIGH FREQUENCY NETS

Daily, 1230 GMT, 21175 kHz ±. Though primarily a controlled net the UK controller usually requires an overseas station to assume co-control, if more than two overseas stations join in.

When conditions permit, members are encouraged to use the following high frequencies in addition to above:—

14065, 21130, 21375, 28065, 28450 kHz.

OTHER FREQUENCIES AND MODES

RTTY: 3590 and 14090 kHz. Use 170 Hz shift and 45.5 bauds.

Slow Scan: Please notify activity to Headquarters for publication.

ACTIVITY SUNDAY

"Activity Sunday" is the Sunday of the second full weekend in very month. Please make an extra effort to contact our overseas members — use listed frequencies and call on the hour when propagation is suitable.

ALL MODES

Call "CQ RSARS" or "CQ ROYAL SIGNALS AMATEUR RADIO SOCIETY". During a QSO sign "G1ABC de G1DEF BT BOTH RSARS K" or "ON0NO de G1GHL BT RSARS K". **DO NOT** join "RSARS" to your call sign in any way (i.e. C1JRL/RSARS) as in Great Britain this is illegal under Home Office Regulations.

Do not wait for the above nets to form — find the nearest clear frequency and call "CQ RSARS". Please do not call CQ on the CW LF controlled nets as there is always a control station around to bring you in. Always book IN and OUT of controlled nets. Pass all details for awards and contests unassisted.

From "Jimmy", July 1981. ■

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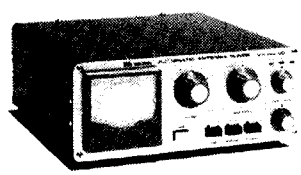

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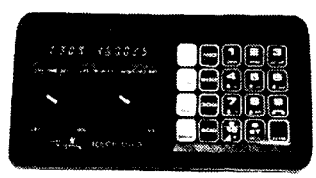

ANTENNAS/ ACCESSORIES

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ASAHI bump .r mount kit $26
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MARK light duty antenna spring $10
RM40
HUSTLER 40m resonator antenna $30
10Y/2M
JAYBEAM 10 el, 11.4dBd 2 metre beam $96
5Y/2M
JAYBEAM antenna 5 el, 7.8dBd, 2 metres $43
8Y/2M
JAYBEAM 8 el, 9.5dBd, 2 metre antenna $57
HW-40
MARK HF helical whip 7.07Mhz $33
PBM18/70
JAYBEAM 18 el, 14.9dBd, 70cm beam antenna $105
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VICOM 2B beam, 2M, 5 el, 8dB gain, 500W $39
VAB/70/16 VICOM 16 el, LP/YAGI, 70cm antenna (incl balun) $106
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VICOM 2M ¼ wave f-glass whip 146.5MHz $5
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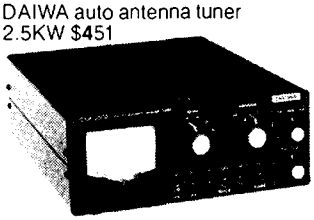
DAIWA automatic antenna tuner 200W $319
CNA2002
DAIWA auto antenna tuner 2.5KW $451



CNW218
DAIWA antenna tuner incl SWR/PWR meter $164
CNW418
DAIWA antenna tuner – HF bands $199

SW110A
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LDM815
LEADER dip meter $94
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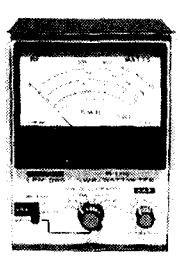

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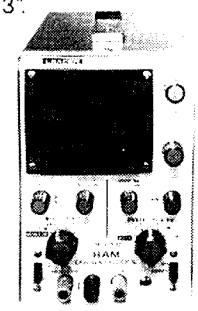

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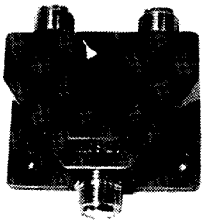

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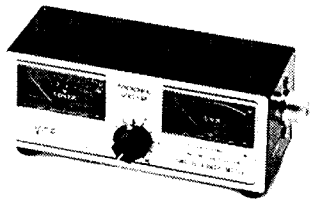

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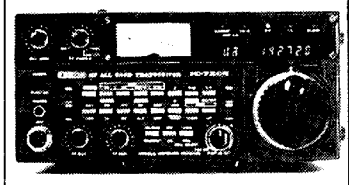

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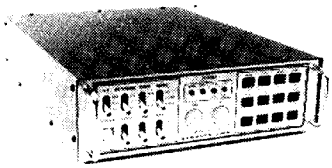

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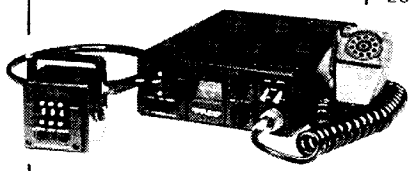

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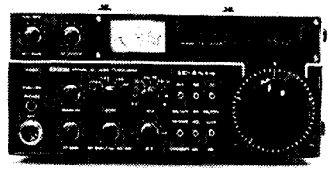

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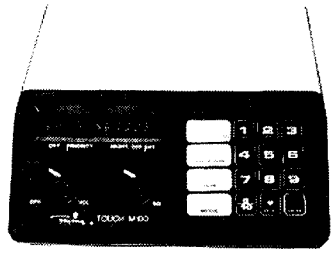

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WICEN at the 1981 Sydney Airport Exercise

Mike Richter, NSW WICEN
Deputy State Co-ordinator

INTRODUCTION

Every year in February, in what is reputed to be the best of its kind in the world, an emergency exercise is held at Sydney Airport to simulate the crash of a Jumbo Jet. The aim of this exercise is to test, under realistically simulated emergency conditions, the Airport Emergency Organisation and to learn how improvements to the effectiveness, adequacy and efficiency can be made.

This type of exercise has been held each year for twenty-four years and as the size of aircraft has increased, so the scale of the exercise must follow, so that this year's exercise involved the rescue, triage, treatment, transport, hospitalisation and identification of approximately 180 uninjured passengers, sixty injured and fifteen dead. Obviously this requires an enormous communications network involving Fire Brigade, Police, Ambulance, Department of Transport and Welfare services. This year the police decided to test the usefulness of volunteer communicators to relieve some of the pressure on the main operations networks and to provide links for special purposes.

The only volunteer rescue groups which NSW police recognise are those which are members of the NSW Volunteer Rescue Association. It was for this reason that WICEN applied for, and was granted, affiliation with the VRA in 1978. Because WICEN is a member of the VRA NSW, police supported the active participation of WICEN in the 1981 exercise.

EXERCISE DESCRIPTION

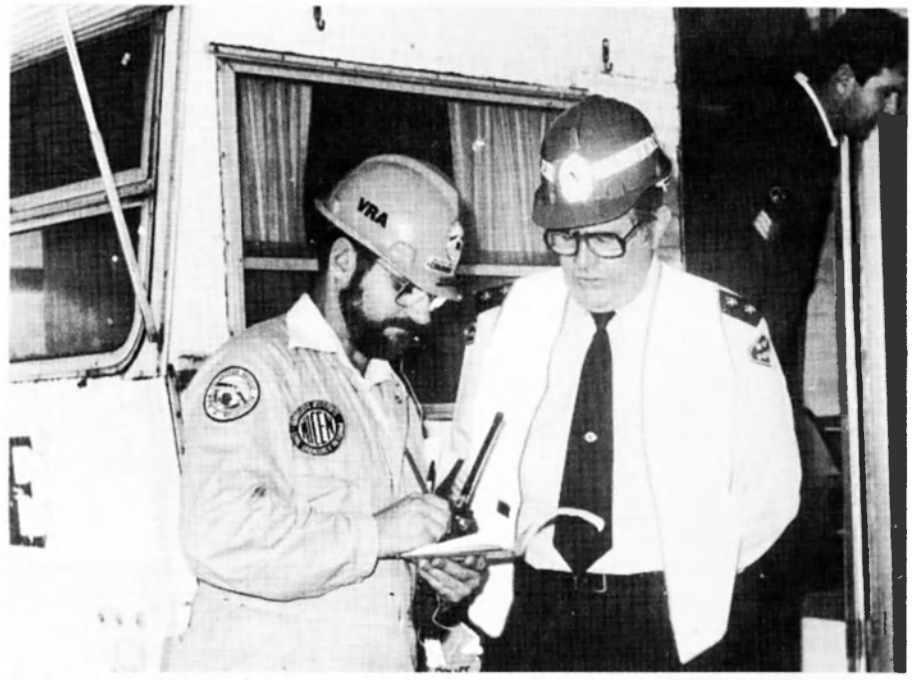
The simulated emergency involved a Jumbo Jet from Lunar Airlines which suffers wheel failure on take-off and subsequent hydraulic failure on both systems which could result in control problems on landing. To complicate matters the plane is adso carrying four packages of radioactive Tritium.

WICEN's brief from the police gave no indication of the actual traffic to be handled but indicated that communication should be available between:—

1. The Police Control Van at the Airport.
2. The Police Emergehcy Operations Centre, Police Administration Building (EOC), 7 kilometres from the Airport.
3. Survivor Holding Room in the International Terminal Building (ITB).
4. Casualty Section, Prince of Wales Hospital, one of the six hospitals used in this exercise, 7 kilometres from the Airport.

TECHNICAL ASPECTS

Although all these points enabled reliable communications to be established using hand-helds via the Heathcote repeater, it was decided that the exercise would be more useful if communications were restricetd to simplex. Tests before the exercise revealed that an external aerial would be necessary at EOC and a vehicle transceiver with a high-gain aerial would provide reliable coverage at Control.



Sydney South WICEN Co-ordinator Don Richardson VK2KDR and Inspector Waring, Police Controller for 1981 Airport Exercise. Photo: Phil Watson VK2ZPW

The 2 metre WICEN frequency 145.7 MHz was chosen as the primary frequency with 147.5 MHz allocated for any special links that may need to be established. This frequency was chosen to minimise desensing problems which occur when two frequencies in the same band are used in close physical proximity. At least two transceivers were available at the major locations to guard against equipment failure, and to enable two frequencies to be monitored simultaneously.

IDENTIFICATION

Full identification of the network was provided once every ten minutes from Control as the VK2 WIA network. As had been proved on many previous exercises, minimum confusion occurred if outstations used functional call signs — ITB, TO, Wales.

PROCEDURE

As this was to be a strictly controlled network with permanent outstations with reliable contact it was decided to keep procedure to an absolute minimum using an abbreviated procedure as used by police in their daily operations. This meant that:—

1. Only outstation call signs need be used to call in to Control or for Control to acknowledge outstations, once the net has been established.
2. "Over" need not be used for short transmissions where there is no doubt that the transmission is finished.
3. If the quality of signals deteriorates or confusion arises both call signs should be given at the start of a transmission and "Over" used to end transmission.
4. Do not read back messages unless specifically asked or if you are not certain that you have received every word correctly.
5. Only spell words which are unlikely to be received correctly — this applies particularly to names which have an uncommon spelling, e.g. Braun — Brown, Parker — Barker.
6. Use common spelling rather than phonetic spelling as this is faster for pronouncable words when communications are good.
7. No transmission is to be longer than 20 seconds as urgent traffic may need to break in with minimal delay. Long messages must be broken up with "Roger so far".
8. Make written notes whenever traffic is submitted or an important event occurs, noting the time of day. This will be required for debriefing and could provide vital information in a real emergency.
9. Direct conversation between users is to be encouraged to ensure speedy communications.

10. Actual injuries or accidents will be reported by preceding messages with "Authentic, Authentic, Authentic . . .".

The following example illustrates these points:—

Outstation Calls: ITB.

Control Acknowledges: ITB.

Outstation Sends: Message from HQ.

Control calls HQ: HQ. Message from ITB.

HQ Acknowledges: HQ. Send.

ITB Sends: From Inspector Black to Emergency Room. Survivor list follows. Roger so far.

Break for urgent traffic. H.Q. Acknowledges: HQ. Roger.

ITB Continues: John Smith, 38, Wahroonga, Fred Brown, 16, Liverpool, Wilma Xeraphos, I spell X E R A P H O S, 21, Engadine, Roger so far.

DVI Interrupts: DVI.

Control Acknowledges DVI: DVI.

DVI Sends: From Inspector Green to Walker at Control. Require Helicopter at Forward Landing Point immediately. Over.

Control Acknowledges: Roger DVI. HQ continue with ITB.

HQ Acknowledges: ITB from HQ. Roger.

ITB Continues: Jim Brown, 26, Canley Vale, etc.

ON THE DAY

Some highlights from the Control Log indicate the more important events that occurred on the day:—

13:06 All outstations have established reliable contact.

13:13 "PORTABLE" is established in the network so that the WICEN Liaison Officer can be stationed near the Police Control Van and maintain radio contact with WICEN control.

13:25 Police Commander advises that WICEN will be responsible for relaying "situation" reports to the Emergency Operations Centre.

14:03 Message to EOC — Aircraft landed at 1400 hrs.; veered off runway, broke into 3 sections, tail at gate 30, fuselage in Botany Bay adjacent to gate 31, nose landed on "hook" of breakwater.

14:26 WICEN operator allocated to provide communications link to Atomic Energy Commission recovery team.

14:35 Message to Control — Two packs containing radioactive material found on beach.

14:37 Message to EOC — Information to hand at this stage indicates 6 deceased and 60 injured. Uninjured are being conveyed to ITB for processing.

14:52 Message to Wales — Helicopter will be taking patients to Prince Henry Hospital — not to Wales.

15:14 Message to Control — Contact Navy divers so that they may collect water samples and bring to AEC staff at gate 30.

15:40 Wales transmits list of casualties to EOC.

15:54 Message to EOC — 173 injured and 43 processed at ITB, 16 deceased, 77 injured, 2 persons arrested for trespass. All sites closed down now.

16:11 Exercise officially completed at 16:01.

LESSONS LEARNED

Taking part in this important exercise gave WICEN insight into the requirements that will be placed on it when a call-out for an emergency occurs. Without such exercises it is impossible to maintain an efficient and effective organisation.

The main lessons learned during this exercise were:—

1. The instant recognition provided by the green VRA helmet is vital in obtaining access and operating within an emergency area.
2. All messages must be accompanied by a Date-Time-Group and Signature so that they can be identified and verified.
3. All Police Officers in charge of sections where WICEN will be operating should be briefed on WICEN's capabilities to ensure that WICEN is used to its full potential.
4. When the new Emergency Operations Centre is established, it is suggested that WICEN be permitted to install an aerial and cable. Not only will this enable a faster response but will also enable WICEN to provide links over a large area using VHF repeaters at Gosford, Blue Mountains, Oberon, Mittagong and Wollongong.
5. Considerable coverage can be obtained using battery-powered simplex VHF so that mains failure will not affect the service. All stations could access the Heathcote repeater using hand-helds with short aerials but it was decided that the exercise would be more useful if the repeater was not used.
6. Lightweight headsets are useful in keeping the operator's hands free for message writing, etc.
7. Noise-cancelling microphones are the only practical means of transmitting effectively in noisy areas; e.g. near aircraft operations, public address systems or sirens.
8. Headphones or ear-pieces are necessary for effective reception in noisy areas and to prevent excessive noise being generated in quiet areas, e.g. survivor holding room or EOC. They may also extend battery operating time by reducing current consumption.
9. An effective clipboard is required to hold forms and log sheets if message writing is to be carried out outdoors. Carbon copies should be made for received messages so that the original can be kept by the recipient.
10. WICEN is suited to handling non-urgent traffic which could cause excessive delays on the main operations channels.
11. Formal traffic for transmission by WICEN should be written by the originator.
12. Operators must be versatile and flexible and be always ready to change operating procedure and network structure instantly as new requirements arise.
13. The operator must judge whether the message is urgent and speed is most important, or is formality and accuracy most important.
14. WICEN must have an effective alert and call-out system if they are to be available in actual emergencies within a reasonable time.

POLICE COMMENTS

Following the exercise debriefings were held by the Police and by the Department of Transport for all groups involved.

Superintendent K. Baret, who had overall control of Police involvement in this exercise, used the following words to describe WICEN's patriclpation:—

"The contribution by the volunteers of the WICEN Group of radio operators proved the worth of mature, qualified and responsible volunteers and by setting up communication bases at hospitals, the International Terminal Building and at the crash sites, were able to lighten the load of the Police Radio Operators considerably in handling a substantial volume of messages.

"They are to be commended for their contribution."

WICEN is grateful for Superintendent Baret's active support which enabled volunteer communicators to take part in this professional exercise for the first time. Sergeant M. Rigg of Police Communications was invaluable in helping WICEN prepare for this exercise.

HOW TO GET INVOLVED

If you are seriously interested in using amateur radio to provide a community service during emergencies you will need to consider the following requirements:—

1. Be prepared to accept commands from Police Officers or senior WICEN personnel during exercises and activations.
2. Be fully experienced in providing a communications service using formal procedure, abbreviated procedure or urgent procedure. Normal amateur procedure is totally inadequate in providing an emergency communications service.
3. Regularly take part in emergency exercises organised by WICEN — the only volunteer communication group recognised by NSW Police, NSW State Emergency Service and Department of Communications. Without this regular practice you will not have the necessary skills, as everyday amateur practice involves no experience in the skills required to provide a reliable communications service. ■

A Review of the FT780R Transceiver

Gil Sones VK3AUI

The FT780R is the latest release from Yaesu in the line of small multimode transceivers. It is a worthy companion to both the 2 metre FT480R and the 6 metre FT680R.

The operating features in all these are similar as they have very similar computer control systems. This computer interfaces the panel controls dial and frequency display to the phase locked loop circuitry used for frequency generation.

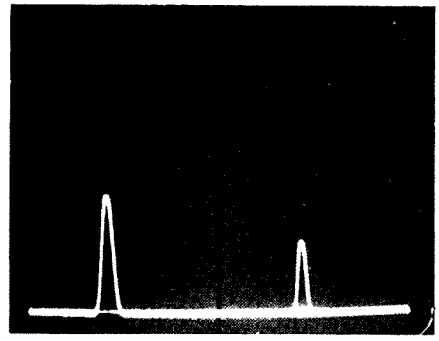
Thanks to the central system features like dual VFOs, scanning, memory channels, priority channel and repeater offset are a breeze.

One hint to band conditions in other parts of the world is the ability to search for a clear channel. This is hardly needed locally where one has to scan to find a busy channel even on the repeaters. Indeed in Melbourne one must know where the 70 centimetre repeaters are to find them in a reasonably short time. At the time of test, June 1981, only the VK3RAD repeater was initially found, although two others lay hidden in the silent band.

Aside from the operating features which are excellent the receiver hides a new development beneath a fairly bland handbook sensitivity claim. Yaesu have placed a Gallium Arsenide Dual Gate Mosfet right up front and they have backed it up with an antenna change-over relay and a real type N antenna connector. With a 0.5 microvolt signal in the SSB mode an excellent 23 dB signal plus noise to noise ratio was obtained, whilst on FM a 1 microvolt signal gave a 37 dB signal plus noise to noise ratio.

These receiver sensitivity figures would look good on many 2 metre rigs let alone on a 70 cm rig, and they are better than those claimed in the book. Further receiver tests yielded an image rejection of 75 dB and found that S9 on the line of LEDs used as an S meter represented a 10 microvolt signal with S1 being registered on a 1 microvolt signal. S5 was 2.5 microvolt signal and S3 was a 1.5 microvolt signal. The S meter is in fact a line of LEDs which double up on transmit as a power output indication.

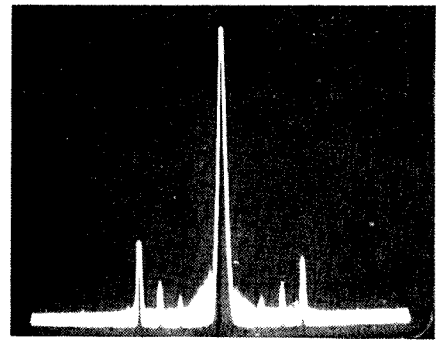
One interesting discovery when testing the rig on the spectrum analyser was the local oscillator leakage. This was at a very low level, being —46 dBm for a received frequency of 430 MHz and dropping to —59 dBm for a received frequency of 439.975 MHz. See photo 1. These are very small signal levels which would also be found on most equipment. They are much smaller than the local oscillator signals sometimes used in the past to track the fox on one sixteenth the frequency.



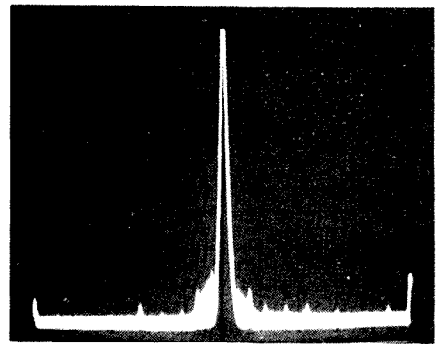
Receiver Local Oscillator Leakage. Reference 0 dBm. Outputs for 430 MHz Rx and 439.975 MHz Rx. 2 MHz/div. horizontal, 300 Hz bandwidth.

The transmitter uses one of the RF power amplifier modules. Yaesu once again hide the true performance by quoting an input power in one place and referring in another to 10 watts output. The transmitter produced an output of 14.5 watts at 430 MHz, which dropped slightly to 13.2 watts at 439.975 MHz. This is quite a good result for a nominal 10 watt rig. The output is all on the intended frequency as the spectrum analyser showed with the spurii being within the FCC limits for sale in the USA. See photos 2 and 3.

The indicated frequency was within 900 Hz of the measured frequency which is better than many two metre rigs and is well within specification.



Transmitter Output. Frequency 439.975 MHz. 5 MHz/div. horizontal, 10 dB/div. vertical referenced to max. output.



Transmitter Output. Frequency 430.00 MHz. 5 MHZ/div. horizontal, 10 dB/div. vertical referenced to max. output.

On air the FT780R worked well, both on SSB and FM. Some FM reports found the mic gain a trifle high with car noise intruding. This is a simple adjustment, however which does not affect the deviation of the signal. Yaesu have provided both a mic gain control for FM as well as a maximum deviation control. Sounds complex, but it is simple and it is preset.

On the repeaters the receiver sensitivity and the transmit power was nicely balanced.

The microphone has buttons which allow the operator to move up or down in frequency, and interesting features are that scanning may be stopped by touching either up, down or even the PTT button. In this instance the PTT button stops the scan and must then be pressed a second time to transmit.

Another interesting feature is the satellite switch which permits the user to shift frequency on transmit. Useful for satellite operation where doppler shifts have to be compensated.

One feature which is not used in Australia is tone burst. It is provided though and it is crystal locked.

A number of tuning steps are provided with 10 Hz being the smallest on SSB. This makes accurate tuning easy. A quicker 100 Hz step is also provided and the dial indicates to 100 Hz. You may also tune in kHz on SSB. On FM a fast tune position gives 100 kHz steps but the intermediate steps of 25 kHz are well adapted to the local channel frequencies.

Indeed if you are not afraid to lift the lid and apply a delicate soldering iron you may adjust the size of the frequency steps quite simply. This is a feature of this series of Yaesu processor controlled rigs which is not generally available to other processor controlled rigs.

The dial resets to 435 MHz when you remove the DC power to the rig. However if you leave DC permanently connected you may preserve the memory by throwing a switch on the rear. With 100 kHz steps available, tuning to frequency is rapid if you don't hold the memory by leaving power on the rig continuously.

The FT780R is indeed a worthy companion to the FT480 and the FT680 and it is certainly the 70 cm rig to beat. The only snag in Australia may be the price due to our customs. Imported on the same basis as 2 metre and 6 metre equipment the price would be very attractive.

The FT780R being reviewed attracted a lot of interest and sales should be brisk. The performance obtained could not be bettered except at very considerable additional expense and with a lot of fiddling.

The review FT780R was provided by Stan Roberts of Bail Electronic Services. Tests both on the air and on the test bench were performed thanks to Kevin Phillips VK3AUQ. ■

QSP

160m BAND

From 16th June, 1981, US amateurs will be allowed to use full power (1000W max. DC plate input) in the band segment 1800 to 1900 kHz. Some power and operating restrictions will continue in some parts of the USA for the segment 1900 to 2000 kHz to protect LORAN A systems operating in E. Canada. A1 and A3 emissions remain in effect for the entire 160m band. Worldradio, July 1981. ■

A Global Navigation System

To track a Great Circle route exactly (the shortest distance between two points on the earth) is every navigator's ambition. VLF Communication Stations and OMEGA make this possible. The lower "d" layer in the atmosphere (70 km day, 90 km night) reflects VLF transmissions and together with earth's surface gives a spherical band around our globe — a near perfect waveguide. VLF transmissions, locked to a caesium atomic clock, are phase stable, capable of long range and, unlike VHF, can be used at tree top height of 40,000 ft. or so. They are so stable that it is possible to determine standard time at any point on the earth's surface to one microsec.

Nine VLF transmission stations (like our NW Cape) use frequencies between 14 and 24 kHz (yes, kiloHertz) and radiate up to one million watts. Eight OMEGA stations transmit pulse sequences on 10.2, 11.33 and 13.6 kHz (imagine the size of the aerial system), with an identifying carrier frequency in such a format that no two stations are on the same frequency simultaneously. This format from eight stations (Gippsland will be one!) repeats every 10 secs. — radiating ten thousand watts on, say!, 10.2 kHz for 1.3 secs., 11.33 kHz for 1.1 secs., and 13.6 kHz for 9 secs., plus ident carrier for 5 secs.

The Airborne (or Seaborne) Receiver, with its oscillator stabilized to the transmitter frequency, sets a basis for comparison of the phase of the signals occurring at its position. With many stations, therefore, a matrix of constant phase lines is interpreted. Also, in this way station redundancy (a strike?) only results in minimal inaccuracies. A computer then determines which station has sent which signal, and in the recent Mark III GNS500A presents a CRT display of eight lines and 14 characters to the pilot. The computer also has in memory ten flight plans. It computes the position every ten seconds by an optimum selection of the stations available to it, and updates the display, with bearing, track and distance to run; also supplying a correct signal format for the autopilot system.

Although developed in 1970 first, and now in use all over the world, the system is not certified in Australia by Transport Australia. However, with special departmental dispensation the system can be used. On December 3, 1980, Ansett Airlines of Australia, Boeing 727 VH-RMO on the inaugural Hobart to Christchurch flight, was the first aircraft (carrying passengers) in the world to use the latest GNS500A Mark III VLF OMEGA — an 18 kg (40 lbs.) system (one quarter the weight of a human navigator).—Condensed from "Aircraft", by Dave VK2ZEN (retired Ansett pilot). (The "Lyrebird", winter 1981.) ■

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"DICK SMITH guarantees to advertised Australian YAESU

Cat. D-2862

FT 101Z SERIES

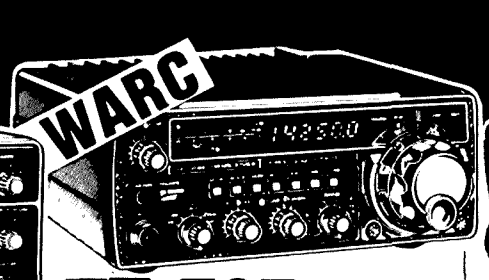
Look at this superb FT-101Z. And what a transceiver! It includes variable IF bandwidth, built-in RF speech processor, all current HF bands (inc. WARC), 180W input (SSB/CW) & AM/CW/SSB operation.

FANTASTIC OFFER: With every purchase of a 101Z a ***FREE*** digital display worth $139 will be included. (2 MONTHS ONLY)

LOOK AT THIS PRICE! FT 101Z **$795**

FT 101ZD Reduced to $849, this unit is packed with features such as HF speech processor, IF bandwidth, & much, much, more. Was selling for $889, now selling for $849, saving you $40. So be quick, these certainly won't last long at this price.

Cat. D-2859



FT-707

What a performer packed into such a tiny package. This brilliant new FT-707 is one of our fastest sellers. And why not, it's a full power all HF band (including WARC) multi mode transceiver not much bigger than the average 2 metre mobile. Look at what you get: digital display, LED S/power meter, push button operation ... all the things the amateur needs for safe, reliable mobile operation. Teamed with the D-2895 power supply makes it a must for the discerning amateur. Do yourself a favour & check it out at one of our stores & compare it with other similar units on the market today. You'll be pleasantly suprised!

ONLY SOLID STATE **$769**

WAS $785.00

OUR MOST POPULAR TRANSCEIVER

Cat. D-2869

THIS COULD BE YOUR LAST CHANCE TO BUY

The incredible

FT-7B

There aren't many transceivers in Australia which are particularly suited to novices - but which won't disgrace them either. The Yaesu FT-7B suits the novice as well as the full call amateur. It gives you the current HF bands, with a variable power output of 50 watts. You have the option of AM, CW or SSB, with the choice of VFO or a crystal locked channel. The FT-7B is ready when you are: just hook up your power & antenna, & away you go. Makes a great base or mobile.

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SAVE $30.00 **$569**

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NEW! NEW! NEW! NEW! NEW!

VHF Handy FM Transceiver

FT-208R

The FT-208R transceiver brings a new flexiblity to today's active 2M operator. An easy to read LCD display is coupled with a 4-bit microprocessor, bringing 10 memories & a scanning function. Only with Yaesu can you get these important features at such an economical price. Check it out NOW!

INC. CHARGER

Cat. D-2885

ONLY $369

ALL MODE FM SSB CW

ONLY $395

2 METRE PORTABLE FT 290R

The FT-290R is a highly sophisticated compact multi-mode transceiver for the 2M amateur band. Featuring PLL sythesis in 100Hz, 1kHz, 5KHz, or 10kHz steps. The FT-290R utilizes a Liquid Crystal Display for digital readout for the operating frequency. 10 memories, scanning of the band or memory channels, two VFOs, & receiver offset tuning makes the FT-290R a significant breakthrough in technology. So be quick, these are going to go fast! Don't miss out!

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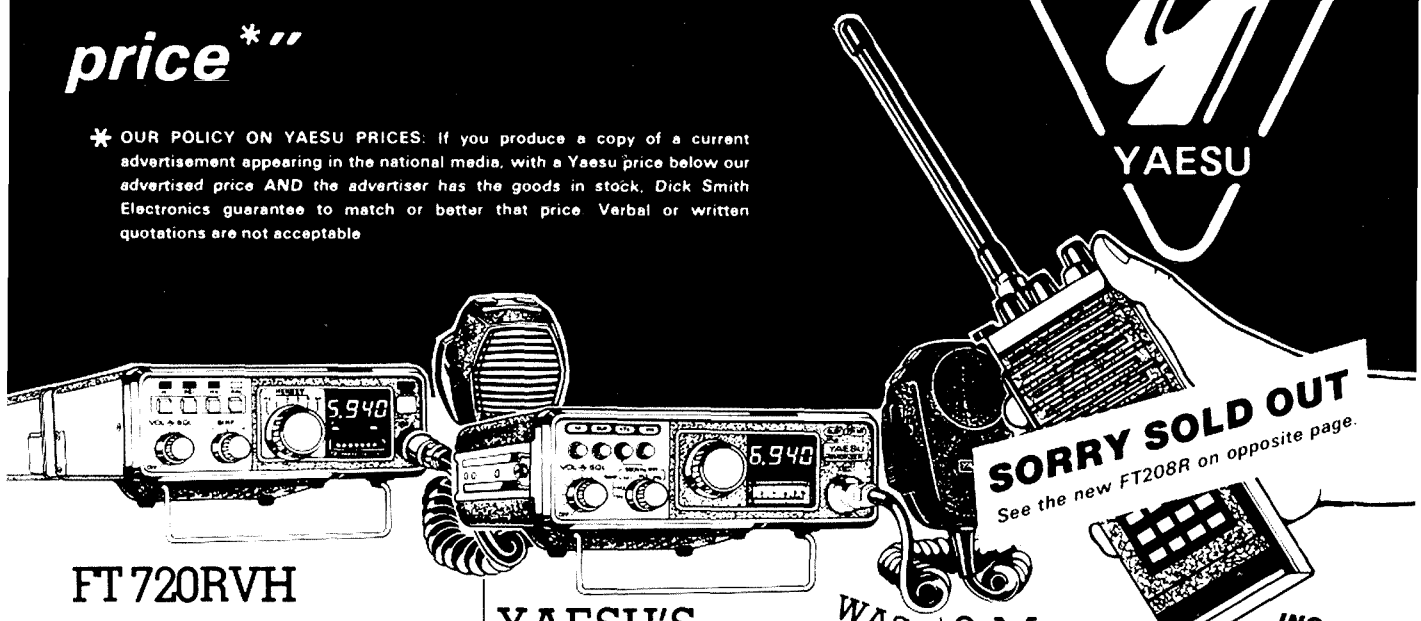
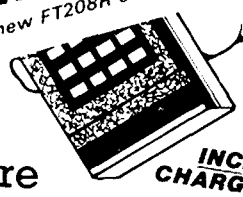


SORRY SOLD OUT
See the new FT208R on opposite page.



INC. CHARGER

FT 720RVH

Yaesu brings you the flexibility and performance you need in today's amateur world. The FT-720RVH not only gives you top performance, it's also the most flexible Yaesu transceiver. It comes apart- so you can locate the microprocessor-controlled 'works' close by you, with the 'RF' end out of the way. Or just as easily snap the two sections back again for a complete transceiver. That's versatility! This great little performer gives you scanning, 5 memory channels, LED Pwr/S meter, 25W output & full 144 - 148MHz operation & much, much more. A must for the person who lacks space in the mobile!

WAS $450.00

NOW $370

SAVE $80.00

Cat. D-2890

YAESU'S FT 227RB

WAS $379.00

One of the most popular Yaesu transceivers we have ever had the pleasure to operate: the incredible FT-227R. This classy PLL scanner will take you anywhere within the 2 metre band instantly- just press the scan button on the microphone - not bad hey! No need to worry about reaching for the selector switch in heavy traffic. And you have 4 memory channels to choose from, with a 600kHz repeater split for working standard repeaters, or 4MHz split for unusual repeaters or requirements. For value-for-money, you can't go past the FT-227RB. It's a winner!

NOW $329

SAVE $50.00

Cat. D-2891

2 Metre Handheld FT 207R

Imagine a hand-held 2 metre transceiver with all the *punch of the big guns - with digital display, 800 channels*, 4-bit CPU chip for frequency control, 4 memory channels, repeater splits, auto scan (up or down), weighing just 680g. How does it perform? How about 0.32uV sensitivity or 7.5kHz selectivity (-60dB). ...or a power output of 2.5W (min). So what are you waiting for, go on, indulge yourself with this little beauty!

WAS $358.00

NOW $308

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DSE A041RB

Chitary Moriyama JH6THP

R. P. Mills VK5XW Chairman, Pacific Amateur Radio Society
13 Taylor Terrace, Rosslyn Park, SA 5072

Chitary is 31 years of age (21/8/81) and is an in-patient of room 11 at Kawatana National Hospital, Japan. He contracted muscular dystrophy when he was six years old and at the age of 11, because he no longer could walk, was forced to give up formal schooling at year 4. He was encouraged to continue with private studies by his family, especially by his father, who spent a great deal of his time educating Chitary. He commenced studying English by listening to radio NHK and reading English textbooks. He became a full time patient in Kawatana hospital at the age of 22 years in an attempt to arrest the spread of the disease. Citary became Interested in amateur radio, so special tuition was arranged at the hospital for him by the JARL so that he could study and obtain his licence. In 1974 he established a club station in the hospital and called it "Cosmo Friend". Membership now has grown to 24 due to Chitary's initiative and the encouragement given by the hospital administrator, Dr. Y. Nakazawa, to make use of amateur radio as a therapeutic aid.

Chitary started operating in room 11 under his call sign JH6THP and very soon became very well known to the Australian amateurs, at the same time rapidly improving his English conversation with a slight Australian accent. At first Chitary had a great problem in understanding the Australian idiom but to his credit he now speaks fluent English. In 1975 he had his first VK visitors with VK2XT and VK3CO travelling out to Kawatana. They were followed in 1976 by VK5RB and VK3AL. In this year Chitary received a letter of commendation from the Australian Ambassador in Japan with regard to his activities in fostering friendship between JA and VK amateurs via the medium of amateur radio. In 1977 Chitary was visited by VK2BHZ and again by VK2XT. He became a member of the Japan-Australia Society in Nagasaki and founded the Pacific Amateur Radio Society (PARS), of which he is still the net controller of the weekly net held each Sunday evening at 0900Z on 14.2800 MHz. The idea behind PARS was to promote and foster friendship between amateurs in the Pacific area with emphasis on JA-VK-ZL. Chitary visited the Australian Embassy In Tokyo, meeting the Australian Ambassador and receiving a letter of commendation from the Australian Minister of Communications. This story appeared in AR September 1977 by VK3CO. In 1978 Chitary ugraded his licence to second class, allowing him to use 100 watts and 20 metres. He also became a member of the prestigious Pacific Society of Japan.

In 1979 Chitary travelled to meet VK3SB, who was in the port of Nagasaki with his family on a ship cruise. As Bill VK3SB was the first VK statioh that Chitary worked

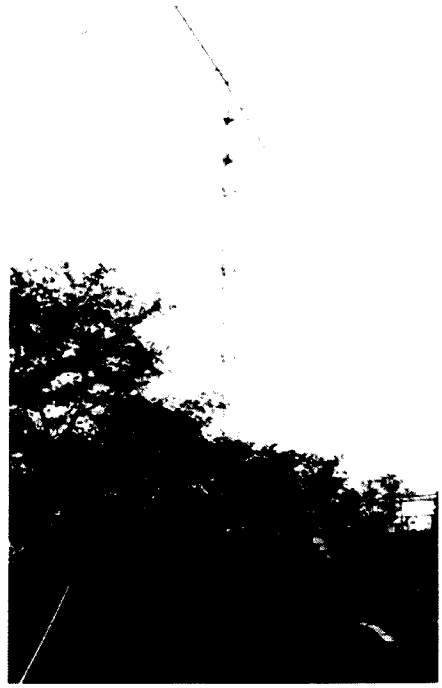
after obtaining his amateur licence the "eyeball" was of special importance to him. VK3CO made a second visit to Kawatana. The Nagasaki Prefectural Government presented Chitary with an award for his services in fostering friendship via amateur radio.

In 1980 the Pacific Society created a Radio Equipment Donation Programme to supply free of charge completely equipped radio amateur stations to nations in the Pacific area that were gaining their independence. Chitary was appointed coordinator of this programme, supplying the Pacific Society with the needs of station equipment required by the newly independent nation. When Vanuatu received a grant of amateur equipment from the Pacific Society Chitary acted as the Master of Ceremonies for the on air celebrations of Vanuatu's independence. Chitary considers that his part as M.C. in this celebration to be the highlight of his amateur life.

He was visited by VK5XW and his wife, Dorothy, at Kawatana in June, 1981.

Apart from his involvement in amateur radio, Chitary manages to find time to teach English to inmates of the hospital, study Spanish and hold the position of Vice-President of the Hospital Patients' Union. The Union helps to Improve hospital life for the patients such as upgrading recreation facilities, patient treatment, etc., not forgetting the hospital meals. Chitary admits that he goes home on holidays whenever he can so that he can enjoy his mother's cooking as the hospital meals become very monotonous.

From the time that Chitary first became involved with Australians on amateur radio he had the dream of visiting this country, meeting the friends that he had made, visit WIA Headquarters, attend a monthly meeting of the WIA and, if possible, visit a large rehabilitation hospital for the disabled so that he could talk to the patients using his experiences with amateur radio as an example of what can be done to make up for physical disabilities. In 1981 Chitary applied to the Australia-Japan Foundation for a travel grant to assist him with his ambition to visit Australia. Many weeks were spent in preparing the necessary application, as Chitary can



Chitary's antenna in grounds of Kawatana National Hospital, Nagasaki.

only operate an electric typewriter by labouriously pressing one key at a time with a chockstick held in his mouth. Chitary was overjoyed to learn recently that he had been succesful in obtaining a very generous grant from the Foundation. This will allow him to come to Australia early in November 1981 for approximately three weeks, during which time he will spend 10 days in Sydney, 3-4 in Canberra and around 10 days in Melbourne. The exact timetable of the tour will shortly be finalised. **Any VK stations that would like to meet him in person are advised that he has now "eyeball" managers in the three cities who can be contacted on the following numbers for information regarding Chitary's movements. Sydney VK2BKD, (02) 523 0246; Canberra VK1GD, (062) 54 1987; and in Melbourne VK3BER, (03) 787 5721.** Chitary can also be contacted most days, in the morning on 15 metres, for approximately half an hour on 21.1800 MHz from 2200Z and in the evenings on 14.2800 MHz at 0900Z also for approximately half an hour. As Chitary is totally dependent on another person for his needs he will be accompanied by his younger brother, who wil ltake care of him on what will be a very strenuous but satisfying and exciting experience for both of them.

On 10th July, 1981, Radio Japan made a broadcast on their service directed at the Australian and New Zealand listener of an interview made by NHK with Chitary. Apart from giving a very good insight into Chitary's life, the 15 minute interview was a very good public relations exercise for amateur radio, particularly with regard to its therapeutic value to handicapped persons and its ability to create friendship, good will and understanding between peoples of different cultures. Chitary handled these topics to very good effect and he is to be congratulated for being such a good ambassador for amateur radio.

FOOTNOTE

Chitary's itinerary for his Australian tour has now been finalised. It is:—

Sydney: 4th-12th November.

Canberra: 12th-17th November.

Melbourne: 17th-27th November.

Kawatana Hospital Club Station JA6ZCY, with Author, XYL and JH6THP.

From left: Author, JE6WZJ, Chitary, JA6IUY, Dorothy Mills and another patient.

QSP

"CONVERSATION"

Conversation, whether by speech or code, is an important aspect of communication and this is expressly demonstrated by the amateur in almost every QSO. When we meet one another face-to-face we radiate additional information without words. Gestures and signals — a hearty handshake, a smile, a frown, a nod, a shake of the head, the expression in the eyes — all combine to support and strengthen the effect of the spoken message.

Divested of the "eyeball" advantages, out out-of-sight contacts rely for impact and attention-holding on the subject matter, the voice quality and sincerity. We can't all claim to have golden "Announcer" voices (some of us have rusted up), but we can perhaps do something about it. A pleasant type of voice helps a conversation enormously because the voice is the only method of expressing the radio speaker's feelings.

The person with a rich store of knowledge and a wide experience, such as many of our older amateurs have, is guaranteed to hold the interest of his listeners. Being natural and sincere are the hallmarks of a good conversationalist. The person who combines with topics of interest will always hold the attention of listeners. Some of us tend to forget that on the air we are talking to a wide audience — amateurs working in their shacks, short-wave listeners, oft-times captive audiences in many radio stores (where amateur rigs are frequently tuned in for the benefit of potential customers), and in a score of homes and vehicles where mixed audiences, women and children, are sometimes subjected to cruditles of conversation best left for an "eyeball".

Exchanges of ideas seem to nourish our lives. Pluto said, "Talking with people is not only fun, it is good for you". When people talk together honestly, we are refreshed — problems oft-times solved. This is true in our marital relationships as well as in day-to-day business or relaxation activities.

Semantics is the study of the meaning of words, and students of semantics know that different persons give different meanings to the same message. We must be aware of this, particularly in emergency situations. "Messages to be relayed must not be subtracted from or added to, or varied in any way" (VK2NL, WICEN State Co-ordinator).

We should keep away from contentious matters — there are some "sore spots" which many would rather not talk about. We should think before speaking, and endeavour not to cause offence to any. Especially keep in mind our potentially large listening audience.—John VK2BTO. (Editorial in "Lyrebird", Winter 1981.) ■

A Simple Drain Dip Oscillator

Bob Tait VK3YSH

Reproduced by arrangement from "The Radio Bulletin", Jan./Feb. '81 (EMDRC Newsletter)

The grid dip or drain dip oscillator is probably the most useful piece of equipment in any ham shack. The principal use of this versatile instrument is the determination of the resonant frequency of a tuned circuit, it can also be used to find unknown values of L and C, check aerials, multiplier, stages, and as an added feature the DDO can be used as an absorption wavemeter. The frequency of operation is 3 MHz to 50 MHz covered in 4 ranges.

Operation: Adjust VR1 until the meter reads half scale, hold the instrument so that L1 is loosely coupled to the circuit under test, adjust VC1 until a dip is found. The depth of the dip will vary in accordance with circuit Q or degree of coupling, however, for more accurate reading loose coupling is desirable.

COILS

50 — 20 MHz 10 turns .022 in. 12 mm diam.
30 — 12 MHz 20 turns .022 in. 12 mm diam.
12— 5 MHz 50 turns .009 in. 12 mm diam.
8 — 3 MHz 90 turns .006 in. 12 mm diam.

All coils are close wound and centre tapped.

The coil bases were constructed using 3 pin audio plugs, the former was anchored to the base using 3 hooks formed out of tinned copper wire (see Fig. 1) and soldered into the base.

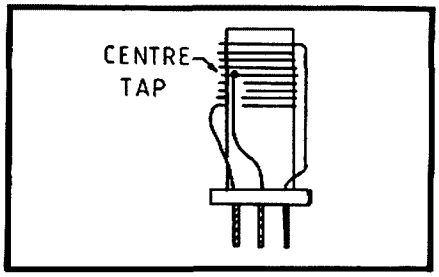


FIG. 1

The tuning capacitor was a 2 gang BC type as used in Japanese transistor radios. I removed every second plate until I achieved the required capacitance.

In order to keep spurious responses to a minimum all the oscillator components were mounted on a tag strip on the tuning capacitor, the leads to the coil socket were soldered onto the tuning capacitor (see Fig. 3).

The case is 120 mm x 70 mm x 40 mm and prefabricated from aluminium sheet, an insulated handle was fitted as an added safety feature when checking active circuits.

CALIBRATION

The dial is made from PC board with the 4 scales glued on, the dial is 60 mm in diameter (see Fig. 2).

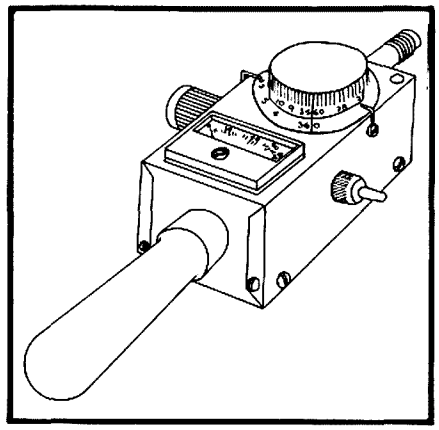


FIG. 2

A BC221 frequency meter loosely coupled was used for calibration and then rechecked on a general coverage receiver making sure harmonic response was not being obtained.

TO FIND INDUCTANCE

A tuned circuit using a 100 pF 1 per cent SM capacitor and the unknown L is tuned to find the resonant frequency. L may then be calculated from:—

$$L = \frac{25330}{100 \times F2}$$

Note: F in MHz.
e.g. F10 MHz
25330/100 x 10 x 10 = 2.53 uH

To find capacitance: Tuned circuit as for L. A 5 uH inductor can be constructed as follows: 25 mm former, 24 SWG wire, 6 turns close wound, leave 3 mm, wind 6 more turns, ends 25 mm long.

$$C = \frac{25330}{5 \times F2}$$

e.g. 25330/5 x 10 x 10 = 50.6 pF

N.B.: If coils need turns adding or subtracting to achieve the correct frequency coverage, this must be done symmetrically about the centre tap.

No claim is made for the original circuit, which is believed to be of UK origin. My DDO has given good service for 2 years.

73s. VK3YSH. ■

PARTS LIST

R1 — 100k.
R2 — 220R.
R2 — 220k.
R3 — 2.7k.
C1 — 0.1 Disc Ceramic.
C2 — 100 pF Tub Ceramic.
VR1 — 500R Lin Pot.
VC1 — 176 + 176 pF.
1 — MPF 102 or equiv.

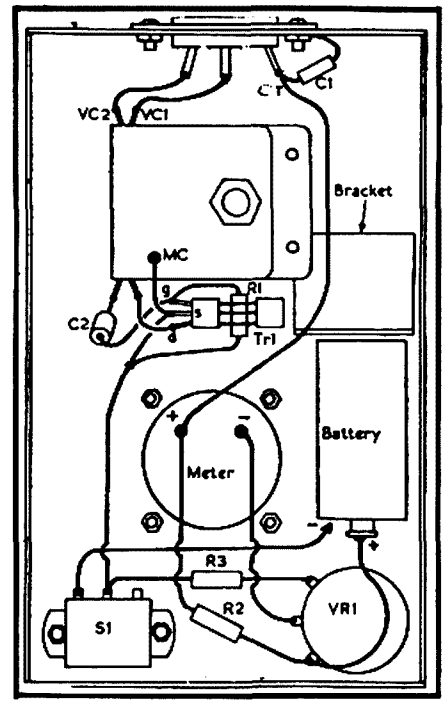
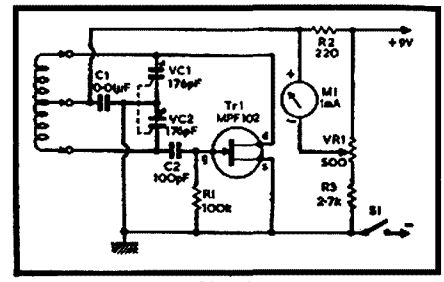


FIG. 3

1 — 0-1 mA Meter.
3 — 3-pin Plugs.
1 — 3-Pin Socket.
1 — Off/On Switch.
4 — 12 mm Formers.



Circuit

QSP

CB IN UK

One of the responses to the Home Office Open Channel proposals came from a PCB assembly system manufacturer who said that TV Band 1 should be used for public radio telephone and CB throughout Europe, 48.25 to 57 MHz for fixed radiophone, 57 to 58 MHz for 80 CB channels at 12.5 kHz spacing, and 58 to 66.75 MHz for mobile radio telephone. A total market of 3.5 million sets by 1986. If that comes about there will be no chance of 6 metre contacts with Europe, ever.

Another proposal from a leading telecommunications manufacturer is to use a band of frequencies between 50 and 500 MHz with a preference for the segment 430 to 450 MHz as being the best compromise between performance and interference. Just another straw in the wind — just note the preferred band. ZL1HV. (Break-In, June 1981.) ■

VK2 MINIBULLETIN

COUNCIL REPORT

At the August Council meeting two clubs were accepted for affiliation with the NSW Division. Welcome to Orana Region Amateur Radio Club and Shoalhaven Amateur Radio Club. There are now 31 clubs affiliated with the Division.

Council has decided, following recommendations from the NSW WICEN committee, to buy crystals for the primary WICEN frequencies of 3600, 7050 and 14100 kHz for use in the SSB transmitters at Dural. This will enable operation from Dural by WICEN during emergencies.

The next Divisional auction will be held at 14 Atchison Street, Crows Nest, on Saturday, 7th November, at 1 p.m. Members with items for auction are asked to deliver them between 10 a.m. and noon on the day of the auction.

Council will present a new award at the next Conference of clubs, to be held in Wollongong on Sunday, 1st November. This award, the Dick Smith Award, will be presented to the "1981 VK2 Educator of the Year". Clubs and members are invited to send nominations for this award to Divisional Council.

Council would like to remind all members that the frequencies of 144.1 and 146.5 MHz are recommended as calling frequencies. Please move to another frequency after your initial contact has been made on either of these frequencies.

DOC Canberra has advised Council that they "are looking into the matter" of daytime transmissions of the TC channel 0 test pattern in Sydney.

TOWER APPEAL

The appeal by Mai Martyn VK2VWG against the rejection by Campbelltown City Council of his application to erect a 17m guyed tower for amateur use was heard in the Land and Environment Court, Sydney, on Tuesday, 21st July last. The court's decision was handed down on 14th August. Mr. Martyn's appeal was dismissed. The reasons for the rejection of the appeal were "The Court is of the opinion that in this setting the proposed 17m high radio mast and large antenna would have a dominating and overbearing effect on persons in the adjoining properties in particular, and probably adjacent properties also. The proposed structure would be out of character with the development of these properties and would injure the amenity of the locality." After obtaining legal advice, it appears there are no grounds on which Mr. Martyn can appeal against this decision.

Mr. Martyn has advised he may be applying for permission to erect either a crank-up tower, which can be lowered during the day, or a smaller fixed tower and antenna. Mr. Martyn thanks all those who have so generously supported him in his appeal.

All those who donated to the appeal have been sent a copy of the decision, where their address has been known. Any member who would like a copy of the appeal decision can obtain one by sending a large stamped self-addressed envelope to the Divisional Secretary, PO Box 123, St. Leonards 2065.

Many thanks to those who have recently donated to the Tower Fund — I. McArthur $20, F. Hine $10, R. Tinker $5, Goulburn ARC $20, D. Thompson $25, VK4 Division $100, A. McDonald VK4TE $5 and R. McKew $10. A report on the court costs and results of the tower donations will be in next month's Minibulletin.

REPEATERS

Repeater Co-ordinator Tim Mills VK2ZTM reports that Shoalhaven ARC put their new repeater VK2RSD to air on channel 7200 from Mt. Cambewarra, near Nowra, on 23rd August last. The Tamworth ARC repeater has had a frequency change from its originally licensed channel of 7250 and now operates on 6750. DOC Sydney has been asked for conditions of operation for a UHF ATV beacon. Many other VHF and UHF applications are at present being considered by the Repeater Committee. Further report next month.

JOTA 1981

The Scout/Guide Jamboree of the Air will be held this year on Saturday and Sunday, 17th and 18th October. The NSW JOTA Co-ordinator is Phil Card VK2ZBX, PO Box 182, Bondi 2026. Phil can be contacted at work on (02) 699 9535. Please let him know of any activity you or your local club will be conducting for JOTA. From Liverpool ADARC comes news of one station that will be operating from Campbelltown. Club President John VK2KDJ advises that the club will be conducting a station over the full 24 hours using the club's call sign VK2AZD/P. The site of the station will be the Elizabeth Macarthur Estate, which is part of the estate upon which the Australian wool industry was started. The station will be combined with the District Scout Camp, with visitors coming from some of the surrounding districts. This will involve approximately 600 Scouts, Venturers and Guides, many of whom will be camping at the site. Any local amateurs who can assist at the station, especially with the provision of specialised amateur modes, can contact John on (046) 25 6607 or via one of the club nets which are held on Sundays 9.30 a.m. on 3580 kHz, or Mondays 8.30 p.m. on 146.55 MHz.

BLUE MOUNTAINS FIELD DAY 1981

This year the Blue Mountains Amateur Radio Club will be conducting their annual field day on Sunday, 15th November, at Springwood High School, Chapman Parade, Faulconbridge. All the details for the day have not been finalised as yet (31/8/81), however the usual facilities of food and rinks for sale, all weather display area, fox hunts, talk-ins, ladies' and children's events, etc., wil be provided. For further information and a programme, please contact John VK2VPG via PO Box 54, Springwood 2777, or phone (047) 39 3615.

News of two newly affiliated clubs.

ORANA REGION AMATEUR RADIO CLUB

C/- 63 Derribong Street, Trangie 2823.

Meetings have been held on last Wednesdays, 7.30 p.m., at Orana Education Centre, Dubbo.

Classes: Tuesdays, 7.30 p.m., Dubbo Police Boys' Club, Darling Street, Dubbo.

President: J. Hams VK2ZMT; Vice-President: P. Harrison VK2CAZ; Secretary: K. Kinsey VK2VAS; Other Committee: P. Heywood VK2VEH, T. Hanson, E. Brodrik CK2BEO, C. Kearines VK2AKC.

SHOALHAVEN AMATEUR RADIO CLUB

PO Box 621, Nowra 2541.

Meetings: Friday, 7.30 p.m., Cnr. Birrilley and Coomea Streets, Bomaderry.

Classes: Morse conducted by D. Courtney VK2AUC, theory by M. Garth VK2ZLX and R. Penalurick VK1KAB.

President: W. Jarvis VK2BUY; Secretary: J. Walker VK2AJT; Treasurer: S. Rigney VK2BRZ.

Repeater: VHF VK2RSD, channel 7200, at Mt. Cambewarra, near Nowra.

COMING EVENTS

Saturday and Sunday, 17th and 18th October: Jamboree of the Air.

Sunday, 1st November: 5th Conference of Clubs at Wollongong.

Saturday, 7th November: Divisional Auction, 1 p.m.

Sunday, 15th November: Blue Mountains Field Day at Springwood.

Saturday and Sunday, 14th and 15th November: WICEN Regional Co-ordinators' Conference.

NSW members and clubs are invited to submit news for inclusion in this column. News for December AR should reach Box 123, St. Leonards 2065, by 29th October.

Susan Brown VK2BSB. ■

VK4 WIA NOTES

GENERAL MEETING

The October meeting will be held on Friday 16th in the Playground and Recreation Association Hall at the corner of Love and Water Streets, Valley. An interesting lecture has been arranged and, as usual, the Bookshop and QSL Bureau will be open for business. The November meeting has been set aside for a "bring and buy" disposals night, so start sorting it out now. These nights are very popular — visitors welcome.

EARLY DAYS

The Divisional Historian Peter VK4PJ is starting to get some results with his efforts to record the early days of amateur radio in Queensland. There are still many gaps in the story. Perhaps you can help com-

plete this history. Please drop Peter a line or give him a ring (QTHR). Perhaps arrangements could be made to send you a blank cassette tape.

SUNSHINE STATE — JACK FILES MEMORIAL CONTEST

The State Contest Manager Bill VK4XZ has advised the results of the 1981 contest.

Section 1a, Tx all bands: Bernie VK4ABY.

Section 1b, Tx HF only: Alan VK4AJZ.

Section 1c, Tx VHF only: Ross VK4KRM.

Section 1d, Club stations: Sunshine Coast ARC, VK4WIS.

Section 2, Outside VK4: Jim VK2BQS.

Section 3, Receiving: Charles Thorpe L40018.

At attractive trophy has been forwarded to each winner. Many difficult to get shires were activated for this contest and perhaps there will be some new applications for the Worked All Queensland Awards.

INWARDS QSL BUREAU

Incoming cards have been held for some time in the posts but are now starting to comethrough. This unnatural drop in input has permitted the Bureau workers to clean up the backlog. How do you get your cards? Having them sent via your local radio club is easier on the Bureau and cheaper for you too. Cards can be sent to you direct if you establish credit with the Bureau. However you choose to do it, please make sure that you let us know — there are quite a number of cards awaiting details of the owners. Look in this month's QTC for "Tom's Hit List" and make sure that you are not "mentioned in despatches".

RECRUITING CAMPAIGN

Council has established a Recruiting Committee for the purpose of finding ways to increase membership in the Institute. A number of avenues in the State are being pursued, including a contest to try and stimulate ideas for development. The major priority is to conduct a mailing campaign using the November "Amateur Radio" issue as a base and adding recruiting material, etc. This permits the use of cheaper bulk mailing rates and hopefully beats the upcoming increases. Efforts are being made to convince Federal Exetives and other Divisions that this potentially cost effective campaign deserves their support as a nationwide exercise. There are a lot of potential members out there waiting to be contacted. ■

THE WIA BULLETIN

Hi folk. Well, after a brief pause for industrial action, or was it inaction, here we are again.

Our action this month seems to be mainly in the north of the State, where, if my information is correct, it would appear that John VK6GU has stirred up some enthusiasm for two metre operation among his confederates in Wyndham, to such a degree that an application for a repeater licence has been lodged with DOC. Probably by the time your tired old optics scan this, VK6RWH will be in operation. Should prove quite handy with all the tourists on the move "round the top" these days. Well done, fellers — keep it up.

Moving a little further south, we come to the area of bananas, tomatoes and tracking stations — not necessarily in that order. They also have a decent sort of high school there, too; if you don't believe me ask Peter VK6APS. You could also ask the Premier of Western Australia, Sir Charles Court, who was recently on hand to officially open the school's own station VK6ACH. Here is what Sir Charles said in performing the opening ceremony.

"Good afternoon everyone — It's wonderful to be here at VK6ACH. I've got some great enthusiasts around me here and I'm sure they're going to have a lot of fun operating this station and also learn a lot from it. There's something very special about radio of this kind because we can often talk to people who otherwise we might never meet, but somehow or other you can build up a great affinity with them. At the same time you learn a lot about the magic of modern technology, in fact you take some of the magic out of it when you understand what it's all about, and for all of this I want to say congratulations to those who have been responsible for the development of VK6ACH. I hope that they and all of their friends with whom they communicate will have a wonderful time and will, as a result, not only bring about great friendships but also will bring about greater understanding of what things are about. The people from Carnarvon and the Gascoyne will be able to talk to people in other parts, explain to them what they are doing and what the district represents, what it's doing for the State, what it represents within the nation, and in turn get a communication back from other people, and thus remind us that we have a great inter-dependance one on the other. We're not just islands in one place or another within our State or within Australia, but we are in fact people within a great nation and people within a great State. And so to all of you, thank you for what you have done to make this possible and every good wish for the future, and on that note it is my pleasure on this day, the 3rd of July, 1981, to declare VK6ACH officially opened and in business." Reports would indicate that the station is well set up with a satellite "dish" on the roof, data transmissions, visual display units, etc. (See September AR for a feature on VK6ACH.—Ed.)

Due largely to the enthusiasm of Fred VK6FH, permission has been granted for the re-broadcasting of the VK2 RTTY news service in VK6 each Sunday, so if you have not yet had the opportunity to do so try to catch this service on two metres next Sunday.

How did you go in the RD Contest? Hope you all submitted a log, could be that VK6 is in with a chance this year!

The North West Amateur Radio Club seems to be gaining momentum and there was more than a strong whisper of another repeater, this time at Newman, proving that the company didn't decide to dig away the hill on which it was proposed to erect the tower.

Did you read that news report about WICEN's Perth Net Controller VK6DY operating for 19 hours handling emergency traffic from a vessel which had gone rock-bound?

Perhaps by the time this reaches you JOTA may have passed — if not, have a happy weeke-end, hope DX is plentiful and contacts abound.

73. Ross VK6DA. ■

QRM

The Monthly Bulletin from the Tasmanian Division WIA

NORTHERN NOTES

A successful meeting was held on the second Friday in August. Highlight of the evening was the screening of the video film "Apollo III Disaster".

Our VHF officer, Ken VK7ZKT, has been burning the midnight oil in reconstructing the Athol Johnson Memorial Contest rules. A tentative date has been set for the above contest — February 21st, 1982.

JOHN VK7NJD, "Where is he?" Well, he QSP'd that he will be returning to the HF bands very soon. Welcome back VK7NJD.

NORTH WEST NOTES

Jim VK7KOW will be attending the Circular Head Arts Festival at Stanley this month. His role will be chief projectionist. Number one film to be screened will be "The Straitsman" starring the late Victor Hardy, of Stanley. Memories return back to the 4095 kilocycle days. His call sign, VSP. A true pioneer and conqueror of the roaring 40s "Bass Strait".

News from St. Helens on Tasmania's remote eastern coastline is that Peter Alford VK7AO and Bob Jackson VK7NBF will be conducting an amateur radio exhibition at St. Helens Hall on Saturday, 29th and Sunday 30th August. Main theme is to expose amateur radio to the public to encourage enlistment to our expanding ranks. Thank you, Peter and Bob (Incidentally, things are a bit fishy down at Falmouth. Here they say that the corks are Bobbing up and down.)

Thanks must also be exhressed to the following amateurs for their constant vigilance and dedicated enthusiasm in maintaining repeater 8, 147000 out, 146400 input, located on Mt. Barrow, approximately 25 miles from Launceston. Namely Peter VK7PF, Bob VK7ZRF, Brian VK7ZBY. A Job well done.

Ken VK7ZKT will be operating portable from King Island early September, VHF bands only, 6 metres and 2 metres.

73. Al VK7AN (ex VK7NAB). ■

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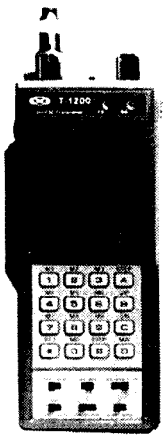

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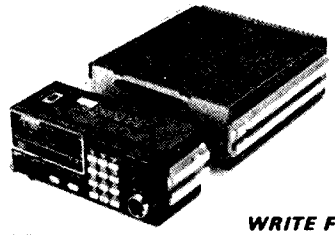
Wrtie for Colour Brochure & Specs

NEW!



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IN5408 1000V, 3A	$1.10
As used in DENTRON AMPLIFIERS in 4007-1000V, 1A	30c
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SD1452 100W HF power transistor	$31

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EL1210 - for 300W antenna tuners	$8
EL3025 – for 1 kW antenna tuners	$10
EL3024 – for 3 kW antenna tuners	$16
EL 1951 – 1 KW 10-80m tank	$59
EL 1952 – 2 KW 10-80m tank	$79
EFC-25-25A filament chock	$26

ELECTROLYTIC CAPACITORS:

HIGH VOLTAGE

ECE 102, 100uF 500V	$8.00

TRANSMISSION LINES

HIGH POWER

10D-2V extra low loss 50 ohm co-axial	$2.70 m
RG8AU, 50 ohm co-axial	$1.50 m
7C-2V 75 ohm low loss	$1.60 m
470 ohm ladder line	$22 100 ft
300 ohm ladder line	38 100 ft

ANTENNA ACCESSORIES:

BOLUNS:

BN86 for beams	$30
Kaufman for dipoles	$26
Kaufman Centre Insulator	$6
B&W 5 band antenna traps for dipole	$49 set

COAXIAL SWITCHES:

ES 375, 6 position grounding	$39
ES376 5 position grounding	$42
ES 590G, 5 position non grounding	$39

AMPLIFIERS:

Lunar HF3-100L2 SOLID STATE	$189
Metron 1kW Solid State	$960
NEC CQ-301 2kW 2 x 3-5000 Z valves	$1000
Spoken M250 Solid State	$219

FILTERS:

Drake TV-3300-LP	$36
Monitor TV HP Filter	$22

ANTENNAS

Araki:

YA-285L 2 x 6m mobile	$19
YS-241H ¼ whip for 2m	$9
YA-45 Loaded 2m whip	$19.50
YA-485D Collinear GP for 433 MHz	$58
YA-485 base loaded 2m & 70cm	$32
YS-505 M heavy duty magnetic mount	$24
SB-7S roofside mount	$15
AHF 10-80mm mobile antenna system	$89

MORSE KEYERS:

Bencher BY-1			$59
Hi-mound:			
HK-807	$65	HK-808	$72
HK-707	$19	HK710	$56
HK-702	$43	HK-706	$21
HK-708	$18.50	MK-701	$38

ROLLER INDUCTORS HERE AT LAST!

IDEAL FOR ANTENNA TUNERS & AMPLIFIERS

Tune all Freq. From 1.5 to 30M Hz
Up to 2kw Power Handling **$69**

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APM-IV VHF/peak power meter	$95
PM-2H SWR/power meter	$89
PM-3HV SWR/Power meter	$49
PM-4HV SWR/Power meter	$29
PM-5H SWR/power meter-mobile	$49
T435, UHF VHF SWR & power meter	$69
Kuranishi-RW-151D	$149
Kuranishi-RW-155D	$170

DUMMY LOADS (0-500 MHz)

T25	$14	RD300	$87
RD15	$14	T200	88
T100	$48		

ROLL YOUR OWN

SEMI-KITS:

SKT-300 antenna tuner 300W, 10-80m, coax & random wire, all parts except box & wiring **$49**

SKT-1200 antenna tuner, 1.2 KW, 10-160m, coax & random wire, all parts except box and wiring **$99**

MIZUHO SG-9 A complete 9MHz SSB transceiver module with attachment of microphone, speaker and VFO Build your own SSB transceiver or transmitter or receiver only **$98**

MIZUHO VFO-5 This unit can be used as local osc. in a direct conversion receiver or as a VFO in a transmitter or transceiver together with SG-9 above. It consists of OSC, buffer, amplifier and RIT **$35**

MIZUHO VFL-7, VFO for QRP transmitter **$35**

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7MHz TX QRP kit **$24**

MIZUHO QP-21
21 MHz TX QRP kit **$24**

MIZUHO QP-50
50 MHz TX QRP kit **$29.50**

MIZUHO Mod-1
Modulator Kit **$24**

***NOTE:* The above kits are ideal for students, colleges, hobby and QRP operators!**

Toroid Cores

All the popular sizes and mixes.

IRON POWDER TOROIDS:

CORE SIZE	MIX 2 .5-30 MHz u = 10	MIX 6 10-90 MHz u = 8.5	MIX 12 60-200 MHz u = 4	SIZE OD (in.)	PRICE $
T-200	120			2.00	5.00
T-106	135			1.06	1.80
T-80	55	45		.80	1.20
T-68	57	47	21	.68	1.10
T-50	51	40	18	.50	1.05
T-37	42	30	15	.25	0.95
T-25	34	27	12	.37	0.85

Chart shows uH per 100 turns.

VHF-UHF

AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston, S.A. 5233

VHF/UHF BEACONS

Freq.	Call Sign	Location
28.200	DL0IGI	Southern Germany †
28.2025	ZS5VHF	Natal, South Africa
28.210	3B8MS	Mauritius
28.215	GB3SX	England
28.220	5B4CY	Cyprus
28.2255	HG2BHA	Hungary ‡
28.225	VE8AA	Contwoyto Lake
28.227	ZL2MHF	New Zealand
28.230	BBC Harmonic	
28.231	ZS3HL	Namibia
28.235	VP9BA	Bermuda
28.237	LA5TEN	Oslo, Norway
28.245	A9XC	Bahrain
28.250	VE7TEN	Vancouver
28.257	DK0TE	Germany
28.260	VK5WI	Adelaide
28.262	VK2WI	Sydney
28.270	ZS6PW	Pretoria
28.276	DF0AAB	Germany
28.280	YV5AYV	Caracas
28.283	VP8ADE	British Antarctic
28.290	VS6HK	Hong Kong
28.302	ZS1STB	Cape Town
28.315	ZS6DN	Pretoria
28.887	W6RIT	Hollywood §
50.005	H44HIR	Honiara
50.020	GB3SIX	Anglesey
50.023	HH2PR	Haiti
50.025	6Y5RC	Jamaica
50.035	ZB2VHF	Gibraltar
50.036	HC1JX	Quito
50.038	FY7THF	French Guiana
50.040	WA6MHZ	San Diego
50.048	VE6ARC	Alberta
50.050	ZS3E	South Africa
50.060	PY2AA	Sao Paulo
50.070	VP9WB	Bermuda
50.070	YVZZ	Caracas
50.080	W1AW	Connecticut
50.080	TI2NA	Costa Rica
50.085	WA6JRA	Los Angeles
50.088	VE1SIX	New Brunswick
50.089	WD4CEI	North Carolina
50.100	KH6EQI	Pearl Harbour
50.104	K4EJQ	Tennessee
50.105	KC4AAD	McMurdo, Antarctica
50.106	ZS6LN	South Africa
50.110	KH0AB	Saipan
50.110	AL7C	Anchorage
50.120	4S7EA	Sri Lanka
50.144	KC6NI	Caroline Is.
50.498	5B4CY	Cyprus
51.022	ZL1UHF	Auckland
52.013	P29SIX	New Guinea
52.150	VK5KK	Arthurton
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.320	VK6RTT	Carnarvon
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.400	VK7RNT	Launceston
52.452	VK2WI	Sydney *
52.425	VK2RAB	Gunnedah
52.435	VK3RMV	Hamilton
52.440	VK4RTL	Townsville
52.500	JA2IGY	Mie
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
144.400	VK4RTT	Mt. Mowbullan
144.420	VK2WI	Sydney *
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.555	VK5RSE	Mt. Gambier ¶
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.900	VK7RTX	Ulverstone
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.440	VK4RBB	Brisbane
432.450	VK3RMB	Mt. Bunningyong

† This beacon alternates between 28.200 and 28.205 about every 5 minutes.

‡ Some doubt about exact frequency, but about as listed.

§ Not heard for a while, maybe poor propagation.

* Sydney beacon VK2WI now on 144.120; hopefully by the time you read this the 6 metre beacon will have moved to new frequency of 52.420.

¶ South East Radio Group at Mt. Gambier still in trouble finding suitable site for this beacon; hopefully operational when you read this item.

28 MHz BEACONS

A comprehensive listing of these important beacons is included for the first time this month. They are particularly important at the moment for this period of equinox and the section of the band between 28.200 and 28.300 should be monitored in addition to 28.885, the VHF liaison frequency.

It is no longer safe for anyone to predict what might be heard on 6 metres or might not be heard! The way things happened during last March/April/May confounded everyone, so what does September/October/November bring? And 28 MHz may be the band to give the lead-in to activities higher in frequency, and with the wide embracing coverage of 28 MHz beacons there is a need for them to be included this month. A photo-copy of this month's beacon list placed alongside your receiver may prove very fruitful.

It is interesting to note that the VE8AA beacon is located in the north-west territories of Canada at Contwoyto Lake, being just south of the Arctic Circle, halfway between Yellowknife and Cambridge Bay, and is a remote weather station. Credit for the establishment of the beacon must go to Fred VE7HE and Ron VE7XR/VE8.

The transmitter is a converted CB set and the antenna a quarter-wave vertical drooping ground plane about 8 to 10 feet above ground. Power to the antenna is less than 10 watts and runs off a 12 volt power supply. (Thanks to Break-In for this Information.)

For the main list of 28 MHz beacons I am indebted to Bill W3XO of "QST", who said the list was largely supplied by Ed W1HDQ and constitutes a list of those beacons known to be operating on a 24 hour basis, in other words "real beacons". Ed quips: "Whoever heard of a part-time lighthouse?" VK5LP is in agreement with this statement and is the reason the present listing of 6 and 2 metre beacons is confined to those "real beacons". There may be one or two overseas beacons not on a 24 hour basis but I am not in a position to check every one; if you know otherwise please tell me!

Incidentally, **Jeff VK2BYY**, when he wrote to inform me of the frequency changes of the VK2WI beacons, urged me to start placing some pressure on those custodians of beacons not presently on the assigned band-plan frequencies, and most of them are not. The recognised band-plan VHF frequencies have been listed in these columns recently, so it may be the time now to start some moves in this direction. I would certainly hope the new VK5 beacons, when they start operating again, will be on the assigned frequencies.

XE1GE FROM MEXICO

An operator well known to many VK stations is Geoff XE1GE, and I am indebted to Bill VK2HZ for sending me the following Information in the form of a letter direct from Geoff, and I quote:

"I started up on 30th September, 1928, with the call X3A, in Tolteca, State of Hidalgo, 50 miles north of Mexico City. Active on 7 and 14 MHz using a 210 in a TNT circuit.

"In 1933 I moved to the Port of Veracuz, and operated with the call of X1BG, in 1934 moved to Mexico City and operated on a limited basis until 1937, and later this same year obtained a new licence, XE1GL, and was active with this call upto August 1941, mainly on 28 and 7 MHz. At this same time I obtained a 56-60 MHz converted RME DM-36, and did a lot of listening on the old 5 metre band, but with no results. In August 1941 I went to Brazil for a year and, as the war had started, there was no further activity until 24th August, 1946, at which time I was issued a new licence and call XE1GE. Prior to the war this call belonged to a Dr. James B. Hard and was very active on 14 and 28 MHz.

"During Cycle 18 worked TE up to 1952, mainly LU, CX and CE. During this year I moved from Mexico City, 50 miles south to Cuernavaca, State of Moreios.

"During Cycle 19 was very active as you know; I worked the tour districts of New Zealand and obtained the VHF WAD Award No. 69. I was on the air on 1st May, 1959, when the VK3ALZ/XE1FU QSO was made, and heard about it from Argentine; I did hear VK3ALZ weakly and I was heard by VK2ADA on 30th March, 1959, and again on 3rd May, 1959. We could have used the liaison frequency of 28.885 MHz then to good advantage.

"Cycle 20: TE started 17th March, 1966, and carried through to 15th March, 1973. Worked the usual LU, CX, PY, ZP9AY, OA4C, HC1 and several KP4. During October 1968 I was one of the operators of the Olympic Village amateur stations which we installed in Acapulco, during the Olympic yachting events, call 4A3P. On 6 metres we worked several South Americans and heard for the first time ZK1AA's beacon on 51 MHz. Then back at the home QTH heard ZK1AA on his new frequency of 50.098 MHz. Heard this beacon many times during 1969 and finally managed to QSO on 5th April, 1969. Continued to work TE up to March 1973.

"Cycle 21: Started with TE to LU on 24th February, 1978; on 28th February heard ZL TV sound on 50.750 at 2100Z, and the first DX from the south-west was 3D2CM on 8th April, 1969, at 0155Z on 50 MHz. Up to the moment I have worked 35 countries and 48 US States on 50 MHz, many VKs also, and VK1, 2, 3, 4, 5 and 7, all on 52 MHz. I was also heard in VK8.

"Equipment consists of Heathkit HX30 10W SSB Tx, plus 60W linear with an 829B, 6 element long yagi 60 feet high, 75A2 Rx with a converter at 14 MHz. The elevation of this QTH is 5700 feet a.s.l. and 50 miles due south of Mexico, DF.

"I was born in Mexico City on 29th June, 1907, and was at school in England from 1919-1924 at Morecambe and Lancaster in the north. My dad came to Mexico in 1892 with his uncle and cousins and established the first linen mill. My mother was also from Lancashire. I have been in Mexico most of my life, except for the year I spent in Brazil.

"Between 1957 and 1959, I co-operated with the ARRL and the Air Force Cambridge Research Centre and Stanford University, making observations and recordings mainly on TE propagation during the International Geophysical Year."

Well, it's been great to learn a bit more about you, Geoff, and we will all be looking forward to another contact with you during October. You have certainly done much to put the North American continent on the map in a very consistent way, and many will have been exceedingly grateful for you having been on the air.

Incidentally, the covering letter from Bill VK2HZ indicates they are having some problems since Channel 0 started operating. Bill bought an IC 502A and has been having some fun chasing countries with 3 watts. Set out to work 10 countries with the unit and so far has achieved 7, including KL7 and KH6 on SSB, and still hopes to get the 10 before the DX disappears. Good luck, Bill, with your efforts, and thanks again for sending Geoff's letter.

22 COUNTRIES FROM SYDNEY

Further to my requests for information from operators on their 6 metre operating, a letter has arrived from **David VK2BA,** who indicates he has worked 22 countries on 6 metres, and heard another 7. For your interest this is David's report:—

1. Australia, all Australian States; 2, Lord Howe Island, VK2YHA; 3. Norfolk Island, VK9NI; 4. Willis Island, VK9ZG, VK9ZD; 5. Papua New Guinea, P29DJ, P29BH, P29ZFS; 6. New Zealand, all call areas; 7. Japan, all call areas; 8. Guam, KG6DX, KG6JDX, KG6JKS, AH2K; 9. Hawaii, KH6NS, KH6IAA, W6HTH/KH6, AH6AP, KH6JJI, KH6FQ; 10. New Hebrides, FK8AB, FK8AX, FK8BG, FK8CR, FK8AH; 11. USA, N6CT, WA6BYA, K6FV, W6XJ; 12. Mexico, XE1GE; 13. Nauru, C21NI; 14. Tahiti, FO8DR; 15. Alaska, WA4TNV/KL7; 16. Bruei, VS5DX; 17. Korea, HL9TG; 18. Marshall Islands, KX6QC; 19. Vanuatu, YJ8PD, YJ8KM, YJ8ZV; 20. Johnoston Atoll, KH3AB; 21. Cayman Island (Caribbean), ZF2DN; 22. American Samao, AH8A.

Heard on 50 MHz but unable to work: British Virgin Islands, VP2GR; Florida, WD4NMV; Texas, W5UWD; Solomon Islands, H44PT; Peuto Rico, KP4AAN; Jamaica, 6Y5RC (beacon).

All stations worked have either been on 52 MHz two way or 52/50 MHz split frequency. Equipment consists of IC 551 driving a 400 watt linear using tube type 8122, antenna 5 element yagi at 50 feet.

Thanks for the list, David, and for a very good effort. With the earlier listing from Steve **VK3OT** and now yours, maybe others will send in their effort. Perhaps 12 countries or more should be a reasonable starting point for those living in VK5 and the eastern States, and 10 from VK6. As I said last month, if enough of you show interest there seems no reason why we should not have our own DX listings as other countries do, it's entirely up to you, the readers, if you will make the effort to send your results then it may get off the ground!

PROPAGATION VARIATIONS BETWEEN 50 AND 52 MHz

David VK2BA has also included some observations under the above heading which may provoke some discussion. As general operating news is still very scarce at the moment, it seems an appropriate time to include his views, and see what the aftermath will be!

"Certainly a lot has been written and said complaining about our 52 MHz restrictions, and tor sure the 2 MHz split makes things very difficult. However, over the last 12 months / have been carefully observing the differences in propagation between the two frequencies and I have come to the conclusion that things are not quite as bad as many people believe.

"How often do we hear 'Signals are getting good and strong on 50 MHz now — perhaps we could try 52 MHz', or 'We have propagation at 50 MHz but the MUF has not risen to 52 MHz'?

"Unfortunately this concept of waiting for the MUF to rise to 52 MHz has caused many QSOs to be lost. That fact is that very often the MUF has reached 52 MHz and above but the reason there is no propagation is because of different skip distances from 50 to 52 MHz.

"Generally it has been found that the band OPENS FIRST AT 52 MHz and later at 50 MHz! Now this is just the reverse to the way many people expect it to be. This is because the ionosphere has greater difficulty in deflecting 52 MHz and for this reason the skip distance is longer than 50 MHz. By the time the band opens at 50 MHz to the 52 MHz propagation has moved off to the west and the chance of a QSO is usually lost.

"I have observed on many occasions that if the ZLs have propagation across the Pacific on 50 MHz, then VK can often find the band is open at 52 MHz (but not at 50 MHz for about one hour).

"What this means is that if a station is heard at 50 MHz weakly, then the 52 MHz QSO should be attempted as quickly as possible, there may be only minutes (or seconds) of 52 MHz propagation left. It also means that it is pointless in checking a particular path at 50 MHz as is so often done to see it it is open, much better to go straight up to 52 MHz.

"Taking the theory a step further (and to my knowledge this has not been done), if for example the ZLs had propagation to the USA West Coast at 50 MHz, by changing to 52 MHz or even above, they should be able on many occasions to work further, e.g. Central USA.

"I have discussed the ideas with Roger Harrison and he is in general agreement."

It's over to you, the readers, for any comment and flak! At this stage I haven't the time to comment at any length, other than to say I also agree with most of the ideas, particularly as applied to the early morning contacts made following the sun from east to west, e.g. from, say, 2100Z to 2400Z. It certainly hasn't always applied in contacts with H44PT, VS5DX and VS6BE, but then the latter two are in entirely different directions. But the theory may be one to exploit during October/November with possible contacts to Africa where it has been well nigh impossible to get signals through on 52 MHz; maybe we are doing it the wrong way and should be trying to get the South African boys up to 52 MHz a lot earlier than we have done in the past. Yes, food for thought. Feedback needed from the multitudes please!

GENERAL NEWS

With thanks to Steve **VK5AIM** for a look at "The Short Wave Magazine" and a snippet from the VHF pages provides the following which may be of some interest.

"First, a real puzzle for the propagation experts. When Charlie Newton G2FKZ found he had an hour to spare in Athens, Greece, airport in mid-February, he telephoned Costas Fimerellis SV1DH for a chat. He heard that on 16th February, Costas was receiving strong signals via TEP mode from ZE2JV on both 6 metres and 2 metres. He had been listening tor beacon ZS1STB, located at the extreme southern tip of the continent for over a year without success. As conditions on February 16th were the best ever heard on VHF, Costas felt convinced he should be able to copy this beacon, however it was not to be heard. Then he turned his 6m beam north and there it was — clearly identifiable!

"Now SV1DH is one of the most reliable and experienced students of VHF propagation anywhere, and this was a first-hand report to G2FKZ, so there can be no doubt as to the authenticity of the item. Precisely what mode of propagation was responsible for reception over a 32,000 km long path, via both polar regions, will exercise the brains of the experts for a long time to come. Next month it is hoped to publish a fuller account of this amazing occurrence.

"On the same day, this time on 2 metres, ZD8TC (Ascension Island) worked KP4EOR (Costa Rica) via TEP, a QRB of around 6300 km. SV1DH suggests this is the first reported incident of stimultaneous north/south and east/west TEP."

About the only comment I would be prepared to make in the absence of more information is that the reception of the ZS1STB beacon sounds very much like back-scatter to me. Maybe such phenomena as that doesn't normally occur in Europe. No further comment appeared in the following month's issue of the magazine, so further news couldn't have come to hand.

Also noted in "Short Wave Magazine" was the comment that "It seemed the peak of Sunspot Cycle 21 occurred in December 1979, the smoothed sunspot number being 165.3. The forecast for the next minimum is currently January 1987. In the past the maximum has been characterized by a rise in geomagnetc activity. This is now definitely under way. Sudden ionospheric disturbances — SIDs — were occurring daily on the HF bands during May, so we can expect more auroras than we had last year, some of which could be quite intense."

UHF REPEATER

I note from "The Propagator" that the Illawarra Amateur Radio Society's UHF Repeater VK2RUW is now operational from a site to the south and east of central Wollongong. Channel number 8255 (old channel 9), and the frequencies are 433.225 MHz in and 438.225 MHz out. They report coverage around the city appears very good, especially in the northern suburbs, which are shadowed from the VHF repeater channel 6850. Special thanks to Graeme **VK2CAG** for his work on the repeater.

CLOSURE

As you have been able to observe there has been little outstanding activity on 6 and 2 metres during the past month, except for the "RD" Contest, and some very good scores were noted, particularly on FM. There have been the occasional 6 metre openings to VK2 and VK2 which is normal for the time of the year. But hopefully some long distance DX will be available by the time you read this. Closing with the thought for the month: "In the good old days the man who saved money was a miser; nowadays he's a wonder!"

73. The Voice in the Hills. ■

THE GEELONG REPEATER VK3RGL

Unfortunately not all amateurs in the Geelong area are fully aware of the problems which have been presented to the repeater.

Earlier this year we had an intermittent timer, and the repeater would occasionally "lock" on. The transmitter and receiver were returned to Geelong and the necessary service was carried out on the timer. When the system was returned to Mt. Anakie, some 10 days later, it was discovered that the receiver input filter and receiver coax cable had been stolen. The police were notified but, unfortunately, so far the items have not been located.

A new crystal receiver input filter is now on order from Japan. The cost of the filter is covered by an insurance policy arranged by the WIA. Delivery time is expected to be late August. A working bee was to be arranged early this month to install the new housing, land line, and accessories but prior to this working bee, on Investigation of the site revealed that a new theft had occurred.

The 20 ft. 6 dB antenna specially purchased for the repeater had been unbolted from its mounting and subsequently disappeared. It does appear that at the same time as this theft, the Telecom microwave station and the CFA buildings at Mt. Anakie were broken into and substantial damage sustained. Fortunately, this antenna is also covered by the WIA insurance and a replacement is being organised.

A new sub-committee consisting of Daryl VK3AQR, Chas VK3BRZ, Peter VK3AWY and Jim VK3DFL has been appointed by the GARC committee to admanistrate the installation and maintenance of the Geelong repeater and 6m beacon. The repeater will be installed at Mt. Aanakie on a single receiver/transmitter site to improve security. The existing transmitter will be retained pending completion of the new solid state replacement. Output power will still be approximately 100W into a 6 dB gain antenna. Steady progress is being made on the 50W solid state transmitter by the volunteer club members. It is proposed to use a microprocessor control for such various automatic functions as time-out, ident and security.

Emergency power will be provided by batteries which will operate in a constant standby mode.

The GARC committee wishes to thank all the amateurs and supporters of the Geelong Repeater for their donations and moral help. The funds received will, with the help of more funding, be directed to improving the security and operation of the first fully licensed amateur repeater in Australia.

Before the repeater is returned to Mt. Anakie it will be operating on an intermittent basis from Geelong for general testing. Some desensitization and adjacent interference may be observed, however this will be eliminated when the new filter arrives.

Use it so final checks can be carried out.—From GARC Newsletter. ■

INTRUDER WATCH

The letter reproduced here was dated 7th August and was addressed to Mr. Alf Chandler VK3LC, the IARU R3 Intruder Watch Co-ordinator, by the Head of the North Asia Branch of the Department of Foreign Affairs. In a subsequent letter addressed to the WIA and which authorised publication it was requested that emphasis be given to the fact that the Department of Foreign Affairs pursued this matter on the basis of advice received from the Department of Communications. The second letter went on to say that the DOC is the Department responsible for management of the radio frequency spectrum, and in most cases, would take up problems relating to international radio interference directly with its counterpart body in the country concerned but in this particular instance the Department of Foreign Affairs made representations to the Chinese authorities on behalf of the DOC.

Alf Chandler's original letter of 27.3.1981 was addressed to the Australian Embassy in Peking (and copied to the Department of Foreign Affairs) explaining his role as IARU R3 IW Co-ordinator and drawing attention to broadcasts from Radio Peking in the Radio Amateur exclusive frequencies as well as being subjected to jamming which creates even greater interference. He also pointed out that the 7010 kHz signal produces very strong harmonics on 14020 kHz which ought to be suppressed.

I refer to your letter of 27th March, 1981, in which you enclosed representations to the Australian Embassy in Peking regarding interference in amateur shortwave radio bands due to broadcasts emanating from Radio Peking.

The Department of Communications has confirmed that broadcasting stations identifying as Radio Peking are indeed heard in band allocated to the amateur service, as you have pointed out. Therefore it would seem on the face of it that the Department of Foreign Affairs would be entitled to make a direct approach to the Chinese Government on this matter under the Article on "Procedure in case of Harmful Interference" of the International Radio Reltations, to which China is a party.

I should explain that representations on the use of reserved frequencies by Radio Peking were made to the Chinese authorities by our Embassy in Peking during 1978. As interference from Radio Peking continues to be a problem, we are asking the Embassy to take up the matter once again with the Chinese.

However, by way of background, I should also explain that the People's Republic of China is a relatively new member of the International Telecommunications Union. At recent international telecommunications gatherings, China has indicated that the international regulations relating to registrations of frequency assignments, which have been in force for many years and tend to favour the status quo, are not in China's best interests, and in fact have prevented China from obtaining the registrations which it sees as being of national Imporiance.

This view tends to be supported by the new International Radio Regulations, which were drawn up at the World Administrative Radio Conference (WARC) 1979, take effect on 1st January, 1982, and which result in preference being given to developing nations in certain cases.

At the signing of the Final Acts of the WARC 1979 the Chinese delegation had a statement incorporated into the Final Protocol relating to the use of frequencies for broadcasting. This statement, along with 82 others, was "taken note of" by Australia and all other Administrations signing the Final Acts.

The Statement, No. 20, is as follows:—

For the People's Republic of China:

At the time of signing the Final Acts of the World Administrative Radio Conference, Geneva, 1979, the delegation of the People's Republic of China, on behalf of the Chinese Government, states the following:—

The Chinese delegation takes note of the decision taken by the present Conference on the convening of a World Administrative Radio Conference for the planning of the HF bands allocated to the broadcasting service and believes that it is an effective measure to solve the problem of congestion in the HF broadcasting bands and out-of-band transmissions. However, owing to historical reasons, the Chinese Administration reserves the right to continue to use those frequencies which it uses for broadcasting at present in the band 5060-27500 kHz until the establishment and implementation of the proposed HF broadcasting plan.

It is recognised that the presence of broadcasting stations in amateur bands restricts the ability of amateurs as a whole to pursue their hobby and is a cause for frustration. However, I am sure that you will appreciate from the overall situation above, and in particular the Final Protocol of WARC 1979, that the Chinese do not necessarily share the same views on reserved frequencies as Australia at the present time.

If our approach to the Chinese results in further information which will be of use to you we shall write and inform you. ■

AROUND THE TRADE

ROTARY COOLING FAN

An ideal fan for cooling electrical equipment is the Sunon Rotary Fan from Dick Smith Electronics.

This rotary fan is designed for power supply and transmitter systems but its uses are as limited as your imagination.

The cooling fan. Cat. No. Y8500, is 11 cm in diameter and is fixed with four mounting positions. As an added advantage the Y8500 can be mounted either internally or externally.

The seven plastic fan blades are encased in metal for rigidity and the fan can be built with new equipment or added on to existing equipment.

The Sunon Rotary Cooling Fan operates on 240V AC and is now available at $16.90 from all Dick Smith Electronics stores. ■

PULSE SWITCHING POWER SUPPLY

Vicom International announces the release of a laboratory type DC power supply incorporating pulse switching to eliminate bulky and weighty power transformers. This power supply produced by Daiwa Corporation of Japan has variable voltage output between 9-15 volts and a maximum current rating of 30 amps.

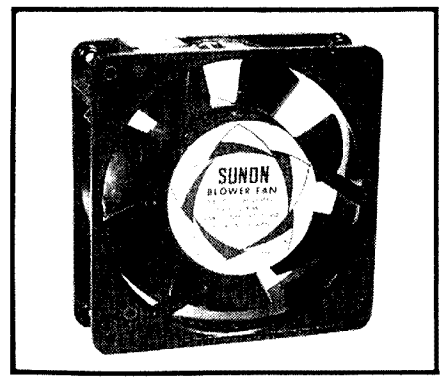
Utilizing the Crossed-Needle Indicating Meter System, famous in the Daiwa VSWR power meters and bridges, voltage output and current is automatically read and additionally, wattage is read on the calibrated scale at the point where the needles intersect.

The efficiency of the supply is claimed 75 per cent with voltage regulations better than 0.5 per cent at the maximum current of 30 amps.

Ripple is below 10 millivolts and a protection circuit is incorporated in the output with a current limiting. Using the pulse switching circuitry at a frequency of 20 kHz, the weight advantage of 9.6 kgs over conventional power supplies is most marked. The size of the unit is approximately 24 x 19 x 34 centimetres and the special filters employed eliminate pulse noise on the output voltage.

Further details, pricing and availability from Vicom International, Melbourne. Phone 62 6931 or the Vicom Sydney office on 436 2766. ■

SUPPORT OUR ADVERTISERS!



QSP

COHERENT CW (CCW)

"Coherent CW is a useful technique which improves communications effectiveness in excess of 20 dB. This factor can be used to offset poor propagation conditions, small or poorly located antennas, or low-power operation. It has the potential to be as revolutionary to CW as SSB has been to phone communication."—QST June 1981, from an article on CCW. ■

SMILE — YOU'RE ON CAMERA

"As everywhere, a smile will get you miles in Tonga, and a surly 'another day, another banana republic' attitude is a recipe for a dip in carefully orchestrated bureaucratic treacle."—From an article in Break-in June 1981. ■

New Zealand ART Conference — 1981

Arthur Godfrey ZL1HV welcoming members and official guests to the NZART Conference which was opened by His Excellency, Sir David Beattie, Governor-General of New Zealand (fifth from left).

Gisborne Branch provided the pall-bearers for the burial of the 700 kHz split for 2 metre repeaters.

David Wardlaw VK3ADW and Michael Owen VK3KI represented the WIA in Auckland at the NZART Conference held earlier this year. Next year the NZART will send an official delegation to the WIA Federal Convention.

The exchange of Ideas that took place will certainly cement the relationship between the two Societies.

The NZART has just computerised its membership records and is running into similar problems experienced by the WIA when we did the same thing.

At the present the NZART will not be seeking third party traffic rights for New Zealand amateurs.

The NZART will be sponsoring a Region 3 award, the details of which will be announced later. Intruder watch received strong support. ■

President of NZART, Arthur Godfrey ZL1HV making a presentation to the WIA representatives David Wardlaw VK3ADW and Michael Owen VK3KI.

IT'S REALLY A SHAME

From Nuts and Bolts (San Francisco Radio Club).

It was apparent immediately to the antenna crew that the installer did not know much about putting up a beam. Among the mistakes were found:—

— the lock washers were all under the screw heads instead of under the nuts. The wind was shaking them all loose and one trap had already fallen off the antenna and was lying on the roof 20 feet below.

— two of the three elements were pointing up in the air about 30 degrees instead of being horizontal.

— one element was 3 inches longer on one side of the cross boom than it was on the other.

— two of the three traps were installed upside down, so the seep holes would catch the rain. The traps were full of water.

— the feedline was not weatherproofed.

— the egg insulators were installed backwards, making the guy wires extremely vulnerable to snapping in a strong wind.

From ARNS Bulletin April 1981. ■

WICEN

R. G. HENDERSON VK1RH
Federal WICEN Co-Ordinator

Continuing with the WICEN handbook draft, which was outlined in a recent column, this issue brings you those sections from Part 1 dealing with regulations, affiliations, accreditations, powers of command, call-out procedures and insurance.

REGULATIONS
The relevant regulations are contained in paragraphs 6.28 to 6.33 and 7.17 to 7.34 of the Amateur Operator's Handbook Revised (December 1978).

EMERGENCY AMATEUR NETWORKS
These are defined, together with the conditions relating to their operation, in paragraphs 6.28 to 6.33. State WICEN co-ordinators should establish a means of advising their Superintendents, Regulatory and Licensing of WICEN exercises and emergency activations.

DISTRESS CALLS AND MESSAGES
The format of distress calls and messages, together with a receiving station's obligations upon hearing such calls, are given in paragraphs 7.17 to 7.34.

NOTIFICATION OF DISTRESS SITUATIONS
Paragraph 7.29 advises who to notify in the event of receiving a distress message. For land-based distress situations the local police should be advised. Particular note is made of the sea-based situations, which should be advised to the Australian Coastal Surveillance Centre, Canberra, ACT, telephone (062) 47 5244. Reverse charges calls are preferable to keep the link open to the amateur involved.

THIRD PARTY TRAFFIC
The reference in paragraph 6.6 is out of date and was not applicable anyway for approved emergency amateur networks — reference paragraph 6.29. As a guideline WICEN exercises in support of civilian agencies should comply with the current general constraints on third party traffic, viz., no commercial content and no material reward to the amateurs involved.

DEPARTMENT OF COMMUNICATIONS LIAISON
Good liaison between WICEN and DOC is essential and can be achieved at State Superintendent R and L and District Radio Inspector level by regular calls by WICEN co-ordinators. It may also be expedient to include the State WICEN co-ordinator on the WIA team for State Joint DOC/WIA meetings.

AFFILIATIONS, ACCREDITATIONS, POWERS OF COMMAND
AFFILIATIONS
The appropriate affiliations for WICEN to make vary from State to State, however they may include the following:—

State Emergency Services/Civil Defence.
Country/Bush Fire Authorities.
Volunteer Rescue Agencies (such as VRA in NSW).
Volunteer Coastguard Agencies.
Australian Red Cross Society.
St. John's Ambulance Brigade.

In each case the affiliation should be with the principal body rather than at a lower level and the limitation of services available to "trained licensed communicators with equipment" observed.

ACCREDITATIONS
Accreditations should be initiated with the State disaster control agencies and then such of the agencies on the affiliation list as are deemed necessary for WICEN to carry out its role. Accreditation is usually confirmed by issue of an identity or authority card.

For example, whilst it is highly desirable to be accredited by the State police as an emergency communications service, it is useful to be affiliated with SES if that atcion achieves compensation coverage for members activated on a task.

POWERS OF COMMAND
The basic chain of command is from the disaster control agency's authorised represenative to WICEN co-ordinator, or deputy, or assistant co-ordinator, however members should accept reasonable instructions from an authorised officer and protest the matter after the emergency if it is felt necessary to do so. WICEN members should only be employed upon communications duties.

CALL-OUT PROCEDURE
Call-out procedures for activation of emergency networks must be devised by State WICEN co-ordinators. Those procedures should encompass the following:

AUTHORITY FOR CALL-OUT OR ACTIVATION
This would normally come from a local, regional or State WICEN co-ordinator.

REQUESTING AGENCIES
A listing of agencies which might request and receive assistance with emergency communications.

ACTIVATION INFORMATION
This should include the disaster control agency which requested the activation and details of what actually occurred, including the duration, size and location of the activation. Observe the DOC regulations and requirements.

LEVEL OF ACTIVATION
Upon consultation with the requesting agency the network might be placed on standby or full alert. These activity states will need to be specified fully in the procedure.

INSURANCE AND COMPENSATION
WICEN members should be clear on their insurance and compensation coverages for both training exercises and emergency activations. This should also extend to equipment and private vehicles if they are involved, and thought could be given to third party considerations.

A group coverage scheme is desirable and the requirement may be met through membership of volunteer rescue agencies or SES. ■

National EMC Advisory Service

Tony Tregale VK3QQ
Federal EMC Co-ordinator

"THOSE LONG-WIRE ANTENNAE"

Interference to amateur reception is on the increase. Perhaps the most common source of annoyance is power line interference.

There have been many articles, reports and words of wisdom produced in connection with PLI: However, when we can remove the politics and get right down to the nuts and bolts, power lines are intended to transport electrical 50 Hz energy, not radiate electromagnetic energy. It is interesting to note the FCC rules and regulations on this subject, and I quote section 15.4 General Definitions:—

(a) RADIO FREQUENCY ENERGY

Electromagnetic energy at any frequency in the radio spectrum between 10 kHz and 3,000,000 MHz.

(b) HARMFUL INTERFERENCE

Any emission, *radiation or* induction which endangers the functioning of a radio navigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radio communication service.

(c) INCIDENTAL RADIATION DEVICE

A device that radiates radio frequency energy during the course of its operation, although the device is not intentionally designed to generate radio frequency energy.

Perhaps we should also consider Australian Standard 2344; this quotes some of the physical aspects of the interference phenomenon:—

C1. SPARKING DUE TO BAD CONTACTS

Unbonded conductive parts subject to the electric field of high voltage power lines and associated equipment are consequently electrically charged and the potential difference between adjacent conductive parts will increase even if both parts are floating. This occurs irrespective of whether they are bonded to components at either line or earth potential.

If the distance between conductive parts is small, the increasing field strength in the space between may reach the critical level and lead to a complete breakdown of the gap. Avalanche ionizing initiates the development of an arc, the gap discharge occurs, the potential difference banishes and the arc extinguishes. The whole sequence of events can be repeated when the parts become recharged, as the space is once again electrically stressed and the next gap discharge takes place.

C5. INTERFERENCE PROPAGATION

Conduction along the line, with the associated electric and magnetic fields, and radiation, are the mechanisms by which the disturbing radio frequencies *reach* the receiving radio antenna. It has been observed in practice that LF and MF frequencies of interest to radio reception, propagate some tens of kilometres along the line. at VHF frequencies of interest to television and FM radio, propagation along the line is less important than radiation from the source. Line geometry, resistance of the corresponding ground, and the value of the frequency are of major importance to propagation. The higher the frequency, the greater the attenuation along the line and the shorter the distance of propagation.

C6. INTERFERENCE LEVEL

Significant radio interference levels are normally confined to the Immediate vicinity of the line and extend a few hundred metres into the surrounding space. If resonant oscillation occurs in a fitting or component, a narrow band of radiated frequencies may be measured at distances up to a few kilometres. The combination of the direct wave and the wave reflected by the ground may result in fluctuations in the field strength measured.

C7. EXAMPLES OF GAP SOURCES

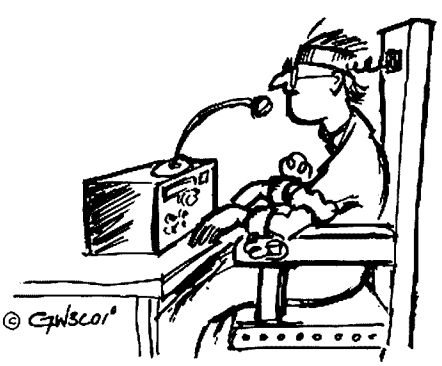
C7.1. Insulation:

Gap sources on overhead lines may be associated with lightly weighted pin and cap insulators, where the weight of the insulator is insufficient to protect the surface from oxidation, or with corroded hardware parts and faulty joints. For porcelain string insulator units it has been found that sparks can be produced by discharge in small voids in the porcelain. Broken insulators, paint layers and even objects not forming part of transmission lines, such as nearby unbonded fences or gutters, may give rise to gap discharges.

The contact between a pin-type insulator and phase conductor can be a source of sparking where the conductor rests in the top groove, at the tie-wire, or at the stirrups in the side groove. The problem is poor contact between metallic and insulator parts, and corrosion creating tiny gaps that may spark over.

C7.2. Pole Hardware:

Where wood poles are used for power lines, sparking may occur between items of pole hardware, and these can be a source of severe interference to television reception. This usually occurs due to the shrinking and swelling of the wood as air humidity changes. As the wood shrinks, nuts and bolts used to hold the crossarms in place, or to fasten insulator pins to the pole or crossarm, can become slightly loose. If any corrosion occurs between the nut and bolt, or the washer (if one is used), an imperfect conact results and sparking takes place.



Another source of television interference from wood-pole lines can arise from the staples used to fasten the earth wire to the pole. As the sections of the pole are at different potentials, the staples which are fastened to the pole may spark over to the earth wire, particularly if there is any corrosion between the two.

C8. WORKMANSHIP

Care must be taken both during the erection of the line to ensure good workmanship throughout, and in the subsequent maintenance to ensure that any defects caused, e.g. through vandalism, are found and the necessary remedial action taken. Special attention should be given to the design and maintenance of equipment to ensure the durability and adequacy of contacts, e.g. air-break isolating switches, the flexible connections provided in the design of such switches, fuse-mounts, and line taps.

C9. INFLUENCE OF WEATHER

Gap discharges are strongly influenced by the weather. It is only in dry weather that the small gap between two conductive parts will act as an insulator or dielectric and possibly cause breakdown. In foul weather or rain a conductive path may be established between these two parts, which consequently remain at the same potential. Interference caused by gap discharges is a phenomenon that is normally associated with fair weather and is usually absent under wet weather conditions. As a result this type of interference is often referred to as dry noise.

Power line interference can be more difficult and time-consuming to locate than most other sources, is more costly to correct and is more broadband; thereby affecting more services. A power line source generally causes interference to a greater number of people than a non-power line source, because of the power line's ability to act as a long-wire transmitting antenna. ■

PHOTOGRAPHS FOR AR

Don't keep them to yourself

SEND THEM IN — NOW

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

Greetings to everyone again and hope those who participated in the RD contest had lots of fun and high scores. Gill VK6YL had a very impressive score from all reports.

Bev VK6NYL is at present touring Central Australia; do hope you have an enjoyable holiday, Bev and family.

Mavis VK3KS is another who deserted our cold and wet weather for sunnier parts, spending three weeks in VK4 land with daughter Lynette and family.

Now Mavis is busy again sending out ALARA awards. A slight change of rules will appear in the awards section of AR soon.

Thank you to ALARA members who have volunteered for executive positions to help keep ALARA running smoothly. Valda VK3DVT has agreed to be Treasurer, and Joyce VK2DIX Vice-President. A very special thank you to Mavis VK3BIR, who has contributed a tremendous amount to ALARA since it started in 1975. Mavis, we hope, will be helping in an advisory capacity in the future.

Daphne VK2KDX is looking for YLs to chat to on Wednesdays on 28.470 at 0400Z. Marlene VK5QO and Valda VK3DVT have twice weekly skeds on 7.125 Tuesdays at 0500Z and Thursday at 000Z, and would welcome any YLs joining in.

Marilyn VK3DMS gave a very successful talk to about 30 men at Mildura recently. Well done; a repeat in the future by the sound of things.

The 14220 MHz net on Mondays at 0630Z is open to OMs the first Monday of the month, otherwise YLs only.

New YLs are reminded that open house Tuesdays and Thursdays, 14.332, check in time 0930Z. Gill VK6YL and Heather VK2HD are net controllers.

Remember also YL activity day, the sixth day of each month, on 28.588, 28.688, 21.188, 21.388, 14.288 on the hour. Call CQ YL and join in the fun.

ALARA contest date is November 14th. Please mark it on your calendar. We are hoping for a lot of logs for our first contest; remember its success depends on YOU. My thanks to all who are sending copies to DX stations they correspond with.

Do hope to talk to you all on the contest and other frequencies. Any queries on the contest please call after ALARA sked on Monday night, after 1130Z when the net is closed. This is also your opportunity for contacts for the ALARA award. Contacts during the net are not valid for the award.

If you would like to join ALARA send a note to Jessie VK3VAN, PO Box 38, Frankston, or join the net on Monday or Thursday nights, 1000Z on 3570 ± QRM; Monday at 1030Z.

33/73 to all until next month.

Margaret Loft VK3DML. ■

VK6 Ladies' Luncheon

The 2nd birthday of the group: Standing, Joan Rumble (VK6RU), Rhonda Roga (VK6NRU), Gill Weaver VK6YL, Christine Carter (VK6FC), June Greenaway (VK6DA), Poppy Bradshaw VK6YF (VK6EB). Seated, Joyce Taylor (VK6JK), Debbie Solomon (VK6MS), Joan Morris (VK6TX), Peg Reimann (VK6DY), Daphne Hugo (VK6KW silent key), Olive Couch (VK6WT). (OM's call sign in brackets.)

A group of YLs, XYLs and friends of amateurs meet on the last Thursday of each month for lunch in Perth or surrounding suburbs. Different venues are chosen to add variety to the occasion. The formation of the group was led by Daphne Hugo, XYL of VK6KW silent key, and the 2nd birthday was held on June 25th, 1981. The attendance, which averages 12, Includes Gill VK6YL, Inge VK6OV, Poppy VK6YF and three other ladies who will be sitting for AOCP examinations in the near future. Visitors from interstate, country areas or overseas are cordially invited to attend these luncheons. ■

INTERNATIONAL NEWS

SOLOMON ISLANDS

Here is the text of a publicity release by the IARU R3 Association:—

"The Solomon Islands Radio Society has announced that the following changes in amateur bands have been approved by the Controller of Posts and Telecommunications, Honiara.

"From 1st January, 1982, amateurs in the Solomon Islands may use the band 10.10 to 10.15 MHz on a non-interference basis.

"In addition, the bands 18.068 to 18.168 MHz and 24.89 to 24.99 MHz will be made available to Solomon Islands amateurs on an exclusive basis once ITU transfer procedures are completed. However, the Controller promised to investigate the release of the two higher bands earlier but on a non-interference basis.

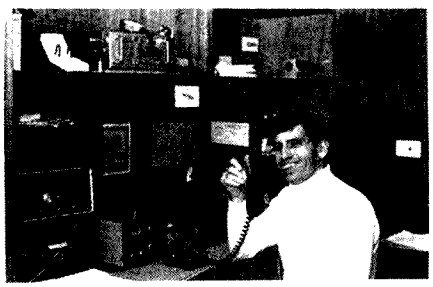
"SIRS application for H4 amateurs to use the band 7.1 to 7.3 MHz was ultimately successful and now amateurs in two countries in Region 3 may use the top 200 kHz of 40 — Solomon Islands and New Zealand. Australian amateurs are permitted to operate 7.0 to 7.15 MHz and the WIA is currently negotiating with the Australian Administration to increase the upper limit to 7.3 MHz.

"SIRS has also received an undertaking from the Controller, P. and T., Honiara, that "mode band plans" (i.e. CW/SSB band splits) will not be enforced by government legislation.

"The Solomon Islands Radio Society is a relatively new member of IARU Region 3 Association. The members are very active and have a Society club station. H44SI." ■

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
5 Helen St., Launceston, Tasmania 7250



At the 1981 Convention of the Association of North American Radio Clubs (ANARC), which was held at Thunder Bay, Ontario, those attending passed a resolution calling for the cessation of "jamming" on the various shortwave bands. It stated that all SWLs should be able to listen to any broadcast station world-wide, at any time of their choosing, and called on their respective administrations to bring this practice up for discussion at the upcoming WARC regional meetings.

Despite numerous protests, it is clear, however, that this jamming will continue as many nations heavily censor and restrict news and information within their borders, and wish to prevent news of developments from getting out and being aired back into the country from international shortwave broadcasting stations. Many of the citizens of the nations concerned do find that the shortwave stations carry a far more extensive news coverage of local events than their own electronic media.

With this in mind, many developing and emerging nations, being sensitive to the coverage of events, particularly by the Western press agencies, would like to break the monopoly of the four main newsagencies to correct what they claim are biased and slanted reports of what is occurring within their nation by legally restricting and controlling what the international reporters and journalists submit to their agencies and networks.

There are four powerful Western newsagencies dominating the world's media at present. They are the Associated Press (AP) and United Press International (UPI) in the United States, Reuters in Great Britain, the first and possibly largest of all the press agencies, and Agence Presse France (APF) in Paris. All are selling news and information on a commercial basis. Australia's only newsagency, AAP in Sydney, is jointly owned by all the major media groups and is also linked up with Reuters in London.

Another major newsagency of note is TASS, the Soviet agency that is owned and controlled by the Government, mainly disseminating news and information reflecting official viewpoint. It has a virtual monopoly on all news emanating from the Soviet Union, and those international journalists based in Moscow who report and publish news/information contrary to the official line are subjected to pressure and harrassment and expulsion from the country.

Many other nations also employ this trend of silencing and muzzling international journalists who submit reports back to their home base of developments within the host nation. Especially in the case when the news, being heavily censored in the local media, comes back via shortwave radio newscasts. For example, Indonesia expelled several Australian journalists who dispatched reports on the Indonesian scene, which the local media did not cover. Apparently many Indonesians were tuning in to Radio Australia's Indonesian language newcasts to find what was happening in their own land.

At the twenty-first Conference of the United Nations Scientific and Cultural Organisation (UNESCO) in Belgrade a resolution was passed calling for a "New Information Order". This resolution would effectively block journalists from reporting other than the official view of events within the host nations. This, of course, is unacceptable to the majority of Western press agencies and the media generally used to working in the context of a free press. Because of this rejection, Third World and non-aligned nations are going ahead with the formation of their own collective newsagency, and in some instances will bar outside press services from entering their borders.

Well, what has this to do with shortwave? To correct the imbalance of news reports, many governments and administrations are utilising international broadcasting outlets to get their version out to a wider audience than is available through press services. I have already noticed a resurgence of activity over the past couple of months around the various frequency bands.

In the July column I made mention of the International Volmet Network. Darrin Pearce L31359, of South Blackburn, Victoria, has forwarded me further information about the broadcasts. They transmit information known as SIGMETS, in addition to the various terminal forecasts. SIGMETS concern the occurrence, expected or otherwise, of various meteorological conditions in the upper atmosphere, with particular relevance to subsonic to supersonic flight levels.

Darrin also sent me details of the various international and regional distress frequencies in the Australian Search and rescue (SAR) area. I have included the HF channels only, due to space limitations.

AUSTRALIAN SAR/DISTRESS HF CHANNELS

1. 500 kHz — International Distress Frequency for ships, aircraft, and survival vessels. This also is to be continuously monitored by all operators of ship and coastal stations.
2. 2182 kHz AM — International Distress Channel for ships, aircraft, etc., as well as Emergency Position Indicator (EPI) beacons.
3. 3023.5 kHz AM — International On-scene SAR Frequency.
4. 4125 kHz USB — Small Craft Distress Frequency.
5. 4340 kHz CW — SUBMISS/SUBSUNK/SMASHES Channel — Indicator buoys so as aircraft can monitor and DF, if possible.
6. 5680 kHz AM — International On-scene SAR Channel, including above.
7. 6215.5 kHz — Small Craft Distress Channel.
8. 6364 kHz AM — International Distress Frequency for survival craft.

5(a). 5695 kHz — Designated as Military Distress Channel.

Thanks for the information, Darrin, and look forward to hearing from you with some further information in the future.

On the 17th and 18th of this month the Annual Jamboree of the Air will be held. This is the occasion when Scouts worldwide link up with one another via amateur radio. Many stations will be set up from Scout halls and camping sites.

Over the past couple of years I have been associated with one of the regular participants in JOTA, the 18th Lounceston Sea Scout Group. This year we will again be operational from their headquarters with VK7RH/P. The boys are keenly looking forward to working many stations during JOTA 1981.

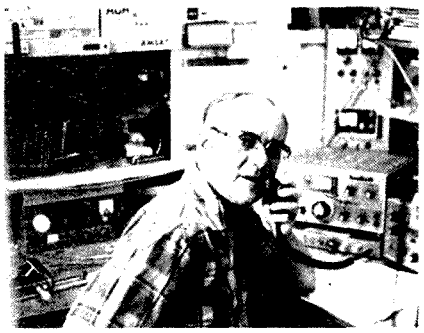
Well, that's all for this month. Until next time, the best of 73s and good DXing! ■

QSP

REPRINT

We've said it before, and we say it again, "You never know where your AR published article will show up next". Latest we have seen is R. A. Howison's (VK2VPN) article "Delta-Yagi — The Answer" (AR November 1980) re-published in Radio ZS for March 1981 (South Africa Radio League). ■

AMSAT AUSTRALIA



R. C. Arnold VK3ZBB

There has been no positive record of signals from AMSAT Oscar 7 although several suggestions have been made that the beacon on 435.1 MHz has operated. It now appears unlikely that we shall again see AO7 as a fully operational satellite and I am therefore dropping its predictions.

OSCAR 8 is functioning satisfactorily according to its operational plan with Wednesdays being allocated as a battery recharge day. There have been some fairly frequent shifts in orbit parameters and therefore the following forward predictions must be viewed as approximate only:—

OSCAR 8
October:

Date	Orbit No.	Eqx. Z	Eqx. W
3	18239	0007	66
10	18337	0040	74
17	18435	0112	82
24	18532	0001	65
31	18630	0033	73

With thanks to "Satellite News" here are some satellite total figures as at 31st December, 1980:—

Objects orbited	12365
Objects re-entered	7915
Object on the moon	161
Objects on Venus	46
Objects on Mars	27
Total satellites in orbit	4450

Now a few tongue-twisters describing the types of orbit —

In geocentric orbit	4421
In heliocentric orbit	46
In barycentric orbit	81
In selenocentric orbit	21
In aerocentric orbit	10
In galactocentric orbit	2
In cytherocentric orbit	3

The AMSAT Pacific Net with control station JA1ANG (Harry) or 9M2CR (Colin) has a new frequency of 14.305 MHz. The time is 11.00 GMT on Sundays. Check-ins are always welcome.

At the time of writing the launch of UOSAT is still cheduled for around September 15th. The following notes on this satellite and its scientific possibilities are reprinted, courtesy of AMSAT Satellite Report.

THE FIRST SCIENCE OSCAR

Imagine for a moment that you could look at the ionosphere in such a way that you could readily know its condition in your vicinity. Further, imagine a small group of stations just like yours networked for the purpose of producing sophisticated ionospheric maps which would allow insight to fortuitous propagation paths. Now stop imagining and come to understand that these capabilities may be close at hand with the impending launch of amateur radio's first purely scientific satellite: UOSAT.

In a little more than a month the UOSAT amateur scientific satellite will be launched from Vandenberg AFB, California, aboard a Delta rocket. The Delta will also carry another scientific package called Solar Mesopheric Explorer. UOSAT will, in the words of its programme director, G3YJO, begin to redress the imbalance between the operational and technical interests manifested in recent years.

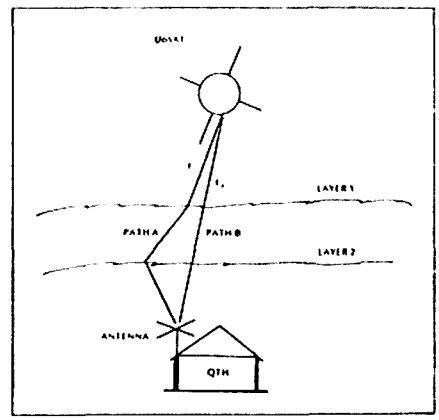
Of what is UOSAT capable? How can you participate and use the future AMSAT-OSCAR 9? Beginning with this issue of ASR we will look at some of the interesting features of UOSAT. Because of space limitations, our view will be necessarily brief. Details and technical solutions must await in-depth articles pursuant to that of Martin Sweeting's fine introduction in ORBIT No. 6.

In this ASR Tech Brief we will look at the phase coherent beacon experiment of UOSAT. When we're through, you should know what it is, how it works and what its significance is. A future ORBIT will explain how you can build and use compatible equipment to directly participate.

As is generally well known among radio amateurs the region of the atmosphere from about 50 to 250 miles in altitude is of great interest since it is within this region that reflection of HF radio waves generally occurs. Prior to radio satellites, the only way in which signals could be sent well beyond the optical horizon was by virtue of ionospheric reflection and EME, i.e. using the moon as a passive reflector. It is therefore of paramount interest to HF amateur comunicators to have current status reports about the condition of the ionosphere. Several methods are available for this purpose. However, the character of the methods and the accuracy resulting varies considerably. At one end of the scale are published long-range forecasts based on predicted solar activity with an assumed linkage to ionospheric condition. At mid-scale are daily forecasts by government agncies and research institutes which produce reports such as the Solar-Terrestrial indices transmitted by the National Bureau of Standards station, WWV, on 2.5, 5, 10, 15 and 20 MHz at 18 minutes past each hour. At the other end of the scale are real-time measurements that you yourself make by probing the HF bands passively (by listening to and noting the areas from which signals are originating) and actively (by calling CQ to see who/where responses come from).

With UOSAT, a new and powerful active probe will be added to the amateur arsenal. Here's how it works.

There are four HF transmitters (among others) aboard UOSAT. The outputs of the transmitters are on 40, 20, 15 and 10 metres and radiate a power of a couple hundred milliwatts each. Nevertheless, given a reasonably competent station, anyone who tries will likely hear these beacons. What is special about the beacons, besides the QRP levels of these HF beacons, is the relation of the phase of the output signal of each: it remains constant or phase-locked. This is crucial to the experiment as shall become evident shortly. Phase coherence is another way of expressing the concept of phase-locking. Thus each wave of the phase coherent beacons leaves the antenna with the same phase relation to the waves of the other beacons. They all depart the UOSAT in step with each other. What has happened to the phase relationship when the waves get to your antennas is what makes this probe interesting. First, though, we need to know a little physics.



Though electro-magnetic (EM) radiation such as light and radio waves travel at 186,289 miles per second in a vacuum, these waves are slowed by travelling in denser media such as air, glass, to name a few common dielectrics. In fact the velocity of an EM wave depends on certain properties of the dielectric. The familiar rainbow emanating from a glass prism set in the sunlight demonstrates vividly the effect. The higher frequencies (blue light) are not refracted as much as the other colours. The red colours are substantially more refracted because of their low frequency.

Much the same phenomenon occurs with radio waves. Thus, when we say that radio waves are "bounced" off the F2 layer or E layer, we are really saying that the collective effort on our signals of passing through layers of the ionosphere with varying propagation velocities is to refract the waves. In fact, a common result of the difference of the refractive index with

varying frequency is the length of the so-called "skip-zone". Signals of 21 MHz will generally have a longer one-hop distance than will signals at 14 MHz (with some exceptions under unusual circumstances). So radio waves are also dispersed under certain conditions just as are light waves passing through a prism.

One very prominent effect of radio waves passing through the various layers of the ionosphere is that their phases become jumbled. That is to say that often, because of the different paths taken by the waves arriving at your antenna, the phase of the wave can vary widely. The phenomenon of QSB is one result when signals from various paths constructively and then destructively co-interfere.

To this point we have seen two important physical phenomena that relate to the refraction and phase of waves.

(a) We have seen that EM waves are refracted under some circumstances, and

(b) The effect of this refraction can be a phase difference caused by a difference in the path length taken by the divergent waves.

Now it is time to tie these two points into the UOSAT experiment!

With UOSAT we have a remote source of EM waves about which we know several key characteristics. Most important, we know the phase relation of the four beacons and we know that it is constant at the source. What the experiment is all about, then, is the measurement of the phase after it has passed through these jumbling layers on their way to your antenna.

The difference in the paths caused by the varying refraction angles of each of the four waves means that the phase relation which existed at the source will be modified in such a manner so as to give us a tool to measure the refractive index of the media through which the waves have passed. That's a rather complex way of saying we launch some waves at "A" and watch what happens to them when they arrive at "B"! And by knowing key properties such as the refractive index of electron density of the plasma along the path between you and the satellite, you can determine the state of the ionosphere; kind of like taking its temperature by remote control! And this information can lead to a map of the ionosphere.

But why four beacons, you might ask? Wouldn't two be sufficient? The two other beacons are there to remove any phase ambiguity that might arise from our inability to discriminate between the successive troughs, for example, of a particular wave.

The equipment needed to generate a simple plot of position versus electron density is well within the grasp of many who read ASR, though definitely not "off-the-shelf". Obviously one must be able to receive on 40, 20, 15 and 10 metres. So receivers and antennas for each band are necessary. The receivers, moreover, are special in several regards. The incoming signals are "beat" against each other in such a way that the resultant heterodyne contains the phase information we seek. Though not particularly complicated, the receivers are obviously fairly special. It is also reasonable to expect a construction article and perhaps even a kit of parts to appear in the usual place in the next year. On the other hand, the antennas can be quite elementary. Here one certainly would want to utilize wire antennas which favour higher angle radiation and are less sensitive to QRN and QRM such as ignition noise. Thus you should avoid vertical antennas. They would be your last choice here. More useful would be a series of horizontal loops of 40, 20, 15 and 10 nested perhaps.

In the shack the phase information must be fed to a computer for processing. The computer will take the phase information from the receivers and, by taking into account such variables as path length, doppler shift and spacecraft velocity (among others) will generate a value for the integrated electron density along the path between you and UOSAT at the instant the measurement was made. If the computer also has access to UOSAT tracking information and a CRT display, with suitable software you might be able to map a region in space "over your house" very nearly in real-time.

At maturity, we might see several stations participating in this experiment by networking via Phase IIIB and inputing observed data to a central point for processing and redistribution. A little further down the line we can envision the time when by listening to a certain satellite frequency and having the proper computer equipment at your disposal, you could obtain a map of the ionosphere showing where the openings were and maybe even provide insight to such transient phenomenon as trans-equatorial, Es, as well as yet-to-be discovered modes.

UOSAT certainly has a host of interesting experiments aboard. This Tech Brief has addressed but one of the dozen or so that will be accessible to amateurs around the world interested in pursuing amateur radio's technical branch. ■

WIA
VICTORIAN DIVISION
WESTERN ZONE CONVENTION

At Hamilton, October 31st-November 1st. OMs, XYLs, and harmonics, dinner, etc. 1981. Trade displays, competitions for All usual convention activities.

For a programme and accommodation availability forward a stamped self-addressed eivelope to the Convention Secretary, Box 188, Hamilton 3300. ■

ERRATA
NOVICE NOTES SEPTEMBER 1981

C5 of Fig. 7 should have the positive terminal connected to D2. No polarity was shown in the diagram. ■

QSP

BANGLADESH AMATEUR RADIO LEAGUE

The WIA would like to assist BARL by sending them a few current or non-current amater radio books such as the ARRL Handbook. If any member could spare a Handbook, not too old and even if more or less in used condition, please send it along to the Executive office. All such donations would be gratefully rece ived and properly applied. ■

AMTOR AND IW

A note from Syd Molen VK2SG to the Federal IW Co-ordinator via VK3LC advises that signals on 3545 and 14075 kHz which might have been reported as intruders would be legitimate signals emanating from amateur stations. He and VK3BUS, he stated, were the only two stations in Australia using the system, although several others overseas are known. The AMTOR system is a forward error correction system mainly using one of the two types of transmission Mode A or Mode B. AMTOR cannot be resolved by the normal RTTY system to print as AMTOR uses a 7 bit baudot code or the 8 bit ASCII code.

HOW'S DX

Ken J. McLachlan VK3AH
PO Box 39, Mooroolbark 3138

AX PREFIX

After the ionospheric blackout on July 25th I wondered if the bands would be worth using as the days progressed towards AX day. However, conditions, though not excellent, were fair, and quite a few AXs had a lot of contacts and were really in demand. One problem was that nearly everyone either wanted to know what country, why was it being used, and then to have a chat — which wasn't on seeing we had the call for one day.

BLANK QSLs — FAIR-PLAY SPORT?

Amazing things turn up in our mail box, but the contents of an unsolicited letter from an amateur DXpeditioner and QSL Manager well known in Europe, really set me thinking. It contained a number of QSL cards duly signed, but the pertinent details were left blank, also a little note accompanied them saying that if I didn't want them I may know someone who did. I know half of VK would, but it doesn't end there as it is believed that there are others floating around in the same condition from North America.

This is on top of the ARRL announcement that bogus cards submitted for DXCC from Europe and America bring about immediate suspension, though one well known American DXpeditioner who has given many VKs a new country from various locales, tried unsuccessfully to resign prior to disqualification.

This is a very serious situation, coupled with some amateurs using two metre links with a friend who has a better location, and using a friend's call sign to get him a report, or getting a friend to operate your station if you cannot make it when your turn comes up on the list for the elusive one. It is not ethical or within the rules of fair play.

What extremes will some amateurs go to in a hope of achieving honour roll status? It is wondered what the VK amateurs who have reached the top ten feel after many hard hours of listening, chasing and eventually getting the card for a new country?

QSL managers like WA3HUP, DJ9ZB and W4FRU, to mention a few, are scrupulously honest with their approach to the task and must feel a little disappointed, if not sad, for some of their counterparts, let alone our own band of DXpeditioners like VK9NS, VK2BJL and VK2BKD, again to mention a few, who have gone to a lot of expense, time and personal hardship to plan and launch successful expeditions beyond reproach, giving every DXer the chance of a new one.

What is happening to the DXer that this should occur? It is understood that everyone would like that new country. This QTH also needs a few but not at the lengths some operators will go to. A suggestion given to me recently that a maritime station tied up alongside some rare island or reef should be counted for that country to make it a little easier, really astonishes me. Quantity not quality is a way of life, but please don't extend it into amateur DXing or let it deteriorate DXCC which is one of the highest achievements of the hobby we enjoy.

DX JOTTINGS

Maryanne WA3HUP has relinquished being QSL Manager for 7X2BK Kamil, as he has not forwarded any logs to check against. Probably best to go direct if you really want it and good luck.

Heard around the bands one Indian Ocean station suggesting four IRCs plus an addressed envelope for a QSL card and one rarity in the Pacific suggesting two green stamps would cover the special card. It is a little expensive to get cards if you really want them personally. This type of station gets a card via the Bureau for his collection from this QTH. If he does not reciprocate not much is lost.

To those that haven't received a VK0 card the following may help to track the elusive operator down. A SASE should suffice in this case.

VK0SJ — PO Box 27, Kingston, Tasmania 7150, Australia.

VK0DB — 9 Terrigal Avenue, Turramurra 2074, NSW.

VK0GW — 12 Warwick Street, Enfield 5085, SA.

VK0JC — J. Christensen, Danmarksvej 20, DK-4800 Nykoebing, Denmark.

VK0KC — 26 Goorama Street, Stafford 4053, Qld.

VK0KS — 2/17 Sherwood Road, Ivanhoe 3079, Victoria.

VK0WW — 14 Thomas Street, Unley 5061, SA.

To those who haunt the letterbox or QSL Bureau for that long awaited card, think yourself lucky, as you have a chance of getting it very quickly compared with the USSR.

One UJ amateur enlightened me on this fact just recently as he has worked 283 countries and has 112 confirmed, as yet no cards from VK after 2½ years. He said the trouble was with Box 88, Moscow. Sometimes the delay from there to his QTH is up to two years!

Another keen DXing OM-YL duo is Jane ON7WW and John ON7EJ, both being familiar on 20 metres in VK.

Jane ON7WW

John **ON7EJ**

John received his licence in late 1977, and once John got on the air, Jane was converted and started studying for her "ticket", which she gained in 1979. With now two DXers in the family and the desire to have an up-to-date station, work began. Both having an interest in antenna systems they progressed from a long wire (3 metres above the ground) to a 14AVQ, TH3JR and the latest but not the last are mono-banders on 10, 15 and 29 metres at heights between 10 and 21 metres.

Forty and eighty haven't been forgotten, as each band has its own ground plane with earthed radials and it can be seen that John's professional engineering talents are well used in this regard.

Jane and John share a Drake TR7 transceiver and a linear at the QTH, which has an elevation of 180 metres above sea level. Both share other hobbies, which include tropical fish and gastronomy when they are not putting a big signal into the Pacific on either Phone or CW.

Jane has yet to catch the OM in the DX tally but if the bands are dead, there is always the fish to tend to and, of course, the kitchen duties have to be taken care of.

CHINA — BY1PK

JARL news recently described JA1AN's visit to China, including a visit to the QTH of BY1PK, which is located close to Peking.

The equipment he saw comprised a receiver, tape recorder and a three element rotary beam with controller and is situated in a very small room of an apartment — the beam being placed on the roof, with dipoles for 40 and 80 metres.

Very enthusiastic SWLers man the station round the clock and signals on SSB and CW were very strong on 21 MHz, most being from JA. Unfortunately they cannot yet transmit, but when they finish fitting up an adjoining larger room they will be able to. They expect this to be in early 1983.

The club members have gone to considerable trouble to design an attractive multi-colour QSL card for the big event of transmitting from station BY1PK.

Apparently activity from BY will be very limited when they receive the go-ahead, due to the high cost of equipment and the very low wages. To illustrate this JA1AN writes that it takes nearly one month's wages to purchase a small calculator, and an economy colour TV is worth in the vicinty of $A1250, which is beyond the reach of most families even though everyone in the household generally works when of age.

For the above I thank my interpreter and hope that when they are QRU someone donates a transceiver so that they can work split frequencies.

ACROSS THE POND!!

Talking to Tony ZL1AZV, a teacher, who was taking advantage of the holidays to burn the midnight oil and work DX, proved to be very informative. Tony advised that Warrick ZL2AFH/A was still awaiting the valves for his "becalmed" rig after three unsuccessful air drops, though ZL4OY/C would be going there in November at the changeover time. As a keen DXer he would accommodate the demand during his stay there, all QSLs should go to ZL1BQD.

Chatham Island hasn't been forgotten this year either, as Lester ZL3PR will be operational and Tony still thinks that he will show from the island in December.

Kermadec, still a much wanted area, is in the boiling pot, but Tony couldn't be persuaded to say any more.

ALBANIA

In a QSO with EA8AK he advised that he has been invited as a guest operator for ZA2HM, which is scheduled to show this month.

ZA Albania was the fourth much wanted country list in the DX Bulletin's recent survey, so the pile-up will be tremendous, and it will be difficult to make oneself heard let alone recognised. They plan to work 80m through 10m, and other guest operators include EA2JG and EA2RP. Good luck for a new one, and if you make it QSLs should be routed to the individual operators, unless they decide to alter their thinking.

JPL

Amateurs who frequent the DX bands and particularly SSTVers had a treat when they had a contact with W6VOI, a club station manned by scientists and technical staff at Pasadena Jet Propulsion Laboratory for the Voyager 2 space probe.

When I had my contacts on 28, 21 and 14 MHz signals were good and many pictures were sent in both monochrome and colour, which were brilliant in detail (I am sorry that I didn't have colour receiving capabilities) and a concise commentary of the impending rendezvous with Saturn. A special multi-coloured card is available for all contacts, and VKs will receive theirs via the Bureau.

They hope to do the same public relations stint again in January 1986, when Voyager 2 will explore the environs of Uranus.

SILENT KEY

I am sad to report the death of Don Buckley W7OK earlier this year from a heart attack. Don was a well known and respected QSL Manager, who was always willing to help with the difficult ones, also with some that he didn't look after, and he has processed cards for many a VK over the years.

His friends and fellow amateurs are carrying on his task until other arrangements can be made, and anyone wanting a QSL from any station he handles may still obtain a card from PO Box 95, Las Vegas, NV 89101, until further notice.

QRL ROUTES

I have in my possession a number of QSL routes, QSL Managers and updated addresses in the form of computer lists and DX Manager Books. If any reader wishes to chase down some elusive card please write all details, including the date of contact, with a SASE to the above address, and we will check our lists for you.

LEBANON
Ahmed OD5RZ is operational from near Bierut under severe difficulties. Not being permitted to operate on 40 or 80 metres or communicate with any other OD licence, he has erected dipoles for 20, 15 and 10 metres at 90 feet. He is very active below 14.200 around 15.00 using his TS120S.

Settling in nicely for a three year stay is Doug T30DM. Doug is using a FT101ZD, a 12 AVQ and a TH3 at 15 metres, also dipoles at 60 feet for the lower bands. Indications are that he will be very busy and won't be short of a QSO when the call sign is announced.

BELIZE
Prefix hunters will be happy if the rumour that VP1 Belize is going to change this month to J9 is true.

For their input and support thanks to VK3AHG, VK3AOR, VK3AXQ, VK3BMA, VK3CIF, VK3PU, VK4DK and VK6NT.

Until next month good DXing.

73. Ken.

EDITOR'S NOTE
An extensive list of QSL Managers has been held over until next month due to space restrictions.—VK3UV. ■

THE CW BANDS WITH ERIC L30042
The best were:—

7 MHz: A4XIZ, CO2BM, EA2ADT, HA9RE, HB9AMO, HB0ALO, HC7CM, LX2BO, SM7ALC, UQ2GDW, Y39UO, ZK2BGD.

14 MHz: FM7WO, FO8HH, GB2FAA, GB4RW, DJ0LC/HB0, KG6RT, VP9KW, VS5RP, XZ5A, ZK1AC, 8P6AU, 9V1UY.

21 MHz: DU6JM, G2WQ, HL1IJ, KL7IB, KX6ZY, UK0FAD, VU2TRC, YB3MD, YC1BMK/3, YV1NX, ZS5YN.

28 MHz: FK8CE, JA8DEY, KP4KK/DU2, UL7PBY, W6VD, WA6SZC, W7FGT, ZS5YN. ■

AR — WRAPPING IT

The Publications Committee are examining ways and means of trimming unnecessary costs associated with AR

WITHOUT LOWERING STANDARDS.

One cost saver would be to mail AR out in a wrapper instead of in an envelope. We need to make this decision now because our existing stocks of envelopes will be depleted early in the new year.

Savings made utilising wrappers would be substantial, and these would be applied to upgrading AR itself.

Any thoughts you may have on this or any other aspect of AR magazine would be appreciated.

VK3UV.—Ed. ■

A State of the Ark Transverter for the New Amateur Bands

Neville Chivers VK2YO
51 Meeks Crescent, Faulconbridge 2776.

I was reading the mail between a couple of VKs and a ZL concerning the new WARC 79 HF bands at 10, 18 and 24 MHz to become available some time in the future. Although interest was shown in a mild way there seemed some natural reticence to make redundant perfectly good transceivers, and go to the expense of buying new black boxes for these bands until there were plenty of signals on them.

But is this logical? Surely here is the classic Catch 22 situation. Whilst listening to the Sunday morning broadcast from VK2AWI an item concerning the need to occupy these bands when they are made available prompted me to action.

My trusty old FT200 presently doing duty driving home-brew transverters on 6 and 2 metres caught my attention. Perhaps this is the way to go about getting on these bands. There are plenty of this type of transceiver around with accessory sockets and low level RF output for transverter operation.

Points I kept in mind were:—

1. The transverter should be simple and cheap to construct, preferably from parts most amateurs would have in their junk boxes.
2. Able to work on any one or all three bands depending on constructor's preference without too much fiddling.
3. Possible to get it going without elaborate test gear.

I considered these points in order.

Point 1: After consulting my extensive collection of hoarded parts (some go beyond WW 2) it looked like the transverter would be state of the ark construction, with valves, 1 watt carbon resistors, and rat's nest wiring, as I have not accumulated a lot of solid state junk yet.

Point 2: Needs a crystal about 4 MHz and main transceiver switched to 14 MHz for operation on 10 MHz and 18 MHz, and the same rock but 28 MHz from the transceiver for 24 MHz output. After a rummage in the crystal tin I came out with two choices in FT243s at 4026 and 3885; either will work with mental adjustments of the main dial.

Point 3: As I have no more elaborate test gear than the usual multimeter, dummy load, GDO and frequency meter found at most QTHs these days, I proceeded in the knowledge that most constructors would vary my circuit to suit their own pet designs. The chance of two identical transverters being constructed from this article would be remote, so more detailed circuit measurements or wave forms would be meaningless anyway, even if I had the gear to do it.

I reasoned that if I could make such a device work from what was available to me perhaps a few more black box operators would do the same.

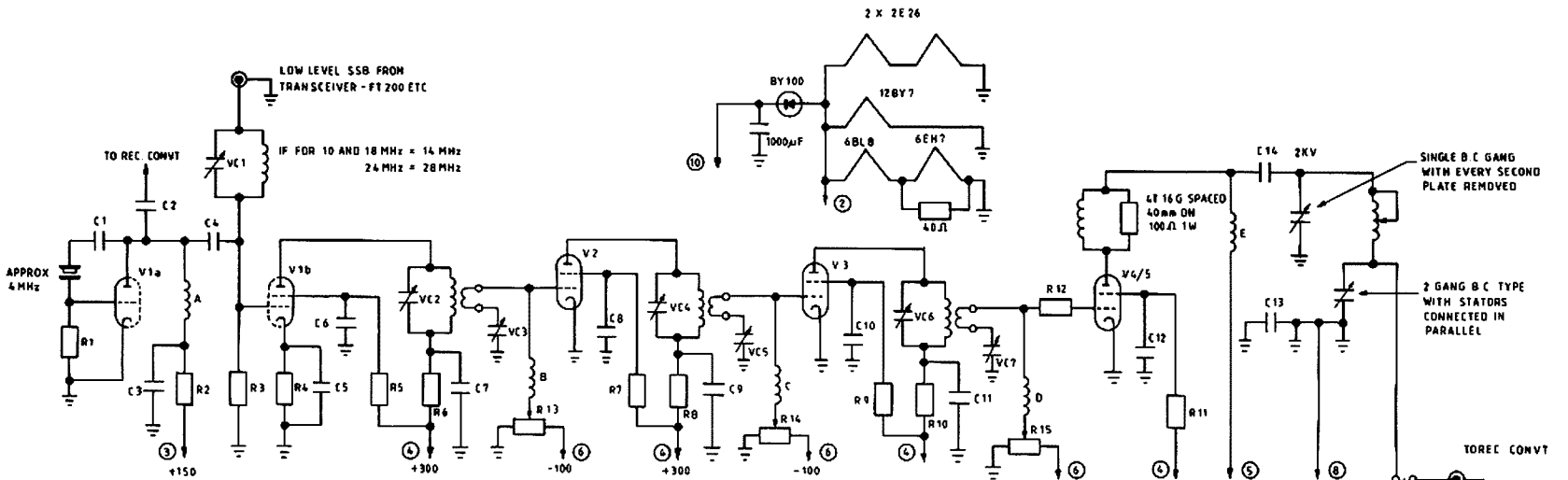
I unashamedly plagiarised various circuits from AR, QST, ARRL Handbook, Yaesu Musen, etc., and came up with a conglomeration that works! (Into a dummy load for the time being of course.)

The particular valve line-up is not critical and may be varied to what is on hand. I tried several alternatives but settled on what is shown in the filament line-up because most are obtainable from black and white TV sets, now decaying in garages or sheds around suburbia. The output tubes (2 x 2E26) were decided for me because they were already installed in the box planned for this transverter. The box was used to house my 6 metre DSB transmitter put out to pasture some years ago. Besides, 2E26s are easily exchanged for 6146s with bias adjustment for higher output (if I ever inherit a pair).

Most of my construction experience has been in the VHF field. It was nice not to have to worry as much about layout or critical adjustments so as to preserve stability. This VHF transverter, In fact, has needed the least amount of debugging of any of my projects to date.

So much for the transmitting side.

For the receiving side, seeing I have a couple of MPF 131s on hand and I am running out of space for any more valves on the chassis (I should have used that old car phone chassis and case in the first place), it looks like a series of plug-in converters will be the order of the day here. Or perhaps that 6AK5-6J6 converter already built from years ago could be put into service again. I will be ready to go on when the new bands are made available with this combination into a G5RV antenna. So get the soldering iron hot, build something like this now, and let's have a QSO on opening day, whenever that is. ■



V1 6BL8/6U8 ETC
V2 6EH7/6EJ7 ETC
V3 12BY7/6CL6/5763 ETC
V4/5 2 X 2E26/6146/6CM5/807 ETC

R1 = 100K
R2,4,6,8,10 = 1K
R3 = 47K
R5,7,9,11 = 10K
R12 = 10Ω
R13,14,15 = 1K BIAS ADJ POTS

RFC A,B,C,D 2·5 mH
RFC E 4 PIE

C1,3,5,14 = ·01
C2, = ·00001 10pF
C6,7,8,9,10,11,12 = ·001
C13 = ·001 FEED THROUGH
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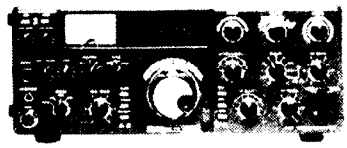

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ATN 28-30-5	12.0	6.5M	$149
ATN 28-30-6	13.2	8.3M	$199
6 mx			
ATN 50-502.5-5	11.9	3.5M	$95
ATN 50-53-8	14.2	5.5M	$149
ATN 50-53-11	16.2	9.0M	$185
2 mx			
ATN 144-148-8	12.7	2.2M	$55
ATN 144-148-11	14.6	3.8M	$65
ATN 144-148-16	17.0	6.3M	$85
ATN 144-148-13WS	17.3	7.0M	$85
70 cm Model (N Conns)			
ATN 420-470-6	10.2	0.6M	$45
ATN 420-470-14	14.2	1.5M	$59
ATN 420-440-11	15.7	1.85M	$65
ATN 420-440-15	16.7	2.85M	$75
ATN 432-16LB	17.2	3.7M	$85
UHF CB (N Conns)			
ATN 47-5	9.2	0.65M	$45
ATN 47-7	10.2	0.7M	$49
ATN 47-11	17.0	1.7M	$59
ATN 47-15	17.8	2.8M	$69
Amateur TV Translator			
ATN 580-14 (N Conns)	17.5	2.0M	$65

ALL LISTED HF ANTENNAS use top grade 6063-T83 seamless tapered and swaged tubing elements with non-brittle ABS tough weather resistant insulators. Booms are 2" OD (longer booms use guys supplied) and elements taper from ⅞" OD or ⅝" OD depending on length. Longer elements use positive rake on insulators to reduce unsightly sag. The best possible materials have been chosen to suit tough Australian weather conditions.

TRAPLESS TRIBANDERS, 13-30 MHz, Continuous Coverage (Includes new WARC & CB) (LOG PERIODICS)

Model	Elements	Boom (metres)	Gain dbi	Price with 2kW PEP Balun
13-30-6	6	6.0	7.5	$289
13-30-8	8	8.5	9.0	$399

TRAPLESS DUOBANDERS, 20-30 MHz, Continuous (Includes new WARC & CB) (LOG PERIODICS)

20-30-6S	6	4	7.5	$189
20-30-6L	6	6	8.5	$219
20-30-8	8	8.5	10.2	$299

MONOBANDERS — For 14 and 21 MHz

14-14.4-4	4	7	10	$269
21-21.5-4	4	6	9.9	$199
21-21.5-5	5	8	11.2	$289

Also available power dividers/couplers, quarter wave sleeve baluns and matching harnesses for stacks of two or more arrays; also 1:1 and 1:4 baluns in 200W or 1 kW and insulators for homebrew. Write for free catalogue.

ATN ANTENNAS

56 CAMPBELL STREET, BIRCHIP, VIC., 3483

PHONE (FACTORY) (054) 92 2224 (OFFICE) (054) 92 2264

ALSO AVAILABLE FROM: **VIC. (03) 873 3939** **VIC. (03) 789 3412** **TAS. (002) 47 6674** **TAS. (003) 31 7075** **W.A. (09) 328 9229** **S.A. (08) 47 3688** **QLD. (07) 397 0808** **N.S.W.**

UPDATED VERSION

NEW J.I.L. SX-200

GFS electronic imports

NOW MONITOR AIRCRAFT, POLICE, AMBULANCE, 10, 6, 2 & 0.7mx AMATEUR BANDS. HF & UHF CB, PLUS HUNDRED MORE. INCLUDING SERVICES IN THE AUSTRALIAN LOW BAND

FEATURING:
- Airband
- Australian low-band

J.I.L.

Ask about our range of BASE ANTENNAS.

PROGRAMMABLE SCANNER DOES IT ALL. 26 - 180MHz, 380 - 514MHz.

SPECIFICATIONS

- **Type:** FM & AM
- **Frequency Range:** a) 26-57.995 MHz Space...5 kHz; b) 58-88 MHz Space...12.5 kHz; c) 108-180 MHz Space...5 kHz; d) 380-514 MHz Space...12.5 kHz
- **Sensitivity:** FM..a) 26-180 MHz 0.4uV S/N 12 dB; b) 380-514 MHz 1.0uV S/N 12 dB; AM .a) 26-180 MHZ 1.0uV S/N 12 dB; b) 380-514 MHz 2.0uV S/N 12 dB
- **Selectivity:** FM.....More than 60 dB at —25 kHz; AM.....More than 60 dB at —10 kHz
- **Dimensions:** 210 (W) x 75 (H) x 235 (D) mm; 8-1/4 (W) x 3-1/4 (H) x 9-1/8 (D) in.
- **Weight:** 2.8 Kgs.
- **Clock Error:** Within 10 sec./month
- **Memory Channel:** 16 Channels
- **Scan Rate:** Fast.....8 Channels/sec.; Slow.....4 Channels/sec.
- **Seek Rate:** Fast.....10 Channels/sec.; Slow..... 5 Channels/sec.
- **Scan Delay Time:** 0 or 4 sec.
- **Audio Output:** 2 Watts
- **Ant Impedance:** 50-75 ohms; Whip or External Antenna with LO/DX Control (20 dB ATT.)
- **Freq. Stability:** 26-180 MHz ... Within 300 Hz; 380-514 MHz ... Within 1 KHz

The new SX-200 represents the latest STATE-OF-THE-ART technology in the development of Scanning Monitor Receivers. It has many features that previously have not been available on receivers of its type.

For example the tremendous frequency coverage, which encompasses all of the following bands:— HF & UHF CB, 27 & 155MHz MARINE, Australian LOW BAND, AIRCRAFT band, VHF SATELLITE band, 10Mx, 6Mx,2Mx and 70CMx AMATEUR, VHF HIGH BAND and UHF TWO-WAY band. Other features include Automatic detection of AM or FM on all bands, Squelch Circuitry that can be used to LOCK OUT carrier only and spurious signals, Fine Tuning control for off channel stations, 240 VAC plus 12VDC operation, Squelch Operated Output that may be used to trigger a tape recorder or channel occupancy counter and accurate Quartz Clock.

AUTHORISED DISTRIBUTORS:
W.A.: Letco Trading Co. (09) 387 4966
N.S.W.: Emtronics (02) 211 0531
Qld.: C.W. Electronics (07) 397 0808
Plus many other regional outlets.
CONTACT GFS FOR YOUR NEAREST STOCKIST.

Now cover the VLF BANDS with your SX-200.

5 KHz to 1500 KHz

With the addition of a

DATONG VLF CONVERTER

- Excellent sensitivity
- Connects simply in series with antenna lead of SX-200

PRICE $109 plus $4 Post

$512

+$8 P&P

TRADE ENQUIRIES WELCOME

Australian Agent:

G.F.S. Electronic Imports, 15 McKeon Road, Mitcham, Vic. 3132 (03) 873 3939

CONTESTS

Reg Dwyer VK1BR
PO Box 236, Jamison 2614

CONTEST CALENDAR

October

3/4	VK/ZL PHONE	AR 5/81
19/11	VK/ZL CW	AR 5/81
17/18	JAMBOREE ON THE AIR	
24/25	CQ WWDX PHONE	

November

82& 22	CZECHOSLOVAKIAN PHONE/CW	FCM
14/15	EUROPEAN RTTY	
21/22	VK QRP CW/THE WORLD	AR 11/81
21/22	ARRL PHONE SWEEPSTAKES CQ	
28/29	CQ WWDX CW	

December

5 Dec. 81 to Jan. 82	ROSS HULL VHF	AR 11/81
12/13	ARRL 10 METRE	

RULES FOR THE 1981 ROSS HULL MEMORIAL CONTEST

OBJECTS
Australian amateurs will endeavour to contact as many other amateurs as possible. Entrants must operate within the terms of their licences.

PERIOD
0001Z 5th December, 1981, to 2400Z 10th January, 1982.

EXCHANGE
RS(T) plus a three figure serial number starting at 001 and increasing by one for each contact, when 999 is reached a start is made again from 001.

BANDS
All amateur bands above 30 MHz, however cross band contacts are not permitted. Operation via active repeaters and translators is not allowed.

OPERATOR
Single operator only. One transmission only at one time.

CONTACTS
Two contacts per GMT day per band with each station providing 10 hours have elapsed since the previous contact.

DURATION
(a) 7 GMT days — not necessarily consecutive.
(b) 2 GMT days consecutive.

SECTIONS
(1) Phone (AM, FM, SSB, ATV and SSTV).
(2) CW (CW and RTTY).
(3) Receiving (any mode).

LOG SHEET
It is desirable that complete logs for the whole contest be submitted for cross checking purposes; photo copies are very acceptable.

The following details must be shown: Time GMT, Band, Emission, Stn. worked, Tx exchange, Rx exchange, Points, Bonus. Each page must be totalled at the bottom.

FRONT SHEET
A front sheet must be attached showing the following information in this order:—

Section, call sign, list of 7 best GMT days with daily score and daily multiple, daily total plus 7 day total, list of best 2 GMT days with daily score and day multiplier, daily total plus 2 day total, name and postal address.

SCORING TABLE — AUSTRALIA

Distance	52	144	432	576	1296	2304 up
Up to 100 km	1	2	5	20	30	50
100-200 km	2	5	10	30	75	100
200-400 km	10	20	40	50	100	200
400-800 km	20	35	60	75	150	300
Over 8000 km	10	50	60	100	200	500

BONUS
(a) For each new call area in Australia, including own call area, 20 points once only per band per GMT day.
(b) For each prefix worked outside Australia, 40 points once only per band per day.

SPECIAL VK6 BONUS
VK6 stations only shall double the final daily score.

MULTIPLIER
All stations shall multiply the GMT day score, including the Bonus (a) and (b), by the number of bands used for scoring during that day.

SCORING TABLE — OVERSEAS STATIONS
52 MHz — 50 points; 144 MHz — 100 points; 432 MHz — 200 points. For contacts with Australian stations only.

AWARDS
A perpetual trophy is awarded annually for competition between members of the Wireless Institute of Australia. The winner's name is inscribed on the trophy and he receives a suitable certificate. The entrant with the highest score in either the 7 day or 2 day division will be the winner and his division will hold the trophy for one year.

Certificates will be awarded to the highest score in both the 7 day and the 2 day divisions. A winner of a 7 day certificate cannot be awarded a 2 day one as well.

Overseas entrants will be awarded certificates on the same basis, one for each call area.

SUBMISSION OF LOGS
Entries are to be sent to the FCM, Box 236, Jamison, ACT, and postmarked no later than 4th February, 1982, and endorsed "Ross Hull Memorial Contest". ■

RECEIVING SECTION
Logs must show the same information as a transmitting log except for the second number exchanged. If both stations are heard both can be claimed but on separate lines of the log. Scoring will be as for a transmitting log.

Any scoring contacts can be logged, there is no limit to the number of times that one station can be logged.

The decision of the FCM is final and no correspondence will be entered into.

Results of the 22 All Asian Contest VK:

A JARL Certificate is issued to the following contestants: VK3RG with 2475 points in the 28 MHz band; VK4XA with 130,237 points in the multi-band entry. Congratulations, gentlemen.

Well, that's all for this month. ■

1981 VK v. THE WORLD CW QRP CONTEST

Sponsored by the VK CW QRPp Club (member of the World QRP Federation), this contest is directed to all CW enthusiasts world-wide who elect to tackle that extra challenge! Contestants may work DX or OWN COUNTRY for scoring!

QRO stations are eagerly invited to participate but must submit contest logs *with QRP stations only* to qualify for the QRO section of the contest.

QRP stations must sign .../QRP for identification.

DATES
Saturday, November 21st, and Sunday, November 22nd, 1981.

DURATION
Total of 48 hours (0000Z November 21st to 2400Z November 22nd).

MODE
CW only.

BANDS
160m-10m.

CONTEST CALL
"CQ QRP TEST."

SECTIONS
Station Categories:
QRP: Single operator, multi-band or single band.
QRO: Single operator, multi-band or single band.

Period Categories:
Full Period: 48 hours.
Half Period: ANY 24 consecutive hours.

EXCHANGE
VK CW QRPp Club Member Contestants:
FOUR DIGITS. Membership number plus consecutive serial number starting from 01. If 99 is reached start again at 01.

Non-Member QRP Contestants (VK & DX):
FIVE DIGITS. RST report plus consecutive serial number starting from 01. If 99 is reached start again at 01.

QRO Stations (QRO/QRP contacts **ONLY** valid:)
THREE DIGITS. Give usual RST report only.

SCORING
For ALL contestants operating QRP:
i.e. indicated output power into antenna NOT EXCEEDING FIVE WATTS.

Each contact shall score points based on the following table:—
5-1 watt: 6 points.
Over 1 watt-2 watts: 5 points.
Over 2 watts-3 watts: 4 points.
Over 3 watts-4 watts: 3 points.
Over 4 watts-5watts: 2 points.

QRO contestants using more than 5 watts OUTPUT:
ONE POINT PER CONTACT.

MULTIPLIERS

No. of VK CW QRPp Club members worked ON EACH BAND:
i.e. VK stations giving FOUR DIGIT reports.

No. of DX QRP stations worked ON EACH BAND:
i.e. DX stations giving FIVE DIGIT reports.

CONDITIONS:
Stations may be contacted ONCE ONLY on each band.

Separate log sheets required FOR EACH BAND.

Each logged QSO to show: Date Time (GMT) Station worked, Number sent, Number received, Multiplier, Power OUTPUT and point claimed.

GRAND TOTAL SCORE equals total points from all band x total multipliers from all bands.

All entries MUST have front summary sheet showing: Calculation of GRAND TOTAL SCORE, Name, Address, Call sign, Signature and Declaration . . . "I certify that all entries in my contest log sheets are true and honest".

CERTIFICATES
To the VK CW QRPp Club member contestant with the highest grand total score IN EACH SECTION.

To the NON-MEMBER QRP contestant from each country with the highest grand total score IN EACH SECTION.

To the QRO contestant from each country with the highest grand total score IN EACH SECTION.

CONTEST ENTRIES TO BE ADDRESSED TO:

VK CW QRPp CLUB, 59 Collova Way, Wattleup 6166, Western Australia, and must reach here not later than end of January, 1982. ■

Townsville Pacific Festival Contest 81

Here are the official placings for the above contest.

MOST OUTSTANDING PERFORMANCE
Alan VK4ARV.

Tx PHONE HF
(a) VK4 stations except North Queensland.
CQ BR WIA. VK4WIR.
(b) VK4 stations North Queensland.
Allan VK4ARV.

Tx VHF
Andrew VK4KAM.

Rx
Mary Verner.
73. Bill VK4XZ, TARC Contest Manager. ■

Taree Amateur Radio Club

70 cm GUESSING COMPETITION RESULT
Winner: White ticket A1.

Geoff Griffin, Church Street,
Gloucester, NSW.

AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

As I noted in the August 1981 issue, here are details of awards available from the Power Valley 10X Chapter.

This chapter was formed in the Latrobe Valley, Victoria, in January 1980. The amateur population is not very large and because of the locality, Chapter members are scattered over a wide area. The Chapter has only five active members who meet on a net frequency of 28570 kHz at 2400 GMT on Saturdays, i.e. Sundays local time.

AWARDS REQUIREMENTS

Awards	Pts. Req.	Chapters Req.	Pt. Value
Basic	15	1 C or 1 HC	1
1st	25	2 H or 2 HC	2
2nd	50	2 C or 2 HC	3
3rd	100	3 C or 3 HC	4
VIP	200	4 C or 4 HC	5
Hon. Charter	—	—	2
First State	—	—	1
Local	—	—	1

The notes which accompany the awards contain some interesting details of the Latrobe Valley, and I quote:—

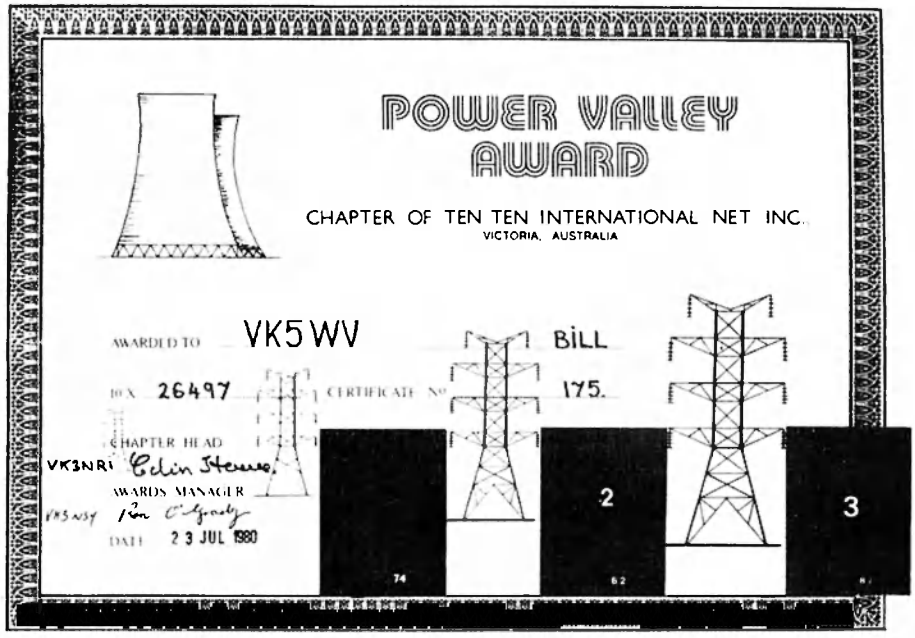
"It is now more than 90 years since the first public electricity supply was established in Victoria and nearly 80 years since the first experimental use of brown coal for briquettes was made in the Latrobe Valley some 150 kilometres east of Melbourne.. Today more than 80 per cent of Victoria's electrical power, the basis of the State's industrial progress is generated in the Latrobe Valley. More than 70,000 people live in the Valley between Moe and Traralgon. The Valley is one of the largest brown coal deposits in the world. Brown coal is a relatively young and soft form of coal; more than half of it water. Through special techniques it can be used efficiently in power stations, although the boilers are larger and more complex and they burn nearly four times as much brown coal to produce the same amount of power as black coal. Open cut mining requires a lot of space and the SEC is involved in not only the basic production of power but in the mining of the coal source as well.

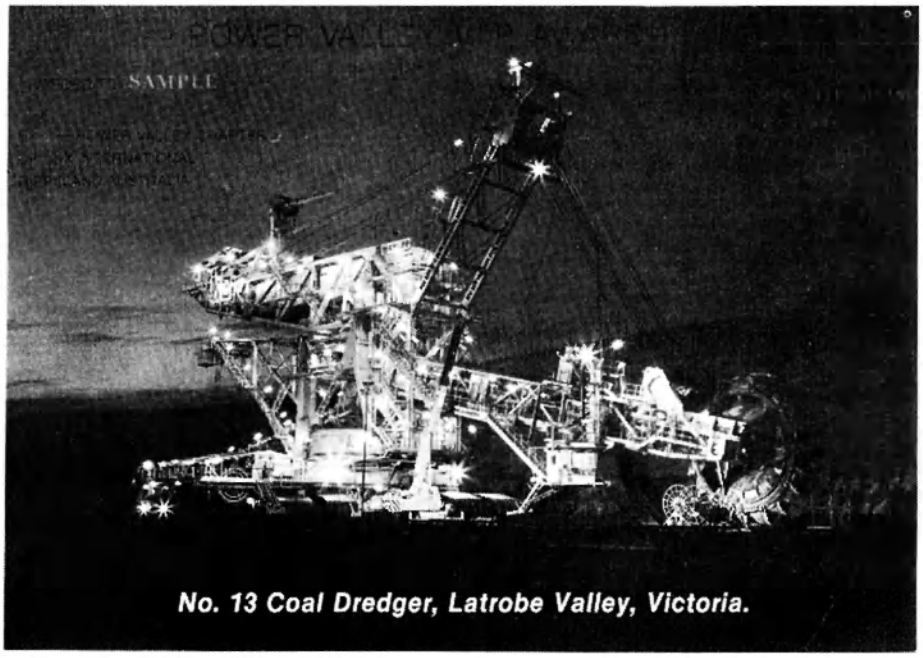
"There are presently four major power stations in the Valley — Morwell, Hazelwood, Yallourn and Yallourn West, and the newest and biggest, Loy Yang, is under construction with 21 more on the drawing table for future development.

Coal mining is a 24 hour operation, which is seen in the night shot of No. 13 dredger shown on the VIP certificate. These dredgers, more like coal eating dragons, can supply up to 1980 tonnes of coal per hour to the ever hungry boilers of the nearby power stations."

AWARD COST

Basic, $3; 1st, 2nd and 3rd endorsements, $1; VIP, $2.





No. 13 Coal Dredger, Latrobe Valley, Victoria.

APPLICATIONS

Basic award only to Kevin Petty VK3VFF, PO 174, Morwell 3840, Vic., Australia.

Endorsements and VIP, Ron O'Grady, VK3NSY, PO Box 65, Morwell 3840, Vic., Australia.

DESCRIPTION

The basic award is printed on yellow card in two colours, red and black. The endorsement stickers are in mauve, red and dark blue.

The VIP is a multi-coloured jumbo print of the No. 13 Coal Dredger (title in yellow) with all printing in gold. This award will definitely be framed on my shack wall when I can get around to it. Both awards measure approximately 300 mm x 210 mm.

Good hunting. ■

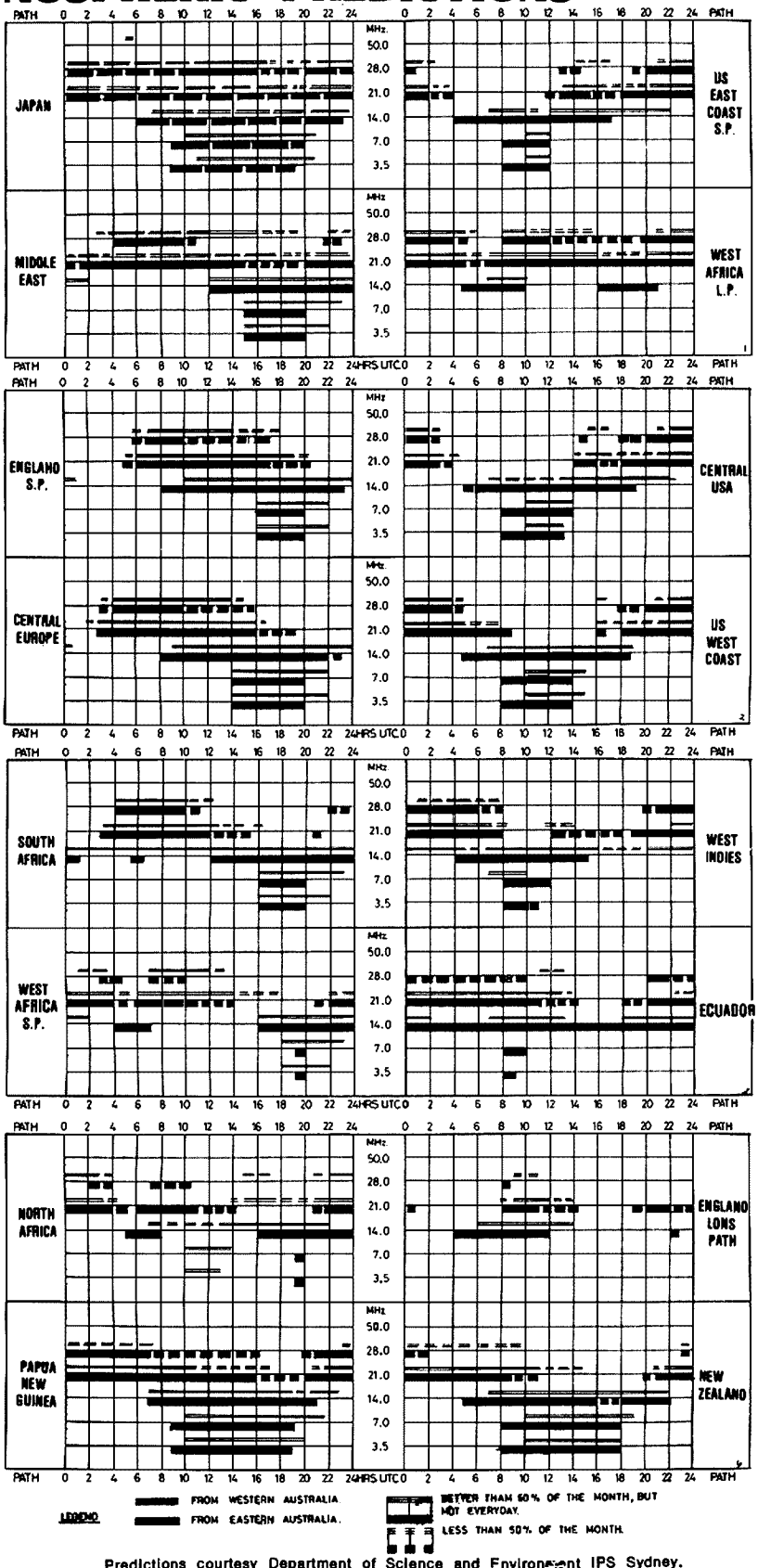
JAMBOREE ON THE AIR

JOTA 1981

The Scout/Guide Jamboree on the Air will be held this year on Saturday and Sunday, 17th and 18th October.

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

EDUCATION NOTES

Brenda Edmonds VK3KT

First — thanks to all those who have responded to my requests for information about classes and comments on courses. More will always be welcome.

Statistics relating to the examinations held in May have been received from DOC. They include novice theory, regulations, and both levels of Morse sending and receiving.

As usual there is a marked discrepancy between the number of applications received and number of candidates sitting — the overall attendance figure for the novice sections was 71 per cent. Variations occur within and between States — ranging from 86 per cent attendance for novice theory in VK4 to 45 per cent for novice Morse sending in VK5.

Pass rates for the various sections in relation to the number of candidates sitting are summarised below.

Exam	Overall Pass Rate %	Min. %	Max. %
Novice Theory	41	23 (VK2)	54 (VK6)
Regulations	62	49 (VK2)	84 (VK6)
5 w.p.m. Sending	73	58 (VK2)	†00 (VK7)*
5 w.p.m. Receiving	58	48 (VK4)	67 (VK5/8)
10 w.p.m. Sending	68	42 (VK2)	88 (VK7)†
10 w.p.m. Receiving	39	32 (VK2)	55 (VK6)

* 14 candidates.
† 8 candidates.

The full table will be forwarded to Education Officers in each Division, or will be available from the Executive Office on request.

One step which could improve both attendance rates and pass rates would seem to be the provision of trial exams wherever possible. Many past students have found that a trial exam has provided valuable experience and helped to calm the "exam nerves". I do not intend to try to organise trial exams anywhere, but I do intend to provide theory and regulations papers for anyone wanting them before the November exams. Class supervisors or private students can obtain these by writing to the Executive Office and stating numbers and types of papers required.

I would be interested to receive copies of any unpublished questions relating to either novice or AOCP syllabus. I am sure there must be a large pool of questions which could be circulated among class instructors and save us all a lot of individual effort.

I have also recently received some sample Morse tapes from the DOC. Copies of these can be provided if you send me a blank tape.

If you have any comments or ideas in Education matters, please let me have them. You can reach me direct — QTHR — or phone 787 5350, or via the Executive Office. I am also trying to establish an Education net on Wednesday evenings about 3685 kHz, about 2200 EAST, and would be pleased to meet interested operators there. ■

CE NOTES

Edited by I on Cook VK W

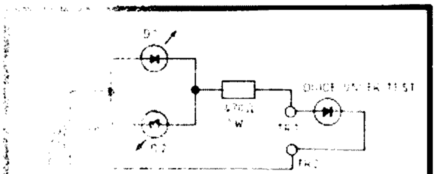
onth we have so e simple p ts to build.

E DIODE ER

nows a s ipl diode tester. A nsformer pro ides an AC voltage his is not critical) which is two back-to-back parallel- emittin diodes (LEDs) and resistor. W en a diode is con- to the termin s, if it is a good only one LED ll light, indicating the diode is con ucting on alternate cycles.

w if oth LEDs light up then we know the diode is conducting on both half and is therefore shorted. If neither light the diode is open-circuit.

this circuit is suitable for test- ry rectifier and small signal de- ces capable of passing at least



SIMPLE DIODE TESTER

ARE LEDS — ANY TYPE

ARE SPRING TERMINALS

ZENER DIODE TESTER

Fig. 2 shows a circuit that may be used to test zener diodes with rated voltages up to 30 volts. Four 9V batteries are connected in series with a 10k ohm resistor to provide a test current between 0.6 and 3.6 mA. A voltmeter with a high input resistance is connected to T1 and T4; if the meter's resistance is too low it will hog the available current and give incorrect readings.

When the zener diode is connected as shown and the switch sed current will ow through the diode ich will assume break-down voltage. his voltage will indicated on the vol ter.

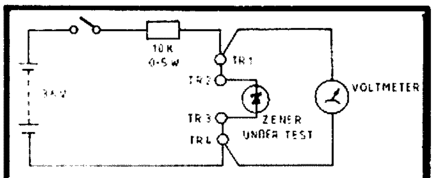


FIG 2 SIMPLE ZENER DIODE TESTER

TR1 - TR4 ARE SPRING TERMINALS

THE VOLTMETER SHOULD BE A HIGH INPUT RESISTANCE TYPE EG 10 M Ohm

If the diode is reversed the meter will probably indicate 0.6 to 1V. A reading equal to that without the diode (nearly 36V) indicates that the zener has an inbuilt temperature compensating diode and is designed for precision circuits. See Fig. 3.

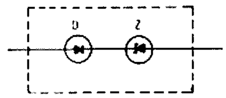


FIG 3 TEMPERATURE COMPENSATED ZENER

DIODE D HAS A NEGATIVE TEMPERATURE COEFFICIENT TO MATCH AND COMPENSATE FOR THE POSITIVE COEFFICIENT OF THE ZENER Z, RESULTING IN (ALMOST) ZERO TEMPERATURE COEFFICIENT

causes D3, an LED, to light. Thus if the crystal is good T1 oscillates and D3 lights. Same crystals designed for special applications, especially those designed for operation at low frequencies, will not oscillate in this circuit but all HF crystals should perform satisfactorily.

A good general coverage receiver such as the FRG7 or R1000 could be used as a check on the frequency of oscillation.

Well I hope that one of these circuits might be of sufficient interest to you to build. It would fill in a rainy afternoon quite nicely. A word to the wise. Draw up your layout for the circuit and the front panel before you start work. Ruled graph paper with lines every 2 mm is very useful for this purpose. Mistakes on paper can be rubbed out but a hole in the wrong spot is there for ever. Sit the components on the paper on which you have drawn the outline of your case and move them about until it is clear where they should fit.

Draw in the positions of the components in pencil and then draw in the wiring — another colour preferably. Remember that the circuit is three dimensional. Happy building. ■

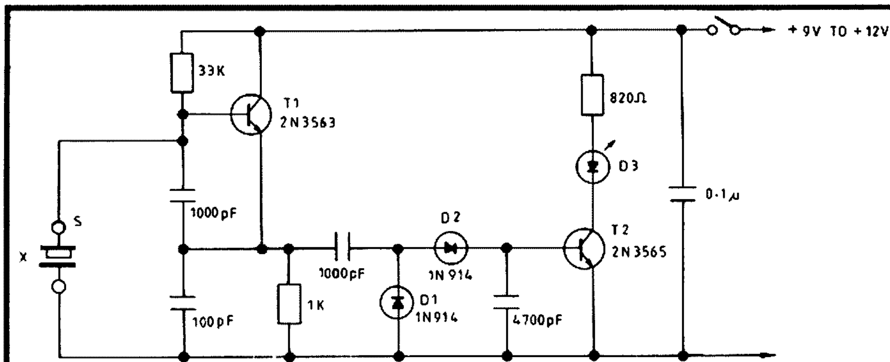


FIG. 4 CRYSTAL TESTER

S IS A CRYSTAL SOCKET (SEVERAL DIFFERENT TYPES MAY BE CONNECTED IN PARALLEL)

X IS THE CRYSTAL BEING TESTED. ALL RESISTORS ARE 0·5 W RATING. ALL CAPACITORS MAY BE 25V CERAMIC.

D3 IS ANY LED RATED AT 10mA OR MORE FORWARD CURRENT

The battery life is almost equal to the shelf life, due to the small test current and short test period.

A CRYSTAL TESTER

Apart from miscellaneous diodes perhaps you have a collection of quartz crystals, ex disposals or ex CB. The question is do they work? Fig. 4 shows a circuit that you can build to find out.

Transistor T1 operates as a Colpitts oscillator (note the two capacitors and remember C is for capacitors and Colpitts, H is for Henrys (inductance) and Hartley).

Diodes D1 and D2 are connected as a voltage doubler and rectify any RF produced by the oscillator. When the rectified signal reaches 0.6V transistor T2 turns on and

WIA INSERTS INTO AR

☆

NOTICE TO WIA ZONES, CLUBS AND GROUPS

WIA Zone, Club and other Group Secretaries are hereby notified that inserts into AR henceforward will be accepted ONLY direct from a Division and then only by prior arrangement with the Secrtary.

All inserts must comply with Postal Regulations and must be received not later than the 26th of the month preceding publication date.

PLEASE READ THIS!

FOR ALL AMATEURS!

FACTS FOR THE AUSTRALIAN AMATEUR

All our Kenwood equipment is manufactured by Trio-Kenwood Corporation (Tokyo) Japan and our replacement parts are supplied by Trio-Kenwood Corp. (Tokyo) Japan. All our equipment is branded "KENWOOD" and all equipment includes an original English manual. Our photocopy service manuals are only $5.00, not $15.00, and if this is not enough, we can supply full original colour manuals. Yes! Kenwood colour service manuals.

FACTS ABOUT PRICE AND SERVICE

BECAUSE we sell equipment that is imported from the factory in Tokyo we are able to offer you huge savings. 100% of one brand alone is imported direct from Tokyo.

BECAUSE we deal directly overseas we are able to tell you of any new models often long before other local distributors and retailers are able to inform you.

BECAUSE we deal directly we are able to obtain parts with ease, which of course must mean we are in a better position to carry out service/warranty, etc.

BECAUSE we usually have the latest service bulletins and of course the parts, we are able to service warranted equipment with an average delay of only 5 days. (Not many can match that service — can they?)

BECAUSE our equipment is in factory sealed cartons, we believe this to be the main reason our service return rate is only 2% and, in any case, if the final quality control check by the manufacturers is not a good enough guarantee, then the BRAND should obviously be withdrawn from the Australian Amateur market until it is suitable. In other words — if the factory can't build them properly — no one can.

NOTE: If the equipment is removed from the carton, how do you know where it's been or what it's done or what's done with it? In our opinion, quality manufactured equipment need not be tampered with.

BECAUSE of all these facts, we have one example to prove the rule.

EXAMPLE: On Kenwood equipment alone not one — no, not one of the transceivers sold by this company in the last 36 weeks up to the lodging of this advertisement with AR magazine, had been returned for service under warranty, or out of warranty, either. We firmly believe this is because our equipment is sold in non-tampered with factory cartons. We believe it is your right as an Amateur and as a customer to receive your purchase in new, untouched condition. If you want your equipment tampered with, touched or on air tested, then we will be unable to supply you. We believe the Amateur to be the best judge of what is fit for him to use.

DON'T YOU?

WARRANTY

BECAUSE of the above proven reliability of Kenwood equipment sold by us over the past 36 weeks, we would like to introduce to you our **NEW — 12 MONTHS WARRANTY** on all of our Kenwood products. Yes — now all our Kenwood equipment is covered by our 12 months warranty. Can you afford to buy your Kenwood elsewhere?

YAESU CUSTOMERS

Thank you for the many calls enquiring after the FT-ONE (scooped by AR magazine last issue). For details on the FT-ONE please send just a note with your address and we will send you the colour brochure shortly. FT-ONE cost approx. $1500-1900. Here are the Yaesu models that we will stock up until Christmas: FT707, FT107M/DMS, FT208, FT290, FT690, FT680, FT480, FT780, FT708, and of course the new FT-ONE. If there are no unforeseen difficulties it will be available before Christmas **AND WE GUARANTEE TO BETTER ANY PRICE BY UP TO 10%**, providing it is above our cost price. Remember our **YAESU** is covered by a 12 months warranty due to its excellent reliability.
NOTE: Only 90% of our **YAESU** is purchased locally therefore there are small delays in some orders.

PRICES SUBJECT TO CHANGE — BUT NOT OFTEN

"AMATEURS NOTE"

Some amateurs think that R.R.P. means "Recommended **Rip**-off Price". To avoid further confusion, we will now sell at A.D.P., that is -

"AMATEURS' DISCOUNT PRICE"

Remember — Why pay more than A.D.P. (R.R.P. is too much).

A.D.P. is only a recommended price. There is no obligation to comply with such prices. Dealers are quite free to sell at lower prices if they so wish.

Hams pay A.D.P.	EGGS	
"AMATEURS'	PAY	R
DISCOUNT	TOO	R
PRICE" — A.D.P.	MUCH	P

Kenwood Price List	HAM(S) and EGGS	
TS[illegible]S Woodpecker	$650 A.D.P.	$847 R.R.P.
[illegible]S	$965 A.D.P.	$1095 R.R.P.
[illegible]M	$999 A.D.P.	Who knows
[illegible]S	$689 A.D.P.	Who knows
[illegible]0S	$749 A.D.P.	$833 R.R.P.
30S	No longer in production	
400	No longer in production	
850	$429 A.D.P.	$495 R.R.P.
7800	No longer in production	
TS 7730	$329 A.D.P.	$379 R.R.P.
TH9500	$595 A.D.P.	$735 R.R.P.
TS600	No longer in production	
TS660	New release	
R1000	$449 A.D.P.	$527 R.R.P.
Most current list available at publication.	Includes 2½% Sales Tax increase.	Does not include 2½% Tax increase

Definition of a double yoker — Someone who **pays** more than A.D.P. **(twice).**

If you pay more than A.D.P. then the yokes on you.

REMEMBER — It is good eggonomics to pay less.

Sorry for the bad yckes.

THE SNOWY RIVER COMPANY P/L.
MAIL ORDER — P.O. BOX 227
GREENACRE 2190, N.S.W.
All equipment in factory sealed cartons.
9-5 MON. TO FRI. — 9-12 SAT. (No callers)
PHONE: (02) 709 1557

Dear Amateur,

It's definitely worthwhile to ring our company LAST. If you write or phone we will give you a price, you definitely don't have to call in person to get our best price. Remember, if we can sell it to you cheaper WE WILL.

Correction — TS130S NOT FINISHED YET

In issue 1 and 2 of volume 4 "Amateur Radio Action" and possible other issues, we printed the following:—

"We still have a few TS130S Transceivers left at the fair price of $699.00 This model is now finished and replaced by the new Woodpecker Model."

THIS STATEMENT WAS ACCIDENTALLY MISLEADING.

Our statement that the TS130S is finished is not correct — the model is still available for sale, and the "Woodpecker Model" does not replace it. Our advert was intended to inform readers that our company intended to **finish** stocking the TS130S and **replace** those stocks with the "Woodpecker Model". We will be selling both models for the moment. "Woodpecker" due shortly at **$689.00.**

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.

23 Corbel Street, Shelley 6155, WA

The Editor,
Dear Sir,

Please find enclosed a short article that I have compiled for Leon VK4NI. With her permission I am submitting it for publication in the Amateur Radio magazine as soon as possible.

Kind regards,
Gillian (Jill) Weaver VK6YL. ■

1981 — THE INTERNATIONAL YEAR OF THE DISABLED

By Leone Cartledge VK4NI (ex VK6NEL, VK4NVC). In Melbourne, Australia, about 12 years ago I attended a school called "The Royal Victorian Institute for the Blind", where I met a boy called Timothy who was interested in electronics. His enthusiasm soon became shared by myself; we joined the Amateur Radio Club VK3AVI, which met each Monday night; we had a whale of a time as licensed amateur radio operators attended to allow each of us to speak to different people, including a sked to America, which we kept regularly. I would very much like to contact any of the operators from this station to renew old friendships.

Several years ago we moved to Perth, the capital of Western Australia, where I attended an Amateur Radio Exhibition in one of the shopping centres. I met some of the local amateurs who offered to assist my studies to attain a novice licence. Many amateurs made cassette tapes which were co-ordinated by a small group who visited me on a regular basis; finally I took a verbal examination — the result — VK6NEL.

Later we moved back to Queensland where, with the assistance of a friend who also made cassettes and visited very Saturday morning for three months, I passed the full call sign — VK4NI. To attain further knowledge I talk to any technicians that I meet and keep regular skeds with friends. Recently I went to a Low Vision Clinic in Brisbane and took a reading test which proved, via the aid of CCTV, that I could read quite well. I intend using this method as currently reading is very very difficult because the eyes will not focus. Mum is marvellous and reads to me often, but as you will realise with a large family to take care of, her time is limited. A friend is making up some glasses for me with binocular lenses plus an inbuilt lamp which will assist my vision; I am hoping to read my electronics dictionary by myself.

I would like to give a word of encouragement to those who may have any form of disability who would like to sit for their ham licence. I wish you the very best from the bottom of my heart and leave you with one of my favourite sayings: Where there is a will there is a way. Thank you to all of those who have helped me with my quest.

33/88. Leone. ■

3 Pines Grove, Oak Park 3046
27th June, 1981

The Editor,
Dear Sir,

DOC work overload and costs could be reduced by giving all amateurs the choice of one, two or three year renewal, depending on the amateur's intention to retain or upgrade his licence.

Perhaps WIA Victorian Council or Federal Council could consider this proposal and approach DOC.

Yours faithfully,
Bob Bourchier, VK3GO.

(This question is still under discussion with the Department and was referred to in AR, December 1980, page 6.—Ed.) ■

100 Wrigley Street, Maroochydore, Old. 4558
27th August, 1981

The Editor,
Dear Sir,

I am enclosing a photograph which may be of interest to readers of "Amateur Radio", at least from the historical viewpoint. The obelisk is situated on the east side of the road on entering Point Lonsdale at the edge of a playing field.

The historic marker records that:

"From this spot on 12th July, 1906, the first overseas wireless messages from Australia were sent by Lord Northcote, Governer-General."

This is followed by the names of the State Governor and a number of other dignitaries and, last but by no means least, the name "Marchese G. Marconi".

I wonder what mode and frequency was used, probably a low frequency and a spark transmitter; maybe a reader has this information.

Many thanks for the high standard of "Amateur Radio", may it still continue in this way.

Sincere 73,
John S. Weir VK4NRQ. ■

C/- Kersbrook PO, SA 5231
26/7/81

The Editor,
Dear Sir,

As a regular user of the so-called "CW only" novice segment of the 15m band (21.125-21.150) I have found that the gentlemen's agreement regarding "CW only" within that sub-band to be almost non-existent.

As a CW only operator I find it most annoying and frustrating to find every attempt to go on the 15m band on CW beaten by QRM from A3J stations, who are operating nets which would be more suited to the 27 MHz band.

Having now reached the stage where my log entries show with regular monotony "Failed to complete QSO due to SSB QRM" has prompted me to put pen to paper to enquire whether or not the WIA or perhaps the DOC is aware of the problem and, if so, what can, or is, being done to solve this increasing problem?

Of course the whole problem stems from the novice licensee being allowed A3J privileges. If the DOC introduced a regulatory system, similar to the FCC regulations for novice operators in the USA, this problem would not occur, and for VK novice licensees to operate "A1 only" would introduce many advantages, firstly, with all operators using A1 within the narrow novice sub-bands with no 10 kHz splatter all over the place, there would be plenty of room for us all to have a QSO, and, secondly, if the novice operator had no choice but to operate A1, by the time he upgraded to the AOCP with the practice, experience gained, he would upgrade a more proficient and competent CW operator than many of the recent AOCP upgrades one hears around the bands nowadays.

It seems strange to me that an AOCP operator (if he so desires) can QSY below 21.125 and have a CW QSO quite free from A3J QRM, all gentleman's agreement, nothing regulatory at all, and yet tune that VFO to 21.125, and on up to 21.150 you stand "Buckley's chance" of a "QRM free" QSO on CW at all.

Would one of the novice operators who uses A3J within the "CW only" section of the band, that is from (21.000-21.150), please tell me that seeing as they do not recognise the CW only areas when, on upgrade to AOCP, can we expect to hear you chaps going great guns on A3J down the bottom end of the band? If not, why not?

Finally to the AOCP operators who also frequent the novice CW sub-band on A3J, may I ask you gentlemen why it is that I do not hear your SSB below 21.125? It seems that your disregard for the rules only exists within the novice segments, because outside the novice areas you chaps resume your normal code of ethics; again this seems strenge, because one would think that whilst the AOCP was operating in novice areas he would operate per the book, setting a standard and an example for the newcomers to follow.

Yours fraternally,
Jerry Ricketta VK5NRG.

Amateurs agree we do not want Government to tell us where we may or may not operate with what modes in whet parts of our bands. As a consequence you and I can operate anywhere within our allocations. But if we all did this without regard to other users chaos would occur. So we have devised long-standing "gentlemen's agreements" for using designated band segments for particular modes because being voluntarily self-regulatory keeps out the law makers. These "gentlemen's agreements" have been widely publicised both in AR and in recent WIA Call Books and ought to be well known to the operators concerned. Perhaps amateurs affected by operators not adhering to the "gentlemen's agreements" should very nicely break-in in the mode used and very tactfully but firmly remind such operators that they are operating —(x)— mode outside the segment set aside for such operators and would they please QSY accordingly. Yes, by doing this you are putting yourself in the wrong but what other course of action is open to you? Surely nobody relishes a situation of high power "jamming" in our bands — that Woodpecker is quite enough thank you.—Ed. ■

117 Berowra Waters Road,
Berowre Heights 2082

The Editor,
Dear Sir,

Sure, if the fads want to play Third Party Traffic Networks, let them.

However, I find it extremely annoying to have a major VHF repeater tied up by ignorant operators.

During a recent communication network breakdown due to industrial action I observed such practices which we can well do without. Around midnight a message was passed from one "5 x 9" station to another, the originator giving the text in laboured phonetics. It was acknowledge in "plain" language, including queries about the text, the message finally "getting through" in plain language.

After several attempts to call the originator and receiving no reply, a weak station from Newcastle returned my call. During his second over, these two "networks", without so much as a please or thank you, came up on top of the QSO, exchanged several overs and went away.

What gives these operators exclusive rights to channels in other than national emergencies?

We don't need these practices on our bands, these people should go back to the CB bands from which they probably came.

Yours faithfully,
A. Deans VK2ADQ. ■

AR ADVERTISERS SUPPORT WIA MEMBERS

LETTERS TO THE EDITOR

23 Waddell Road, Palmyra, WA 6157
25th August, 1981

The Editor,
Dear Sir,

You recently published a Hamad for me in which I requested a recording of Tony Hancock's "The Radio Ham". I am pleased to report that I had several replies, which I have answered. Unfortunately, I have lost one letter from an eastern State YL and have been unable to thank her. I hope she reads this and drops me another note or I will be in real strife one day if she hears me on air.

I have placed three Hamads in the last 12 months and all have been successful.

I appreciate AR and always look forward to the next issue. Thanks.

Paul VK6PNW. ■

TECHNICAL CORRESPONDENCE

39 Glenhuntly Street, Woodville, SA 5011
11/7/81

The Editor,
Dear Sir,

In his letter in May AR Mr. Diamond asks six questions. If he had been active in amateur radio in the late 1940s he would have known the answers, which are:—

1. The small voltage amplifier triode used as a Pierce oscillator in Mr. Rechner's circuit will not damage the crystal with the voltages applied.
2. A crystal oscillator does not need a buffer stage between it and the amplifier. Circuits with two stages, CO-PA, were standard in the crystal oscillator days and can be found in any handbook of that era.
   As an instructor in a Youth Radio Club I started several novices with a similar circuit using a 6J5 triode Pierce crystal oscillator and a 6V6 amplifier. None of these rigs chirped or damaged the crystal.
3. The ordinary mH choke and the capacitor shown have proved sufficient to prevent key clicks in low power rigs.
4. Harmonic suppression is done in the ATU.
5. Mr. Rechner's letter stated that the rig would would work into any SWR. This means that it could work into any SWR without damaging the final tube, whereas a rig with transistor output loses the transistor if worked into a high SWR or if protected against such loss has very little output into a high SWR.
   The loading of the rig is done by adjusting the number of turns on the output coil to match the load.
6. The globe in the output circuit was common in the early days and was used to measure RF currents which it did cheaply and efficiently. It was used to tune both plate circuits and ATU. A 60 mA globe suitably shunted to match currents and to operate at a dull glow, where it was most sensitive, would consume less than 1/10th of a watt. Twin globes were also used in feeder lines to indicate SWR and aid in adjusting ATUs.

Mr. Rechner's letter attracted the notice of the compiler of the Technical Topics column of Radio Communication, the magazine of the RSGB, and his letter and circuit were reprinted in that column with the comment "His letter and design (which would readily be expanded to include additional features) represents a powerful argument for not regarding thermionic devices as obsolete and oldfashioned."

In these days of black boxes a lot of the old skills and practical knowledge obtained by amateurs who built their own rigs has been lost.

Yours faithfully,

J. A. Gazard VK5JG. ■

SILENT KEYS

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

Mr. H. A. VINNING	VK1VG
Mr. C. R. K. GIBSON	VK3FO

OBITUARY

HOWARD VINNING VK1VG

Howard Vinning VK1VG, of 17 Hacking Court, Narrabundah, died on 7th August, 1981.

I have known Howard since 1947, when he workwed for 3GI in sale as a radio technician. He was licensed in 1938 and was an active member of the Eastern Zone. He transferred to New Guinea in 1952. He served five years overseas with the AIF in the 1939/45 war, and was made a Life Member of the RSL for service to them in New Guinea. He founded the Apex Club of Lae, New Guinea.

He held the call sign VK3VG in Sale, VK9VG in New Guinea, and when he returned to Australia in 1972 he was given VK1VG in the ACT. As Overseas Travel Officer for RSL HQ in Canberra he was widely known and held in high esteem. His passing leaves an unfilliable gap in many of our lives.

Yours faithfully,

Graham Colley VK3QZ. ■

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

FT301S Solid State HF Txcvr., includes CW filter, AM filter, RF speech processor, FP301, 25 amp. power supply, FL110 wide band linear am., all with handbooks and packaging, good order, $650; Leader LSG II signal gen., $15. Barry VK3BPF, QTHR. Ph. (03) 729 9761.

Yaesu FT200 with power supply, mic., handbook, exc. cond., no mods., $290. Len VK4QL, QTHR. Ph. (071) 62 1881.

Yaesu FT101E, complete with fan, DC-DC converter, CW filter and mic., used only on novice power since new, with Bail's improved noise blanker and spare set of final valves, $550, incl. handbook and cables; Yaesu YC601B digital freq. display and counter to match FT101E EC, complete with instruction manual and leads, as new, no mods., $200. VK3DQV, QTHR under 3NWW. Ph. (03) 560 3773.

Kyokuto 2m 144-10 SX, 15W Txcvr., $185, ONO. Max VK2DT. Ph. (02) 868 1131.

Kenwood TS120V, 10W Digital Readout Txcvr., with mic. and 40 page Kenwood service manual, $450; Realistic DX300, 10 kHz to 30 MHz, digital readout, communications Rx, $290, both in good cond. VK2AZT. Ph. (069) 42 1392.

Icom IC701 HF Txcvr., all solid state, mint cond., hand mic., no mods., manual, orig. packing, $750. VK7MG, Franklin Street, Swansea 7275. Ph. (002) 57 8220.

Yaesu FT7 Txcvr., mint cond., complete with accessories and handbook, $350; Yaesu FL110 solid state linear, as new, complete in carton, $200. VK5BI. Ph. (086) 45 8140 BH, (086) 45 0023 AH.

TR9000 Kenwood, 144 MHz to 148 MHz, CW/FM/SSB, dual VFOs, 5 memories, digital readout, excellent cond., scanning in 10 kHz, 5 kHz, 100 kHz steps, operator and service manuals, near new, bargain, $490. Ph. (069) 22 4305.

Kenwood KP202 2m hand-held 6 ch. fitted 40, 50, rep. 2, 3, 6, 8, nicads, charger, 2 aerials, leather case, $120, ONO. VK7ZAT, QTHR. Ph. (004) 24 1006.

IC22A, ch. 2, 4, 8, 40 and 50; IC202 2m SSB, both in good cond., all acc. and handbooks, $200 each or best offer. VK3AQD, QTHR. Ph. 459 6445, 718 2463.

Deceased Estate: BC348J Rx, Kingsley HRO type, oscillator Zenith 512, Paton tube tester, Paton Palec MX32 multi-tester, Paton type 400 multi-tetser, HEW 33 multi-tester, Transmission Products tube tester type 862, best offers. R. Hopkins, Lithgow. Ph. (063) 51 4217.

Kenwood KP202 2m Hand-held Txcvr, ch. 37, 40, 51, rep. 2, 5, 8, with nicad batteries and charger, 2 aerials, VHF adaptor and handbook, $150. Bert. VK3BH, QTHR. Ph. (03) 80 1204.

Yaesu FL2100Z (WARC) linear amp., exc. cond., $490; FV901 ext. remote VFO, inc. auto scan with many other features, exc. cond., $385. Mark VK3VLY, QTHR. Ph. (03) 459 3517.

Kenwood TS600 all mode 6m, with mic., manual, in orig. carton, plus 100W linear amp., all as new, $500. VK2BQO, QTHR. Ph. (02) 328 7892.

Complete Station: Drake R4C Rx with 600 Hz first IF filter, plus full set of accessory crystals for SW, BC, CB, etc., just been realigned to spec.; T4XC Tx, 160-10m, also thorough overhaul, AC4 supply, MS4 speaker, Shure 444 mic., all little use, mint cond., $1250; Drake CW filter, 25 Hz, near new, $55; NB4 noise blanker, realiged to spec., $45; operating console for table or bench, 60 in. long x 12 in. deep x 20½ in. high, three shelves 9 in. apart, selected KD hardwood, ready to stain or veneer, $30. P. Nesbit VK3APN. Ph. (03) 211 8979 AH.

Shure Mic., model 444, new cond., $70; **KLM 70** solid state 2m linear, 10 in 70 plus out, $140; Leader LSG-11 sig. gen., $50. C. P. Singleton VK4UX, Strong Street, Gatton, Qld. 4343. Ph. (075) 62 1478.

Kenwood TS520S, $500; DG5 display, $160; VFO 520, $160; SM220 monitor, $285; AT200 tuner, $185; SP520 speaker, $30, perfect cond. Ken VK3ALO, QTHR. Ph. (03) 560 5278.

Galaxy V Txcvr., 300W plus pwr. supply, PTT, hand mic., spare valves, manual and schematic, $250; KW Eezematch ant. tuner, $50. VK3AET, QTHR. Ph. (03) 754 2553.

Yaesu FT1901EE, as new, AC-DC, both power cables, CW xtal filter, fan, mic., instruction book and circuit, $495; YO100 monitorscope, as new, all cables, plugs, original carton, $90. VK3NC, QTHR. Ph. (055) 81 1363 evenings.

Linear Amplifier, 3 kW PEP, 1 kW continuous, made by ETO, model 76P, $1500; Drake txcvr., TR4CW, 300W PEP, xtal filter and noise blanker, AC and DC supplies, $600; all as new. Ph. (02) 76 9647 after 5 p.m.

EMC

(ELECTROMAGNETIC COMPATIBILITY)

If radio frequency interference is causing you a problem you are reminded that — "Advice on all types and aspects of interference (PLI, TVI, AFI, etc.) is available from the National EMC Advisory Service".

FORWARD DETAILS TO

VK3QQ,
Federal EMC Co-ordinator, QTHR.

Tower, 40 ft. high (in 2 sections), galv. steel, free standing, approx. 3 ft. triangular base, made by P. G. Wallace & Co., offers invited to purchase, dismantle and remove from existing location at East Ringwood, Victoria. Enquiries to Ian Alexander VK3DDL. Ph. (03) 233 8794.

TS520S HF Txcvr, as new, incl. mic. and manual, $500; TH3JR hy-gain tri-band beam, only 2 yrs. old, plus balun and manual, $150. Ph. (049) 57 5470 BH, (049) 66 2231 AH, QTHR.

S100 16k Ram Board with 2k ram, S100 proto boards, S100 6 slot mother board, ETI 632 VDU with keyboard and encoder, SC/MP programming and applications manuals, any reasonable offer. VK2BVM, 27 Spencer Street, Narrabri. Ph. (067) 92 1339.

Philips Video Cassette Recorder, model N1512, excellent cond., recently overhauled, suitable for RF video camera, $300. Stan VK3BNJ. Ph. (03) 743 6708.

TRS80, level II, 16k, green screen, tapes, programmes, books, magazine subscriptions, mint cond., $1100; macrotronics ham interface, plus demodulator in cabinet, all manuals, $250. VK1UE, QTHR. Ph. (062) 58 1228.

3 Section 60 ft. plus Hally Tower with Ham II rotator, control cable and controller, Drake R4C rx covers 10-160 ham bands, plus 6 additional xtals for SW broadcast bands, Yaesu FL2000B linear, Heathkit 50 ohm dummy load 2 kW LP filters, 2 Ameco pre-amplifiers, one hy-gain quad, one Heathkit monitorscope SB610, offers. John. Ph. (03) 583 5417.

Drake Txcvr, TR-4C, 300W PEP SSB, 260W CW, 260W PEP AM 10-80m, AC-4 power supply, MS-4 spkr., noise blanker and handbook, hardly used, $500. Ken VK6ZA, 5 Hillegine Street, Gosnells, WA 6110. Supply phone number for quick reply.

Belcome 432 MHz Txcvr, unused, $200; Commodore computer 8K with RTTY/CW/SSTV and $200 utility and games programmes, $700; antenna rotator LO, suitable lightweight beam, $85. VK2ZN, QTHR. Ph. (02) 76 9647.

Calculator SR52, programmable, elec. eng. library and operating manuals to suit, $110; slide projector, Rollei autofocus and Australux screen, all as new, $200; teleprinter, Seimens model 100, exc. cond., $350. Greg VK2YJO, QTHR. Ph. (02) 516 9539 Bus.

Drake TR-4C Txcvr., mint cond., with RV-4C remote VFO, 34-PNB noise blanker, all crystals, AC-4 power supply, MS-4 speaker, spare tubes, manual and mic., $700; Collins KWM-2, in exc. cond., with spare tubes, manual and mic., $550. VK4OY, 17 Blackwood Road, Manly West, Qld. 4179. Ph. (07) 396 0886.

Mobile Antenna Set, Trio MA-3, covering 3.5, 7, 14, 21, 28 MHz (new), $100; Tech grid dip oscillator, 440 kHz-280 MHz (model TE15), new and unused, $90;TRC-11 27 MHz 6 chan. txcvr., easily converted to 28 MHz, some crystals, $20; ETI-704 crosspatch/dot TV pattern gen., $20; Micronta sig. tracer, $7; logic probe, $5; Traeger 80m AM txcvr., has been fully converted to 80m, $20. All goods guaranteed. No reasonable offer refused. Steve Porter VK4WBY, QTHR. Ph. (07) 52 0171, ext. 282 BH.

Yaesu Monitorscope, PC, manual, $200; FT7 extra 10m xtal, manual, bracket, $350; MFJ 941B aerial tuner circuit, $120. VK4SV, QTHR. Ph. (07) 398 6732.

Barlow-Wadley XCR30 Portable Comm. Rx., tunes 0.5-31 MHz, v.g.c., complete with service manual and orig. packing, $165; AWA FP1 12W O/P AM 2-7 MHz txcvr., good cond., set up on 80 or 160m, with crystals, complete with circuits and data, DOC approved for some HF type services, $60. VK3UG, QTHR. Ph. (057) 62 1454 AH.

TS600 all mode 6m txcvr., with lunar gasfet rx pre-amp., carton, books, etc., v.g.c., $469; 40W PEP solid state 6m linear free with TS600; VFO 520 ext. VFO, $95; brand new cond. AN-PRC11 38-55m FM txcvr., plus circuit diagram, $45; will deliver to Newcastle. VK2ZBD (VK2VSI), PO Box 16, Hawks Nest 2324. Ph. (049) 97 0383 9 a.m.-1 p.m.

Museum Pieces: Army sigs. 122 Mk. 2 transmitter and handbook, 22 power unit, amplifier RF2 Mk. 2, all can be restored, yours for the taking; also two 19 in. bench racks, same terms. VK2KB, QTHR. Ph. (049) 2 4666.

Two FRXD (M14) RTTY Tape Machines, one good cond., never used, needs minor repairs, the other run down, good for parts only. Wanted a model 14 reperf. and tape distributor (separate units), must be in good working order. Terry Robinson, 21 Russell Avenue, Woodend 3442. Ph. (054) 27 1574 (VK3XCM).

FT101E, 160m to 10m plus 11m, 3 yrs. old, perfect cond., used mainly as rx, with AC/DC leads, mic., fan, processor, manuals, in orig. box, $575, ONO. Ray VK1ZJR/4, 1 Heather Street, Slkstone, Qld. 4304. Ph. (07) 33 7307 BH.

Racal SSB Txcvr., transistorised, capable of 2-12.5 MHz operation, fitted with boards for 2-5.5 MHz, size 7 x 19 x 19 in., VSWR protection crystal oven, aerial filter 100W PEP, 240V operation, $200, ONO; antenna, Belling Lee, 6 el. yagi on 169 MHz, v.g.c., $35; AWA 3 el. yagi on 155 MHz with heating el., v.g.c., $30; rx, ham bands only, professionally made, 80m to 10m, USB, LSB, AM, fast-slow AGC, size 13½ in. wide x 6 x 9¾ in. deep, $85. VK3AQB. Ph. (03) 337 4902.

TS520 AC/DC with remote VFO, CW filter and spkr., $550; Oskerblok SWR 200, $60; Hi-Mound MK701 paddle, $30; BK100 bug key, $37; Cornel AR-22L rotator, $60; Trio CO-50 oscilloscope, $45; KW E-ZEE Match ant. coupler, $80; brad new Craig M100 language translator, $62. VK5PK, QTHR. Ph. (08) 258 1807.

Kenwood TS820 HF SSB Txcvr., CW filter, DC converter, manuals, MC-35S and orig. packing, little use, mint cond., $650. VK2VUT, QTHR. Ph. (048) 21 1731.

TH6DXX Tribander, new, checked complete but never assembled, $450. VK3SP, QTHR. Ph. (03) 842 1841 AH.

TS120V with TL120 linear, 100W out, mint cond., little use, $540. VK2HZ, OTHR. Ph. (047) 51 1724.

ADVERTISERS' INDEX

Kenwood KP202 2m hand-held txcvr., c/w helical whip and quarter wave whip, mint cond., $150. Bill VK3ZLO, QTHR. Ph. 277 4690 AH, 561 2966 BH.

Complete Shack Clearance: Kenwood TS20 TS, $500; Kenwood MC35 mic., $30; Super Panther CB at 28 MHz, 5 kc steps, $80; Dick Smith headphone mic. to suit above, $10;2 home-brew PTU, 10-80m, $5 ea.; Hydarka multi-band vertical, $80; many bits and pieces saved, all must go. Apply PO Box 13, Puckapunyal.

TH3-JR, 10-15-20m, brand new, in sealed bags, $195; Mark 6 ft. helical 40m, $15; 20m, $15. Mike Richter VK2BMM. Ph. (02) 231 2394 BH, (02) 478 3881 AH.

WANTED

VFO520, SP520, ST-1 for TR2400, 50 ohm dummy load, multi-connection coax switch AT 200 (or similar). VK4SZ, PO Box 26, Innisfail, Q. 4860.

Wanted for Club Repeater Project — one STC MTR 151 high band set. VK4ACT, 11 Stirling Street, Toowoomba 4350. Ph. (076) 32 1143.

Pye F60/FM/AH diagrams or manual, will return after copied, required for 2m conversion. VK4NTW, Box 108, Chermside 4032.

Circuit Diagram and service manual for Australian Rx type AR8. N. Burton, 130 The River Road, Revesby, NSW 2212. Ph. (02) 774 1827.

Type 3 Mk. II HF Txcvr., and any vintage equip. or components. Max VK2DT. Ph. (02) 868 1131.

Descriptive, detailed information required on article in "Ham Radio", August 1978, page 34 (higher frequency resolution for an HF synthesizer), in particular method used to obtain divide ratios; information not required on basic PLL operation. A. P. Wakeham, 55 Yongala Street, Taperoo, SA 5017.

Full info, specs., and radiation pattern for G5SV antenna, will pay post and copying costs. Box 108, Chermside, Old. 4032.

R210 Army Receiver, circuit diagram and service information, will pay copying and postage costs. John VK2ZJF, QTHR. Ph. (02) 969 4539.

Copy of RSGB Teleprinter Handbook, on loan or purchase. VK3SP, QTHR. Ph. (03) 842 1841 AH.

TRADE HAMADS

RTTY Siemens 100A, $120; UHF FM321, all 40 ch. plus repeaters on 70 cm, $299; MLA2500 linear amp with large front panel, 2000W power output meter, 1.8 to 30 MHz, AM, SSB, CW, RTTY, SSTV, $750; FRG7 rx, 500 kHz to 30 MHz, $275; ex RAAF Pye aircraft transceiver, 110 to 140 MHz, $45; UHF FM320 transceiver, $259; new W65 18 ch. SSB CB radio, $179; new W65 40 ch., $195; 18 ch. walkie talkie, $110; 40 ch. CB with scanner, $99; 23 ch. CB, $55; 18 ch. CB, $69; 27 and 28 MHz 4 el. beam, $79; helical ant., $8.50. Different rigs coming in each day. When in Sydney drop into Park Disposals, 32 Park Street, Sydney, 2000, near Town Hall Railway. Ph. (02) 264 7515. Rigs posted anywhere in Australia, NZ, PNG, Pacific add $5.

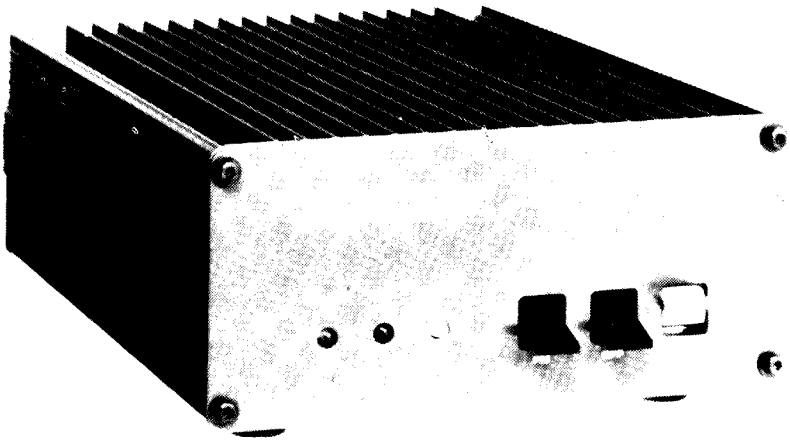
Amidon Ferromagnetic Cores: Large range for all RF receiver and transmitter applications. Closed during November. Send large SASE for data and price list to: R.J. & U.S. Imports, Box 157, Mortdale, NSW 2223.

QSP

SEANET CONVENTION 1981

This year will take place in Jogjakarta, Indonesia, 27th to 29th November. ORARI, the Indonesian Amateur Society, is hosting this Convention in central Java. The venue is the Sahid Garden Hotel and the organisers can be reached through PO Box 13, Jogjakarta, Indonesia. ■

TWO METRE LINEAR AMPLIFIERS

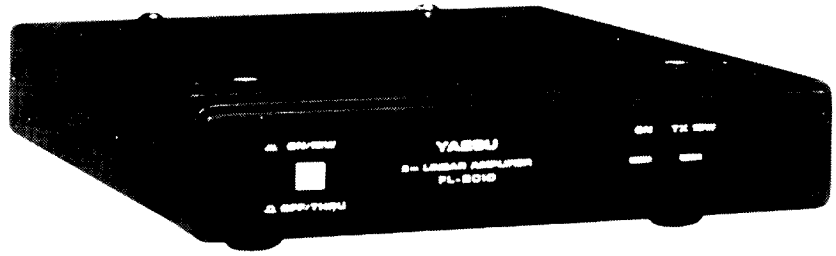


YAESU FL-2050

Drive: 10 watt (max. 15 watt)
Output: 50 watt (for 10 watt input)
Switchable RxAmp 12dB gain for
FT480R, FT227RB etc.

YAESU FL-2010

Drive: 2.5 watt (max. 3 watt)
Output: 10 watt
for FT207R, FT209R etc.



NEW FM HAND HELDS

FT208R
144-148 mHz in
5/10 KHz steps
2.5 watt output

FEATURES:

* LCD display with a lamp for night-time use.
* Keyboard entry of all frequencies and split frequency for non-standard repeaters.
* Up/Down scanning. Manual or auto scan for busy or clear frequency. Automatic scanning restart.
* Priority channel with search-back feature.
* Memory scan and scanning between two desired frequencies.
* Extremely low battery consumption (approx. 20mA squelched).
* Memory back-up battery life estimated at more than five years.
* 16 tone DTMF pad on the front panel.
* Equipped with rubber flex antenna and Ni-Cd battery pack.
* Interface to tone encoder FTS-32AE, and tone squelch FTS-32, optional.
* Speaker/microphone (optional).

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430-440 mHz in
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1 watt output

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SCALAR

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9 - Band
200 watt P.E.P. input
SSB/CW transceiver

TEN-TEC 580-DELTA
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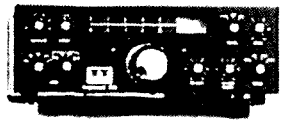
200 watt P.E.P. input
SSB/CW transceiver



TEN-TEC ARGONAUT-515
5 - Band
5 watt P.E.P. QRP
SSB/CW transceiver

DL-1000
1 kw oil filled
Dummy load

TEN-TEC 234
Speech Processor
Unique Passband Control

TEN-TEC 228
Transmatch with SWR meter. Use with coax, balanced line or long wires. 3 position antenna switch.

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SWR/Power Meter
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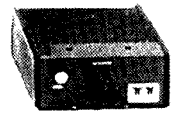
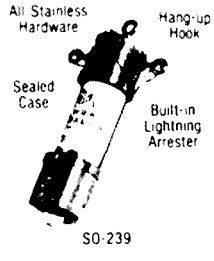
Power Scales 20, 200, and 1 kw.



TEN-TEC 645
Dual paddle keyer with dot and dash memories.



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Dipole Baluns
3-40 MHz
1 KW DC

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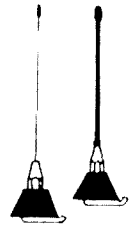
For 10, 15, 20, 40, 80 Metre Band Dipoles



70 cm and 2 Metre Mobiles
Stainless Steel or Fibreglass Unity or Gain

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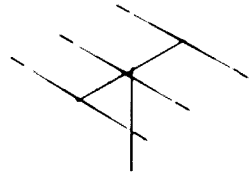
80 THRU 10 METRES

SC22DX
5-BAND TRAPPED VERTICAL
Self supporting
light weight
1 KW PEP



SC33 DX
3-BAND BEAM
10-15-10 Metres
no bandswitching
8 dBd Gain
1 KW PEP

SCALAR GROUP

NSW: 328 KINGSGROVE RD. KINGSGROVE, 2208. **tel: (02) 502 2888**
VIC: 20 Shelley Avenue, Kilsyth, 3137 **tel: (03) 725 9677**
QLD: 8 Ferry Road, West End, 4104 **tel: (07) 44 8024**
W.A: Unit 5/319 Pearson St., Osborne Park, 6017 **tel: (09) 446 9177**

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 49, No. 11 NOVEMBER 1981

FEATURED IN THIS ISSUE:

- ★ AN ALUMINIUM WINCH-UP TOWER
- ★ A NEW REPEATER SITE
- ★ A TALE OF A TOWER
- ★ CW PROCEDURES AND TECHNIQUES

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Tel. (03) 528 5962

Enquiries and material to:
The Editor,
PO Box 150, Toorak, Vic. 3142

Copy is required by the first of each month. Acknowledgement may not be made unless specially requested. All important items should be sent by certified mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

Material should be sent direct to **P.O. Box 150, Toorak, Vic., 3142,** by the **25th** of the second month preceding publication. Phone: **(03) 528 5962.** Hamads should be sent direct to the same address by the **1st** of the month preceding publication.

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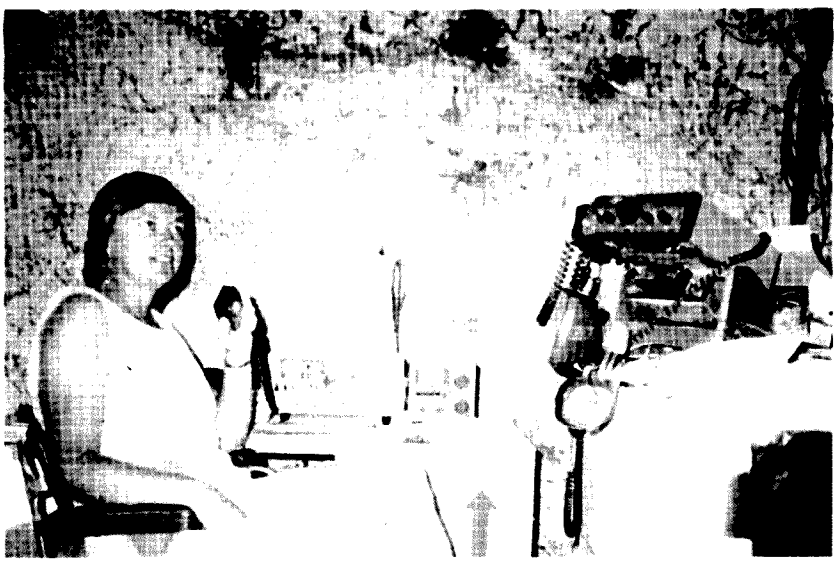

Kathy Marsh VK5NKM in her unique shack at Coober Pedy — see page 46.

Q S P

... --- ...(.)
S O H

If you read AR in detail, you may be aware that the VK2 Division is currently involved in legal discussions on behalf of an amateur and his application to install a tower for use in the normal pursuit of his hobby. The VK2 Division would appreciate help with the quite substantial costs in a legal discussion of this type and has opened a "tower fund" and welcomes all donations, of what ever you can afford, to this fund.

However, you may be unaware that the VK5 Division has also become deeply involved in discussions with various councils, and has accepted on behalf of its members, the task of continuing these negotiations with councils, and into court where necessary. They would also like financial help and have opened a "save our hobby fund" which now gives you some idea of the meaning of the Morse at the top of this item.

At the August Council Meeting of the VK4 Division, it was proposed that a donation of $100.00 be made to each of the funds to indicate our financial and moral support to these Divisions, and it was also suggested Council Members may like to contribute as well to the funds. In a very short time, $39.00 was on the table, to be split between the two funds, after Council Members not present at the meeting had the opportunity to contribute.

As everyone well knows, legal costs are not cheap — if you feel these Divisions have acted correctly, in accepting the opportunity to contest decisions by various Councils, and to contest these decisions in court if need be, please accept this opportunity to donate to both the funds what ever you can afford. If you disagree with the Division's actions, in my opinion, you may have the wrong hobby.

One final point — lawyers and courts work normal 9 a.m. to 5 p.m. days — the people from these Divisions engaged in these discussions are donating parts of their flexidays or holidays to talk to Councils or to appear in court — show your appreciation by donating funds to support their donations.

ALEX McDONALD VK4TE Federal Councillor

(Currently there are considerable problems in Victoria which could have wider implications — Fed. Pres.) ■

WIRELESS INSTITUTE OE AUSTRALIA

Federal President: Mr. P. A. Wolfenden VK3KAU
Federal Council:
VK1 Mr. R. G. Henderson VK1RH
VK2 Mr. T. I. Mills VK2ZTM
VK3 Mr. G. A. G. Williams VK3ZXW
VK4 Mr. A. R. F. McDonald VK4TE
VK5 Mr. G. Preston VK5PI.
VK6 Mr. N. R. Penfold VK6NE
VK7 Mr. P. Fudge VK7BQ

Staff: Mr. P. B. Dodd VK3CIF, Secretary.
Part-time: Col. C. W. Perry, Mrs. Ann McCurdy.
Mr. Bill Baly (AR Production).
Executive Office: 3/105 Hawthorn Rd., Caulfield North, Vic. 3161. Ph. (03) 528 5962.
Divisional Information (all broadcasts are on Sundays unless otherwise stated).

ACT:
President — Mr. W. R. Maxwell VK1MX
Secretary — Mr. C. T. Vidler VK1KV
Broadcasts— 3570 kHz end 2m Ch. 6 (or 7): 10.00Z.

NSW:
President — Mr. A. D. Tilley VK2BAD
Secretary — Ms. S. J. Brown VK2BSB
Broadcasts— 1100 local. 1.6125 (Ncle Relay), 1.825 (Sydney Relay), 3.595, 7.146, 28.32, 52.12, 52.525 MHz, Rptr. Ch. 6650 Oberon, 6700 Orange, 6750 Gosford, 6800 Lismore, 7000 Sydney, 6525 Sydney.
1930 local. 1.8125 (Ncle Relay), 1.825 (Sydney Relay), 3.595, 28.32, 52.12, 52.525, 144.12 MHz, Rptr. Ch. 6650 Oberon, 6750 Gosford, 7000 Sydney, 8525 Sydney.

VIC.:
President — Mr. P. R. Drury VK3JM
Secretary — Mr. D. X. Clarke VK3DES
Broadcasts— 1840, 3600, 7135 kHz — 53.032 AM, 144.2 USB and 2m Ch. 2 (5) repeater: 10.30 local time.
Gen. Mtg. — 2nd Wed., 20.00.

QLD.:
President — Mr. D. Laurie VK4DT
Secretary — Mr. F. J. Saunders VK4AFJ.
Broadcasts— 1.825, 3.580, 7.120, 14.342, 21.175, 28.400, Rpt. Ch. 6700 and 7000 Sundays from 0900Z (Sat. 2300 UTC).
Re-broadcasts—Mondays 3.605 from 1930Z, Mondays 80 or 20m RTTY segment from 200Z.

SA:
President — Mr. J. B. Mitchell VK5JM
Secretary — Mr. W. M. Wardrop VK5AWM
Broadcasts— 1820, 3550, 7095, 14175 kHz; 21.195 28.470 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.
Gen. Mtg. — 4th Tuesday, 19.30.

WA:
President — Mr. B. Hedland Thomas VK6OO
Secretary — Mr. F. Parsonage VK6PF
Broadcasts— 3560, 7075, 14100, 14175 kHz. 28.47, 53.1 MHz. 2 metres Ch. 2 Perth, Ch. 6 Wagin. Time 0130Z.
Gen. Mtg. — 3rd Tuesday.

TAS.:
President — Mr. I. F. Ling VK7XL
Secretary — Mr. P. Clark VK7PC
Broadcasts— 7130 (SSB) kHz with relays on 6 and 2m Ch. 2 (S), Ch. 8 (N), Ch. 3 (NW), 09.30 EST.

NT:
President — Mr. T. A. Hine VK8NTA
Vice-Pres. — Barry Burns VK8DI
Secretary — Robert Milliken VK8NRM
Broadcasts— Relay of VK5WI on 3.555 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 Mon, Tues & Thurs 9.45-13.45h). P.O. Box 123, St. Leonards, NSW 2065.
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 417 3535 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 — G.P.O. Box 10, W. Perth, 6005.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (Incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

Slow morse transmissions — most week-day evenings 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 — OSL Bureau, P.O. Box 73, Teralba, 2284.
VK3 — Inwards OSL Bureau, Mrs. B. Gray VK3BYK, 1 Amery Street, Ashburton, Vic. 3147.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse VK3XY, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Old., 4001
VK5 — OSL Bureau, Mr. Ray Dobson VK5DI, 16 Howden Road, Fulham, S.A. 5024.
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, Tas. 7001.
VK8 — OSL Bureau, C/- VK8HA, P.O. Box 1418, Darwin, N.T. 5794.
VK9, 0 — Federal QSL Bureau, Mr. N. R. Penfold VK6NE, 388 Huntriss Rd., Woodlands, W.A. 6018.

Letter from the President

This special issue of AR has been posted direct to every known licensed amateur and club in Australia; it is the largest print-run undertaken in the 48 years of our magazine.

The recruiting of new members is of utmost importance if the Institute is to have the necessary resources to serve amateur radio properly.

There is no need for me to repeat here to you, the member, the advantages and benefits of belonging to the WIA — you have already made that decision and by so doing you have "contributed" to the consolidation of the activity in Australia.

Why then send recruiting material to you also? The answer is that we need "saturation coverage" for this campaign. Our records do not necessarily contain details of the most recently licensed amateurs. Also it is not necessary to be a licensed amateur to join the Institute — as an Associate.

In these areas we seek your help. We specially ask those of you who are in contact with prospective amateurs to introduce them to the WIA.

So let's all get behind this campaign. In the long run a larger Institute will not only help amateur radio in Australia and internationally, but will also spread the financial responsibility in a more equitable way.

If you want more recruiting information please contact your Division or the Executive Office in Melbourne.

73.

P. WOLFENDEN VK3KAU,
Federal President. ■

WIANEWS

This monthly column, which has been a feature of AR for six years, sets out to inform members about current Institute and amateur radio matters at first hand. The subjects dealt with and reported on are very often on-going material which may or may not re-surface within months or longer.

For example, the WIANEWS column in AR of May quoted directly from correspondence conducted between the Institute and the Department of Communications on the subject of the use of the AX prefix under certain conditions. In WIANEWS of July future proposals for seeking the use of the AX call were also reported. These referred to NATIONAL and not LOCAL events. Nevertheless requests are being received which go outside existing parameters which cannot be supported at this time. Consequently the Executive has decided to submit an Agenda Item on this subject to the 1982 Federal Convention.

A proposal was received from the VK5 Division, backed up by most compelling reasons, that a NATIONAL SPECIAL PURPOSE FUND should be established. Such a fund would be applied to various specific purposes which are clearly matters of national importance to amateur radio and to radio amateurs. An example quoted was the question of costly legal representations recently conducted in VK5 and VK2 tower cases which are of a nature creating precedents in law in favour of amateur radio. The VK5 Division launched a "Save Our Hobby Fund" when it became clear that Court actions resulting from planning approvals being refused by Councils had to be challenged. Although the law on the subject varies from State to State, the effect of successful appeals in one State creates desirable precedents for use elsewhere.

It has now been suggested that this matter should be raised for discussion at the next Federal Convention.

Two new Federal officers have now been appointed. Bob McKernan VK4LG has been appointed FEDERAL INTRUDER WATCH CO-ORDINATOR to replace Graeme Fuller VK3NXI, who resigned in August due to pressures of private affairs. Charlie Robinson VK3ACR has been appointed AMSAT AUSTRALIA CO-ORDINATOR. Bob Arnold VK3ZBB continues as Publicity Officer on amateur satellite matters.

WIA YEAR BOOK

In September the Publications Committee discussed the possibilities of publishing a WIA Year Book annually for sale to members late each year. The Executive supported this in principle and work on it has commenced. The 1982 edition is proposed to be entitled "WIA 1982 YEAR BOOK FEATURING VHF AND NEW SOUTH WALES". The 1983 edition might feature Victoria and antennas, and so on to cover each Division over a seven year period, as well as to include different subject material culled from the pages of AR. This, to some extent, replaces the ideas last year of publishing WIA books on particular subjects, such as VHF.

Whilst the contents of the Year Book have not been completely finalised at the time of writing, it is envisaged that it should be a book which every member ought to have available on his bookshelf for ready reference purposes. Suitable subjects for inclusion would be a diary of events for 1982, year by year historical highlights, lists of past events, past winners of trophies, etc., the more permanent listings presently included in the 1981/82 Call Book, such as band plans and the like, Divisional and Federal Co-ordinators and much more, including the best of VHF from AR taking up to a quarter or more of the book. Every effort will be made to keep the price right and, incidentally, to restrict the print run to a marketable quantity.

PHONE PATCH

Here is the text from a letter dated 16th September received by the Federal President from Jim Linton VK3PC:—

"I am writing to let you know that authorised phone patch experiments were this month conducted using station VK3PC.

"The tests were authorised by DOC and Telecom.

"Their aim was to demonstrate to Telecom the envisaged operation of amateur radio phone patch.

"The tests included Third Party Traffic to and from VK9ZG Willis Island and the patching on air of Telecom's acting manager Telephone Regulatory, Matt Moore.

"He spoke via patch to Gray Taylor VK3VGT.

"Mr. Moore was pleased with the quality of transmission — the QSO lasted four minutes."

"All tests were on 15m using SSB."

1981-82 CALL BOOK

A final reminder that stocks of the Call Book are running out fast at the time of writing. Better not be too late in ordering your copy and any other books, badges, etc. ■

STOP PRESS

In letter 53/2/6, 51/1/55 of 5th October the DOC has agreed that certain paragraphs in the Handbook will be considered to be non-examinable for future Section "K" (Regulations) examinations.

The non-examinable list is:—

RECIPROCAL LICENSING 2.4, 2.5.
GENERAL 3.1, 32.
SPECIAL NOVICE EXAMINATIONS 3.3.
QUALIFICATIONS AND SYLLABUS 3.4.
PASS CONDITIONS 3.5, 3.6, 3.7, 3.8, 8.9, 3.10, 3.11.
CONDITIONS TO BE FULFILLED BY SUCCESSFUL CANDIDATES 3.12.
REPLACEMENT OF CERTIFICATE 3.15, 3.16.
EXEMPTIONS 3.17, 3.18, 3.19.
TEACHING INSTITUTIONS 3.20.
FORM AND METHOD OF APPLICATION 4.5, 4.11, 4.13, 4.14.
TRANSMITTING EQUIPMENT 5.11, 5.12.
USE OF STATIONS IN THE AMATEUR SERVICE 6.3.
MOBILE OPERATION 6.20, 6.21.
EMERGENCY AMATEUR NETWORKS 6.28, 6.29, 6.30, 6.31, 6.32, 6.33.
RECORDING AND REPLAYING TRANSMISSIONS 6.55.
RELAYING OF TRANSMISSIONS 6.56.
RADIO TELEGRAPHY 8.3, 8.4, 8.5.

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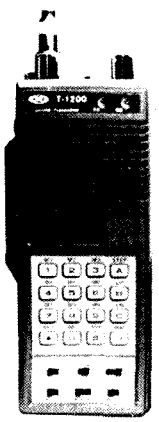

T1200 HAND HELD TRANSCEIVER

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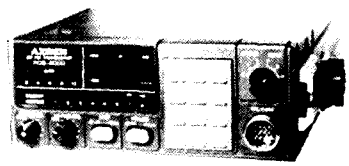

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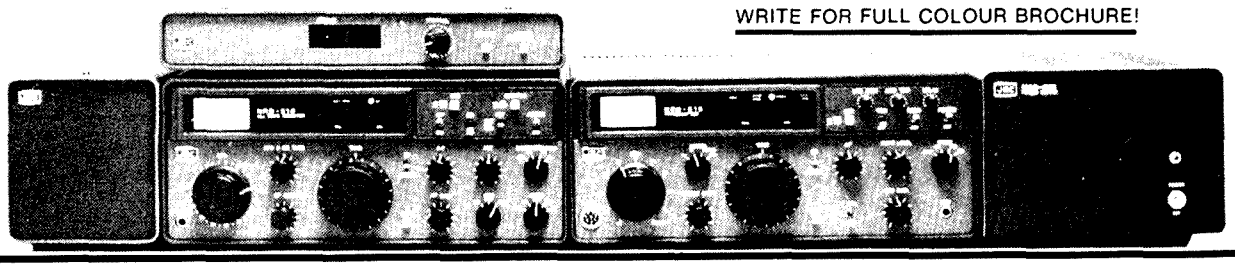

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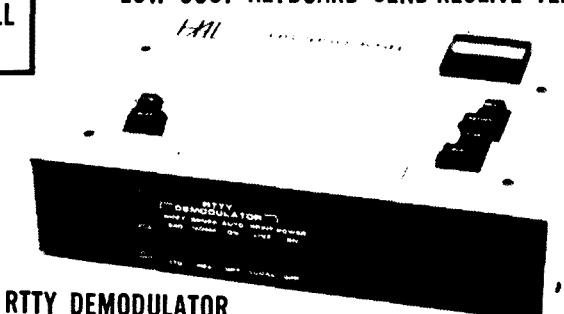
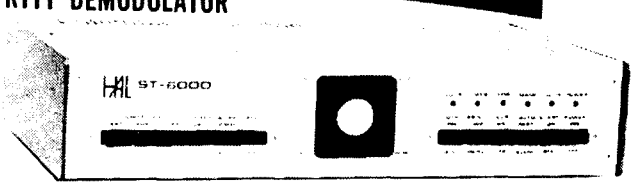


RTTY DEMODULATOR



An Aluminium Winch-up Tower

George Cranby VK3GI
PO Box 22, Woodend 3442

WARNING:
If you are not prepared to drill close to 600 holes set out mostly to an accuracy of ±0.5 mm, and to cut 147 accurately measured braces, do not read on.

Not being as young as I used to be, and unwilling to rely on outside help to raise my HF and VHF antennas, I decided to purchase a wind-up, tilt-over tower. One telephone call later I decided to design and build my own! The finished tower carries a Mosley TA33Jr and a 2m ZL Special on a 1.8m timber extension.

Since I have no welding facilities nor access to a galvanising plant I decided to use riveted aluminium sections. Due to my lifelong association with the aluminium industry I was confident that I could avoid corrosion trouble with this material. Despite the relatively high price of aluminium the cost of the completed tower was less than half that of a commercial galvanised steel tower.

My basic requirements were these:—

1. Height 11 to 12m.
2. Suitable for antenna maintenance from ground level.
3. Easy erection without outside help.

My previous telescopic mast had been fitted with a hinge at ground level and was pulled up with a boat winch attached to the garage. The existing base, consisting of a 2½ in. galvanised pipe sticking 200 mm out of a small concrete block, was to be used to hinge the bottom of the future tower. It is recommended, however, to increase the width of the hinge fitting, as shown by dotted lines on Sh. 3; this will increase sideways stability during erection. I have to use temporary stay wires at right-angles to the pull lines to prevent possible side sway when lowering the bottom section.

The material list sounds pretty formidable. However, the aluminimum sections are readily available from Comalco or Alcan supply centres; most other items are standard hardware. The stainless steel cable and thimbles came from a marine outfitter and the winch from a manufacturer. The mild steel fittings were welded for me at a small local workshop and were drilled in my garage.

MATERIAL LIST

1. 8 lengths of 25 x 25 x 3 mm Al. angle, 6m long.
2. 15 lengths of 25 x 3 mm Al. strip, 4m long.
3. 60 3/16 in. x ½ in. galvanised roof bolts and nuts.
4. 200 3/16 dia. x ⅜ in. Al. pop (blind) rivets, typically Sydney Cooke AS66D.
5. 2 3/16 in. or 5 mm drills — you will break or wear out one.
6. 1 ¼ in. x ¾ in. galvanised bolt and nut, to attach pulley.
7. 1 ⅜ in. galvanised bolt and two nuts, length to suit hinge arrangement.
8. 1 ¼ in. galvanised eye bolt with two nuts and spring washer.
9. Small pulley, see sketch.
10. Boat winch.
11. 11m of 2 mm dia. extra flexible stainless steel cable, with s.s. thimble and clamps to suit.
12. Guy wire, insulators, thimbles and clamps, turnbuckles.
13. Mild steel items 3, 4, 5 and 6.
14. One can of chromium or galvanising spray paint.

CONSTRUCTION

It is strongly recommended that construction be carried out in the steps set out below. Believe me, they are based on bitter experience.

1. Mark out all angles. Use a long steel tape fixed to one end. Do not measure from one mark to the other. Mark within 0.5 mm tolerance, centre punch and drill. Note that the distance of the holes from the edge of the angle is very critical. Before tackling the upper section angles cut 200 mm off each of them, leaving 5.8m. The 4 pieces are used to make up item 12.
2. Cut all braces. Length of lower braces is not very critical, but of upper braces is, since they fit inside the angles. If you are not accurate you may have some filing to do during assembly. Mark all holes within 0.5mm tolerance, centre punch and drill.
3. Assemble braces on the outside of the bottom section. Make up two ladders, stand them on edge and complete the square tower assembly. Rivetting to be done from the inside — this is essential. It is useful to loosely insert 3 or 4 rivets ahead of the one being applied.
4. Repeat the procedure for the upper section, but assemble braces on the inside of the angles. Rivetting must be done from the outside. This will allow the rivet heads to clear each other when sliding. Please note that the holes on each angle side are offset to allow the braces to clear each other. Be careful, when drilling, to have the offset on the correct side — see bottom of Sh. 2.
5. Each lattice, before assembling into a tower, must be checked for absolute straightness. After assembly, the tower must also be checked. If there is a bend, or a deviation from the 180 and 200 mm widths, drill out the nearest two or three rivets, allow the frame to straighten, re-drill through braces and angles, and rivet again.
6. Drill all mild steel items. Clamp them in their exact position on the respective tower sections and use them as template to drill through the Al angles.
7. Paint the mild steel items with several coats of spray paint or, better, have them galvanised.
8. Assemble steel fittings to tower sections. Note that roof bolt heads must be outside on items 3, 5 and 6, but inside on item 4, to ensure sliding.
9. Attach pulley and eye bolt.

You are now ready to proceed to the:—

ERECTION

1. Slide the top section (2) into bottom section (1). Make sure they do slide, although with some friction due to the horizontal position. If they stick, proceed as per Construction 5.
2. Attach bottom hinge plate (3) to the base by means of the ⅜ in. bolt. Push up the far end — weight just over 20 kg — and rest it on a 1.8m step-ladder or simple shear legs.
3. Attach the rotator, pull in and connect its control cable and test; set to desired position.
4. Attach antenna(s). Connect feeder cable(s) and test for continuity. If the reflector is nearest the ground the SWR should be close to correct.
5. Cut guy wires to calculated length, insert insulators where appropriate and attach with galvanised thimbles to lower and upper top hats, (4) and (6). Note: I use two of the upper guy wires, with insulators at the top and 10m down, as inverted V for 7 MHz with excellent results, fed with 75 ohm coax at the top.
6. Make sure that one guy wire set, attached to the centre guy wire hole, points directly to the spot where the pull-up winch will be attached; otherwise you will cause sideways pull and possible disaster.
7. Attach the s.s. winch to the eyebolt by thimble and cable clamps, feed it through the tower and over the pulley and secure it near the winch plate (7).
8. Connect a temporary extension to the lower of the two guy wires facing the pull-up position of the winch (on a suitable point of the house or garage) and attach to the winch.
9. Attach the other two lower guy wires to their ground attachment points. If your hinge base is narrow use temporary stay wires to prevent the tower from swinging before the lower guy wires are sufficiently extended.

10. When the tower is vertical and therefore balanced, detach the guy wire from the winch. Without releasing the pull on the tower attach the guy wire to its ground point.
11. Adjust all guy wires of the lower section to keep it exactly vertical, and make off permanently.
12. Test rotator and antenna(s).
13. Remove winch from garage (or house) and bolt it to the winch plate (7). Attach the s.s. cable to the winch.
14. Although the assembly is very strong I recommend that you pick a still day to winch the upper section to its full height. Leave about 600 mm overlap. During winching make carefully sure that all cables slide up without catching. I fastened the cable bundle to the inside of the upper section braces with insulating tape; during winch-up I taped the cables together every 1m as they fed into the bottom section.
15. Permanently terminate all upper guy wires, making sure that the upper section is exactly vertical. Do not make them too tight because this imposes an unnecessary downward pull on the winch cable. The safe load for a 2 mm flexibe cable is about 300 kg.

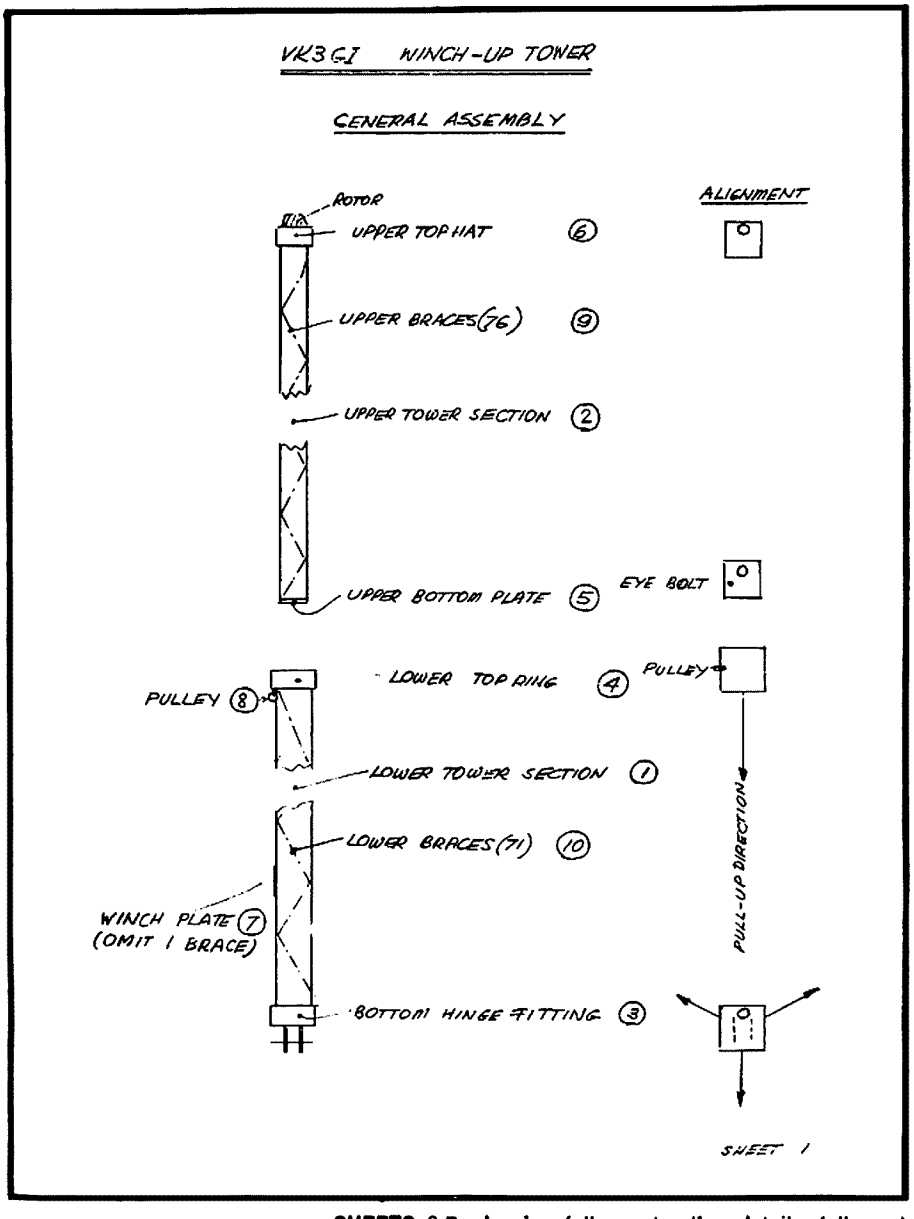
Now operate to your heart's content.

POSTSCRIPT

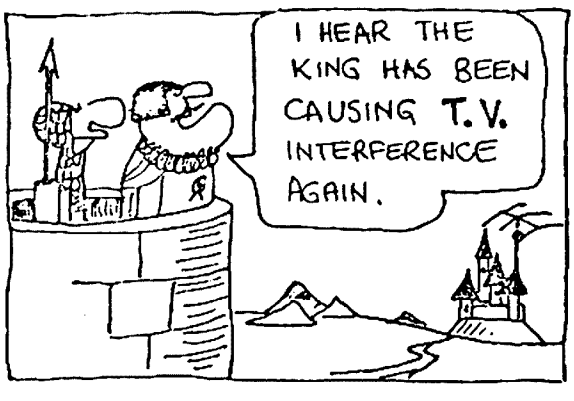
Further notes from author:—

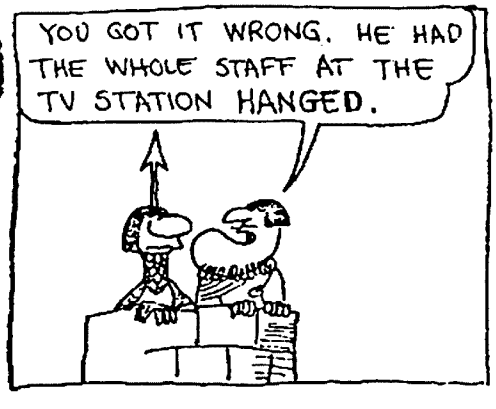
1. It is recommended as good practice to earth the tower by attaching a piece of flexible cable, connected to a ground stake.
2. The stop, item 11, sheet 2, is made up from left-over 25 x 3 mm Al. strip.
3. If 4, instead of 3, guy wires are used the risk of side sway during pulling up or lowering of the tower is eliminated. This modification requires that the guy attachment holes (10 mm) on items 4 and 6 should be drilled centrally on all four sides instead of the 3 holes shown, 2 of which are offset from centre.

If there are any queries please ring VK3GI on (054) 27 2576. ■

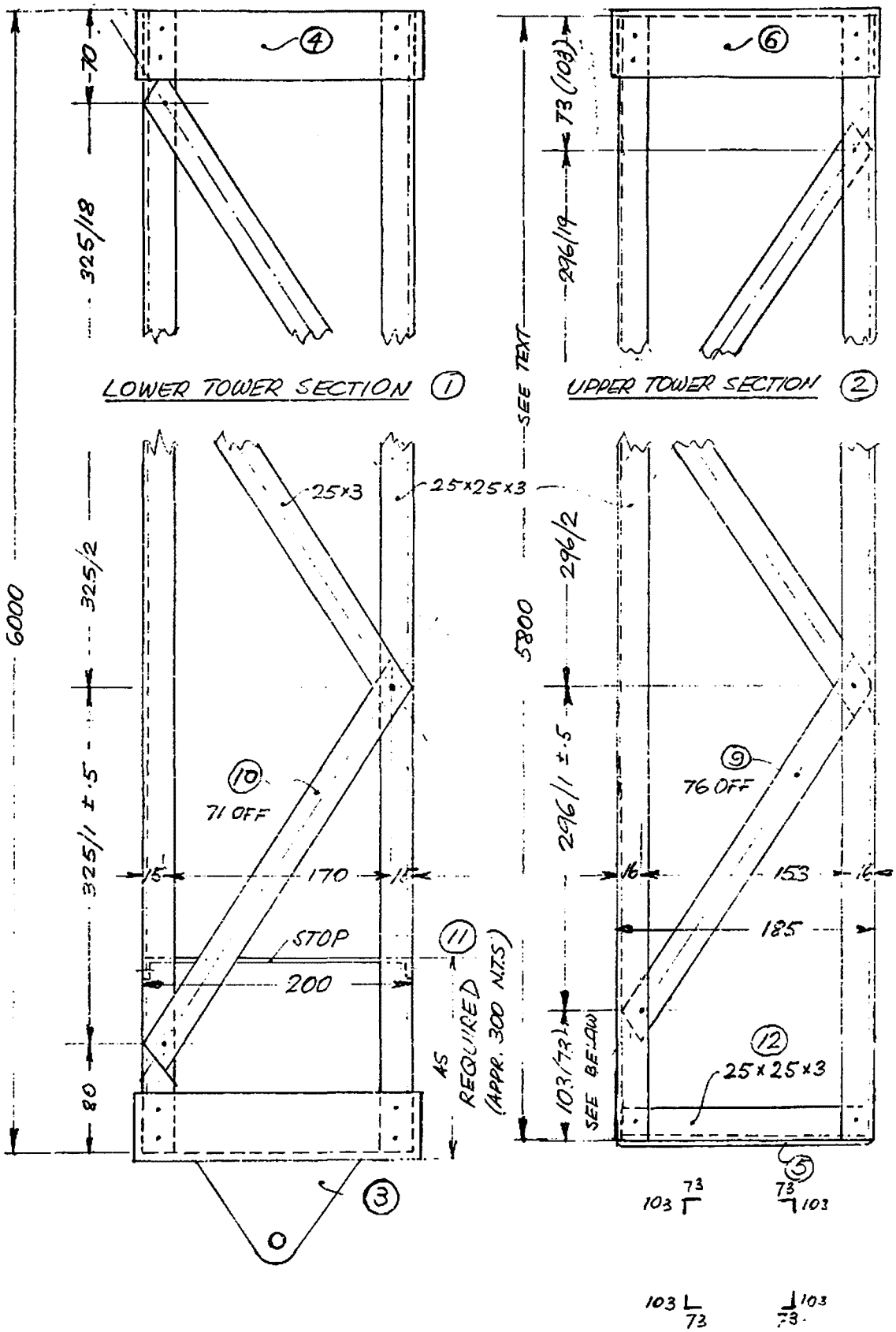


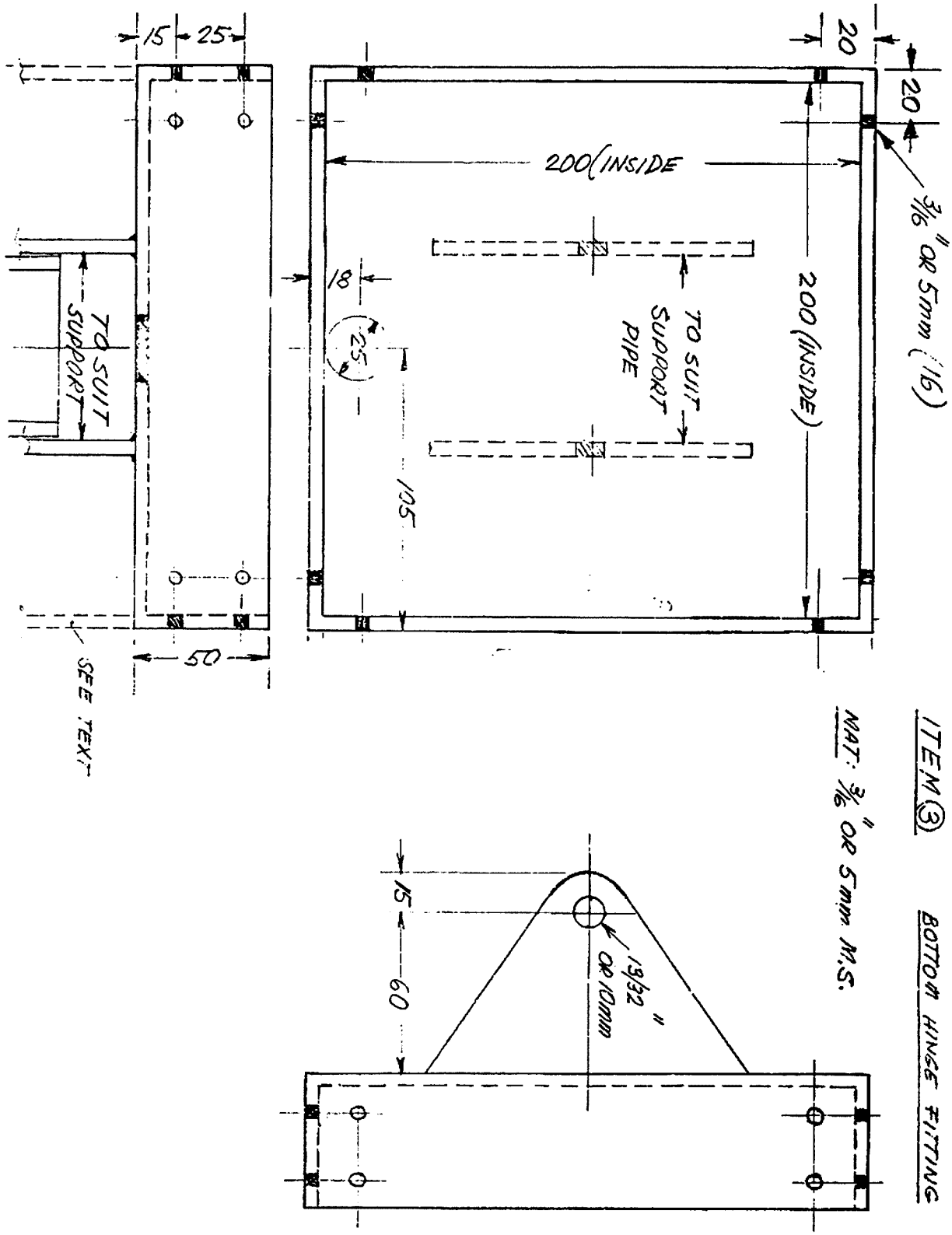
SHEETS 2-7, showing full construction details, follow ➧

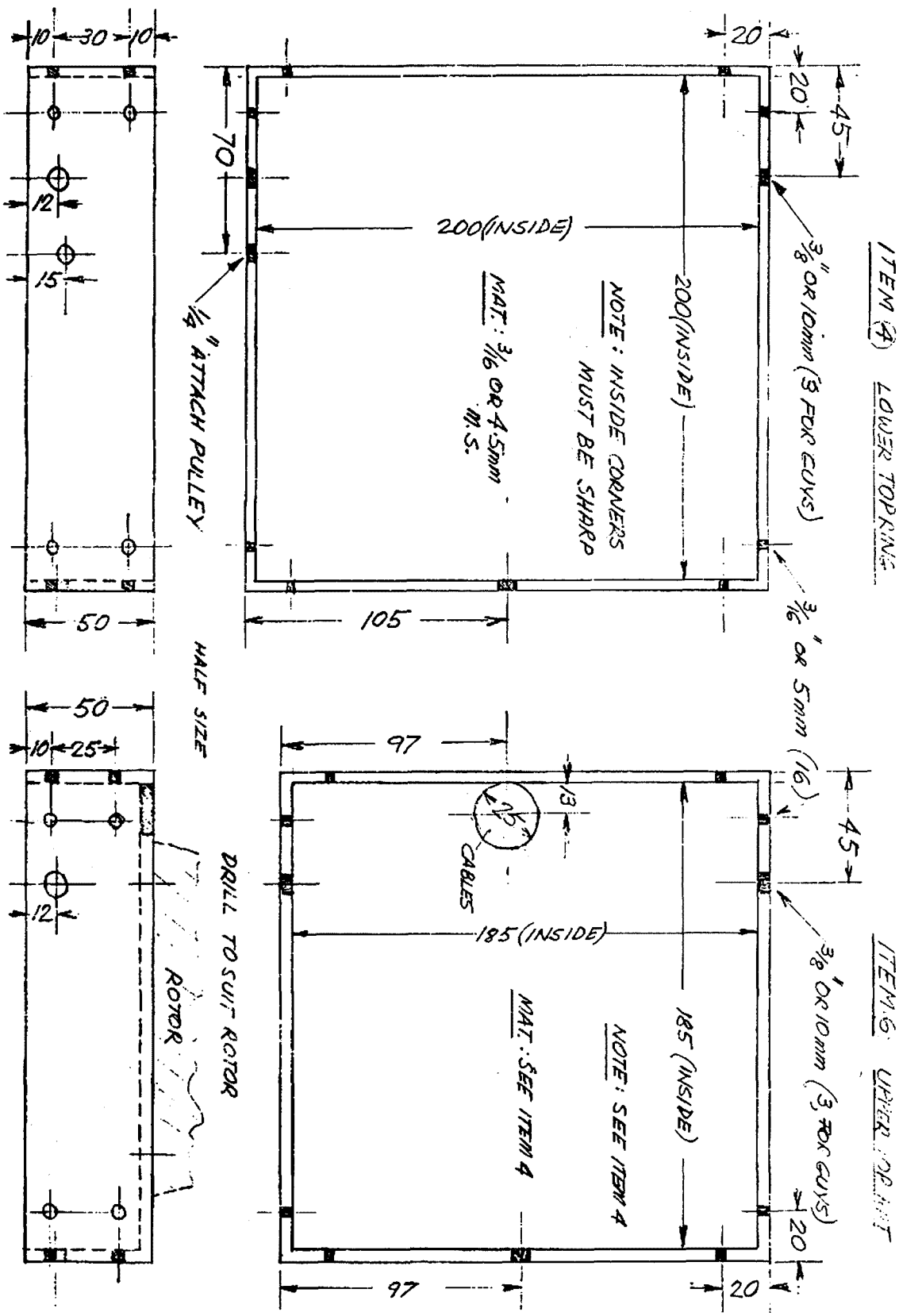


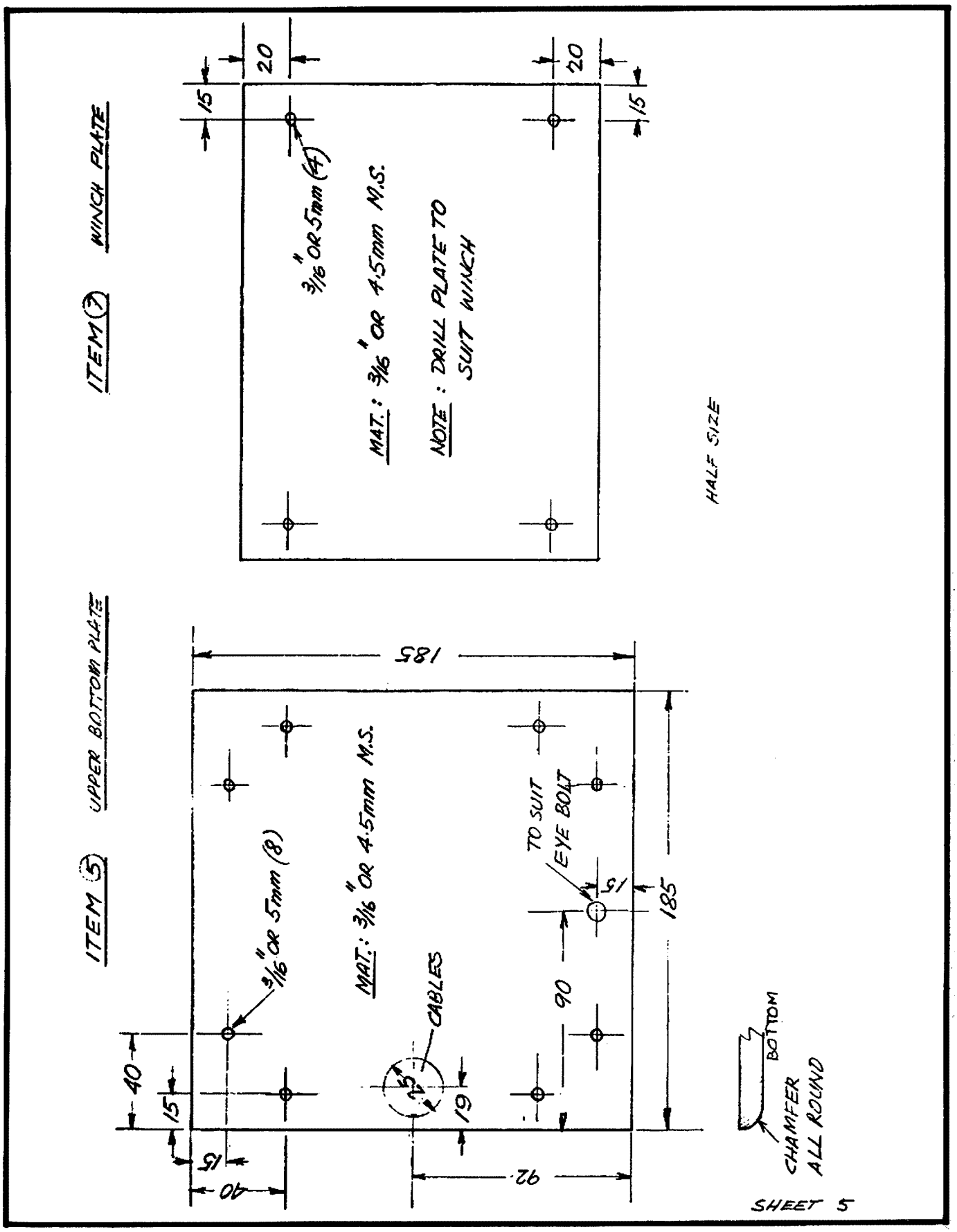


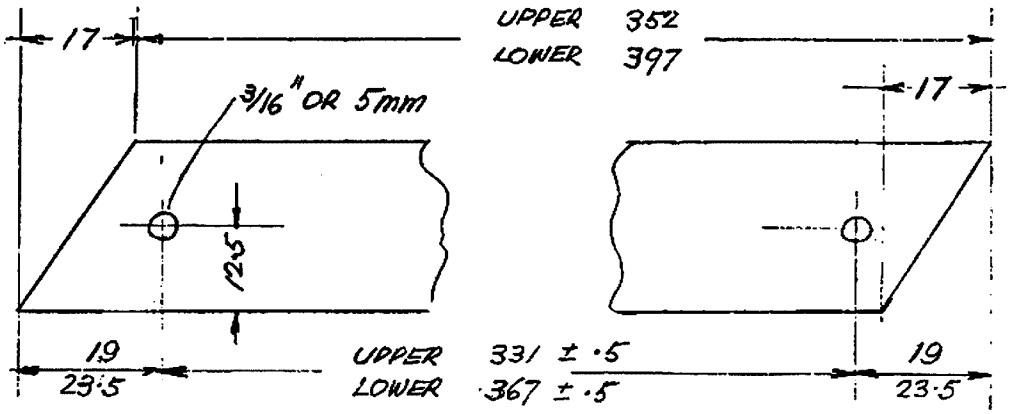
From "The Propagator" April '81


④
70
325/18
LOWER TOWER SECTION ①
⑥
73 (103)
296/19
UPPER TOWER SECTION ②
SEE TEXT
6000
325/2
325/1 ±.5
25x3
25x25x3
⑩
71 OFF
15
170
15
STOP
200
80
⑪
45 REQUIRED (APPR. 300 N.T.S.)
③
5800
296/2
296/1 ±.5
⑨
76 OFF
16
153
16
185
103/73
SEE BELOW
⑫
25x25x3
⑤
103
73
73
103
103
73
73
103


15
25
20
20
200 (INSIDE
3/16" OR 5mm (.16)
18
25
TO SUIT SUPPORT
TO SUIT SUPPORT PIPE
200 (INSIDE)
105
50
SEE TEXT
ITEM ③
BOTTOM HINGE FITTING
MAT: 3/16" OR 5mm M.S.
15
60
19/32" OR 10mm

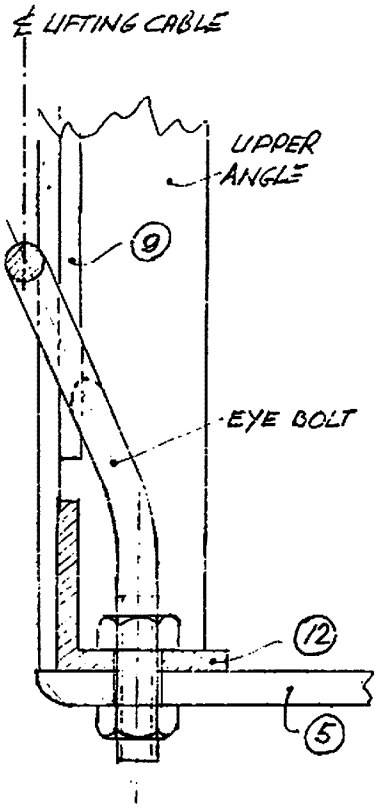

ITEM (4) LOWER TOPRING
10
30
10
12
15
50
70
20
20
45
200(INSIDE)
200(INSIDE)
3/8" OR 10mm (3 FOR GUYS)
1/4" ATTACH PULLEY
NOTE: INSIDE CORNERS MUST BE SHARP
MAT: 3/16 OR 4.5mm M.S.
105
3/16" OR 5mm (16)
HALF SIZE
50
10
25
12
DRILL TO SUIT ROTOR
ROTOR
97
13
CABLES
185 (INSIDE)
185 (INSIDE)
45
3/8" OR 10mm (3 FOR GUYS)
NOTE: SEE ITEM 4
MAT: SEE ITEM 4
97
20
20


ITEM (7) WINCH PLATE
20
15
3/16" OR 5mm (4)
MAT.: 3/16" OR 4.5mm M.S.
NOTE: DRILL PLATE TO SUIT WINCH
HALF SIZE
ITEM (5) UPPER BOTTOM PLATE
185
3/16" OR 5mm (8)
MAT.: 3/16" OR 4.5mm M.S.
TO SUIT EYE BOLT
51
185
90
CABLES
40
15
19
92
BOTTOM
CHAMFER ALL ROUND
SHEET 5

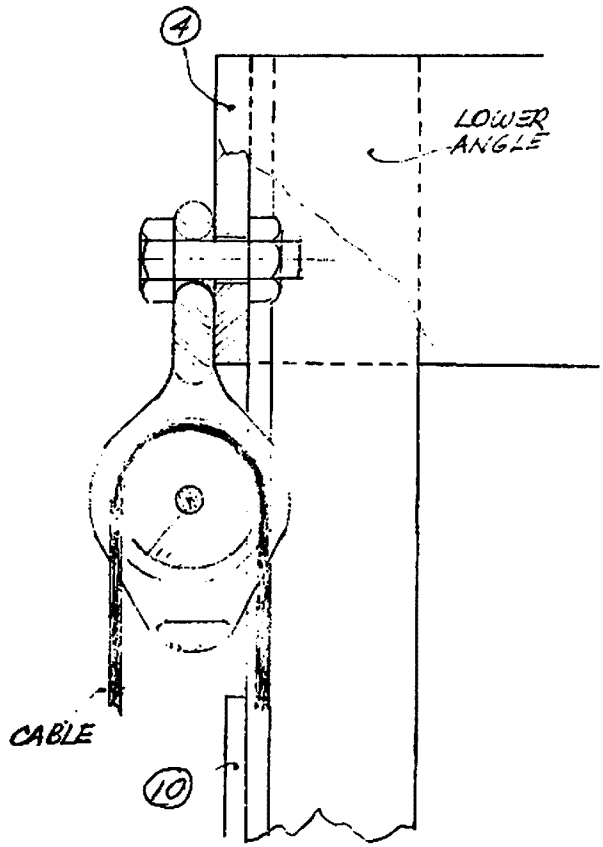


BRACES (9) & (10)
FULL SIZE

NOTE : LOWER BRACES (10) ASSEMBLED OUTSIDE ANGLE
UPPER BRACES (9) ASSEMBLED INSIDE ANGLE

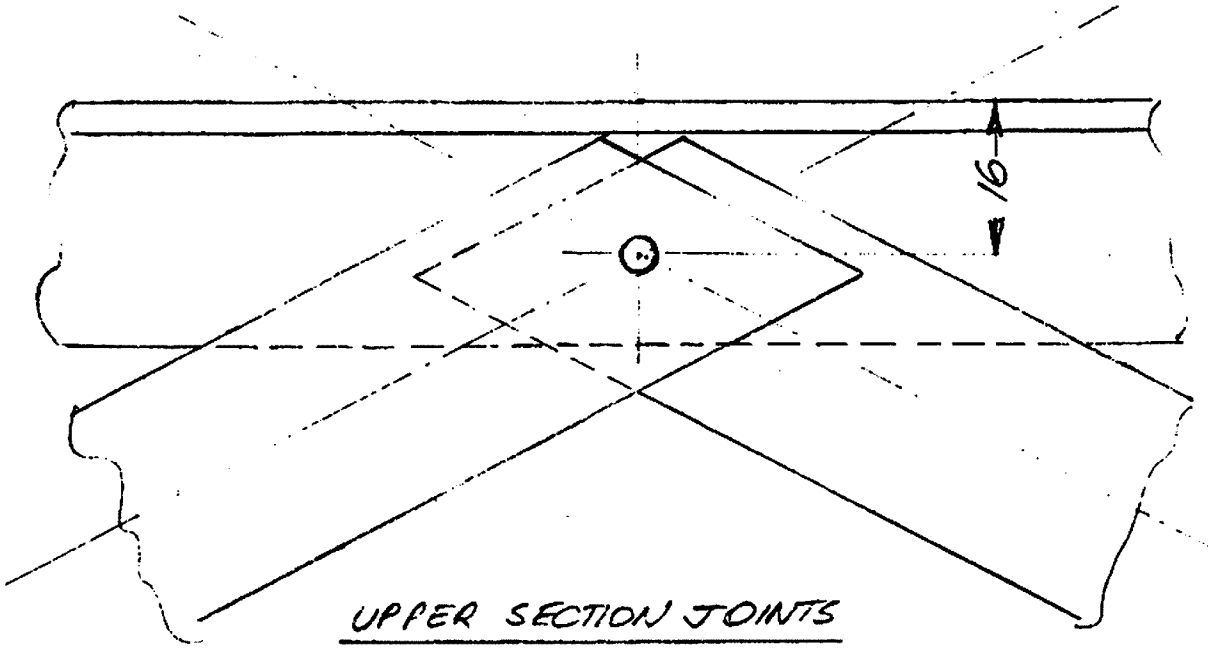


LIFTING EYE ASSEMBLY
FULL SIZE



PULLEY ASSEMBLY
FULL SIZE

SHEET 6

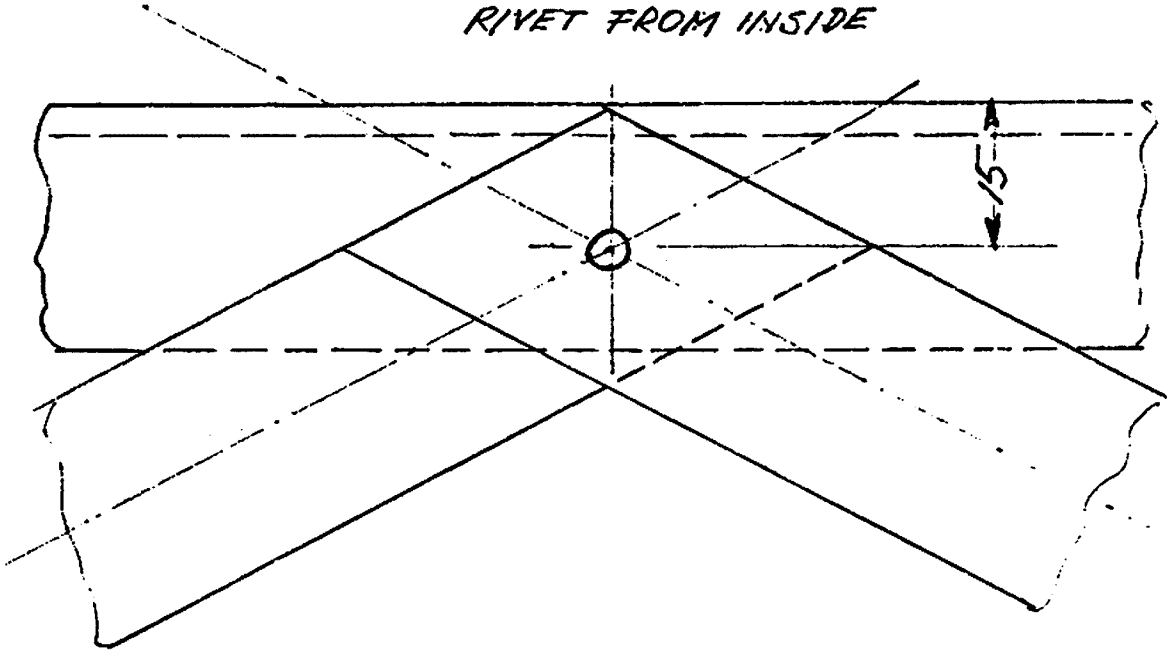


UPPER SECTION JOINTS

RIVET FROM OUTSIDE

LOWER SECTION JOINTS

RIVET FROM INSIDE



What should you know about Burns?

Man is a fragile creature, intolerant of even quite moderate heat. In general, temperatures about 65°C (150°F) are tolerated for only limited periods, the length of time depending on the dryness of the air, the amount of protective clothing worn, and the exertion required. Above 95°C (203°F), the tolerance time drops sharply so that while 120°C (250°F) can be tolerated for 15 minutes, 145°C (294°F) becomes intolerable in 5 minutes, and at 175°C (348°F) irreversible injury occurs to the skin in less than one minute. These tolerances compare unfavourably with the heat generated by a fire, which may reach temperatures of 150°C ten feet ahead of the blaze and over 543°C (1,000°F) above the fire.

HOW EXTENSIVE IS THE BURN PROBLEM?

The National Commission on Fire Prevention and Control, in its Report to the President and the Congress, said that 300,000 Americans are seriously burned each and every year. "Seriously burned" in this Report was considered to be a burn of 15 per cent of the body surface or more, although from the point of view of life survival, physicians in this country consider a 15 per cent burn life-threatening only in toddlers and in the ill and elderly, unless the wounds become infected.

Doctors refer to the severity of burns as first, second and third degree. The most severe are third-degree burns and the least severe first-degree. This is exactly the opposite of legal terminology, in which first-degree murder is the most serious.

BURN DEPTH

In a first-degree burn, the skin is reddened but there is no blistering. Most of us have had first-degree sunburns at one time or another, and some of us have had sunburns that blistered.

A second-degree burn includes both reddening and blistering, but does not destroy the full thickness of the skin. With the possible exception of the soles of our feet, we don't think about our skin as being thick, since it is so easy to cut through with a razor, but the thickness of the skin is important. If only the upper layers of the skin cells are destroyed, new skin can grow from the uninjured cells below. An analogy can be made with a lawn. If you cut the grass, it will grow again from the roots. If you destroy cells in the upper layers of the skin (whether by burning or by skinning your knee), the wound will repair itself from the cells that are not damaged. If, however, you bring a bulldozer into your yard and plow up all the grass by the roots, the lawn will not grow until it is reseeded. Similarly, if you destroy all the skin cells by heat, the skin will not regrow but must be replaced by a skin graft.

The severity of a burn is determined by many factors, some of which are the intensity of the heat (°C), the length of exposure, the size of the body area burned, the thickness of the skin, the age and health of the victim, and the speed of subsequent cooling. Two burns that look identical on the surface may have different outcomes, depending on whether or not the full thickness of the skin has been destroyed. If you have ever cooked a chicken, you are aware that it takes time for heat to penetrate. Skin that has been exposed briefly to high-intensity heat may look like a full-thickness burn, with the surface charred yellow-brown or whitish, but deep cells may still be intact. A longer exposure to more moderate heat may result in a wound that cannot heal without grafting because the heat has had time to penetrate, and all the underlying cells were destroyed.

IF IT HURTS, REJOICE

If you burn yourself in your kitchen or while fighting a fire and the burn hurts, it is a good sign. A full-thickness (third-degree) burn destroys the nerve endings and does not hurt. If properly cared for, a wound that hurts will probably heal without the necessity for grafting.

CONVERSION OF SECOND-DEGREE TO THIRD-DEGREE BURNS

Even with good care, a deep second-degree burn can become infected. Pathogenic bacteria (germs that can cause infection) are everywhere — on the victim's skin, in the air, your mouth, on the page you are reading, on floors, tables, and especially on your hands. If a burn becomes contaminated with bacteria, there is a good chance that the bacteria will invade the burned tissue. Intact skin resists bacterial invasion, an important service of which most of us are unaware. Without skin to protect us, we are all vulnerable to infection. When a burn becomes infected by bacterial invasion, the last remaining islands of cells from which skin can regrow can be destroyed. Pus is little more than dead bacteria, dead white blood cells (which come to do battle with the bacteria), and cell debris. A neglected burn is much more likely to become infected than one that is cared for.

KEEP YOUR FINGERS OFF THE BURN WOUNDS

Your fingers, which go to dirty places, are loaded with bacteria and so is your mouth. The heat that causes a bad burn may kill many of the bacteria on a burn wound, but contact with human hands can re-establish them there. Bacteria may spread through the tissues, killing cells, creeping through body to the bloodstream, causing fever, debilitation, and death. Protect burn wounds from germs while in transit by covering them with the cleanest material avaiable. If sterile dressings are not at hand, a clean sheet or pillowcase will do.

Every time you speak, you spray the people around you with bacteria. The germs are so small that we can't see them, but they are there, and many of them can wreack havoc In an open wound. If you have a cold or sore throat, you are a menace to the burned patient. Let someone else take care of him, if anyone else is available. In any case, cover the wounds early.

WHAT ABOUT COLD WATER?

You can actually decrease the severity of a burn if you cool the skin quickly. If you wait five minutes and put cold water on broken blisters, you may do more harm than good, introducing bacteria into the wound with the water. Don't waste time trying to get ice out of ice-cube trays. If you burn your finger in the kitchen, put your hand under the stream of water from the cold-water tap. If blisters are already broken, forget the water; put a sterile dressing or the cleanest material available on the burn, and seek medical care.

HANDS ARE LIKE MONEY IN THE BANK

Your hands feed you, dress you, save you from falling, help you over rough terrain, carry your burdens, and serve you in a thousand ways. Be kind to them. Medical attention is wise for all but the smallest burns of the hands. Even little burns of the hands should be covered with sterile dressings, since hands can readily become contaminated with bacteria.

WHAT ABOUT SURVIVAL?

The size of the body area burned is important in determining the victim's chances of survival. In general, for adults, if you add the patient's age to the extent of his burn, the patient will have better than a 50 : 50 chance of surviving if the total is under 100.

Like the elderly, infants and toddlers are more vulnerable to fire than those in the middle years. They have more difficulty escaping from flames and are less aware of what they should do, and thus tend to be more severely burned than older children. Once in school, children learn quickly that they should drop and roll if their clothes catch fire, but this instruction comes much too late. It should be given to two-year-olds. It is a mistake to sell the little ones short and assume that they are too young to learn or understand, for the **best burn treament is prevention.**

(Article by Dr. Anne W. Phillips, Executive-Director of the National Smoke, Fire and Burn Institute, Inc., which appeared in the FIRE JOURNAL of the National Fire Protection Association, Boston, Mass., USA.) ■

CW Procedures and Techniques

By Bert G3XSN
From RNARS Journal "Jimmy", April 1981

Morse Telegraphy is supposed to be the transmission of intelligence by means of Morse Code. Whilst I do not profess to be an expert, I guess that poor old Samuel Morse must have turned over in his grave many times listening to the Amateur Bands.

As far as I know, CW is still based on a 3 : 1 ratio at about 15 w.p.m.

An operator with a slow steady clean cut method of sending has a big advantage over the poor operator. Good sending is partly a matter of practice, but patience and judgment are just as important qualities of an operator as a "good fist". Operating knowledge of Standard Procedures and some "NET" know-how are necessary.

The best operators, both using "phone" and "CW", observe certain operating procedures which are regarded as Standard Practice.

(1) CALLS

VK2NLE, VK2NLE, VK2NLE, de G3XSN, G3XSN, G3XSN, AR . . . a long call is unnecessary, and only causes frustration.

CQ

The general enquiry call. The length of repeated calls is carefully limited in **intelligent** amateur operating. CQ is not used when testing or when the operator is not expecting or looking for an answer.

Never send CQ "blind". Listen to the transmitting frequency first. If nothing is heard, then ask QRL (is this frequency in use, please?). It does no harm to enquire a couple of times before putting out a call.

THE DIRECTIONAL CQ

To avoid useless answers and lessen QRM, every CQ call should be made informative, when possible. Repeat, do **not** answer such calls **not applicable to you.** E.g., CQVK, CQVK, CQVK de G3XSN, G3XSN, G3XSN.

Amateurs who do not raise stations easily may find that their sending is poor, their calls badly timed, or their judgent in error.

When conditions are right to bring in signals from the desired locality, you can call them with **short calls** at about the same frequency, with breaks to listen. This will raise stations with minimum time and trouble.

(2) ANSWERING A CALL

After contact is established, decrease the use of the call signals of both stations to once or twice.

When a station receives a call but does not receive the call-letters of the station, calling QRZ? may be used. It means "By whom am I being called?".

QRZ should not be used in place of CQ.

(3) ENDING SIGNALS AND SIGN-OFF

The ending signals AR, K, KN, SK and CL are often confused.

AR means ends of transmission. It is recommended after a call to a specific station before contact has been made. E.g., ZL1AXM (x3) de G3XSN (x3) AR.

K means to go ahead. (Any station.) Recommended after CQ and at the end of each transmission during QSO, when there is no objection to others breaking in. E.g., CQ, CQ, CQ, de G3XSN, K, or VK4XY de G3XSN K.

KN — Go ahead (specific station), all others keep out. Recommended at the end of each transmission during a QSO, or after a call, when calls from other stations are not desired and will not be answered. E.g., VK6PG de G3XSN KN.

SK means end of QSO. recommended before signing last transmission at end of QSO. E.g., VK2DDW de G3XSN SK.

CL means "I am closing down my station". Recommended when a station is going off the air to Indicate it will not listen for further calls. E.g., VK4CD de G3XSN SK CL, or SK VK4CD de G3XSN CL.

R means transmission received as sent. Use "R' only when all is received correctly.

REPEATS

When most of the transmission is lost, a call should be followed by correct abbreviations to ask for repeats. When a few words on the end of a transmission are lost, the last word received correctly is given, then send "AA?", meaning "all after". This invites the station to repeat again all after the last word correctly received.

When a few words at the beginning of a transmission are lost, then send "AB?" ("all before") and send the word which was received correctly.

The quickest way to ask for a fill in the middle of a transmission is to send the last word received correctly, a question mark, then the next word received correctly. Another way is to send "?BN" (word) and (word). Do not send words twice (QSZ) unless it is requested. Do not send QRM or QRN when you mean QRS.

GOOD PRACTICES

(1) The letter "R" is often used in place of a decimal point — e.g., 3R5 MHz, or the colon in time designation — e.g., 2R30 p.m.

(2) A long dash is sometimes sent for Zero.

(3) For best results, send at a medium speed.

(4) Send evenly with proper spacing.

(5) No excuses for "poor or garbled copy".

(6) Good operators do not anticipate.

(7) "Swing" in a fist is not the mark of a good operator.

(8) Unusual words are sent twice.

ON GOOD SENDING

Think about your sending a little. Are you satisfied with it? You should not be, ever. Nobody's sending Is perfect, and therefore every operator should continually strive for improveent. Do you ever run letters together, like Q for MA, or P for AN — especially when you are in a hurry? Practically everyone does at one time or the other.

Tape record your QSOs and play them back to yourself. Can you read what you send? If possible use an inked tape recorder. This will really show up your faults.

Not so long ago I was trying to copy an Amateur's call sign. He was sending "VI2ZZ"; what he meant to send was "I2ZZV". This is very bad practice. When conditions are poor, don't continue repeating irrelevancies instead of "Guts". Do not send Name, Name, Name, QQ times — send Bill, Bill, Bill, or Liverpool, Liverpool, instead of QTH 1000 times. ■

DIAL-A-PROP

A telephone service, telephone (02) 269 6614, 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 fadeouts), 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 (0000 UT), 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 6614. ■

A New Repeater Site — Part 2

Jill Weaver VK6YL
Hon. Secretary, WA Repeater Group

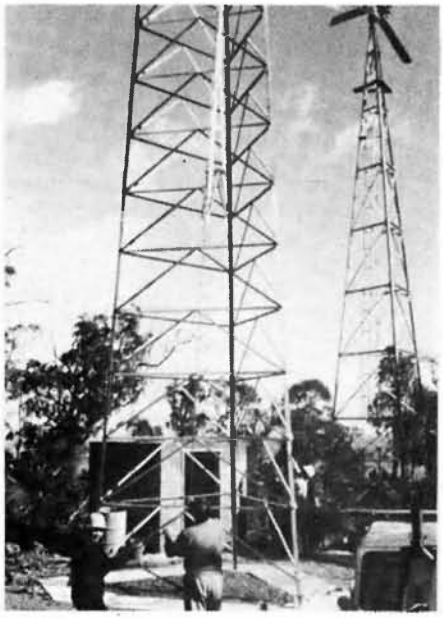
The events leading up to concrete pouring day — "C" Day — were all explained in the first part of this saga. Now it is "C" Day minus 1.

At 7.15 p.m. on Friday night we were informed that the intended cement truck had a damaged gearbox, the readout for the weigh batching machine was needed urgently in the country, and just to add to our worries the front-end loader was required by the quarry to replace another machine due for service. Fortunately a substitute cement truck was arranged and Peter VK6PO burnt midnight oil constructing another readout for us to use.

Undaunted we proceeded. Over 20 of us arrived on site at 8.00 a.m., Saturday, the 6th of June, compacted the sand and prepared the formwork for the shack floor and roof, while all the time the rain clouds darkened above. Simultaneosly at 1.00 a.m. the concrete truck, the front-end loader and the rain arrived. For four hours ingredients were weighed, mixed, poured, vibrated and shovelled by the very hard working team who thanked the truck driver at 2.00 p.m. and retired very wet, cold and soggy for lunch in the quarry shed. Due to many gallons of water lying on top of the concrete it was impossible to trowel it over. It was covered with donated plastic and the cleaning up process then began. Meanwhile my OM, Bob (not an amateur), who had driven the loader all day, continued to ferry excess blue metal and sand up to the hill — filling in potholes on "Tic Highway" and levelling out "sump-crushing" rocks until the track became too slippery and darkness fell. Around 8.00 p.m. many very tired but elated people wended their weary way home: we had achieved step one of our goal.

People are wonderful . . . from several sources we acquired around 2,000 bricks, 1,400 new ones, with the balance second-hand, which were transported to the site in borrowed trailers and cleaned by teams of amateurs, wives and harmonics, who sounded like little elves with their picks and doonas. Stan Robson, a bricklayer friend of one of our members, volunteered to build the shack, with our group doing the labouring. Drums and trestles were lent by amateurs, a door frame donated and vent bricks purchased. We mixed the cement by hand for Stan, who completed the shack in four working days, and christened it "Ticky". Please note that we call the site "Tic Hill". We chose TIC in preference to TICK for originality. Much trauma when the day came to lift the roof on top of Ticky, but with the aid of the crane — borrowed of course — this was achieved without any hitches.

Whilst Stan was bricklaying other members were hard at work removing the corrugated iron forming which left a beautiful



crinkle cut finish on the concrete. One of the most back-breaking jobs was that of refilling the rocks and gravel around the tower bases and levelling off the site. Each week work continued in an endeavour to return the area back to a natural contour to allow nature to take her course in time to come.

Ilmar VK6ZILB was in charge of the wind generator and tower, which in no time grew above the trees to 40 feet high. He spent many many hours of his own time, not only on the wind generator and the attractively finished zelamite panel housing the controls, fuses, etc., but he prepared for the coax and cables, the bench and many other things — thank you Ilmar. Meanwhile other members worked on the 100 ft. antennae tower. We had to pick our days carefully as during winter the rain and winds were extremely strong, especially for the boys working around the 80 ft. level of the tower. One calm Sunday afternoon we ran out of nuts and bolts. We were very thrilled when we received a relay from the firm responsible for earlier donations to say they would meet us at their business premises and give us sufficient to complete the tower.

A tradition was set — hot potatoes at the end of each working day, cooked in foil in the coals of the fire originally intended to burn out a large tree stump. Long after the stump had gone the fire was lit to provide warmth and a drying agent for the wet and weary. Later we enjoyed making a small barbecue from the left-over site materials, and sausages were added to the menu.

We are greatly indebted to the brothers Kevin VK6AKW and Peter VK6PO, with son Robert, for their expertise throughout the project from beginning to end, especially with the main tower, liaison with many firms and hours of hard work. Peter made a gin pole which allowed us to lift the very heavy tower top in place at the 100 ft. level, with the 22 ft. 6 dB gain co-linear antenna above this.

Our president, Trevor VK6MS, had the unenviable task of designing and con-

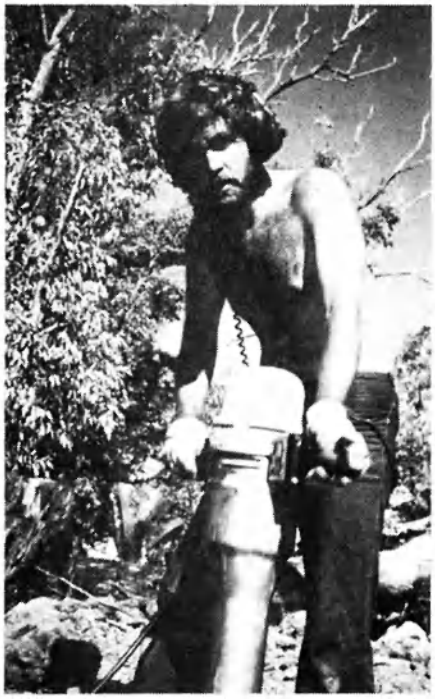
Site clearing.

structing innumerable items for the site. His knowledge and organisation of materials, together with his extensive supply of tools, never failed to amaze us. The project would have never eventuated without you, Trevor. Thank you from all of us.

Much barbed wire was run around the towers and entry pipes to increase security; later we hope to erect a fence. Lights were fitted inside Ticky, which has been painted with several coats of a white waterproofing solution on the entire inside and roof top; no mean feat when it was pouring down with rain during this process, the solution could only be described as looking like a soggy flour and water dough — it clung to our brushes like glue!

Will VK6UU, Ilmar VK6ZIB and Barry VK6BKZ continued working on the site during the RD contest, taking time off to contact the other members participating via the new repeater antenae, wind generator and six only 2V 500 AH batteries — well done boys! They discovered that power line noise was present. Suspecting the 22 kV 3-phase lines just to the north of the repeater to be the culprit, we set out the following Sunday in a 4-wheel drive equipped with foxhunting beam and snoop loops to track down the offending pole. Murphy showed his presence as usual; no power line noise could be heard that day, though four very audibly noisy insulators were located after a spine crunching two hours almost blazing our own trails in the rocky terrain. The authorities have been notified and are going to replace the insulators.

George, the operator of the Catt D988 loader (called "Betsy"), volunteered his services with permission of the owners to landscape the terrain around our site — we would still be shovelling next Christmas without his generous help. Fifty tons of gravel, road base and clay, yuk! not too much clay thank heavens, were carried in the huge bucket and spread around the site, with the members shovelling and raking it flat. It looks lovely, thank you, George, for all your work and especially for our "pet rock"; all 21 tons of it brought from the quarry to the site. Talking of pet rocks, interesting coloured strata was found whilst jackhammering; chips of these were sold to boost our very depleted funds. Spring is now upon us, the wild flowers are in bloom around the area, and we hope it will not be long before they return to where we disturbed the land.



"What frequency rocks did you want?"

Ilmar VK6ZIB and the wind generator.

"C" Day.

The repeater has been installed and we are in readiness for the grand opening in mid-October. Over 365 days (1 year without holidays) working 10 hours each day would have been needed for one man to complete the project. There were actually 25 full days (8,760 hours) worked by the following amateurs, wives, harmonics and friends:— VK6AD, VK6AUS, VK6AKW, VK6CU, Sune, VK6EW, VK6FC, VK6HA, VK6HL, VK6KB, VK6KG, VK6KGE, VK6MS, VK6NWB, VK6OO, VK6OW, VK6PO, Robert, VK6PQ, VK6RW, Stan Robson, VK6UO,

"We did it!" President Trevor VK6MS.

"Ticki" gets a hat.

VK6UU VK6YL, Bob, VK6YS, VK6ZBI, VK6ZBI, VK6ZCK, VK6ZF, VK6ZGA, VK6ZHV, VK6ZIB, VK6ZJR, VK6ZKV, VK6ZLT, VK6ZMB, VK6ZBG, VK6ZRE, VK6ZRR, Peter, VK6ZSE, VK6ZST, Martin and friend Mark from Scalar.

We would like to thank the following, together with many of our members listed above, for their donations:—

Pioneer Quarries, especially George and Phil, Cockburn Cement, Swan Portland Cement, Cement and Concrete Association, Delta Concrete, Scalar, A & M Wholesalers, Ian and Kay More, VK6ABR, VK6EV, VK6IO, VK6NDJ, VK6TO, VK6UN, VK6YE, VK6ZJS, with apologies to anyone we have missed. To all those who purchased "Pet Rocks", to members of the WA Repeater Group and all amateurs and families, we say thank you for your support.

In conclusion, may I say that it has given me great pleasure to be the co-ordinator of this wonderful project — thank you. ■

Crinkle cut concrete.

QSP

TOWNSVILLE

Townsville, the second largest city in Queensland, has a population of 126 licensed amateur radio operators. The Club Station VK4WIT is on air every Sunday at 09.30 GMT, 3.605, and 22.30 GMT on Saturday at 28.410. That is, of course, Sunday 8.30 a.m. It also operates several stations throughout the year on all bands during contests, field days and JOTA.

TARC meets on the 1st and 3rd Tuesday of the month to conduct business and social events. Guest lecturers are featured at general meetings, particularly from James Cook University Physics Section.

The Club maintains a 2 metre repeater on 146.700 MHz, a 6 metre beacon on 52.440 MHz and plans a 10 metre beacon on 28.270.

This year the biennial North Queensland Convention will be an International Convention, and has been designated as the Queensland Convention by the WIA (Queensland Division). Invitations have been extended to ham radio operators in many countries, including the USA, NZ, Germany, Italy and of course England. Any hams who wish to attend should contact me at my QHT.

Roger VK4CD, President, Townsville Club.
(From "Jimmy", July 1981.) ■

NETHERLANDS QSL BUREAU

DXers will wish to know the address of the Dutch QSL Bureau if they wish to send QSL cards for Netherlands contacts. It is PO Box 330, 6800 AH Arnhem, The Netherlands. ■

If you have let your WIA membership lapse in the past year or two, why not seek reinstatement now — just look at what you are missing.

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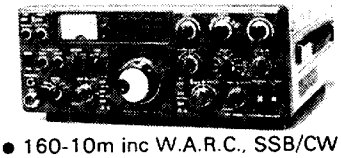

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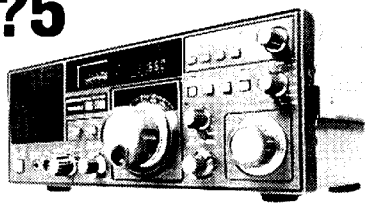

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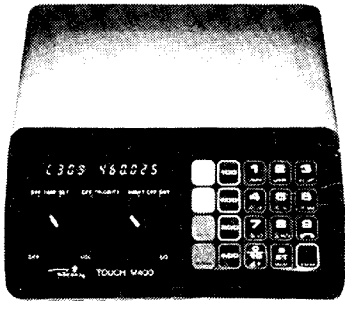

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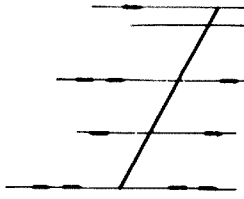

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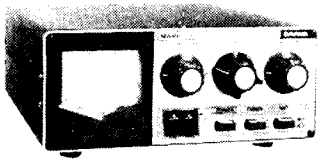

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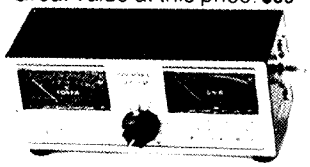

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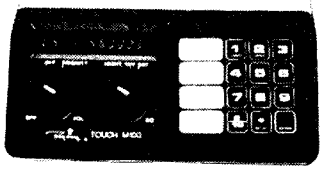

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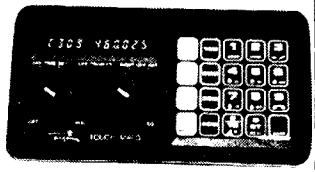

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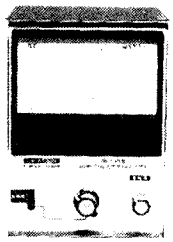

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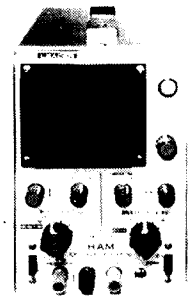

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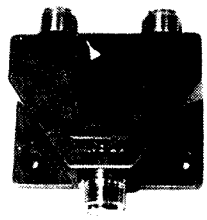

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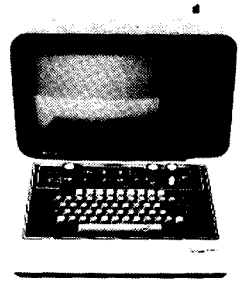

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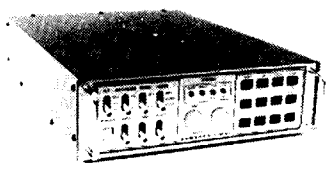

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A Tale of a Tower
— Further Information on the VK5JG Design

In the August 1981 Issue we published a design for a simple tower and mast entitled "Mounting a Quad Antenna" by John A. Gazard VK5JG. Resulting from comments by the draftsman we added some footnotes based on the information initially supplied. Now, in the light of more data from the author, we see that some of our suggestions introduce more problems than they solve, and others have already been taken into account. So much useful information is contained in the letters from VK5JG that we now publish the correspondence essentially unedited.

The Editor,
Dear Sir,

I have the following comments to make on the "Editor's Note" which followed my article "Mounting a Quad Antenna" in August AR.

(a) A locking pin is not essential. The winch and cable are designed to carry the light load of the top mast and quad (80 lbs.) at all times. Even if the mast were to fall the top flange which carries the quad would come to rest on the top of the sleeve and no damage would be done so the word 'safety" is quite out of place.

The locking pin which you have added to my design would prevent the beam turning and would make the tower useless. It would take two men to remove the locking pin as you have shown it — one to climb the mast and the other to operate the winch. This would defeat the whole object of the design, which is to allow instant raising and lowering.

(b) A two-sleeved bearing would be harder to set up and align. An 18 in. bearing has proved ample in practice.

(c) There is no need for a thrust bearing at the bottom of the mast. The arrangement with the mast hanging on the wire operates well and the mast is easy to rotate. A thrust bearing is outside the scope of amateur manufacture.

(d) The calculated load on the holding down bolts is less than 600 lbs. This would require a bolt cross section of 0.06 sq. in. at a stress of 10,000 lbs. per sq. in. A ½ in. bolt has twice this area at the bottom of the thread.

(e) The 6 in. dia. 3 ft. 6 in. deep concrete footings are ample. I calculated that the uplift on the windward side bolts with the maximum wind load is less than 600 lbs. My experience as an engineer on civil construction works has shown that concrete rammed into a bored hole as above can easily withstand this load.

I was able to prove this when I tried to remove a footing to shift a tower to another site. I excavated around the footing until only two feet remained in the ground. I saturated the hole with water overnight and using a lever by which I could apply an upward force of 500 lbs. I was unable to shift the footing.

A footing three times the diameter would require nine times the concrete and would weigh 860 lbs. which is 260 lbs. more than is necessary without allowing for the grip of the earth.

(f) If the base was made a metre square and the tower was uniformly tapered the tower diagonals would have a length of about 4 ft. and as a ¼ in. rod would not take any compression load at this length the diagonals would have to be increased to ½ in. pipe or else cross diagonals of ¼ in. plus horizontals of ½ in. pipe would be required.

Whatever the spacing of the verticals the same total length of diagonals is required so that the uniformly tapered tower would cost more in material and as each diagonal would have to be separately cut, mitred and hollow ground, would be more difficult to set up.

The diagonals for the 8 In. spaced verticals are zig-zag bent from a 20 ft. lengh of ¼ in. rod using a jig. This operation takes only a few minutes and then the diagonals (in one piece) are sprung in between the verticals and welded.

The uniformly tapered tower would require a separate ladder and the winch would require a base welded to the tower.

I have made or helped to make four of these towers for friends and after use from two to four years no disabilities have been found. I am disappointed that your Technical Editor and Draftsman, who do not appear to have any structural qualifications or experience should alter my design to make it unworkable and make suggestions which have no value.

Yours faithfully,

J. A. Gazard, B.E. (Civil).

☆★☆

Mr. J. A. Gazard VK5JG,
Dear Sir,

We agree with you that you have some cause for complaint about the diagrammatic addition of a locking pin to your mast/tower design as published in August AR. However, it was not Intended to be more than a general indication that in the draftsman's opinion some such device was necessary. Further correspondence with him would have delayed publication by at least another month. We agree that as indicated on the drawing the device would be unworkable. He made a number of additional comments on the design, about which he was obviously unhappy. These were borne out by a few quick editorial calculations and resulted in the postscript to which you have objected. I would like to discuss the subject in rather more detail, taking the various points in the same order as you have raised them.

(a) A locking device of some kind, mainly against rotary forces, is usually needed on a beam system, if for no other reason than to reduce loads on the rotator in strong winds. It could be controlled from the ground by a lanyard, or perhaps electrically actuated. With your design it could be safer not to rely entirely on the winch cable for support, particularly if the mast were left fully up and strong winds developed while it was unattended. If the mast did fall, it would "come to rest" with an impressively high shock load.

(b) The exact form of top sleeve(s) is dependent on antenna wind loading; see later.

(c) The thrust bearing envisaged at the base of the mast would allow it to turn without the cable wrapping around it.

(d) The load on the hold-down bolts depends also on wind loading. See later.

(e) The mass of the footings should be commensurate with the loads on the hold-down bolts. Agreed that the "grip of the earth" is a significant bonus over mass alone, but difficult to estimate, dependent on soil properties, and probably best neglected *in a conservative design.*

(f) We agree that more material would be required for a uniformly tapered tower, and that fabrication would be more difficult. This was only a suggestion, based on the draftsman's comment that "a bend in the pipe here is a potentially weak point".

Now for some pessimistic assumptions. First, it cannot be guaranteed that the mast will always be lowered into the tower before a storm strikes, so its design should be adequate to survive the strongest likely wind while fully erected. Second, since it might be constructed and erected in any part of Australia (or elsewhere) the design wind velocity should be at least 80 m.p.h. Some State building codes may well call for 100 or 120 m.p.h. The minimum permitted anywhere in Australia (for 50 year expected life) is 27 metres/sec. (97 km/hr. or 60 m.p.h.) and in most places the recorded maxima are at least 40 m/s (90 m.p.h.). Australian Standard 1170, part 2 (1975), covers the subject in great detail. Further, although the antenna(s) you have used on the mast may have been relatively small, in the absence of any direction to

the contrary someone may try to put two or three good sized beams on it for several bands.

To plug in some figures (using Imperial measurement since they were those of the original drawing, later metricated): The flat-plate equivalent windage area for the antenna(s) plus mast might be up to about 5 sq. ft., effectively at the top of the mast 25 ft. up. Wind load at 80 m.p.h. ($0.0042AV^2$) = 135 lbs. Moment arm at base 2½ ft. so uplift on bolts is 10 x wind force, i.e. 1350 lbs. or 675 lbs. per bolt. This should be the weight of each footing (rough agreement with your stated 600 lb.). But 6 in. dia. x 3 ft. 6 in. deep is *only* 0.7 cu. ft. Density of concrete 137 lb./cu. ft., so weight of footing just under 100 lb. Very much less than bolt load.

Bolt strength. A ½ in. Whit bolt has root cross-section of 0.1215 sq. in., so tensile stress = 675/0.1215 = 5600 p.s.i. Agree this is not excessive, i.e. ½ in. or 12 mm bolts OK. I think this error came about because the draftsman did not get a copy of your text, and your drawing did not indicate the mast was square; he thought it was triangular, with only one bolt.

Top sleeve bearing. Again, your drawing did not clearly show it to be 18 in. long, nor specify where and how attached to tower. If welded only at the centre of the sleeve the weld stresses could be excessive. Incidentally, the mast base moment (12 x 135 = 1600 lb. ft.) will produce a maximum stress in the pipe approximating mild steel yield point of 30,000 p.s.i., for a pipe section modulus of 0.66 $in.^3$. In other words the mast would be on the verge of failure if antenna area is 5 sq. ft. in an 80 m.p.h. wind. It might be on your own head if you don't let it down before the big storm!

In conclusion, I am sorry for the confusion which has arisen. I think eventual publication of your letter, this reply, and perhaps a little more information as well would help many tower builders. Regarding your final comment, neither the draftsman nor myself is as unqualified as might appear. He is based in Canberra (the distance does pose a liaison problem) and describes himself as having "had reasonable experience in the building trade, involving steel fabrication", although not a "structural engineer". My *own* backyard boasts a 50 foot tower and mast very strongly resembling yours in shape and materials. Of my own design and construction, it has supported at least three and sometimes four antennas and still stands after 20 years. It has a lanyard controlled locking device, but is not designed for quick raising and lowering.

73. W. M. (Bill) Rice, B.E. (Elec.),
VK3ABP, Technical Editor. ■

☆★☆

The Technical Editor, 4/9/81.
Amateur Radio,
Dear Bill,

Thanks for your letter of 2/9/81. I was very upset when I read the editorial comments following my articles on the tower and would have preferred it not to have been published if those comments were to be added.

However it is too late now and I would ask that as well as printing my letter you acknowledge in the next issue that the addition of the locking pin was not part of my design and that I do not agree with the remarks.

Before referring to your points "a" to "e" I would point out that the whole idea of the design was that a light neat structure could be built if it was raised only when actually in use and I mentioned that the top mast would not stand up to gales in the raised position. The 2 in. pipe has an OD of 2.375 in. and ID of 2.055 in. I calculate the modulus of section as 0.577 $in.^3$ and with an area of 4.5 sq. ft. for the quad (neglecting the mast) at a height of 20 ft. above the sleeve the moment on the pipe would be 21600 in. lbs. and the stress in the steel pipe 37,000 p.s.i.. slightly higher than your calculated 30,000.

The top mast is so easy to raise and lower that we (the other users and I) raise it when we switch on the rig and lower when switching off. This raising and lowering might be considered a disadvantage but it is a trade-off for a neat and cheap construction.

Referring to your points (a), (b) and (c):

(a) A quad is symmetrical about its rotating axis and has very small rotating forces due to wind. One tower had an electrical rotator with a brake which easily held the quad on the mark. The remainder constructed were rotated by hand from a wheel (sketch A). This wheel had holes in the rim at 15° intervals and a pin was dropped through to hold the quad in the required direction when operating. Some users leave this pin in when the mast is lowered but others, including myself, let the mast float with the idea that it will take a position involving least wind loads.

The fact that the winch wire winds around the mast prevents it from turning more than about 180 degrees under wind load, thus preventing breaking of the feed line.

(b) I found it difficult to obtain a tube of exact size for the sleeve. I have used an oversize tube and lined it at each end to fit but have found the most convenient method is to make a box of 4 angle irons as per sketch B.

(c) The winch cable is very lightly loaded (less than 80 lbs.). The winch ratchet wheel is 4 in. diameter of 3/16 in. plate, with 6 teeth ½ in. deep. It has proved quite safe in use and operates as a friction free thrust bearing. The only risk is that one might let go the handle when lowering the mast. However the way the ratchet and pawl happened to be made the ratchet teeth knock the pawl back into operation if the mast is lowered too fast. Sketch C.

(e) I know that "the grip of the earth" cannot be calculated but once in my career I had to carry out tests on tension piles and my experience in pulling out poles with a crane has shown that the earth grip is always considerable and sufficient in this case. My attempt to remove a footing was further proof. In calculating the uplift on the footings it is necessary to deduct the deadweight of the tower and quad on each leg from the wind moment tension.

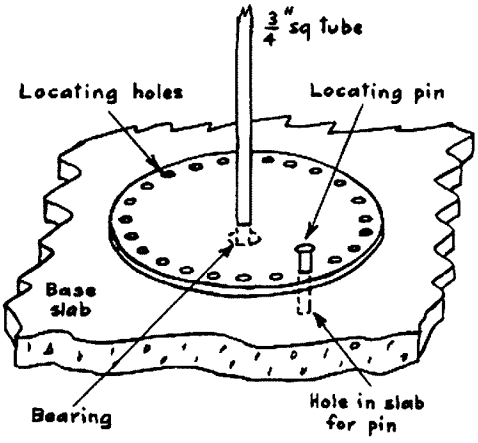
(f) The bend in the pipe was made by cutting out a notch before bending and then welding over the cut and laying on a large pallet. This gives a sharp bend and, as the horizontals and diagonals meet at this point, there is no weakness. The calculated stress in the ¾ in. pipe with mast lowered is about 6,000 p.s.i. at this point. Sketch D.

I had considered making a full drawing but as I am retired and have no access to drafting equipment I made a sketch showing cross sections and all details such as winch, ratchet, etc.

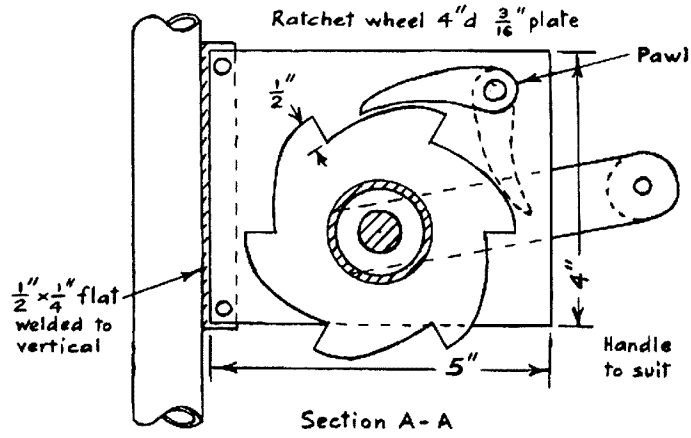
However, this would have needed so much space that I thought it better to supply sketches to the few who might require them for construction. They could be photo-copied and would not involve much work; but it appears now that it would have been better to supply all the details for publication.

73. John Gazard. ■

(Sketches overleaf)

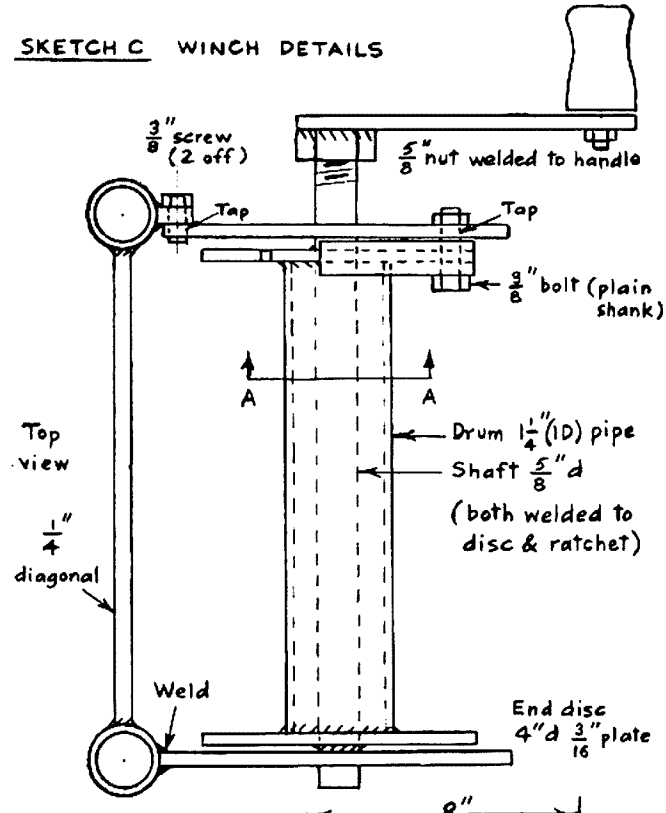


SKETCH A ROTATING HANDWHEEL (wood or metal)



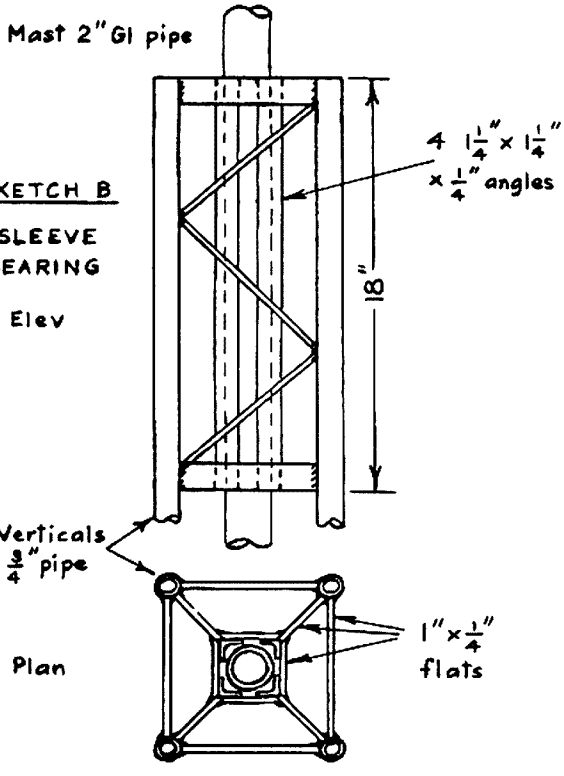
Section A-A

SKETCH C WINCH DETAILS



SKETCH B SLEEVE BEARING

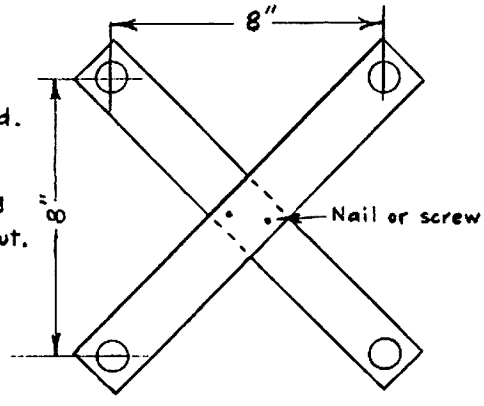
Elev

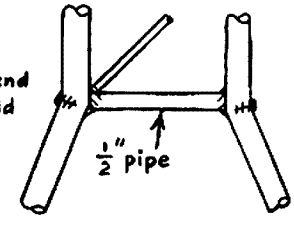


Plan

SKETCH E WELDING JIG

3 reqd. 3" × $\frac{3}{4}$" softwood.
Holes neat fit $\frac{3}{4}$" pipe.
Knock along as welding progresses, then break out.





SKETCH D BEND DETAIL

YAESU—BREAK THE CODE AND SAVE—!

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Only $. . . - - / . . - - - / - - - - . / *OR LESS*

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YAESU FL2100Z 1.2 kW Amp.
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YAESU ACCESSORIES
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FT707 — Biggest selling HF SSB Mobile Transceiver
Only $ - . . . . / - - - - . / - - - - ./ *OR LESS*

FT107 M/DMS SSB-HF Transceiver
Still only $. - - - - / . - - - - / - - - - . / - - - - .

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All our Kenwood equipment is manufactured by **Trio-Kenwood Corporation (Tokyo) Japan** and our replacement parts are supplied by Trio-Kenwood Corp. (Tokyo) Japan. All our equipment is branded "KENWOOD" and all equipment includes an original English manual. Our photocopy service manuals are only $5.00, not $15.00, and if this is not enough, we can supply full original colour manuals. Yes! Kenwood colour service manuals.

FACTS ABOUT PRICE AND SERVICE

BECAUSE we sell equipment that is imported from the factory in Tokyo we are able to offer you huge savings. 100% of one brand alone is imported direct from Tokyo.

BECAUSE we deal directly overseas we are able to tell you of any new models often long before other local distributors and retailers are able to inform you.

BECAUSE we deal directly we are able to obtain parts with ease, which of course must mean we are in a better position to carry out service/warranty, etc.

BECAUSE we usually have the latest service bulletins and of course the parts, we are able to service warranted equipment with an average delay of only 5 days. (Not many can match that service — can they?)

BECAUSE our equipment is in factory sealed cartons, we believe this to be the main reason our service return rate is only 2% and, in any case, if the final quality control check by the manufacturers is not a good enough guarantee, then the BRAND should obviously be withdrawn from the Australian Amateur market until it is suitable. In other words — if the factory can't build them properly — no one can.

NOTE: If the equipment is removed from the carton, how do you know where it's been or what it's done or what's done with it? In our opinion, quality manufactured equipment need not be tampered with.

BECAUSE of all these facts, we have one example to prove the rule.

EXAMPLE: On Kenwood equipment alone not one — no, not one of the transceivers sold by this company in the last 40 weeks up to the lodging of this advertisement with AR magazine, had been returned for service under warranty, or out of warranty, either. We firmly believe this is because our equipment is sold in non-tampered with factory cartons. We believe it is your right as an Amateur and as a customer to receive your purchase in new, untouched condition. If you want your equipment tampered with, touched or on air tested, then we will be unable to supply you. We believe the Amateur to be the best judge of what is fit for him to use.

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BECAUSE of the above proven reliability of Kenwood equipment sold by us over the past 40 weeks, we would like to introduce to you our **NEW — 12 MONTHS WARRANTY** on all of our Kenwood products. Yes — now all our Kenwood equipment is covered by our **12 months warranty.** Can you afford to buy your Kenwood elsewhere?

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"AMATEURS' DISCOUNT PRICE".

Remember — Why pay more than A.D.P. (R.R.P. is too much).

A.D.P. is only a recommended price. There is no obligation to comply with such prices. Dealers are quite free to sell at lower prices if they so wish.

Hams pay A.D.P.	EGGS	
"AMATEURS'	PAY	R
DISCOUNT	TOO	R
PRICE" — A.D.P.	MUCH	P

Kenwood Price List	HAM(S) and EGGS	
TS130S	$650 A.D.P.	$847 R.R.P.
Non-Woodpecker		
TS830S	$985 A.D.P.	$1095 R.R.P.
TS830M	$999 A.D.P.	Who knows
TS130S	$689 A.D.P.	Who knows
TS530S	$749 A.D.P.	$833 R.R.P.
TS180S	No longer in production	
TR2400	No longer in production	
TR7850	$469 A.D.P.	$495 R.R.P.
TR7800	No longer in production	
TR7730	$349 A.D.P.	$379 R.R.P.
TR9500	$595 A.D.P.	$735 R.R.P.
TS600	No longer in production	
TS660		New release
R100	$469 A.D.P.	$527 R.R.P.

Most current list available at publication. Includes 2½% Sales Tax increase. Does not include 2% Tax increase.

FORWARD BIAS

(VK1 DIVISION)

SO YOU NEED A TOWER

In the ACT the approval of towers for amateur and other radio purposes is the responsibility of two government authorities:—

The National Capital Development Commission is concerned broadly with the environmental impact aspects of appearance and siting of the proposed structure. Generally such towers must be free standing, at the rear of the dwelling, and as inconspicuous as such a structure can be made. While not essential to the approval of the application it is a good plan to have briefed your immediate neighbours with full details of the proposed structure and, if possible, obtain from them a letter indicating that they have no objection.

The Building Section of the Department of the Capital Territory is responsible for the approval of the engeering aspects of the proposed tower and antennas it will carry including structural design, vertical and lateral stresses, materials to be used, foundations and anchoring details, etc.

Each application is treated individually — there are no officially approved types of tower, although your application will have a better chance of success if it is a type that you know to have been previously approved in the ACT. If you propose to erect a tower you should speak first to friends who have gone this road and then with the Building Section before you outlay any money. The final hurdle and, if you are like me the hardest of all to clear, will be in obtaining the financial approval of the Department of XYL.

MULTICULTURAL TV TRANSMISSIONS

It is noted that there has recently been a call for the introduction of Multicultural TV to serve the ACT and the surrounding areas. On the basis that we are TV viewers, as well as radio amateurs, we should perhaps take the view that such broadcasts would make a welcome addition to the rather sparce TV fare offering to viewers in this area. However, having in mind the mutual interference problems existing between the internationally unstandard Channels 0 and 5A and our 6 and 2 metre bands it is the contention of the VK1 committee that ALL new Multicultural TV transmissions should be confined to the UHF TV channels as originally intended.

This matter will be represented by VK1 to the Minister for Communications — the local House of Assembly — local Federal Members and Mr. Al Grasby.

I wonder if it would be possible to convince the TV receiver manufacturers that there is a dollar in it for them if MCTV transmissions are confined to the UHF bands?

QSL PSE/TKS

Have you ever given more than a passing thought to the amount of work — and cost — that goes Into the operating of your QSL Bureau?

Sorting the inward cards is a big job in itself, but I'm glad that I don't have to do all that sorting, wrapping, addressing and posting the vast number of outward QSL cards.

Our most recent despatch overseas and local cost the Divisions about $105. Sure, that's small cheese by VK2 or VK3 standards, but a significant cost for VK1.

In the past, and I can't for the life of me see why, VK1 has handled outward QSL cards for non-members of the Institute free of charge.

Well you guys out there, the honeymoon is over — outward cards for non-members will in future cost 5 cents each.

Quick question: Why 5 cents only on outward cards? It's the inward cards that qualify us for the awards.

DIN A4

No — it's not one of the new emission designators. It's a sheet of paper 297 x 210 mm which has been for some years the Australian standard letter size paper. It is a little bigger than the old quarto and considerably smaller than the old foolscap size papers.

But did you ever try to photocopy a foolscap sheet on to A4, without either photo-reduction or A3 capability, on your saltmine photocopier? It just can't be done.

So you scribes out there who will persist in using foolscap paper, what about you get with it and join the rest of us who have adopted decimal coins, metric weights and measures, etc.

73. VK1KV. ■

VK2 MINIBULLETIN

COUNCIL REPORT

At the September meeting, Council was pleased to welcome Albert Amateur Radio Club to affiliation with the NSW Division, making a total of 32 clubs now affiliated. The evening broadcast relays on 80m and 10m have been discontinued and the signals now originate from Dural. Thanks to Peter VK2NGK, Steve VK2BGL and members of the Gladesville Radio Club who have provided relays in the past.

UHF repeater applications from Blue Mountains Amateur Radio Club on channel 8375 and TK/Southern Highlands Amateur Radio Society on channel 8025 were approved for submission to DOC Sydney. WICEN has received permission for the use of a Chatswood site for their repeaters on channels 7150 and 8275.

Council decided to print Certificates of Affiliation for affiliated clubs. Thanks to Steve VK2VHP for designing the certificates. The Division's contribution to the Tower Fund was $650. Totals costs of the case were $3,200, most of which was raised from donations. Council would like to thank again all those who donated so generously to the appeal.

Details of three clubs affiliated with the Division:—

Central Coast Amateur Radio Club
PO Box 238, Gosford 2250.

Net: Tuesdays at 8 p.m. on 3565 kHz using VK2AFY/P.

Meetings: 1st and 3rd Fridays at Club rooms, Dandaloo Street, Kariong.

President: Terry Davies VK2KDK; Vice-President: John Pogson VK2DBC; Secretary: Suzanne Wells; Other Committee: Les LeBreton VK2AKT, Ray Wells VK2BVO, Stan Dogger VK2VFW/ZRD, Bob Leane VK2ZLV.

Magazine: Smoke Signals, published monthly.

Repeaters: VK2RAG on 6750 at Somerbsy. Time out 4m, ERP 20W. VK2RUG at Somersby. Time out 4m, ERP 3W.

Field Day: February at Gosford Showground.

Griffith Radio Club
PO Box 4, Griffith 2680.

Net: Wednesdays at 1100Z on 28.48 MHz, using VK2DBK.

Meetings: SES Headquarters, Griffith, 3rd Mondays.

President: Graeme VK2DGW; Vice-President: John VK2YEZ/NQL; Secretary: John VK2DFC; Other Committee: Leon VK2DLN; Social, VK2DIX, VK2BBL, VK2VRW; Repeater, VK2YEZ, VK2YNC, VK2ZJL.

Repeater: VK2RGF on 6850 at Griffith. Time out 3.5m, ERP 10W.

Coffs Harbour and District Amateur Radio Club
PO Box 655, Coffs Harbour 2450.

Net: Mondays at 8 p.m. on 3610 using VK2DVF.

Meetings: 3rd Wednesdays at Orora High School, Bray Street, Coffs Harbour.

Classes: AOCP and NAOCP at Orara High School Wednesdays.

President: Max Francis VK2BMK; Vice-President: Bruce Telfer VK2DDU; Secretary: Dave Harding VK2DUR; Other Committee: Margaret Nally VK2DQU, Rick Fletcher VK2BKV.

Repeater: VK2RCH on 6650 north-west of Coffs Harbour. Time out 3m, ERP 20W.

Field Day: Easter at Urunga.

COMING EVENTS

Saturday, 7th November: Divisional auction at 14 Atchison Street, Crows Nest.

Sunday, 15th November: Blue Mountains Field Day at Springwood.

Saturday and Sunday, 14th-15th November: WICEN Regional Co-ordinators' Conference.

NSW members and clubs are invited to submit news for inclusion in this column. Please address it to VK2 Minibulletin, PO Box 123, St. Leonards 2065. News for January AR should reach us by 29th November.

Susan Brown VK2BSB. ■

AMATEUR RADIO

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$850.00
WHY PAY $1278?

YOU REAP THE BENEFIT

Here's your chance to up-date to one of the best transceivers in the world, at a true bargain price!

Dick Smith has just made a scoop purchase of the entire manufacturer's stock of the famous FT107M transceivers - at an incredible discount.

They have all the outstanding features that have made the FT107M Australia's most popular top-line transceiver, and include all of the current legal amateur bands. (They don't have the new WARC bands included - but why pay hundreds of dollars more for bands we may NEVER get to use?)

Hurry: stocks are strictly limited - and as we bought the entire manufacturer's stock, this offer can NEVER BE REPEATED!

D-2863

SPECIFICATIONS:

Frequency coverage: 160, 80, 40, 20, 10
Modes of operation: LSB, USB, CW, AM, FSK
Input power: 240W DC (SSB), 80W DC (AM, FSK)
Sensitivity: 0.25uV for 10dB S/N (SSB/CW/FSK), 1uV (AM)
Selectivity: 2.4kHZ (-6dB) 4kHZ (-60dB) SSB, cont. variable from 300 to 2400Hz
Carrier Suppression: better than 40dB
Spurious radiation: better than 50dB below rated output
Power requirements: 240V & 13.5V supplies built-in

THE MANY BENEFITS OF BUYING YAESU FROM

DICK SMITH

- *We sell more Yaesu than anyone else: so we have the best stocks, at the best prices (tell us if we're wrong!)*
- *We have the largest service centre: if something does go wrong with your Yaesu, we can fix it fastest!*
- *We honour Yaesu's 12 month guarantee - beware of others who may offer you only a 90 day warranty.*
- *Dick Smith Electronics have over 22 stores throughout Australia - plus over 200 approved re-sellers. You're never far from friendly help.*
- *We know amateur radio - we have 32 licensed amateur radio operators on the staff including Dick Smith & Ike Bain the Managing Director.*

AND WE GIVE YOU A FULL 12 MONTH GUARANTEE!!

FINANCE TO APPROVED PERSONAL CUSTOMERS OR USE YOUR BANKCARD

CHECK THESE OTHER GREAT DEALS

Most popular communications receiver in the world!

20,000 KM RANGE YAESU FRG-7

More Yaesu FRG-7's are in use throughout the world than any other communications receiver. Check these outstanding features

- Features the famous 'Wadley Loop' for rock solid stability & minimal drift!
- Triple conversion superheterodyne circuit for extremely high sensitivity with excellent selectivity (better than 0.7uV, 6dB @ 3kHz & -50dB @ 7kHz).
- Operates from 100/120/220/240V AC or 13.5V DC
- Weighs only 2kg, size 34 X 15 X 29cm
- 21IC, 22 transistor & 16 diode circuitry

D-2850

WAS $~~[illegible]~~ LAST YEAR!

ONLY $359.00

SAVE $40

Yaesu's brilliant FRG 7700/SW

There's not much we need to say about this outstanding receiver: let the features speak for themselves

- 2MHz - 30MHz continuous!
- All mode - including FM (great with converters)
- Digital frequency readout, with digital clock
- Superbly easy to operate: set pre-selector, then tune!
- Timer for tuning receiver on/off, plus control of external equipment eg. (tape recorder)

D-2841

EXCLUSIVE TO DICK SMITH

NEW

ONLY $499.00

OPTIONAL MEMORY UNIT Gives you single button recall of any of 12 chosen frequencies. Great for monitoring, skeds, etc. Simple connection, instructions inc. **$149.50** D-2842

The FRT-7700 is an ultra compact antenna tuner. Designed to operate from 150kHz - 30MHz, it will provide the proper impedance for the receiver, rejecting unwanted signals. Also has a built-in 60dB max attenuator plus a two-section lowpass filter unit for rejection of strong signals above 2MHz.

Antenna Tuner $71.50

D-2843

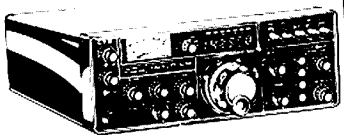
FRV 7700 VHF 2-6 metre converter

Increase the listening range of your FRG-7700 with this high performance frequency converter. You'll be able to listen to all the amateur activity up top, plus aircraft & land mobile stations, etc. Makes great VHF listening!

ONLY $124.50

D-2844

TOP OF THE RANGE SSB/HF transceivers



FANTASTIC FT-107 DMS

This has to be Yaesu's finest transceiver. A masterpiece of solid state engineering - you only have to take the cover off to see the thought & care that has gone into its design. Full band coverage, of course - in all modes (FSK included). A massive 240W PEP input, with features like RF speech processor, variable bandwidth, superb noise blanker. PLUS 12 channel memory. The FT-107 is everything you want from a transceiver and a little bit more.

D-2871

ONLY $1328

Antenna Coupler FC 107

D-2873

Problems with antenna mis-match on your FT-107? Not with this superb coupler. Designed to match the 107 styling, but just at home with any transceiver. Huge meters for power output and SWR. Superb quality!

ONLY $205

FT-902D our most popular HF transceiver

D-2853

The FT-902D has just about everything you've ever wanted in a transceiver. All modes (yes, even FM (including WARC). You get digital readout, RF speech processor, rejection tuning, 180W PEP input, etc, etc. So come in to one of our stores & check it out & ask for your free brochure.

ONLY $1195

Antenna Coupler FC 902

This coupler can feed anything from a random length of wire to a beam. Match the load perfectly so you can deliver more power up there where it's wanted! Suits all bands, has built-in SWR/pwr meter as well. 50 or 75 ohm system, 500W rating.

ONLY $265

D-2855

DICK SMITH Electronics

Australia's largest supplier and Yaesu factory approved distributer & service centre.

NEW!NEW!NEW!

VHF Handy FM Transceiver FT-208R

The FT-208R transceiver brings a new flexibility to today's active 2M operator. An easy to read LCD display is coupled with a 4-bit microprocessor, bringing 10 memories & a scanning function. Only with Yaesu can you get these features at such an economical price. Check it out NOW!

ONLY $368

INC. CHARGER Cat D-2889

MOBILE CHARGER

D-2894

The Yaesu PA-2 is a mobile charger, come pwr supply. Suited for the FT207R & FT208R. Uses the power from your 12V battery when mobile. Also recharges nicads in your battery pack.

ONLY $29.95

Mobile or base

WARC

D-2869

FT707

Yaesu has used the 'state of the art' technology & put it into such a tiny package. Yes, it's the brilliant FT-707. This little wonder contains all the outstanding features that most big rigs lack. It's a full power, all HF band (inc. WARC) multi mode transceiver. You get digital readout, LED S/power meter, plus button operation all the things the amateur needs for safe reliable operation. You've waited a long time for a rig like this, so take the splurge now, it's well worth the money.

ONLY $795

Antenna Coupler

Get the most from your FT-707, use the Yaesu FC-707 antenna coupler & ensure your transceiver always delivers the power it should. Has all the features you need: pwr/SWR meter, in-built dummy load, all band coverage (including WARC), less than 0.5dB insertion loss.

D-2875

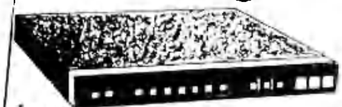
ONLY $149.80

Base operation?

Just add the FP-707 mains supply & you're away. You get fully regulated 13.5V at 20A. Has plug-in connections so you can't cause problems, plus you get an extra speaker - for greater clarity. D-2895

ONLY $175

Digital VFO



Long'n'slim - intended to sit under the 707. 12 memories, up/down scanning in 10Hz steps & receiver offset tuning. Power by FT-707. D-2896

ONLY $299.80

Mobile bracket

Don't let your valuable 707 jump all around the car. Fit it in this superb mounting bracket for safety & security. Also holds the digital VFO. A must for the serious mobile operator. D-2897

ONLY $36

Economy HF/SSB The FT 101Z

WARC

D-2862

Here is one of the finest transceivers in the 101 family, the FT-101Z. This brilliant performer is packed with a host of features, that the more expensive radios lack. So why pay more when you can get features like RF speech processor, variable IF bandwidth, all current HF bands (inc. WARC), 80W input (SSB/CW) & AM/CW/SSB operation & many other features to numerous to mention. So do yourself a favour and check it out NOW at a store near you!

ONLY $795

FT 101ZD

Remember the famous FT-101B? And the 101E? Here is one of the most popular of the 101 series. It has all the features of the famous 101Z but includes digital frequency readout. Stocks are limited so ring the nearest store & check ... stock left ... they

D-2859

STOCK LIMITED

ONLY $910.00

NEW! FT 101Z FM

Now you can have the features of the renowned FT 101ZD with the benefit of FM. Get crystal clear reception & trouble free interference. It makes a great combination!

$885

D-2872

DC-DC Inverter

Want to go mobile? Add this superb DC/DC inverter to your car battery. (13.5V nominal) Don't tie yourself to your shack - get out to where the DX is great!

D-2864

ONLY $77

FL-2100Z 1.2kW Linear Amp.

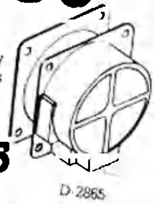
If you want a linear that built like a power house, that gives you a clean, strong signal, try the new WARC FL-2100Z. Australian amateurs can be assured that at our maximum legal limit of 400W PEP the FL-2100Z is just coasting resulting in years of extra life. It features twin cooling fans for reliable operation & gives plate voltage, VSWR & DC readings from its two large meters. Suits virtually all amateur transceivers on the market.

ONLY $580

D-2548

Yaesu Fan

Give your FT-101Z a break by installing a cooling fan. Comes with all the fittings, 110V operated (runs from a tap on the transformer).



ONLY $29.95

D-2865

Yaesu's top 2 metre FT 480R has FM/CW & SSB

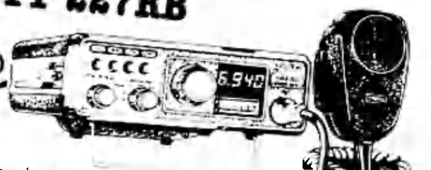
10% OFF

Yaesu call this their 'total performance VHF computerised transceiver'. And total performance it is! As the top-of-the-line Yaesu 2M family you'd expect a lot. You get FM, SSB, CW over the full 2M band, with two VFO's, four memory channels, scanning, digital readout, hi/lo power switch & much, much more. To sum it up in one word, superb!

ONLY $525

D-2887

PLL scanning 2 metre FT 227RB



One of our most popular Yaesu transceiver we have ever had the pleasure to operate, the incredible FT-227R. The PLLL scanner will take you anywhere within the 2M band instantly - just press the scan button on the microphone. Has four memory channels, power output of 50W & the receiver has better than 0.3uV sensitivity (10dB S/N). It operates on 13.5V DC with protection against reverse polarity & high antenna SWR. For value-for-money, it's hard to go past the FT-227RB

ONLY $319

D-2891

SPECIAL OFFER

FREE If you purchase a D-4100 base with resonator, we will give a **FREE** 2M stub (D-4102) worth $11.25 at no extra charge.

When you buy the gutter mount base & 2M stub, you're on the air on 2M immediately. As you want the HF bands, simply buy that band resonator/antenna whip & screw it into the 2M stub. You only have to buy the whips for the band you want. Go mobile with Yaesu

RSE - M - 2 GUTTER MOUNT Cat. D-4100	$24.95	RSL - 7 40M ANTENNA Cat. D-4112	$25.50
RSE - 2A 2M STUB Cat. D-4102	$11.25	RSL - 14 20M ANTENNA Cat. D-4114	$25.50
RSL - 145 6M/2M ANTENNA Cat. D-4104	$27.50	RSL - 21 15M ANTENNA Cat. D-4116	$25.50
RSL - 3.5 80M ANTENNA Cat. D-4110	$25.50	RSL - 28 10M ANTENNA Cat. D-4118	$25.50

DICK SMITH WILL BEAT ANY GENIUNE ADVERTISED PRICE ON YEASU EQUIPMENT.

SAVE $100

D-2868

NOVICE POWER HF/SSB

There aren't many transceivers available in Australia which are particularly suited to novices - but wont disgrace themselves either. The Yaesu FT-7B suits the novice as well as the full call amateur. Gives you all the current HF bands with power output up to 50W. You also have the option of AM, CW or SSB with the choice of VFO or a crystal locked channel. The FT-7B is ready when you are, hook up your power & antenna & away you go!

NOW ONLY $549

NEW! NEW
2 METRE PORTABLE
FT 290R

D-2885

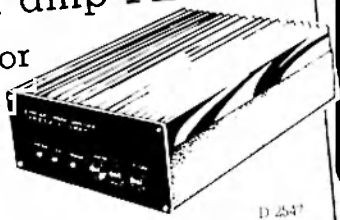
ALL MODE FM/SSB/CW

The FT-290R is a highly sophisticated compact multi-mode transceiver for the 2M amateur band. Featuring PLL esthesis in 100Hz, 1KHz, 5KHz, or 10KHz steps. The FT-290R utilizes a Liquid Crystal Display for digital readout for the operating frequency 10 memories, scanning of the band or memory channels, two VFOs, & receiver offset tuning makes the FT-290R a significant breakthrough in technology

ONLY $395.00

NEW! NEW
VHF Power boosted linear amp FL-2050

Ideal for all 2M rigs



D-2547

Add this to your hand held for real mobile power. Also suitable for SSB, CW, AM etc. Operates from 13.6V DC up to 15W input for maximum power. Includes 12dB receiver pre-amp, with automatic transmit receive control.

ONLY $239.00

The 1981 Radio Amateur's Handbook ARRL 640 pgs

This book is packed with subjects like. 600 MHz frequency counter, Link - Coupled Transmatch, Modulated RX Noise Bridge, IC op amp and sweep tube charts, Antenna/Preamp system for EME, Modern Band - Edge Marker, Pin Diode QSK System, - plus heaps more, too numerous to mention. Has 22 chapters of the usual high standard plus revised template drawings for a variety of circuit boards and some revised chapters eg Power Supplies. A must for the shack!

B-2218 **10% OFF ONLY $14.35**

VALUE PACKED!

AMATEUR CALLBOOKS
FOREIGN RADIO

The Foreign Callbook contains over 300,000 licenced radio amateurs in countries all over the world, giving call letters, name and address. Ideal for DXers.

B-2262 **ONLY $21.95**

UNITED STATES N, K & W LISTINGS

Contains the call letters, class name and address of over 300,000 licenced radio amateurs in the United States, its possessions and territories. Great for the active amateur!

B-2260 **ONLY $22.95**

Antenna Anthology

The best of recent QST HF antenna articles and theory presentations collated into one useful & very handy reference book. Ideal for those antenna experimenters!

B-2205 **$6.25**

All about cubical quad antennas

The world famous classic on Quads! Gives new dimensions, revised gain data, Quad V Yagi, etc etc. Conect dimensions given for 6 to 80M

B-2304 **$5.50**

Q & A for the novice licence

Keith Howard VK2AKX

For the would be amateur, this book puts a question then gives the answer in simple but explicit terms, an excellent means of learning. Covers everything from A-Z

ONLY $4.95

B-2315

WORLD ATLAS

This 20 pg. colour world atlas gives diagrams of all the continents, plus the Polar projection & the West Indies - Caribbean area. A must for the serious DXer

ONLY $4.20

B-2268

Radio Amateur prefix map of the world

Shows the prefix on each country plus capitals & major cities. Also DX zones

ONLY $2.20

B-2264

DICK SMITH GREAT CIRCLE MAP

Azimuthal equidistant projection of the world, with Australian Amateur frequencies, international radio prefixs & international Q's signals. Centered on Australia

ONLY $3.00

B-4502

DICK SMITH ELECTRONICS

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ACT: 96 Gladstone St **Fyshwick** 80 4944 **QLD:** 166 Logan Rd **Buranda** 391 6233, 842 Gympie Rd **Chermside** 59 6255 **SA:** 60 Wright St **Adelaide** 212 1962 **VIC:** 399 Lonsdale St **Melbourne** 67 9834, 656 Bridge Rd **Richmond** 428 1614, Cnr Dandenong & Springvale Rds **Springvale** 547 0522, 260 Sydney Rd **Coburg** 383 4455 **WA:** Cnr Wharf St & Albany Hwy **Cannington** 451 8666, 414 William St **Perth** 328 69 44

Order Value	Charges
$5-$9.99	$1.20
$10-$24.99	$2.20
$25-$49.99	$3.30
$50-$99.99	$4.40
$100 or more	$6.00

These charges for goods sent by Post in Australia only — Not airmail overseas or road freight

VK4 WIA NOTES

DIVISIONAL SERVICES

Are you making best use of the services offered by the Queensland Division? Did you know, for instance, that our Awards Manager, Don VK4UA, can check your cards for various awards? The Outwards QSL Bureau not only allows you to send your cards around the world for 2 cents each, it can provide you with QSL information for those rare DX stations. The Inwards QSL Bureau co-ordinates all incoming cards, sorts them and makes them available to all amateurs. Do you purchase books from the Book-shop? It carries a wide range of technical literature at very reasonable prices — look at the list in this month's QTC.

RADIO TOWERS IN VK4

The May issue of QTC carried an informative article on local government vs. towers. In view of the problems now being experienced in other States, this is a "must" for anyone's reading list. Send for a copy if you don't have one.

RADIO CLUB WORKSHOP

Your radio club has been requested to send in ideas and motions for next year's workshop. What did you contribute? It is proposed that this time a "live-in" weekend will be arranged and it promises to be a very productive meeting. Get your motions in now — this year we will accept general motions from members who are not club members.

JOHN MOYLE NATIONAL FIELD DAY

This popular field day weekend is on again this February, and now is the time to commence your planning. The Radio Amateurs' Group VK4WIZ has proven itself to be the best field day club in Queensland, if not Australia, and is looking for some competition this year. Who is going to take up the challenge? Your club? Look for the slightly altered rules in January AR.

COUNCIL ELECTIONS

It is that time of the year again. You are probably aware that the affairs of your Division are managed by twelve amateurs elected annually as the VK4 Council. Have you ever considered nominating? This is a positive way in which you can contribute to the organization of your hobby. Think it over then arrange for two members to nominate you as soon as possible.

HOW TO GET UP-TO-DATE INFORMATION

Listen to the news each Sunday, most bands 0900K on phone and 1000K on RTTY (VK4RBT). Council may be contacted via the news re-broadcast call-back on Mondays, 3605 kHz at 1930K, the Queensland net each Thursday, 3605 kHz at 1930K, and on the Radio Club net each Tuesday, 3605 kHz at 1930K, or via GPO Box 638, Brisbane 4001. Keep us in touch with you.

VK4DT. ■

Ham Radio Horoscope

HAM RADIO HOROSCOPE

AQUARIUS: JAN. 20-FEB. 18

You have an inventive mind and are inclined to be progressive. You lie a great deal, like giving a report 40 over 9 when the other stations is barely S3. You forget cards for DXCC. People think you are stupid, but that's because you come across that way.

PISCES: FEB. 19-MAR. 20

You are imaginative and can find DX stations at the bottom of any pile-up. Your talent is particularly adept when following OSCAR stations around as they shift frequency. You do get confused now and then and work your own station.

ARIES: MAR. 21-APR. 19

You are quick tempered, and tend to respond with bitter sarcasm when people's operating practices offend you. But when you do the same thing, you can't take the criticism.

TAURUS: APR. 20-MAY 20

You are practical and persistent, dogmatic. Most people think you are stubborn. You keep on calling DX stations long after they have gone QRT. But this sometimes works and they hear you when they come on again the next day.

GEMINI: MAY 21-JUNE 20

You are a quick and intelligent thinker, and people often admire you for your sense of timing in a contest. You are bisexual, which means you tail-end a lot.

CANCER: JUNE 21-JULY22

You procrastinate a lot, which is one reason why your shack is so messy and your VFO drifts. But you are sympathetic and understanding, and people always ask you to help them with the messy jobs, like changing gears in their rotators. You do help them, too, when you get around to it.

LEO: JULY 23-AUG. 2

You think you're a born leader. Others think you are pushy. You are arrogant and a bully. That's why you win contests.

VIRGO: AUG. 23-SEPT. 22

You are logical and neat, and you pick nits. You have quite a collection of nits, in fact, that you have picked. But some of them dried up. You tend to be unemotional and you fall asleep at the key a lot, and wake up sending your dreams. You really ought to see a psychiatrist.

LIBRA: SEPT. 23-OCT. 22

You are artisic and have problems facing reality. You won't admit that the station you called came back to someone else, so you go back and give him a report, and chatter on while he works three or four other guys.

SCORPIO: OCT. 23-NOV. 21

You are shrewd and unethical. You're the type of guy that starts rumours to throw the rest off the track, like getting everyone to listen on 14220 when the DX is really on 14250. Having two transmitters at the same time is a disgusting ruse.

SAGITTARIUS: NOV. 22-DEC. 21

You are optimistic and enthusiastic, but not about ham radio. If you're an XYL, you are tolerant of ham radio. If you're a novice OM, you refuse to go for your AOCP exam because you hate to fail.

CAPRICORN: DEC. 22-JAN. 19

You don't like to take risks, and you tend to be lazy. If you can, you get others to work DX for you so you can watch TV. You always have guest operators in contests. You should avoid standing still too long or you may take root and have to remain there forever.

ARNS Bulletin, April 1981. ■

QSP

SOME THOUGHTS ON THE ROYAL SIGNALS NET — 21.170

Late in the night when the XYLs have gone to bed, a few avid RSARS members in VK land sneak into the radio shack and tune up on 21.170 MHz at 12.30 GMT. The first sign that the RSARS net has started is Les' VK2NLE melodious voice, or George's VK4KY deep voice. Then out of the QRM and QRN comes G6UC and G4HLC. (Can they hear me?)

We patiently wait to be called in by Net Control, as he talks to the phantom Gs with 5 x 9 signals into Sydney. As the clock creeps past midnight local time, there is a faint call from ZL band, followed by a booming 5 x 9 VE and the Gs, GWs and GMs start joining the group.

It is now early morning as we creep to bed, hoping not to disturb the family. The net has been a good one — several new stations, some on voice and some on CW.

I am sure there are a lot of VK-ZL members who could join the net occasionally. It is an opportunity to work three continents, meet new and old friends on the air, and help other members gain the coveted VK-ZL RSARS Award. If you have a spare evening, please call into the net and join the group.

Roger Cordukes. 73 de VK4CD. ■

If you received this issue of Amateur Radio without being a WIA member or subscriber, it was not an accident. Please consider it an inviation to join the WIA. Details are on the enclosures.

WIA members receiving recruiting material in this issue, please put the material to good use by passing it along to a non-member with a recommendation to join.

VHF-UHF

AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston, S.A. 5233

VHF/UHF BEACONS

Freq.	Call Sign	Location
For 28 MHz beacons refer October 1981.		
50.005	H44HIR	Honiara
50.008	JA2IGY	Mie
50.020	GB3SIX	Anglesey
50.023	HH2PR	Haiti
50.025	6Y5RC	Jamaica
50.035	ZB2VHF	Gibraltar
50.036	HC1JX	Quito
50.038	FY7THF	French Guiana
50.040	WA6MHZ	San Diego
50.048	VE6ARC	Alberta
50.050	ZS3E	South Africa
50.060	PY2AA	Sao Paulo
50.070	VP9WB	Bermuda
50.070	YVZZ	Caracas
50.080	TI2NA	Costa Rica
50.088	VE1SIX	New Brunswick
50.100	KH6EQI	Pearl Harbour
50.106	ZS6LN	South Africa
50.120	4S7EA	Sri Lanka
50.498	5B4CY	Cyprus
51.022	ZL1UHF	Auckland
52.013	P29SIX	New Guinea
52.150	VK5KK	Arthurton
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.320	VK6RTT	Carnarvon
52.330	VK3RGG	Geelong
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.400	VK7RNT	Launceston
52.420	VK2WI	Sydney
52.425	VK2RAB	Gunnedah
52.435	VK3RMV	Hamilton
52.440	VK4RTL	Townsville
52.510	ZL2MHF	Mt. Cllmie
52.800	VK6RTW	Albany
144.400	VK4RTT	Mt. Mowbullan
144.420	VK2WI	Sydney
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.550	VK5RSE	Mt. Gambier
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.900	VK7RTX	Ulverstone
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.440	VK4RBB	Brisbane
432.450	VK3RMB	Mt. Bunningyong

Only change of note this month to the beacon list is the frequency change of JA2IGY from 52.500 to 50.008, where it has already been heard. Advice from Graham VK6RO and confirmed by JR6IGG.

Tom VK5TL has written to say he copied the ZS5VHF beacon on 9/9 at 0640Z transmitting the following information: "ZS5VHF please QSL to ZS5TR or phone (03)175 3125 vvv de ZS5VHF. Beacon position 29D 44M South, 30D 50M East, Natal, South Africa. vvv 28025550.005 and 144.925 MHz." Tom said the beacon was actually on 28.255 MHz. Last month I listed it as being on 28.2025 but that is obviously wrong. Someone has programmed the keyer incorrectly by putting an extra 0 in as the third digit. Thanks, Tom.

NEWS FROM CANBERRA

After a long time it was good to receive a letter from Andrew VK1DA, who pointed out the reason the Canberra beacon on 144.475 uses a vertical antenna is that it is a former antenna used by repeater 6900, which has now been shifted to another site. The only chance to put another antenna, horizontally polarized, on the site is when the Department of Transport radar unit is off the air, so we may have to wait for that to occur! When something can be done there are hopes to include a six metre antenna on the mast as well for the proposed beacon on 52.475 MHz, which has been approved and allotted the call sign VK1RTC.

Apparently the multitude of HF, VHF and UHF transmitters on the various hilltops around Canberra make headaches for everyone, including DOT, whose equipment suffers wideband interference when certain refractive conditions exist to mix the medium frequency stations with the HF and VHF, etc. That's the worst of having so many good elevated sites to use!

Eddie VK1VP is currently working on a UHF FM repeater using one of the Philips donated W1FU units, under test it is providing about 3 watts to the antenna, which is a 13 element coaxial collinear. The system is destined for Mt. Ginini and there are hopes of increasing the power to 25 watts.

On the two metre scene in Canberra Andrew says 144 MHz activity has increased a bit over the years with the ready availability of small multi-mode rigs, but it seems few are really truly interested in DX. And it seems there generally exists more interest in 144 MHz in the country areas of New South Wales than in Sydney.

During the RD Contest Dick VK1ZAH operated portable from a ridgetop location on 52, 144, 432 and 1296 MHz. Dick scored over 400 contacts on those bands but only one Sydney station was worked! The FM channels in Canberra ran hot with 50, 51, 40 and 49 being used roughly in that order. On 1296 Dick was only able to work Neil VK1ZT and Bob VK1RC.

Bob VK1RC spent part of that weekend in Sydney and was staggered at the lack of activity on 2m FM. One station was heard to say he had been pretty active, then gave out number 013! It certainly gives the impression the Sydney boys are really browned off, which seems a pity.

Thanks for writing, Andrew, at least the rest of us know a little more about what goes on in your city, and some of the problems you encounter.

NEWS FROM COCOS (KEELING) ISLANDS

Mike VK9ZYX writes from Cocos Island in the Indian Ocean to advise he is now fully operational on 6 metres using an FT625R into an adaption of G2BCX's 16 dB 2 metre beam, i.e. triagonal reflector, 2 x phased dirven elements and 5 directors. Seems to work quite well at 15 metres high.

Has tried often to call VK6 and VK8, but only ends up with JA QSOs, or hear them working the VK6s. The KH6EQUI beacon is often heard. After experiencing 2 metre FM repeater operations in Australia, JA "pile-ups" are something different! Easily worked 100 JAs in four evenings for 28 prefixes. But Mike is still very anxious to work VK stations.

Mike is undertaking a linear amplifier project with the aid of info from VK9YA-VK5CCT and also looking at constructing a pre-amplifier. Also has a 2 metre 16 dB beam to be mounted on the mast and a lend of Alex's VK5CCT IC202 to try 2 metre DX and Oscar.

QSL to Mike Beall VK9ZYX, Cocos (Keeling) Island, Indian Ocean, Western Australia 6799, or via the QSL Bureau.

WHAT'S HAPPENING IN THE WEST?

Graham VK6RO has just returned from a holiday in the north-west of VK6, and while there worked 433 JAs, one HL2 plus hearing H44PT, P29ZAS and VK8VF, all on 6 metres. Since 1979 Graham has worked more than 750 JAs whilst mobile, including three countries JA, KG6 and HL2, heard H44, P29 and ZS2. He says conditions at the home QTH for contacts to JA and other places is so poor he has to go north to work them! Equipment consist of FT680R, which gives 10 watts output on SSB, FM or CW and 3 watts on AM, also an IC502 3 watts SSB. Antenna is a homebrew quarter wave mobile whip.

This trip: SSB, 232 JAs up to 5 x 9 + 20 dB; AM, 89 worked up to 5 x 9 + 10 dB (didn't know there were so many AM stations still around . . . 5LP); FM, 65 worked, some with 1 watt, 5 x 9 + 10 dB; CW, 47 worked with 599 reports, plus others at 1 watt. On the IC502, with its inbuilt whip antenna, signals from Japan have been up to 5 x 9 + 20 dB!

It is interesting to note that as Graham progressed further north the more contacts into Japan were being made, e.g. 3/9 Carnavon 19 JA; 4/9 Karratha 21; 5/9 Port Hedland 6 plus VK8VF beacon; 6/9 Broome 98 JAs, plus Malay TV audio FM on 53.750 at 5 x 9 + 40 dB for several hours; 7/9 Broome 99 JA; 8/9 31, 9/9 29 plus reception of JA2IGY on 50.008, very strong FM broadcast station, possibly Chinese, on 50.642 MHz at 0315Z; 10/9 still at Broome 68 JAs, heard P29ZSA on 50MHz working JAs, heard H44PT on 52.050 at 1123Z calling CQ but VK8GB grabbed him! 11/9 Pt. Hedland 19; 12/9 Dampier 22 plus HL2; 13/9 Dampier 18 JA; 14/9 Carnarvon 1 JA plus others on 50 MHz; 15/9 Carnarvon 2 JAs.

During the day the MUF at Broome did not rise above 43-45 MHz until sundown, when the 49.750 TV was heard every day, and the MUF rose very rapidly. TV from Malaysia was heard most nights on 53.750, whilst FM carriers were on 50.540, 50.550 and 50.642 most nights, plus two-way radio signals on 51.950 with American accents.

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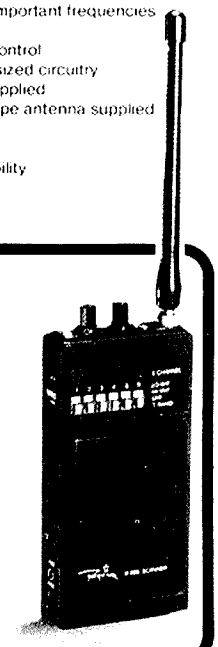

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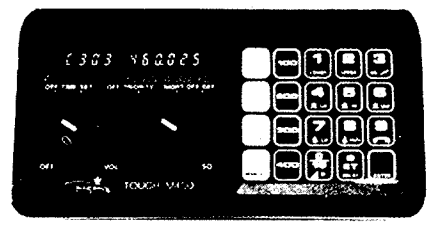


$449

A Chinese (?) FM broadcast heard on 52.600 each night. Graham said we may have heard JA pile-ups on SSB, but you haven't heard anything until you hear a similar pile-up on AM. What a mess! The capture effect on an FM pile-up was remarkable to listen to with 5 x 9 + 10 dB signals.

Graham concludes by saying he spent $591 on accommodation while on holidays so each JA contact cost him $1.36! I guess that's another way of looking at and justifying expenditure. On that basis my (5LP) trip to VK6 with a caravan three years ago was somewhat more costly when reckoned on the basis of the 10 contacts I had whilst there!

ADELAIDE UHF REPEATER

By the time you read this the proposed Adelaide UHF repeater should be at the testing stage as most of the unit is ready now. The licence has not yet been sought, but it is hoped to have it officially on the air early next year.

Possible operating frequencies being 438.525 out, 433.525 in.; 5 watts RF output to some form of gain antenna. It is fully solid state with the metal work being constructed by Tony VK5ASA and the electronics by Mark VK5AVQ.

BITS AND PIECES

17/9 Lyall VS6BE hearing Australian TV very strong on 51.750 MHz at 2230Z, nothing on 52. 19/9 WA4TNV/KL7 5 x 7 on 28.885 0210Z and trying into Eastern States on 52 MHz, also tried from VK5 but no go . . . FW8SC active into JA and should be on in December . . . W working into ZL from time to time on 50 MHz . . . 12/9 VK4 hearing ZL TV also heard by VK8GB, same day KL7 to ZL . . . 13/9 KH6EQI into VK2 . . . 7/9 report that G4JLH heard ZL1UHF beacon on 51.022 at 2015Z — only a marginal signal enhanced by meteor showers and received on an FRG7 with a microwave modules converter! . . . Garry VK5AS at Cowell now on 432 MHz . . . VK5ZRO worked VK5AS who was mobile on SSB from Elizabeth to Port Germein in the mid-north of SA on 2 metres — the 2 metre repeater normally only goes half that distance . . . 20/9 0315 to 0340Z 5 x 9 signals from JA7 and JA8 into VK5 . . . note there is to be a VK-JA 6 metre contest 20/11 to 29/11 and again 20/3/82 to 29/3/82, no other details.

GEELONG VHF FIELD WEEKEND

After a bit of prodding I was able to establish that the Geelong Amateur Radio Club proposes holding another VHF Field Weekend on 12/12/81 and 13/12/81 with rules and regulations similar to those last year and published in November 1980 AR. So that the time you might normally spend trying to find last year's copy can be better spent overhauling your portable gear, I herewith reprint the conditions for the weekend.

AIM

The Field Day Weekend is being conducted in an effort to encourage VHF/UHF usage and participation in the Ross Hull Memorial Contest, as well as filling the needs for a nationally co-ordinated VHF Field Day Weekend.

CONTEST PERIOD

Any continuous 24 hour period within the first 48 hours of the Ross Hull Contest.

RULES

All Ross Hull rules apply, plus/except the following:—

Only entries from portable stations will be accepted, however check logs from home stations will be welcome.

A station is deemed portable when it is operated at least 2 km from the home QTH.

No equipment, including antennae, may be set up more than 24 hours prior to the start of the contest.

Power may be derived from any source available.

A scoring contact may be made with the same station on the same band repeatedly providing at least 4 hours elapse between the contacts.

SCORING

Scoring as per Ross Hull Contest rules.

ENTRIES

Each entry must contain a front sheet giving details of station, including location and total score claimed, plus a photocopy of the log. All entries will be acknowledged and certificates will be awarded to the overall winner, plus the highest score in each call area.

All entries to be sent to the Contest Manager, Geelong Amateur Radio Club, PO Box 520, Geelong 3220, and should be postmarked not later than 13th January, 1982.

It is to be hoped propagation conditions will be better this year as they were very poor last year, even contacts on 2 metres over even average distances were difficult. It is also hoped more stations will make an effort to go out. It is comparatively easy to set up a portable station these days with equipment working off 12 volts if you can rake up a few spare antennae and other bits and pieces. The task increases when you start running higher power with amplifiers for several bands and the other associated equipment for such a set-up, but it can still be fun. Try it!

FROM OVERSEAS

Steve VK5AIM sends me some information from "The Short Wave Magazine" and its columns detailing VHF activity, and I note firstly the contact between Mike G3VYF and Abe 4X4IX in Israel at 1605Z on 11/6/81 via Es propagation over a distance of 3515 km. G3VYF is in Essex and was the only G station to make a contact suggesting a very selective path.

What is also believed to be a first time contact occurred when G3FPK worked a station in the Spanish, North African enclave of Ceuta around 1615Z on 10/7/81. Several other G stations were in on this one.

Also noted that first 6 to 4 metre contact between ZB2BL and GW3MHW occurred on 3/7/81 about 1640Z. And since 1/7/81 the EI stations no longer have 6 metre permits, and likewise neither do the Italians. In Denmark operators have to obtain a permit to listen on 4 metres!

Reading through the notes Steve sent, my heart went out to G3PBV, who complains of having a hill 200 feet high only 200 yards away. I know the feeling OM! Only my hill is 600 feet high!

CONCLUSION

As you may have guessed, overall things on the VHF bands have been rather quiet. There have been the usual JA openings and some Es on 6 metres, very little on 2 metres and 70 cm. However, hopefully October will see some improvements. Closing with the thought of the month: "A man's worst difficulties begin when he is able to do as he likes."

73. The Voice in the Hills. ■

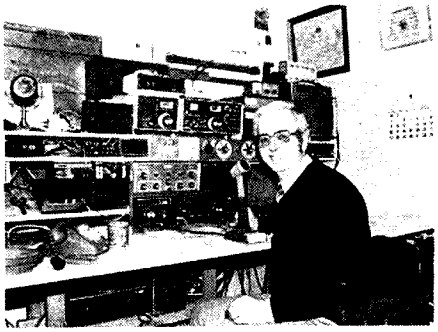
QSP

PSSSTI! AMATEUR RADIO PROFILES MAGAZINE

Amateur Radio Profiles (ARP) publishes a quarterly journal that allows no commercial advertisement. The journal provides an in-depth review of amateur equipment. The reports are totally unbiased and they tell it like it is; good or bad. ARP is published by Bill Winkis KC4PE, a member of the Users International Radio Club. ARP will provide a very valuable service to the amateur community, because it will allow you to read the pros and cons of the various manufacturers' radios so you can make a factual judgement of your purchase. Also, ARP provides a "GBBU Equipment Ratings". The Good, Better, Best and Ultimate dollar values, versus performance and how they compare. Here are some reports on equipment tested.

Ratings of 26 popular Tri-Band antennas, Icom 251A vs. Yaesu 225RD-IC2A, IC260, HF amplifiers, IC-720A, IC-730, KWM-380, etc. The magazine is well written and generally contains 20 pages. Subscriptions are US$13.00 per year, US$24.00 for two years. For your subscription write ARP, Box 164, Cataula, Ga. 31804, USA. Try it, you'll like it! (Surface mail prices quoted) ■

HOW'S DX



Ken J. McLachlan VK3AH
PO Box 39, Mooroolbark 3138

No one can complain, the bands have been good throughout September with outstanding propagation and 10, 15 and 20 metres. Calling CQ, particularly on 10 or 15 metres, resulted in one having to resort to working by call areas to maintain any order and retain his sanity. Trying the country or prefix approach did not deter some Europeans, particularly USSR club operators, from getting out of line. One solution would have been to work split frequency operation, but I personally feel that this is a very selfish approach as more band space is used and the guys on the other end not having an external VFO are disadvantaged. This approach is the only way for a DXpedition to go otherwise no one would have a chance.

Many DX stations were heard and worked, including most of the expeditions on three bands at least.

One of the youngest operators in years but not in experience of handling the pile-ups was 17-year-old Mark A22ZM, who had 2,000 cards to use up in a couple of weeks before QSYing to ZS5-land at the end of September.

A lot of "big guns" could learn a lot by listening to the "little pistols" operating habits, and by using them could increase their DX tally.

LAZY DXers

A lot of operators unfortunately are becoming net only operators, letting someone else find the DX and bring it to them instead of seeking it themselves, or actually calling CQ. Some operators admit they work nets only. Perhaps this is the undoing of DXing in general and the escalation of sloppy operating techniques, which goes hand in hand with the lethargic attitude "you find it and I will work it".

As a net controller on a couple of bands, I feel that nets have their place on the bands, but don't depend on them to work all your new ones that way. You will have more fun and feel a sense of achievement by working the rare ones on your own. If you doubt your own capabilities, don't, and try practising different approaches in DX contests; you will, I am sure, be surprised at the results.

VACANCY

Whilst on the theme of nets, Percy VK3PA, the anchor-man of the ANZA and Pacific DX net, and a controller for over a decade, has intimated he wishes to retire from these duties in mid-1982.

If you are interested in DX and feel that you can contribute in any way as a controller please phone, write or catch up with Percy on either 21.204 MHz at 5.00 UTC daily, or 14.265 MHz Tuesday and Friday at 6.00 UTC. He would be delighted to hear from you

CHINA

As predicted by Vic T12VVR, there was activity from BY in September.

Four members of the Boing Employees' Amateur Radio Society arrived in BY on September 4th for an eight day visit, with two Drake TR7s under their arms, two trapped dipole antennas, the ARRL film on AR and a few books.

They unexpectedly were allowed to operate a demonstration station to communicate back to Seattle. This historic event took place on September 6th with a QSO between K7LAY/P and W7PMO. This was the first authorized amateur transmission in more than 32 years, and signals were good.

The second demonstration took place between the BEARA group in Shanghai and the Chinese in Beijing — both TR7s being pressed into service. The equipment worked faultlessly (as usual) and the operator in Beijing was Chen Fe Ho, the other operator was Hsu Y.C., ex XU8CH and C1CH many years ago. (Would anyone have a card from this gentleman?)

The Chinese asked the delegation to tell the world that their top government leaders are solidly behind amateur radio and before too long China expects to establish many friends through the media of AR. (For a fuller account, see International News.)

We all sincerely hope to hear the BY prefix on the bands in the forseeable future.

DX JOTTINGS

Jacques 3XIZ was active and provided many that missed VK4NIC/3X with the new one, if you were lucky, also QSL to W4FRU.

Congratulations to Philip VK2DPN, who has been notified that his WAZ mutil-band certificate is on its way to him and, being endorsed mobile, is the first one ever issued by the Editors of CQ Magazine.

A first for Philip and a first for VK. An article on how you did it would be interesting; how about it, Philip?

Peter FR0CE is very active on all bands both CW and SSB. He operates an 820S linear and quad at 20 metres on 10, 15 and 20, with dipoles at 18 metres for 40 and 80 metres. Unfortunately he has very few VK cotnacts but is always looking for the Pacific area — if you are successful QSL to DF2OU.

Dave C6ADV operating out of the Bahamas with a nice signal on 15 and 20 metres — using a log periodic beam at 14 metres and the exciter is a Drake TR4. Dave works varying and odd hours, and can be found around the usual DX frequencies on SSB 14.195, 21.295 and 28.695 MHz. QSL route is via N7YL.

Remember Ed W4MGM operating 9U5JM, who really looked after the VKs during his recent whirlwind trip through Africa? He is now back home, the direct QSL cards have been honoured and we came by this photo which was snapped whilst he was enjoying an Eyeball QSO with Mike 9X5MH over a beer proving that DXing is not all hard work!

Ed W4MGN and Mike 9X5MH.

BURMA

XZ9A Laydoh and XZ5A Sanplo still active all bands though have had their share of equipment failures. QSL cards even though adequate IRCs and green stamps have been included for airmail return are being bulk posted to points in most countries for distribution at internal mail rates. This is evidently to get a little more out of the xercise, and some are just going via the Bureau. It is felt that if you send an addressed envelope with IRCs or monetary coverage for the payment by return by airmail, that's the way it should come back, not via other indirect routes to increase the profit percentage but don't blame Sanplo or Laydoh.

SAN FELIX

Apparently the San Felix DXpedition at the time of writing are having their difficulties with the locals wanting to get into the act. The SVs being unable to obtain reciprocal licences direct or via obtaining a Stateside ticket for the FCC, then an automatic CE licence. On the last reports, early October for a limited period was the word; and the PY0 St. Peter and St. Paul Rocks jaunt being put off until 1982, due to internal difficulties and funds being inadequate.

CROZET

XYLs becoming QSL managers seems to be catching as George FB8WG on CROZET has enlisted the assistance of his XYL whilst he is on the island for a twelve month tour of duty. As the island has been virtaully unoccupied for a number of years, there is a lot of work to be done, and it is anticipated signals should be heard on all bands in early November from the much wanted locale.

George will be using his TS820S and a Triband beam. Up to the time of leaving Paris, he had not acquired an external VFO to make split operation possible, so

the going may be rough though he is a very experienced operator on both CW and SSB.

Logs will be sent by RTTY at regular intervals and the turn around time will be kept to a minimum for QSLs.

If you are successful a card to F2CL should gain you a result. Good luck!

Frank VK9NYG, with his newly acquired external VFO, is getting amongst the DX. 3,200 QSOs was the count to the middle of September and his manager Neil VK6NE is kept on his toes with the requests.

ILLEGAL OPERATIONS

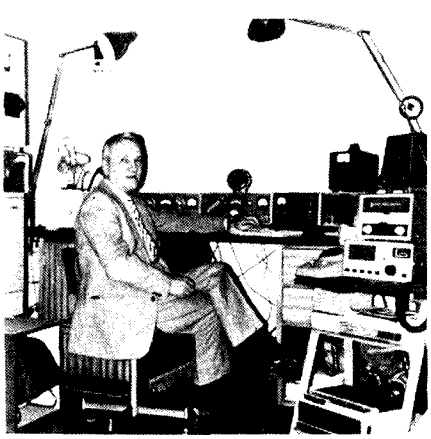
EL2BA, President of the Liberian Radio Amateur Association, is seeking help to catch illegal operators who use EL calls operating maritime mobile. Only two call signs are licensed to sign MM (EL0AL/MM QSL EL9A and EL0AN QSL RYAA Bureau), the others being illegal. If you have a QSO with a MM station using any other suffix, please try to acquire the name of the vessel and location, make out a normal QSL card with this info on it and forward it through the Bureau. This hopefully will give the Association and the EL authorities evidence which they may use.

I0LLZ

Always a big signal, always a gentleman, is a conservative way of introducing Luigi I0LLZ to this column. Luigi is well known to VK DXers on 20 metres by either minding a net frequency, chasing up an elusive one for the "gang" to work, or just chatting amongst his many friends.

Luigi in 1939, using the call KA1LZ from his then OTH of Manila, came second in a world contest — no mean feat considering that a typhoon disrupted power for a considerable time that day.

Now he only needs three countries to have worked the world — those being Burma, China and Kamaran Island. If they are to be worked, Luigi will be there with his Collins line, Henry 4K linear, which is fed into a 5 element Telrex monobander at 100 feet. The QTH is a spacious home close to the centre of Rome where Luigi, with his XYL, Bianca, is enjoying his retirement and of course amateur radio.



Luigi I0LLZ.

Faces Behind the Key and Microphone

H.R.H. Prince Talal Bin Abdel Aziz Al Saud Ahmed HZ1TA.

KNIGHTS OF MALTA

Mario I0MGM has eventually succeeded in getting IA0KM "The Knights of Malta", confirmed as a new country by the ARRL effective from the initial QSOs, but please do *not* submit cards prior to 1/1/1982.

CW ON THE LOW BANDS —

As heard in the West with Mike VK6HD.

Mike reports that in his opinion the bands have not been very productive in September, but it looks as though he got some "goodies" in his log.

160 Metres

KG7, K7CA, VK9XW, W8ANO and W8JI.

80 Metres

AH2L, FO8DF, FP8AA, FW0DBK, JT0WA and W1 to W0 call areas plus G, F, OK and ZS.

40 METRES

CR9JA, DL2GS/YVS, EA6FD, EA8AK, FO8HA, FR7BP/J, HB0ALM, HF0POL, HH2VP, JT0WA, KV4C, OE1ETA/KH8, OE2VEL/KH8 and 6Y5MJ.

LISTENING AROUND THE CW BANDS WITH ERIC L3-0042

160 Metres

W8J1 and many VK2, 3, 5 and 7.

80 Metres

VK and ZL only.

40 Metres

AH2L, CM7MF, GI3OQR, ML1CX, KV4C1, OE1ETA/KH8, YB0VK, YC1BMK/3, ZK2TA, Y39UO, ZF2BN and 4N2CBM.

20 Metres

EA9GD, E18EK, FB8YH, F0GQ/FC, FK0AD FM0EOM, FW0BK, H13OC, TF3JO, VP9HM/P, VQ9A, VS6CF, ZK2BGD, 5W1DO, 9M02EG.

A DXer's dream — 9U5JM, 9U5AC, 9L1CA, W4MGN, 9U5WR.

15 Metres

AH2L, DL1GK/HB0, EA½KC, F0AHY/FC, FP8AA, IS0JGC, PZ2AA, UJ8JA1, VS6CF, 5W1DK and 5W1DO.

10 Metres

CE3ZW, FW8BK, FW0BE, HM01, HP1XEK, KA7JGP/KH2, OH0BA, YB0BK, YB0BRT, ZC4YC, ZS6BL1 and 5WDG.

QSL ROUTES YOU MAY REQUIRE

A7XD — PO Box 4747, Doha, Qatar, Africa.
A9XDB — PO Box 26180, Barhein.
FR0FLO — PO Box 200, Tampon, via 97430, France.
HC1MD — PO Box 9100, Quito, Equador.
H13BEA — PO Box 945, Santiago, Dominican Republic.
JA9IAX/JD — PO Box 2, Ogasowara, Tokyo, Japan.
SV0BV/SV9—PO Box 564, Athens, Greece.
ZK2BGD — PO Box 37, Alofi, Nive Island, South Pacific.
4W1AB — Box 2434, Sana, Yemen.

QSL MANAGERS YOU MAY NEED

A7XE — DF4NB
A9XDA — N4BPP
A9XDE — N4BPP
A22ZM — ZS5CU
A71FD — A7XD
C21NI — OE2DYL
C31IU — KJ8JAQ
C31LM — EA3BDW
C5ADR — DK9KD
C6ADV — N7YL
CT2DO — W4PKN
DL7NS/HB0 — DL7NS
DL2VK/ST3 — DF9FM
EF6BDX — EA6CE
EL5G — K3RB
EL6A — K4SE
EL9A — K4WSB
F9UKI/3A — F9UW
FB8YI — F3KH
FB8YJ — F6APU
FG0/FOO/FS — N6RA
FG0/GDI/FS — F6AXX
FH8OM — DJ1TC
FK8CE — K2RDR
FK8DH — DJ9ZB
FO0KW — W6RFI
FR7BY — IS0IFA
FR7CE — DF2OU
FW0BF — DJ9ZB
G3MUV/CE0 — KA4MGH
G3POA/5N0 — G3RPD
GJ4JVO — GJ2LU
HC7CM — N5BET
HH2CS — F6AXY
HS0JUA — JA8ATG
J3AE — J3AAG
J5AG — SM3CXS
J88AQ — W2MIG
JW8XW — LA8XW
JY1 — WA3HUP
JY1 — WA3HUP
JY8 — ZL1BMU
KC6BS — JH7LMZ
K6LPL/CE0Z — W6ORD
KS6DV — WB6FBN
KN5N/VP2A — K9MK
K6SAD/KG6 — VE5QY
KX6ZY — K7TI
OE1ETA — OE2DYL
OE1VEL — OE2DYL
OX3KM — OZ4KM
OY5J — WA3HUP
DF3NZ/ST2 — DARC
FH8YL — 18JN
FH8YL — I8JN
SO3CC — Polish Buro
SV0AO — KA2FRP
TL8CR — F6AQO
TL8WH — W5RU
TU2DP — KC4JR
VP8HM — K0JW
XT2AU — WA1ZEZ
YT0RA — YU1EXY
YU7QCC/HB0 — YU7GMN
YZ3F — YU3TAQ
3A8EE — 3A2EE
3B8DB — K5BDX
4N0RA — YU1ELM
5T5AZ — KB7HB
7X4BL — K4CNW
7Z2AP — I8YCP
8J3XPO — JARL
8Q7BF — JA1ITE
9M02DW — 9M2DW
9Q5L — K3FN
9Y4LL — K2QIE

WHAT'S BEEN HEARD AND WORKED ON SSB IN VK

10 Metres
A22ZM, A51PN, CE0AA, CE0ZAD, DL8NU, A22ZM, A5IPN, CE0AA, CE0ZAD, DL8NU, EA6AE, EP2TY, F6AYE, G31J, HA8KEY, KX6BU, LA7OT, N6HR/KX6, AE3AE, PA0YJM, SV0BC, T3ODB, **USSR** most areas, W1—W0, XZ9A, **ZE**, ZS, 3B8AE/3B9, 1V3OSH/5R8, 8P6BX, 9Q5FL.

15 Metres
A22ZM, A71AD, CE0ZAD, C6ADV, DF9FM/A22ZM, A71AD, CE0ZAD, C6ADV, DF9FM/ST3, D68AM, EA8XM, EA9JG, FO8DP, HS5AID, KC4AAC, M1C, OE8AJK/YK, SU1AA, T30AE, W1—W0, XZ5A, XZ9A, ZB2EO, ZD7HH, ZE1BP, ZS5MG, 3DCS, 4X4DX, 7Q7LW, 8P6BN, 9N1MM, 9L1FC, 9Q5L.

20 Metres
A22ZM, A71AD, C21N1, CE0ZAD, DF, DL, E, F, G, HA, HH, J6LOU, J73PP, LA, MYC, OX3ZM, PA0, S8AAP, T30AB, UK1PGO, VP8AEM, VP8AJL, VP8QG, W1—W0, XZ9A, ZS5Y, 4U1ITU, 4U1UN, 4W1AB, 8P6AH, 9Y4LL.

Sincere thanks to VKs 2DXH, 3CIF, L3-0042, VKs 4DK, 6IH, 6HD and 6NE for their contributions and assistance.

Good DX.

73. Ken. ■

National EMC Advisory Service

Tony Tregale VK3QQ
Federal EMC Co-ordinator

"POT-POUR-RI"
In these days of rising petrol prices it would be nice to be able to fill the tank each time we key our mobile VHF transmitter. This is what happened with a series of new cars recently — perhaps we should say "The guage indicated so". The cause — RFI to the (integrated circuit) tank sender unit — the cure was not just screening and filtering! After many hours of searching and bonding, it was discovered that the vertical antenna had been mounted in a double roof area. Bonding the double roof sections together at the base of the vertical cleared 90 per cent of the problem: the final 10 per cent was cleared with ferrote beads and filter capacitors.

Final installation and testing of the communications and electronic equipment was being completed aboard a new navy ship in southern Scotland. Saturday afternoon found most of the yard staff watching the cup final on the wardroom TV, and many reserach boffins testing the high power HF transmitters — "Well the two did not mix!". The antenna splitter/amplifier which had been supplied and installed by a very large communications company was found to be "as wide as a barn door". After a quick search of the dockyard dustbins for an old soup can, a temporary HPF was fitted to the input of the splitter/amplifier, avoiding a major walk-out of the yard personnel.

Location: Nato night fighter base, West Germany. Control tower reports intermittent lighting of intercom cal light from the transmitter station. The transmitter station was located one mile from the tower, all telephone and control cables were underground and consisted of 14 miles of ring cable, with many outlets and test boxes. An intermittent fault could be on any part of the ring. While awaiting the controller's clearance to inspect the problem, it was noticed that there was something strange about the intermittent nature of the light — "It was sending the station call sign in Morse!". The fault — the HF beacon transmitter had just been re-located and enough RF was being fed down the new telephone cable to light the lamp one mile away. Of course being able to read the code was a great help in locating this problem.

RFI ALMOST SCUTTLES COVERAGE OF SHUTTLE LANDING
According to the Associated Press, the FCC ordered four field engineers to Edwards Air Force base after it was learned that the equipment used by TV news crews was interfering with communications on frequencies which were to be used by the Columbia space shuttle on landing. The problem was traced to the ENG cameras set up at Edwards. These units use a small transmitter operating in the TV auxiliary bands (1990-2110) MHz and around 2450 MHz) to relay pictures to a nearby control centre. Unfortunately, spurious emissions from the cameras produced interference on the frequencies to be used by Columbia in landing (2200-2290 MHz).

According to James McKInney, Chief, FOB, FCC, everyone co-operated with the Commission, and the problem was quickly traced to at least six of the fourteen ENG cameras on hand. Replacements for the defective units were flown to the landing site and were operational two hours before Columbia landed. Had the problem not been resolved, however, there is little question that network coverage of the landing would have been curtailed.

TVI FROM SWR INDICATORS AND POWER METERS
From the USA comes a report of RFI problems associated with this type of test equipment. It concerns the Daiwa CN-720 and similar SWR indicators/power meters causing TVI when used on the HF bands, especially 10 metres. A spectrum analyser check confirmed the problem with both the CN-720 and the CN-520. The fault was traced to the LED's and associated circuitry. In addition to this problem, we have also found switching diodes and diodes remaining in the signal path in power amplifiers, when the amplifiers are "off", to sometimes be a source of TVI.

A most useful tool in understanding and dealing with all types of RFI problems Is the "New Interference Handbook" from the USA. This book is very moderately priced and is excellent value for money — a most useful reference book for any shack. Available from Divisions and MagPubs. ■

SUPPORT OUR ADVERTISERS!

ANZA Net Co-ordinates Vessel in Distress

Ken MacLachlan VK3AH

Whilst controlling the 21.204 MHz ANZA net in late September, Frank HT1KD called for assistance with a distress call he had received on 14 MHz regarding a vessel afire in the Pacific.

Alerting the Commonwealth Government Marine Search and Rescue Authority, reverse charges was accomplished within one minute, and before Frank had finished his original transmission. Precise information as to the vessel's co-ordinates, name, number of people on board, the hazard and its magnitude were in possession of the Coast Guard at Honolulu within minutes, who acted promptly by dispatching a search plane to the area immediately

With the land-line still open to Canberra we QSYed to the 14 MHz frequency, where the signal from the vessel was strength 9. The YL operator had stated that she was using a FT200 connected to a battery. Shortly afterwards in a very tense and frightened voice, she announced that 75 per cent of the vessel was afire and they couldn't get to the lifeboast but were abandoning ship in a heavy storm with high seas.

The 65 ft. vessel "Sun River", with a compliment of 18, last known position 164° 24' 16" W and 18° 11' 21" N may unfortunately never be heard of again, but as amateurs we know that a service has been provided and everything in our power was done to assist these poor unfortunate people, even through delibrate QRM on a frequency publicised as handling emergency traffic.

All operators should read page 4 AR September 1981, and get all details (including the registry of the vessel; this we did not get as it would have saved problems that occurred later), and if not directly involved refrain from comments on frequency and leave it to the original station who took the call. That station probably has better propagation and a fuller understanding of the problem as he has with the emergency since its inception. Help by all means, *if you are asked*. We suggest to some operators that they refresh their memory by reading the regulations.

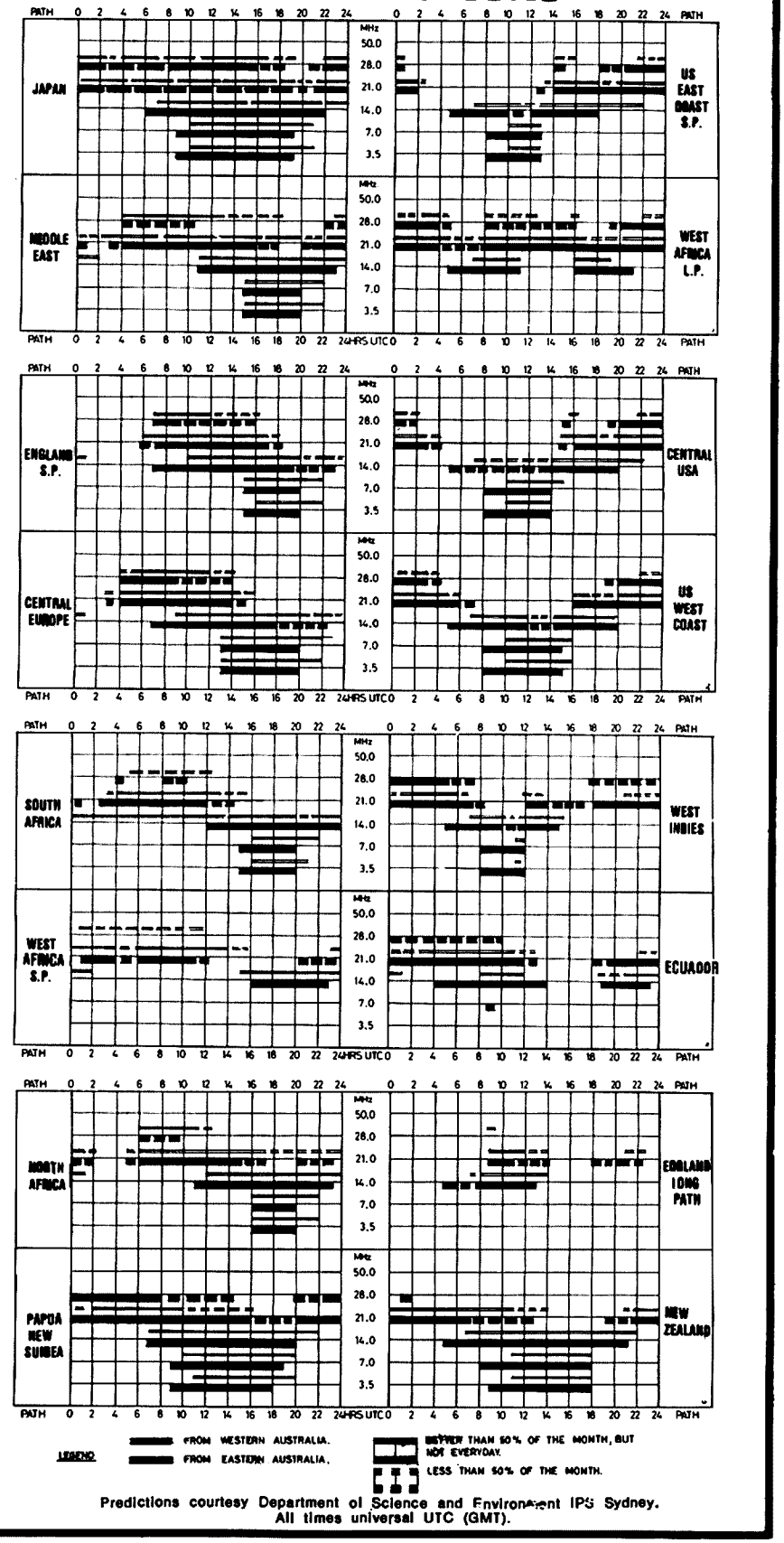
My sincere thanks to the gentlemen at the Centre in Canberra for their courtesy, help, advice and understanding, the Coast Guard Radio Room at Honolulu, radio amateurs HT1KD, ZL1BOQ, N6DKP, KH6ML and others who I might have missed.

Ken VK3AH. ■

Join a NEW MEMBER NOW!

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

EDUCATION NOTES

Brenda Edmonds VK3KT

Congratulations to all those who passed the various sections in the August exams. It was good to hear all the new call signs appearing in a rush in September. Commiserations and better luck next time to those who didn't quite make it, and of course good wishes to those about to attempt the November ordeal.

Perhaps this is an appropriate time for a few words about examinations, in reply to some of the disgruntled comments that have been heard.

Firstly and most importantly — the onus is on the candidate to record his answers on the answer sheet, and to fill in the details on the top of the sheet. In one recent examination four answer sheets were found to be totally blank except for the name, etc., at the top. Later it was found that four question booklets had selected answers marked, but there was no way these could be identified to any of the unmarked sheets. So four people who may have been quite confident scored zero.

The present system involves hand marking of all answer sheets — but the marker cannot be expected to know where you intended to put the circle If you did not put it round the right letter. If you circle alternatives A and C in question 37, and no alternative for question 38, that's two wrong even if C for 37 and A for 38 are correct. The answer sheets do require care in filling them In, especially if you don't work steadily through from 1 to 50. This is partly examination technique, I know. Some people need more practice with it than others.

There is no predetermined number of candidates allowed to pass. We are now receiving statistics from DOC after each exam (see recent ARs). The pass rate range between States agrees fairly well with the overall average of 35-40 per cent for AOCP for over twenty years. Novice rates are slightly higher than AOCP.

With regard to marks obtained, we all hear of the numbers of candidates who achieve 66 or 68 per cent, but remember that these are the more vocal ones, usually. The 50s and 58s do not make so much impression. DOC has produced statistics showing the number of candidates on each score for the November 1979 Novice and February 1980 AOCP exams. The numbers of candidates were approximately 1400 and 1100 respectively. At Novice level, 25.63 per cent of candidates scored 60-68 per cent, and 27.89 per cent scored 70-78 per cent, 5.11 per cent exactly on 70 per cent. For the AOCP the figures are 60-68 per cent, 26.27 per cent; 70-78 per cent, 18.09 per cent; 80 per cent exactly, 4.09 per cent.

The graphs show up as a standard distribution curve. All these statistics can be obtained from Divisional Federal Councillors or from me if details are required.

If you have any complaints about examinations, please do let me know.

If you would like to write some questions, I will be glad to receive them, either for use in trial papers or to pass on to DOC for use.

My first trial Novice paper is available now from the WIA Executive Office. I also have a supply of sample Morse tapes which I can copy for you if you send me a blank tape.

Once again, please send me any ideas or comments on education matters, or join me on 3685 kHz at 2200 EST on Wednesday evenings.

73. Brenda VK3KT. ■

The WIA is in busines for more members. Please help.

CONTESTS

Reg Dwyer VK1BR
PO Box 236, Jamison 2614

NOVEMBER

8 & 22 CZECHOSLOVAKIAN PHONE/CW FCM
14/15 EUROPEAN RTTY
21/22 VK QRP CW/THE WORLD AR 10/81
21/22 ARRL PHONE SWEEPSTAKES CQ
28/29 CQ WWDX CW

DECEMBER

5 Dec. 81
10 Jan. 82 ROSS HULL VHF AR 10/81
12/13 ARRL 10m CQ

JANUARY

1982 —
10 COMPLETION OF ROSS HULL VHF CONTEST
9/10 1ST ANNUAL 40 AND 80 METRE PHONE 73 Mag./AR
23/24 WHITE ROSE 2ND SWL LF AR/FCM

1ST ANNUAL 40 AND 80 METRE CONTEST

Exchanges:
RS report plus DX country (to US stations).

Rules:
From 0000Z January 9 to 2400Z January 9 for 40 metre event.
From 0000Z January 10 to 2400Z January 10 for 80 metre event.
Categories: Single operators may work a total of 16 hours on each band. Off periods must be not less than 30 minutes each. Multi-operators may work 24 hours on each band. Off periods must not be less than 30 minutes each.

Entries:
Single operator: 40 metre band only, 80 metre band only.
Multi-operator: 40 and 80 metre bands.

Exchange:
RS report plus DX country.

Points:
1 point per QSO band with Continental, US and Canada or within your own country. All other contacts are 2 points each on each band. All contacts between 1000 and 1400 local time count double.

Multipliers:
1 multiplier point is earned for each US State (48 tot.), each Canadian Province (12 tot.) or DX country worked per band.

Logs:
For each band with SASE to Whidbey Island DX Club, 2665 North Busby Road, Oak Harbour, Washington 98277.
Entries dated after 11th February, 1982, will not be eligible for consideration.

THE WHITE ROSE RADIO SOCIETY 2ND SWL LF BANDS CONTEST

Date:
From 1200 GMT 23 January, 1982 to 1200 GMT 2 January, 1982. 18 consecutive hours of operation allowed.

Entries:
Phone or CW only. No mixed modes.

Bands:
1.8, 3.5, 7 MHz bands.

Logging:
The practice of logging a series of contacts made by one station will be depreciated.

Logs are not to have more than 10 contacts by the same station on each band.

Score:
1 point per station on your own continent, 5 points per contact outside your own continent.

Total points to be multiplied by the number of different countries heard on each band added together.

Logs:
To show date, time GMT, station heard, station worked, report at SWL QTH.

Points can be claimed for station heard. If both stations are claimed then both calls must be shown in the station heard column.

Entries:
To Contest Manager,
Mr. David McGregor G4IDJ,
C/o White Rose Radio Society,
8 Manor Court, Shadwell,
Leeds LS17 8JE, UK.

Post:
Logs must arrived before 16th March, 1982. (Comments on contest appreciated.)

COMMENT

Many thanks to those of you who did take the trouble to reply with your comments on both the John Moyle and the RD Contest.

The results of the RD Contest are well under way at the time of submission of this column and we should see the final results within the next issue or so.

All the best for now.

Reg VK1BR. ■

COMMONWEALTH CONTEST 1981

A comparison of the results of the Commonwealth Contest over the past three years tends to show that 1960 must have been the peak year of Sunspot Cycle 21!

Points scored by the top six stations in those three years ranged as follows:—

1979: 1st 6613 to 6th 5251.
1980: 1st 7293 to 6th 5679.
1981: 1st 5436 to 6th 4181.

Of course station activity due to publicity or lack of it plays a big part in the success of a contest, and this year, in areas other than Australia and Britain, publicity was sadly lacking, with the result that total logs submitted were down from 127 to only 100. Of these, 39 were from VK (79-41, 80-43), 40 from the UK, only 6 VEs, 3 ZIs and 12 from 11 other exotic areas.

Not many VKs would have judged conditions very good at all, but the results showed that, whereas the rest of the Commonwealth seemed to "catch a cold", the locals were affected only to the extent of a few "sneezes".

Russ Coleston VK4XA is to be congratulated on his 5th placing overall, the highest VK placing for many years.

The leaders were:—

1.	VE6OU	5436	4.	G3FPQ	4438
2.	G3FXB	4895	5.	VK4XA	4365
3.	VE5RA	4794	6.	G3MXJ	4181

RECEIVING SECTION

3. Eric Trebilcock BCRS195 2245

AUSTRALIAN SCORES

5.	VK4XA	4365	60.	VK6RU	1228
8.	VK2BPN	4129	62.	VK1UD	1075
18.	VK7BC	3208	63.	VK8HA	1009
20.	VK3XB	3065	65.	VK3AUQ	955
23.	VK3AEW	2705	67.	VK3BDH	935
25.	VK2GW	2545	69.	VK3CG	925
29.	VK3KF	2180	70.	VK5FG	915
33.	VK3ZC	2123	72.	VK3KS	905
40.	VK6FS	1880	75.	VK3APN	845
41.	VK3CM	1775	76.	VK7GB	785
42.	VK3YD	1765	86.	VK2II	575
45.	VK7RY	1695	87.	VK4SF	555
48.	VK3YK	1625	90.	VK5DL	480
49.	VK3RJ	1565	91.	VK5HO	470
51.	VK2DID	1463	92.	VK3YL	460
53.	VK7CH	1410	95.	VK1BR	400
55.	VK5BO	1385	96.	VK2DKU	365
56.	VK3BKU	1370	98.	VK3ABA	320
57.	VK1CC	1345	99.	VK5NLC	275
58.	VK2DBL	1270			

Other Pacific area results:—

12.	ZL2BR	3848	46.	9V1TL	1690
22.	ZL1HV	2758	81.	ZL1IL	650
24.	T3OAT	2690	93.	VS6JR	450
35.	P29EJ	2110			

Single band entries among the above were:—
7 MHz — VK3APN, Overseas leader.
14 MHz — VK6RU, Overseas leader.
21 MHz VK3ABA.
28 MHz — VK8HA, Overseas leader, VK4SF.

The four man team contest between States resulted:—

VK3	10073	VK7	7098
VK2	9407	VK5	3250

Insufficient logs were submitted from other States to qualify as teams.

AUSTRALIAN AWARDS

The Gold Medallion for the leading VK entrant — Russ Coleston VK4XA.

The Silver Medallion for the leading State team — Ivor Stafford VK3XB, Andy Domjan VK3AEW, Eric Ferguson VK3KF, John Tutton VK3ZC.

The Bronze Medallion for the middle placed VK entrant — P. Van Louwersen VK2DBL.

HOW THE LEADERS MADE THEIR SCORES

OSOs/Bonus areas per band 80 to 10.

VE6OU	9/9	53/29	229/54	160/40	30/26
G3FXB	11/11	47/31	116/59	72/50	34/26
VE5RA	4/4	42/46	186/55	135/38	23/22
VK4XA	23/14	16/11	178/52	80/35	40/25
VK2BPN	18/12	32/18	126/49	78/35	38/25
VK3XB	13/10	6/6	93/33	88/38	13/13

Equipment used by the two top VE stations makes interesting reading:—

VE6OU:T4XB/MLA2500, R4B 3.5 MHz dipole/delta loop, 7 MHz dipole/2 el., 14 MHz 3 el., 21 MHh 4 el., 28 MHz 5 el., CL36.

VE5RA: T4XC/SB220, R4C, 3.5 MHz Inv.-V, 7 MHz 4 el. yagi, 14 MHz 4 over 4 el. yagi, 21 MHz 6 over 6 el. yagi, 28 MHz 5 over 5 el. yagi.

RSGB COMMENTS

"First time in all the years I've been operating that I have taken part in 'BERU'. If they've all been like this, then I'm sorry I've missed them."—G3HAL.

The unique character of this contest is again reflected in the comments of entrants. A combination of somewhat indifferent conditions and rather poor publicity in Canada reduced the overall entry a little from recent years and the lower leading scores are evidence of the move away from the peak sunspot period.

Heading the table this year is John Sluymer VE6OU, who with the help of a very competitive antenna system, totalled 480 contacts and 158 bonuses to take the Senior Rose Bowl.

Al Slater G3FXB continues his domination of the UK scene with his ninth successive win of the Col Thomas Rose Bowl. Although OSO and bonus totals were well down on last year, his 280 contacts and 177 bonuses were sufficient to put him in overall second place, giving him the Junior Rose Bowl in addition.

The varied band conditions put Russ Coleston VK4XA in sight of the leaders in overall fifth place and leading the Australian representation with 337 QSOs and 137 bonuses.

It is a pleasure to see increased participation in the receiving section this year. Top honours and the Receiving Rose Bowl go to Ron Thomas BRS15822. In second place is a newcomer, as far as recent years are concerned, C. Bradbury BRS1066, although he mentions that he did participate in 1938 and 1939! Another listener who has experience of "BERU" operations over many years is Eric Trebilcock BCRS195, of Melbourne, whose 40th entry in this contest puts him in third place.

Bonus points on the lower frequency bands were somewhat scarce. On 3.5 MHz the leading UK stations managed to find VE1, 2, 3, VO, VPS, 9H1, ZB2, 5N and C5, but there was no sign of ZL or VK this year. Western Canada and Oceania were limited to semi-local contacts on this band and there was no evidence of trans-Pacific openings.

7 MHz conditions were average, though not up to the levels of recent years. Most G stations worked the few exotic prefixes in Africa and the Caribbean without too much difficulty and the long path opening to VK/ZL was reasonable, although somewhat hard going, as the skip shortened and European signals built up in strength.

14 and 21 MHz carried the bulk of QSO traffic as would be expected. The short path from Europe to VK in the first 6 h. of the contest provided plenty of bonus points on both bands, with the opportunity to fill in any gaps next morning on the long path. 21 MHz appears to have remained active in Eastern Australia until about 2 a.m. local time on the short path, and European stations needed to keep an ear on this band to catch the sporadic long path openings which persisted throughout their night. However in VE the band seems to have closed fairly early with no "small hours" activity.

28 MHz was the disappointment this year. After very good conditions in recent events, scores were well down. Marginal openings to VK and VE from Europe provided some bonus points but were not sustained long enough to build up any significant number of contacts. Conditions were a little better in the southern hemisphere and VK8HA remarked that from his location this band was open during virtually the whole of the contest period.

The Australian entry accounts for almost 40 per cent of the tabulation and this is due in no small part of the efforts of John Tutton VK3ZC and Eric Trebilcock BCRS195, who for many years have undertaken "BERU" publicity for VK. The committee acknowledges their continued help with grateful thanks. We hope that a similar situation can be established for Canada and New Zealand.

BERU 1982
1200Z 13th March to 1200Z 14th March. Rules in February AR. ■

AROUND THE TRADE

YAESU'S NEW SUPER TRANSCEIVER: FT-ONE

The FT-ONE is a top of the line general coverage transceiver with a completely new design. Controlled by a microprocessor, the FT-ONE allows the complex operations today's amateur demands. All of the up-to-date convenient features are built-in, teamed with the FT-ONE's super high performance circuitry.

Wide Dynamic Range

The receiver front end utilizes a push-pull amplifier, consisting of two low noise power transistors and a high-intercept diode balanced mixer, providing a wide dynamic receiving range of more than 95 dB through the coverage.

Frequency Controls

The keyboard, UP/DOWN switches and main dial allow you to tune to any frequency within the 150 kHz-30 MHz range continuously, with resolution to 10 Hz. The full operating range can be searched, using the scanning control (UP/DOWN controls and keyboard entry resolution to 100 Hz). If you wish, you can stop the scanner on any frequency where a signal is present, in order to check the signal and band condition.

Convenient Filtering System

The filters in both the receiver and transmitter sections are 8 pole crystal filters. In the receiver section, the filtering system provides continuously variable bandwidth from 300 to 2400 Hz. Furthermore, the centre frequency of the filter can be adjusted to any desired point using the IF shift control for a solid copy of a signal on a crowded band. Also, the audio peak filter rejects unwanted high pitched carriers within the passband.

10 VFO System

The FT-ONE includes 10 VFOs for various frequency operations, allowing you to return to a desired VFO frequency, in the same manner as when using the memory function of earlier equipment. The Tx and Rx VFO selector lets you choose the desired VFO for both Tx and Rx, allowing split operation on any frequency within the coverage.

Full Break-In

The Full Break-in feature is most convenient for CW operators, providing a monitoring call-back feature during your CQ calls. Between each dot or dash the transceiver returns to the receive condition, allowing you to monitor your frequency.

General Coverage

The FT-ONE comes equipped for full band coverage from 150 kHz to 30 MHz continuously without band switch selection, so you can check the band condition of broadcasting stations operating on non-amateur bands (transmission on non-amateur bands is prohibited by the circuits).

Reliable Power Supply

The FT-ONE is equipped with a compact switching voltage regulator, which provides a stable voltage to both receiver and transmitter sections with high efficiency.

Convenient Features

Various convenient features such as VOX, speech processor, AMGC, variable threshold noise blanker, audio peak filter, notch filter, etc., are built-in features of the FT-ONE.

Specifications

Frequency coverage: Rx, 150 kHz-29.9999 MHz; Tx, 1.8 MHz-29.9999 MHz. Modes: LSB, USB, CW, FSK, AM, FM. Case size: 370 (W) x 157 (H) x 350 (D) mm. Weight: Approx. 17 kg. Power requirements: 100/117/200/220/234V AC; 13.5V DC. Power consumption: Power switched off for memory back-up — 3.5 VA (at AC); 0.95W (at DC); Tx, 560 VA (at AC); 270W (at DC); Rx, 90 VA (at AC); 36W (at DC).

Transmitter

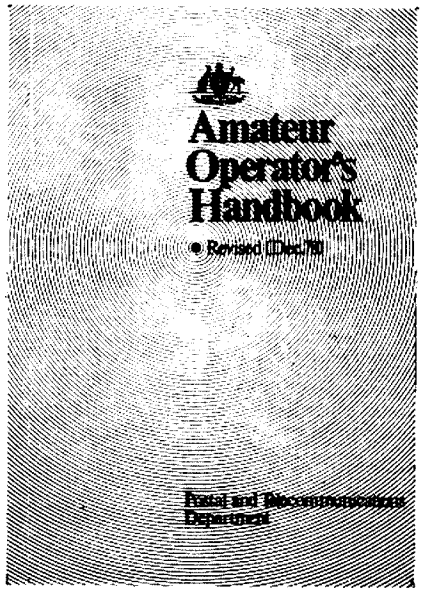
Carrier suppression: Better than 40 dB. Unwanted sideband suppression: Better than 40 dB. Spurious radiation: Better than 40 dB. Frequency response: 350-2700 Hz at 6 dB down. 3rd order IMD product: Better than —31 dB. RF output impedance: 50 ohms. Microphone impedance: low — 500-600 ohms.

Receiver

Sensitivity: 3 uV for 150 kHz to 1.7999 MHz (SSB). 10 db S/N: 0.25 uV for 1.8 MHz to 29.999 MHz. Selectivity: SSB, —6 dB at 2.4 kHz, —60 dB at 4.0 kHz; CWN, —6 dB at 600 Hz, —60 dB at 1.3 kHz; CWN, —6 dB at 300 Hz, —60 dB at 900 Hz; AM, —6 dB at 6 kHz, —60 dB at 11 kHz.

The FT-ONE will be available from Bail Electronic Services, 38 Faithful Street, Wangaratta 3677, Tel. (057) 21 6260, from about November 1981. ■

AMATEUR OPERATOR'S HANDBOOK



A must for every amateur radio enthusiast!

The Amateur Operator's Handbook, Cat. No. B 5042, outlines the regulations and conditions for the operating of amateur radio.

About one-third of the exam for Amateur Operators' Certificates of Proficiency (AOCP) is based on regulations, therefore the B 5042 Is essential reading for anyone Interested In becoming an amateur operator.

This handbook is the all-new updated version, including changes in the service since the previous version.

The handbook was previously only available from Government Publications, but Dick Smith has made a special purchase as a service to amateurs and aspiring amateurs. Now the Amateur Operator's Handbook is available for $3.60 from all Dick Smith Electronics stores. ■

MAGAZINE REVIEW

Roy Hartkopf VK3AOH

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice.

RADIO COMMUNICATION August 1981
Tropospheric Scatter Propagation (G).

CQ-TV No. 114
Colour Vision Mixing (P).

CQ July 1981
Special Antenna Issue.

CQ June 1981
SSB Monitorscope (P). Navassa Island DX (G). 432 MHz Satellite Antenna (C).

73 September 1981
Easter Island DX (G). The Deaf and Deaf-Blind Communication (G).

QST May 1981
Coherent CW (G). Coax Cable Antenna Traps (P).

QST June 1981
Coherent CW (P). ■

QSP

MARINE RESCUE

The American ketch "Ketch-up" ran aground and later sank in heavy seas on a reef about 260 km west of Port Moresby whilst heading for Darwin via Daru. A Mayday call, according to a report, was heard by VK6DY who alerted the Coastal Surveillance Centre in Canberra. When the exact position was confirmed PNG authorities were informed and sent out a patrol boat which rescued the retired Doctor of Los Angeles, the skipper-owner, and the other five people aboard. ■

CHURCHILL FELLOWSHIP

The Churchill Trust will soon be calling for applications from Australia of 18 years and over who wish to be considered for Churchill Fellowships tenable in 1983. Details and application forms may be obtained from The Winston Churchill Memorial Trust (M), PO Box 478, Canberra, ACT 2601. The aim of the Trust is to give opportunity, by the provision of financial support, to enable Australians (whether qualified or not in any specialty) to undertake overseas study or an investigative project of a kind not fully available in Australia. 59 Fellowships tenable in 1982 were announced earlier this year at a total cost of $450,000. ■

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
5 Helen St., Launceston, Tasmania 7250

Recently, Radio Netherland's experimental transmissions of computer programmes via shortwave came unstuck. Unfortunately, as far as enthusiasts in North America and the South Pacific found out, somewhere along the route from the studios in Hilversum and the relay bases in Bonaire, Netherlands Antilles and Madagascar, the computer and audio became fouled up. Those able to copy the European transmitters in Lopik, were more fortunate in copying the signals, especially the TRS 80 and Pet Commodore programmes. Because the APPLE system utilizes a higher baud rate, nobody was able to obtain a printout of the programme.

Various suggestions have been advanced as to why the computer signal failed to enter in. However, the effects of multi-path propogation could have been significant factors as evidenced by similar effects on slow-scan TV signals. Radio Netherlands has also stated that it will be continuing experimental computer programme transmissions.

One way of overcoming the problems encountered so far could be that the signal be transmitted at half speed on a reel to reel recorder, and fed into the computer at normal speed, taking twice as long as at present to feed the programme. It must be borne in mind that these computer freaks are a very small minority of the total listening audience, and the majority do prefer to hear more relaxing sounds than the discordant tones and noises of computer audio.

This is the second experimental transmission by a major international broadcaster during the past 18 months, for it was during the middel of last year that Kol Israel in Jerusalem conducted tests with SSTV (slow-scan). Unfortunately the images were rather poor, because of multi-path distortion. Added to this the number of those capable of receiving SSTV are very small indeed, and it is surmised that Kol Israel has abandoned these transmissions for the present as not being feasible.

I notice that Voices, the magazine about shortwave programmes, has re-appeared after a hiatus of nine months. It was widely believed to have ceased publication, due to problems with sponsorship and advertising. However, it is now being issued in a quarterly format, and those initial subscribers who paid earlier will have their subscription extended to when payment runs out, which could be up to two years extension. It could conceivably encounter problems, so I would caution those contemplating taking out subscriptions. I do recommend the Review of International Broadcasting edited by Glenn Hauser of Knoxville, Tennessee. This reviews programmes of the various international stations, and has been published for many years now.

During the last week of September it really became confusing, for on the 27th Europe reverted back on to Standard Time, which meant many transmissions beamed to Europe were aired one hour later than previously. Compounding this, the USSR instituted their half-yearly frequency alterations and I am reliably informed that up to 50 per cent of the frequencies will be changing. This means a big headache for the frequency management personnel at the major international stations, who will put in many hours of overtime keeping abreast of the changes, and altering channels where necessary. I am at a loss to understand why the USSR does not change in line with the rest of the world on the first Sundays in March, June, September and December.

A number of broadcasters now have a communications type magazine programme with a wide variety of information for enthusiasts. The trend away from purely "DX" formats, while regretted by some, nevertheless is more attuned to the realities of interest amongst the listening audience. As international broadcasters don't exclusively cater for the random DXer, generally the DXers being too busy chasing signals than listening to ordinary programmes.

Several of these programmes are worth listening to, namely Media Network on Radio Netherlands. This is possibly the best of these, with regular weekly news. The recently revamped HCJB's DX partyline does contain some useful information from time to time. It is of interest to note that many are very similar in format to the BBC World Service Radio Club, which had its demise at the end of last year.

Our Radio Australia has recently commenced a monthly communications magazine called "Spectrum". Hosted by Dick Speekman, it can be heard on the first Sundays of the month at 0612 and 1212, as well as other times during that day.

Well, that is all for this month. Until next month, when we will be reviewing 1981 in retrospect, the best of DXings and 73. ■

CLOSE-UP

THE ONLY AMATEUR IN COOBER PEDY — VK5NKM — HAS UNIQUE QTH

The front cover picture shows Kathy Marsh VK5NKM in her shack at Coober Pedy, the opal-mining town in the central South Australia about 800 km north-west of Adelaide. Not only is Kathy the only amateur in the town, but probably the only one in Australia whose house is about 6 metres underground.

Many of the 7,000 inhabitants of the isolated but fast-growing mining centre live in these so-called "dugouts" to avoid the surface temperatures which in summer approach 50 degrees Celsius for months on end. Dugouts are also warmer in winter, and many are quite palatial in their dimensions and furnishings. Kathy and her husband, Lester, have spent most of their time since arriving from Victoria some years ago in enlarging and improving the former opal mine which is now an impressive home.

Kathy prefers the 80 metre band but, as the second photo shows, has quite an antenna farm on the hilltop above the dugout, and has operated a good deal on 15 and 10 metres as well. She is the deputy matron of the Coober Pedy Hospital and also local controller for the State Emergency Service, so not surprisingly doesn't often have time to get on the air these days!

Photos: Ron Fisher VK3OM, Bill Rice VK3ABP. ■

CALL BOOK DATA REMINDER

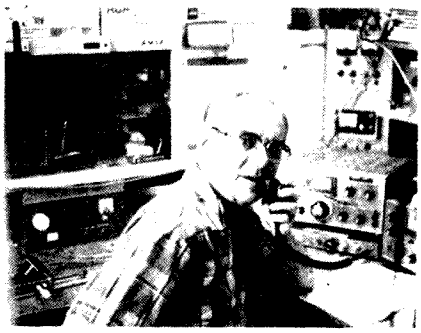
The Editor is aware that there are still a small number of errors, duplications and omissions as well as uncorrected addresses in the current edition.

The data in the Call Book is only as accurate and complete as the information supplied to the Institute.

PLEASE tell us about any errors, etc., and please tell your amateur friends to tell us too. *Write to* —

WIA
Box 150, Toorak, Vic. 3142

AMSAT AUSTRALIA



R. C. Arnold VK3ZBB

Charles Robinson VK3ACR has been appointed Amsat-Australia Co-ordinator by the Federal Executive of WIA following the resignation of David Hull VK3ZDH.

As mentioned on several occasions in these notes, David has received little co-operation from AMSAT in recent years despite his sterling service to the organisation in the early 1970s. I hope Charlie may be able to get Washington to realise that there is still an enthusiastic group of satellite operators in this country.

Sincere thanks to David for his past service as Co-ordinator and Command Station Controller, and best wishes to Charlie in his new role.

I shall continue to act as Publicity Officer.

I have received a copy of the UOSAT Technical Handbook. The handbook is in loose leaf form and will be amended and expanded as required in the future. The handbook is copyright and only available to members of AMSAT-UK, but I hope that we may be able to obtain permission to reprint a part or the whole of the text in "Amateur Radio".

Meanwhile if you require this most informative publication I suggest you become a member of AMSAT-UK and receive your own copy, together with other authoritative satellite information. Membership is a minimum of £E4 per annum, but I suggest you send £10 to cover postage costs by airmail. The Secretary/Treasurer of AMSAT-UK is:—

R. J. C. Broadbent G3AAJ,
94 Herongate Road,
Wanstead Park,
London, E12 5EQ.

Predictions for AMSAT OSCARS 7 and 8 for November, 1981, are:—

NOVEMBER

	OSCAR 7			OSCAR 8		
Date	Orb. No.	Eqx Z	Eqx °W	Orb. No.	Eqx Z	Eqx °W
1	31832	0028	90	18644	0039	75
8	31920	0103	98	18742	0111	83
15	32008	0138	107	18840	0000	66
22	32095	0018	88	18938	0032	74
29	32183	0053	96	19036	0104	82

I am now in a position to supply basic orbital elements for OSCARS 7 and 8 and, I hope, for UOSAT and Phase IIIB in due course.

These elements are described in an article by Tom Clark W3IWI in "Orbit" magazine, March/April 1981, and will probably be the only form of prediction for future satellites. This data is sent to me each time the satellites show a significant shift in parameters — for OSCAR 7 this is every month or so, for OSCAR 8 the figures change every week or ten days. If you would like these figures on a regular basis send me a supply (say 10) of self-addressed, stamped envelopes and I will pass them on to you each time I receive them.

The latest sets of elements available at time of writing are:—

		OSCAR 8	OSCAR 7
Epoch	To	263.53773404	250.4230546
Inclination	Io	98.8106	101.492
Rt Ascn	Oo	295.3972	264.9503
Eccentricity	Eo	0.0005706	0.001914
Argument of Perigee	Wo	280.2486	68.8888
Mean Anomaly	Mo	79.8157	291.3533
Mean Motion	No	13.96298956	12.53360433
Orbit No.	Ko	18066	31167

Tom Clark's article includes a programme written in North Star BASIC suitable for many of the popular home computers. I hope the article can be reprinted in AR to give guidance to those wishing to compute their own orbital data. (Note: The article is too long for this issue but it is hoped to reprint it soon.—Ed.)

As these notes were being prepared the launch of UOSAT was again deferred to early October. I hope there will be news of a successful launch for the next edition.

Preliminary orbit characteristics, assuming a normal launch are.—

Period: 95.504 min.
Height: 560 km.
Inclination: 97.48°.
Increment: 23.95° W/orbit.
Max. O/H pass: 12 min. 20 sec.

This information will be updated after launch. Please note that the 10 GHz antenna is to be LH circular. ■

EMC
(ELECTROMAGNETIC COMPATIBILITY)

If radio frequency interference is causing you a problem you are reminded that — "Advice on all types and aspects of interference (PLI, TVI, AFI, etc.) is available from the National EMC Advisory Service".

FORWARD DETAILS TO
VK3QQ,
Federal EMC Co-ordinator, QTHR.

WICEN

R. G. HENDERSON VK1RH,
Federal WICEN Co-ordinator

WICEN MOBILE/FIELD STATION CHECK LIST

What does the well equipped WICEN operator take with him when called out? The answer in a nutshell is enough to be self-sufficient in the field for at least 48 hours.

PREPARATION

Preparation is the key word, have your equipment prepared and other stores identified so that you don't take half a day to get mobile.

EQUIPMENT

Make up now all the cables, connectors and leads you need, don't put it off until called out. What's more, they will be of general use around the shack. That includes power cord adaptors, headphone-mike sets and field antenna, such as a good fox hunting 2 metre yagi. Make sure your equipment is capable of a rough journey and your nicad battery pack is charged.

VEHICLE

Spare tyres (inflated), spare fan belt, spare light bulbs and a tool kit are all helpful for getting you to where you want to go. Suppressed ignition systems, efficient alternators/generators and regulators help you to stay on the air when you get there. Remember your car must be reliable so fix the overheating radiator, worn parts and nuisance faults now.

YOURSELF

A faulty operator is expensive to replace, so make sure you are equipped to handle the job. Clothing can be vital if you leave the shelter of your vehicle. Don't enter bushfire territory wearing T-shirt, stubbies and thongs, this gear is also unwise for night time bush wear. Temperatures in Australia can range from —10°C to 40°C, so dress for the prevailing weather to avoid sunburn, frost bite and hypothermia.

PERSONAL EFFECTS

Amateurs are human so take with you the necessities of life. Items such as toothbrush, toilet paper, spare clothing, soap and towel will not only make you feel better, but more important for your associates, make you nice to be near as well. Sunglasses, sunburn cream, insect repellent, a torch and a good book will make the hours pass more pleasantly. To attend to the needs of the subject in hand, message pads, clipboards, pens and pencils, maps, compass, etc., will be necessary. For real comfort, bring along your tent, table and chairs, camp stretcher and sleeping bag.

THE INNER PERSON

Food for the complete WICEN body Is essential, suffiice it to say that a hungry operator is a whingeing operator. Take along tins of Spam and meat, fruit and biscuits to sustain your operations for at least 48 hours. Also the necessary brew makings for tea, coffee, Bonox and a gas cooking set.

DISASTER KITS

Much of the material mentioned above can be assembled in an old tin trunk, battered suitcase or similar container to fit the boot of your car. Again it might be subdivided Into two or three containers, say a radio equipment one, a clothing bag and a food/cooking kit. The first-named has uses on fox hunts and amateur radio conventions, the second for impromptu outings to the beach and the third for barbeque lunches.

CONCLUSIONS

From the thoughts above you should be able to draw up your personal check lists/load lists and assemble the gear. Do it now. Remembers the Scouts' motto "Be Prepared".

WICEN REGISTRATION FORMS

Most States have their own WICEN registration forms so the following notes will only record in a general way matters that might be included in them.

Identification: Name, address, call sign.

Contact details: Home and work phone numbers.

Availability: How long can you afford to be on duty?

Response time: How much time do you need to react to a call-out?

Vehicle: Type — cross-country capability.

Equipment: Transceivers, bands, modes.

Power supplies: Generators, mains supplies, batteries.

Antenna: Types and masts available.

Other facilities: Caravan, trailer, tents.

Previous experience: WICEN, SES, Services, VRA, etc.

Special skills: Bushwalking, caving, remote repeaters, etc.

Some States have EDP programmes to sort and present the data and provide co-ordinators with a series of quick look-up tabulations.

Respect the delicate balance between confidentiality and having adequate information available to those who need it. Often an abbreviated contact list plus general capabilities (e.g. 2m FM mobile/fixed, HF/VHF, mobile HF only) is adequate for most WICEN office-bearers. ■

QSP

SECRECY PROVISIONS

According to an article in Worldradio, July 1981, the extisting Section 605 of the US Communications Act reads — "This section shall not apply to the receiving, divulging, publishing or utilizing the contents of any radio communication which is broadcast or transmitted by amateurs or others for the use of general public, or which relates to ships in distress." The amending bill submitted by Senator Goldwater proposes — "This section shall not apply to the receiving, divulging, publishing or utilising the contents of any radio communication which is transmitted by any amateur station, or by any station for the use of the general public, or which refers to ships, aircraft, vehicles or persons in distress." ■

SAVE MONEY

WHEREVER BATTERIES ARE USED —
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- OPERATES FROM 240 VOLT AC MAINS
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- CHARGES BATERIES SINGLY OR IN GROUPS
- DIFFERENT SIZED BATTERIES MAY BE CHARGED TOGETHER
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BATTERY PRICES: **Type AA $4.15**
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PRICE
$19.00
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IDEAL CHRISTMAS GIFT

Can be recharged up to 1000 times! This is where you save real money

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98 CANTERBURY ROAD, CANTERBURY, VIC. 3126 PHONE: (03) 836-0707

HF, UHF and VHF ANTENNAS BY ATN

	Gain dbi	Boom	Price incl. balun
15/11/10 mx			
ATN 20-30-1 rotary dipole			$40
10/11 mx model			
ATN 28-29-3B or 27-28-3B	9.5	3.5M	$70
ATN 28-30-3	9.7	3.5M	$89
ATN 28-30-5	12.0	6.5M	$149
ATN 28-30-6	13.2	8.3M	$199
6 mx			
ATN 50-502.5-5	11.9	3.5M	$95
ATN 50-53-8	14.2	5.5M	$149
ATN 50-53-11	16.2	9.0M	$185
2 mx			
ATN 144-148-8	12.7	2.2M	$55
ATN 144-148-11	14.6	3.8M	$65
ATN 144-148-16	17.0	6.3M	$85
ATN 144-148-13WS	17.3	7.0M	$85
70 cm Model (N Conns)			
ATN 420-470-6	10.2	0.6M	$45
ATN 420-470-14	14.2	1.5M	$59
ATN 420-440-11	15.7	1.85M	$65
ATN 420-440-15	16.7	2.85M	$75
ATN 432-16LB	17.2	3.7M	$85
UHF CB (N Conns)			
ATN 47-5	9.2	0.65M	$45
ATN 47-7	10.2	0.7M	$49
ATN 47-11	17.0	1.7M	$59
ATN 47-15	17.8	2.8M	$69
Amateur TV Translator			
ATN 580-14 (N Conns)	17.5	2.0M	$65

ALL LISTED HF ANTENNAS use top grade 6063-T83 seamless tapered and swaged tubing elements with non-brittle ABS tough weather resistant insulators. Booms are 2" OD (longer booms use guys supplied) and elements taper from ⅞" OD or ⅝" OD depending on length. Longer elements use positive rake on insulators to reduce unsightly sag. The best possible materials have been chosen to suit tough Australian weather conditions.

TRAPLESS TRIBANDERS, 13-30 MHz, Continuous Coverage (Includes new WARC & CB) (LOG PERIODICS)

Model	Elements	Boom (metres)	Gain dbi	Price with 2kW PEP Balun
13-30-6	6	6.0	7.5	$289
13-30-8	8	8.5	9.0	$399

TRAPLESS DUOBANDERS, 20-30 MHz, Continuous (Includes new WARC & CB) (LOG PERIODICS)

20-30-6S	6	4	7.5	$189
20-30-6L	6	6	8.5	$219
20-30-8	8	8.5	10.2	$299

MONOBANDERS — For 14 and 21 MHz

14-14.4-4	4	7	10	$269
21-21.5-4	4	6	9.9	$199
21-21.5-5	5	8	11.2	$289

Also available power dividers/couplers, quarter wave sleeve baluns and matching harnesses for stacks of two or more arrays; also 1:1 and 1:4 baluns in 200W or 1 kW and insulators for homebrew. Write for free catalogue.

ATN ANTENNAS
56 CAMPBELL STREET, BIRCHIP, VIC., 3483
PHONE (FACTORY) (054) 92 2224 (OFFICE) (054) 92 2264

ALSO AVAILABLE FROM: **VIC. (03) 873 3939** **TAS. (002) 47 6674** **W.A. (09) 328 9229** **QLD. (07) 397 0808**
VIC. (03) 789 3412 **TAS. (003) 31 7075** **S.A. (08) 47 3688** **N.S.W.**

AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

For our RTTY enthusiasts, here are details of two awards available from within VK for working/printing stations on the RTTY mode.

THE WESTERN KEYBOARD BASHERS AWARD OF PERSEVERANCE

The Western Keyboard Bashers' Award of Perseverance is offered to all amateurs or SWLs who have contacted or, in the case of SWLs, printed ten (10) Western Australian amateurs on RTTY on any band. It is hoped to encourage the seeking of VK6 amateurs by other States and possibly other countries. Also available will be various endorsements, such as all on one band, QRP working, etc.

Rules

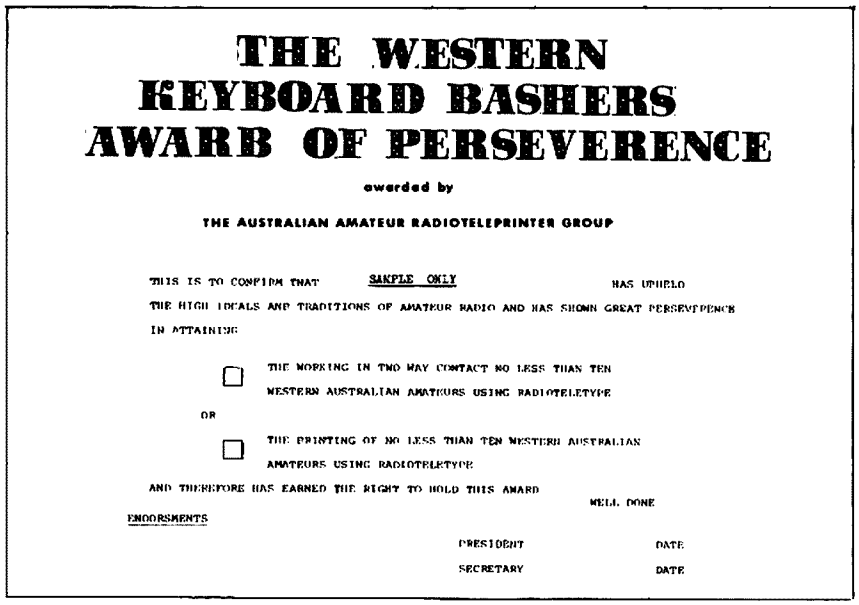
1. Contacts with all WA amateurs with either Full or "Z" calls are permitted.
2. The only mode permitted is RTTY.
3. Only one (1) contact per WA station is allowed to count towards the award.
4. All contacts must be two-way RTTY contacts except for the SWL class.
5. All contacts must be listed showing date, time and frequency and should be verified by one other amateur who should sign the log as well. QSL cards should not be sent.
6. All contacts after the 1st July, 1978, are eligible.
7. Cross band or cross mode contacts are not countable.
8. A fee of $1.00 should be enclosed to cover postage, etc.
9. Members of the AARTG are permitted to apply for the award.

Applications

All applications and enquiries should be directed to—Secretary, Australian Amateur Radio Teleprinter Group, Box N1002, GPO, Perth, WA 6001.

Description

This award is printed in two colours on white paper. The title is in red and all other printing in black. The award measures 300 mm x 210 mm.



THE WESTERN KEYBOARD BASHERS AWARB OF PERSEVERENCE

awarded by

THE AUSTRALIAN AMATEUR RADIOTELEPRINTER GROUP

THIS IS TO CONFIRM THAT SAMPLE ONLY HAS UPHELD THE HIGH IDEALS AND TRADITIONS OF AMATEUR RADIO AND HAS SHOWN GREAT PERSEVERENCE IN ATTAINING

☐ THE WORKING IN TWO WAY CONTACT NO LESS THAN TEN WESTERN AUSTRALIAN AMATEURS USING RADIOTELETYPE

OR

☐ THE PRINTING OF NO LESS THAN TEN WESTERN AUSTRALIAN AMATEURS USING RADIOTELETYPE

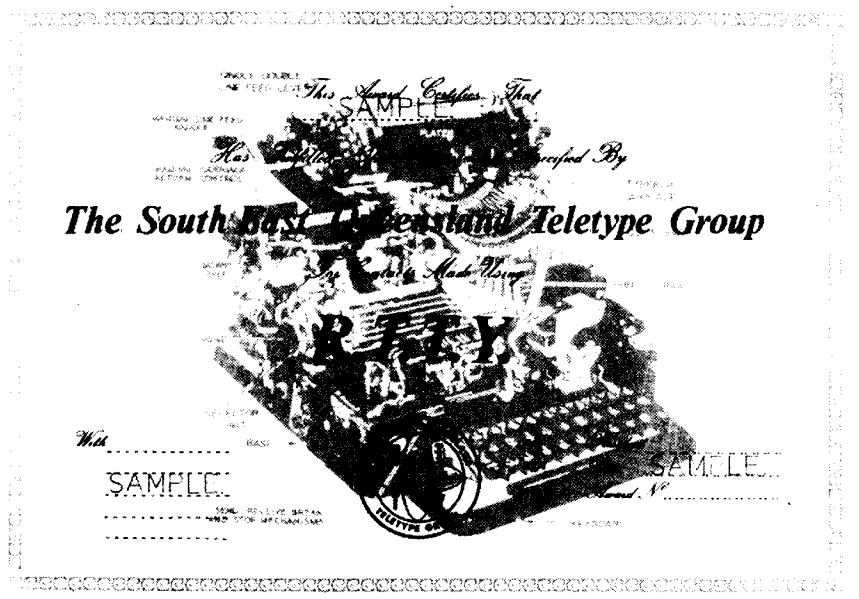
AND THEREFORE HAS EARNED THE RIGHT TO HOLD THIS AWARD

WELL DONE

ENDORSEMENTS

PRESIDENT DATE

SECRETARY DATE



THE SOUTH EAST QUEENSLAND TELETYPE GROUP AWARD

This award is open to all transmitting and listening amateurs who gain award points in the following manner:—

Rules

1. Australian amateurs must score five (5) points, overseas amateurs must score three (3) points.
2. To qualify, a station must, where possible, copy the official station of the South East Queensland Teletype Group, VK4TTY, during a news broadcast and, in the case of a transmitting amateur, participate in the callback (2 award points). A portion of the printout of the news broadcast together with the date, time, frequency and the broadcast number are to accompany the request for the award.
3. Additionally, a transmitting amateur must work three member stations of the South East Queensland Teletype Group on RTTY (1 point each). Log extracts and/or printouts are to be included with the award application, and each member station may be counted only once towards the award.
4. Listening amateurs should, in lieu of 3, forward log extracts and/or printouts of the three contacts involving different member stations of the South East Queensland Teletype Group (1 point each).

Applications

Applicants for the award should forward the above information, together with one dollar Australian or 5 IRCs to cover postage and printing costs, to the Secretary, SEQTG, PO Box 184, Fortitude Valley, Qld. 4006, Australia.

Description
This award is printed in two colours on high quality parchment paper and features and illustration of a Model 19 printer in gold in the background, and all printing in black. The surround is also in gold and the award measures 300 mm x 210 mm.

SWL CENTURY CLUB AWARD
This WIA award for SWLs has been on the books for a long time, but I have not been able to find any records or sample since I have been FAM. This was brought to the attention of the Federal Executive and it was decided at the last Federal Convention to delete it from the awards programme because of lack of interest.

Therefore this award will lapse and be deleted from the WIA records on 31st December, 1981, unless I receive any enquiries.

CORRECTIONS
The following corrections are made to the WIA award listings which appeared in the September 1981 issue:—

1. Under DXCC top listing phone, read: VK6LK 307/321, VK4PX 297/312. Under open, read: VK3AHO 294/326.
2. Under DXCC amendments, CW, read: VK2SG 138/148.

Good hunting. ■

INTERNATIONAL NEWS

AMATEUR RADIO RE-BIRTH IN CHINA
One item of considerable potential interest this month. Here is the text of a press release statement kindly forwarded to the WIA by VS6CT, the President of the Hong Kong Amateur Radio Transmitting Society, who commented in a covering letter:—

"I am hoping that this will be the beginning of further contacts and I, personally, am hoping that in the event that China only initially starts communications internally, that we, as part of mainland China, will be privileged to assist in the training and helping them to emerge into our community of modern day amateur radio."

This is the press release:—

"Hong Kong, Saturday, 12th September, 1981.

The Boeing Employees' Amateur Radio Society (BEARS) delegation arrived in the PRC on September 4th, 1981, and departed on 12th September, 1981. We were the first official international amateur radio delegation to visit China in more than 32 years. Our host was the Chinese Institute of Electronics, a branch of the 4th Ministry of Machine Building. The delegation members consisted of C. P (.Pat) West W7EA, delegattion leader, H. (Henry) Oman K7HO, R. W. (Bob) Hudson K7LAY, W. P. (Bill) Showers KC7CF.

All the delegation members are Boeing employees from Seattle, Washington, with a total of more than 110 years of Boeing service. Our other sponsor was the Western Washington DX Club. Contributors to our expedition included the R. L. Drake Company, who supplied two complete TR7 stations; Telex Hygain, who supplied two tape dipoles anntenas; and ARRL, who supplied a copy of the film 'Wide World of Amateur Radio' and a few books. Our delegation prepared and presented a four hour slide presentation covering amateur radio in the USA. This presentation was made in each of the cities that we visited. Although we did not expect to operate we were permitetd to set up a demonstration station in Beijing and communicate with our home city, Seattle. This historic event occurred at about 10 p.m. Beijing time on September 6th. Our contact in Seattle representing our two clubs was W7PHO and our call sign in Beijing, also representing our two clubs, was K7LAY. We are very sorry that we could not talk to more stations. The Chinese advised us that our transmissions were the first authorised amateur radio communication demonstration in more than 32 years, truly an historic event. This contact signifies the increasing friendship between our two nations.

A second historic event occurred on September 9th. With the assistance of our delegation in Shanghai, the Chinese in Beijing installed a Drake TR7 station and the Chinese in Shanghai also installed a Drake TR7 station. Successful communications were established between Beijing and Shanghai by Chinese operators for the first time in more than 32 years. The operator in Beijing was Chen Ren-Mo, and the operator in Shanghai was Hsu Y.C. Mr. Hsu was licensed many years ago as XU8CH and C1CH. Although propagation was not good between Beijing and Shanghai, communications were established about 10.45 p.m. on September 9th.

The station in Beijing used the call sign CIE and the one in Shanghai used the call sign K7LAY. Both stations were heard in many countries with strong signals. The Drake equipment performed excellently despite much rough handling during transportation.

The Chinese asked us to tell the world that their top Government leaders are solidly behind amateur radio and before too long China expects to establish many friends throughout the world through the media of amateur radio.

Our delegation was overwhelmed by the reception we received in China and very honoured to be the first official amateur radio delegation to China and to demonstrate amateur radio. In China we met many oldtimers and our meetings with them were precious events in all our lives.

We are very appreciative to our host in China, the China Institute of Electronics, and also to the China National Radio Sport Commission and the Shanghai Institute of Electronics."

A WIA member aboard HMAS Swan on a visit to the area at the time also reported this story and added that the warship's visit to Shanghai was the first of an Australian warship to China since 1949.

RECIPROCAL LICENSING
Several members have written about their own experiences with amateur licensing in overseas countries as the result of an article in the WIA 1981/82 Call Book and September 1981 AR, page 20.

VK2ZXU writing about amateur licensing in France in 1978 commented "It is possible to obtain a form of temporary licence by making local application . . . what one does is to aproach the Chief of the PTT in the Department one resides in (or alternatively in Paris — 'Immeuble PTT Reseau International, 75584 Paris Cedex 12') and apply for a temporary permit. You need the *original* of all licence papers to confirm your Australian status, together with all travel and residential documents. It helps to have a recommendation from a French operator and to be using type approved commercial equipment. There can be considerable time delays so one should not try this for short visits, e.g. less than six months.

"Approached in the right way with all necessary documents, some local advice and recommendation, and at least four passport photos . . . it is surprising what can be done. One false move, however, and you may as well go home and start again."

In a letter from VK5BW Alan comments "VKs may easily obtain visitors' licences in Denmark, Finland, Holland, Ireland, Liechtenstein and Norway. Call signs in the UK (for visitors) are issued as G4 to Commonwealth country amateurs (VK, VE, ZL, etc.)."

PAPUA NEW GUINEA
From the May 1981 issue of "Garamut" the PNGARS newsletter comes news that their QSL Bureau is now via Box 141, Port Moresby (instead of Box 204, Port Moresby, the Society's address), the Society's 1981 subscription is K5.00, and that classes are held regularly in Port Moresby through P29PS. Some officers of the Society for 1981/81 were listed as President, P29LS; Secretary, P29CH. The Society provided communications for the Independence Safari Rally. The official PNGARS net is on 3565 kHz at 09.30Z Thursdays. ■

NOVICE NOTES

Edited by Ron Cook VK3AFW

A BOO-BOO IN JUNE?

In the June issue we discussed PEP power and Paul VK5ZPU read the column and has written in to say that I was in error in using the term *watts RMS*. After due consideration I accept Paul's criticism; as they say in the classics "There ain't no such beast as RMS power". Electrical power is the product of DC volts and DC amps or the product of RMS volts and RMS amps when the power is dissipated in a resistive load and when a steady state has been reached.

When an RF signal is pulsed or fed to a reactive load things get a bit more complicated. I had intended to avoid those complications and, in keeping with fairly common industrial practice, I used the term *watts* RMS to differentiate a steady AC power dissipation (i.e. key down CW) from instantaneous power or average pulse power for example. There is no disputing that my use of that term is technically incorrect and for that error I apologise. To make my article quite correct delete the "RMS" after the words "produces 7 watts" and "by definition 1 watt".

To make the matter clear I reproduce the offending paragraph and Paul's letter.

Consider a simple CW transmitter running, say, 10 watts DC input to the final amplifier. Now assume that it is an efficient amplifier and produces 7 watts RMS when connected to a 50 ohm resistive load. The load will heat up and will get just as hot with the 7 watts of RF as with 7 watts of DC. This is of course to be expected as by definition 1 watt RMS of RF produces exactly as much heat as 1 watt of DC.

Page 40, Amateur Radio, June 1981.

Dear Sir,

I wish to point out an error in the discussion on Peak Envelope Power in Novice Notes by Ron Cook VK3AFW in AR's June issue 1981. At the bottom of the first column he definies 1 watt RMS as equivalent to 1 watt of DC. This is incorrect. The correct statement is that 1 watt *average* power of an RF waveform (or just 1 watt RF) is equivalent to 1 watt DC. RMS quantities of *voltage* and *current* are important for finding the equivalent heating power of a transmitter, etc., because average power Pav = *Vrms* × *Irms* for a resistive load irrespective of waveform. This is what Ron has calculated for an unmodulated CW carrier but he calls it RMS power, which is incorrect.

To demonstrate the difference between RMS power and average power, it is possible to calculate from first principles the ratio between RMS and average powers for a sinewave as follows, but bear in mind that RMS power is quite a meaningless quantity.

Consider a sinusoidal voltage and current flowing in a resistor as in Fig. 1. The voltage varies with time according to

$$v(b) = Vp \sin t$$

and the curent according to

$$i(b) = Ip \sin t$$

hence Instantaneous power is

$$p(t) = Vp \sin t \times Ip \sin t$$
$$= v(t) \times i(t)$$

i.e. $p(t) = Vp\ Ip \sin^2 t$, as shown in Fig. 2.

The RMS value of any periodic waveform x(t) is defined in mathematical terms as:—

$$Xrms = \sqrt{1/(2\pi)} \int_0^{2\pi} [x(t)]^2\ dt$$

or —

$$(Xrms)^2 = 1/(2\pi) \int_0^{2\pi} [x(t)]^2\ dt$$

For the instantaneous power waveform:

$$(Prms)^2 = 1/(2\pi) \int_0^{2\pi} (Vp\ Ip \sin^2 t)^2\ dt$$
$$= (Vp^2\ Ip^2)/4 \times 6/4$$

(I have left out several lines of Paul's working to help the typesetter.—VK3AFW.) or —

$$Prms = Vp\ Ip/2 \times \sqrt{6/2}$$
$$= Pav \times 1.225$$

i.e. RMS power = 1.225 × Average power for a single wave.

Note that the RMS power is greater than the Average power, a fact often exploited by amplifier salespeople to exaggerate their power output figure.

I hope the above discussion has helped to clear the confusion and banned the use of the confusing almost always incorrectly used term "RMS power".

Yours faithfully,

Paul Lucas VK5ZPU.

So there we are. RMS power exists as a mathematical concept only. Real power, the stuff that boils water, etc., is produced by effective voltages and currents. Any AC signal of any wave shape can produce power and, for a resistive load, it is possible to calculate the power if we can measure the voltage and current and determine a value for each such that their product is equal to the power (heating effect) produced. These values of AC voltage and current are the effective values. It happens that if we know the wave shape we can calculated the effective values. An effective current is one that produces the

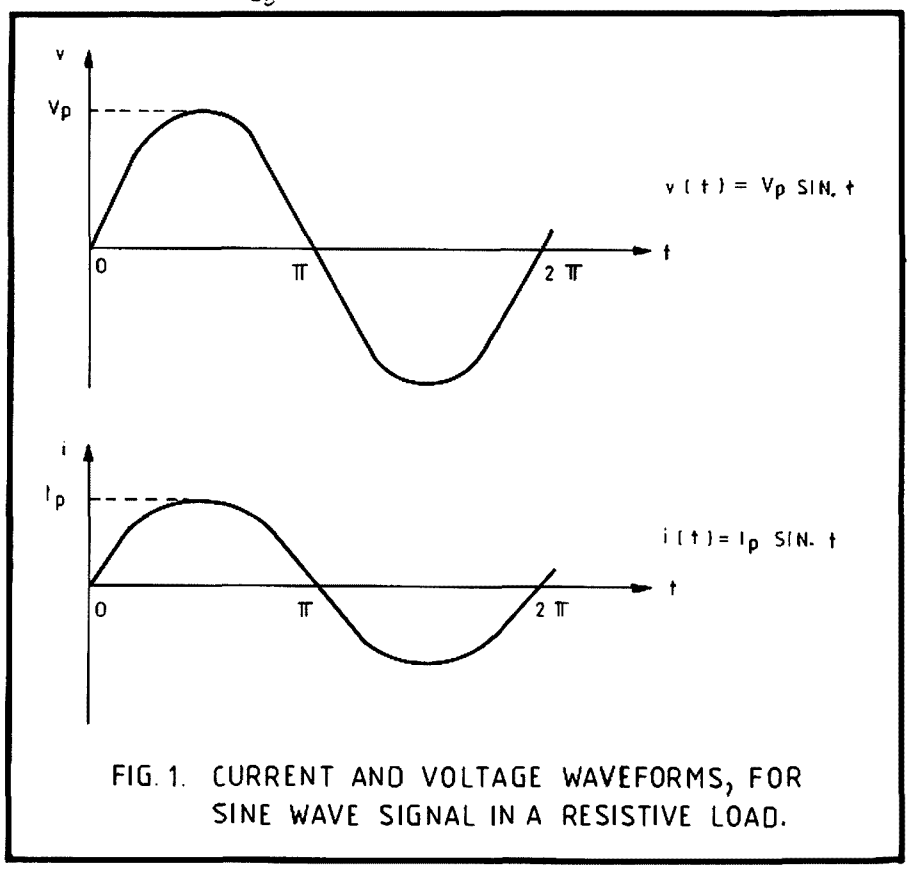


FIG. 1. CURRENT AND VOLTAGE WAVEFORMS, FOR SINE WAVE SIGNAL IN A RESISTIVE LOAD.

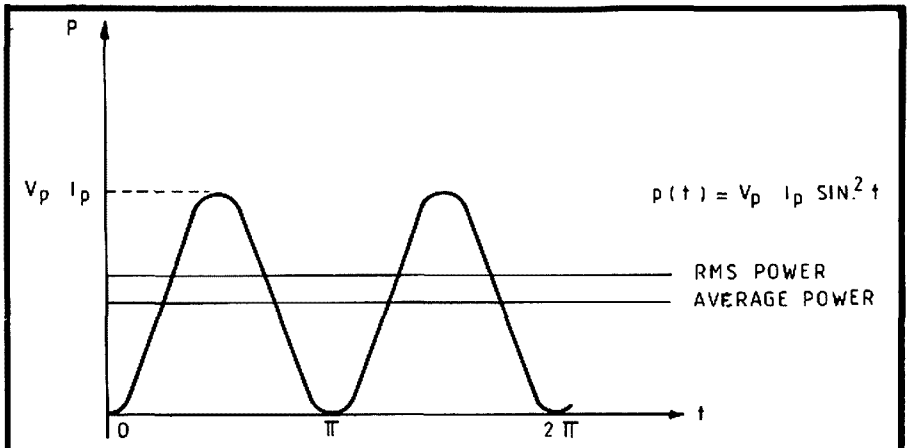


FIG. 2 THE POWER WAVEFORM FOR FIG. 1

NOTE: $p(t) = V_p I_p \sin^2 t$

$$= V_p I_p \left(\frac{1}{2} - \frac{1}{2}\cos^2 t\right)$$

$$= \frac{1}{2} V_p I_p - \frac{1}{2} V_p I_p \cos^2 t$$

THE FIRST TERM IS DC OR AVERAGE COMPONENT (READ BY A WATTMETER)

THE SECOND TERM IS THE AC COMPONENT AT 2 X VOLTAGE AND CURRENT FREQUENCY

same heating effect as a DC current of the same numeric value. So 1 amp effective produces exactly as much heat as 1 amp DC, i.e. it has the same effect.

The mathematical procedure to calculate the effective value involves taking the Root Mean Sum of the Squares or RMS for short, as Paul has done. Hence effective values of voltage and current are called RMS values.

Well that's pretty heavy stuff for beginners. Don't worry if you don't follow Paul's calculus, it's the answers that count, not an understanding of the mathematical derivation. Thank you for writing in, Paul, I appreciate your efforts and I hope we have sorted out another problem.

OLD CO-AX FOR SALE

I cannot emphasise enough the importance of an efficient *antenna system*. This includes not only the radiating section but also the feedline which is usually coaxial cable. The cable may be old — is it lossy due to corrosion caused by water getting into the braid? (Perhaps you forgot to seal the exposed end at the antenna). The cable might be new but cheap — is it lossy at 28 MHz? The answer to this and any other question of a similar nature is easy if you have a VSWR meter and a CW source with an adjustable output; there is a catch which is explained.

To measure the loss of a length of cable all we need to do is to short one end and measure the VSWR at the other. If the cable has no loss the VSWR meter will read infinite VSWR, i.e. there will be no change between forward and reverse indications. To avoid damage to the RF source it should be ascertained whether or not it will operate into high VSWR loads. An FT7 with the CW level control modification can be set to, say, 1 watt out into 50 ohms and should be quite safe to use for these tests; keep an eye on the collector current and do not let it exceed 1A.

Suppose that we find that the VSWR is infinite. This means that all the power sent into the cable has travelled to the short, been reflected, and travelled back to the transmitter. No power has been absorbed by the cable.

Suppose the cable has a 3 dB loss. By the time the power pushed into the cable reaches the short, half has been absorbed by the cable. All this power, 50 per cent, will be reflected but by the time it reaches the sending end again only half the reflected power has made it back as the 3 dB loss in the cable has again absorbed half. Thus the reflected power is only 25 per cent of that that started out. This will show as a VSWR of 3 : 1. We can calculate the cable loss by measuring the VSWR if we know the formulae. John Frank WB9TQG discusses this in May 1981 Ham Radio.

The formulae for gain or less in dB, a, is:—

$$a = 10 \log (P2/P1) \text{ dB}$$

where —

P1 is the forward power and
P2 is the reflected power.

Now we want the attenuation or loss for a single trip, i.e. we want to know the loss between the transmitter and the antenna. So the formulae becomes:—

$$a = 5 \log (P2/P1) \text{ dB}$$

If your VSWR meter doesn't indicate forward and reflected power then the formulae for cable loss becomes:—

$$a = 5 \log [(SWR - 1)/(SWR + 1)]^2 \text{ dB}$$

Suppose we find that the SWR is 2 :1. Then —

$$a = 5 \log [(2 - 1)/(2 + 1)]^2$$
$$= 5 \log [1/3]^2$$
$$= 5 \log 0.1111$$
$$= -4.8 \text{ dB}$$

So the cable loss is 4.8 dB, a loss is indicated by the negative sign.

Now many VSWR meters only have a red band above 3 : 1 and no markings. If the meter has a scale marked 0 to 1 as well as SWR indications we can use a different formulae. If your meter does not have a linear scale marked 0 to 1, then you can connect another meter in parallel with the inbuilt meter. A 0-50 uA meter with a 0 to 1.00 scale, such as may be found on a multimeter, would be ideal.

Set the sensitivity and/or power level to obtain a reading of 1.00 full scale on the "forward power" or "set" position. Switch to the "reverse power" position or "SWR" position. The meter will read less than 1.00 unless the cable has no loss. By squaring the reverse reading we get the power ratio directly. For example, if the meter reads 0.90 on "SWR" then the reflected power ratio is 0.90 x 0.90 = 0.81. Using the appropriate formulae:—

$$a = 5 \log (P1/P2)$$

we get —

$$a = 5 \log 0.81$$
$$= -0.46 \text{ dB}$$

So our cable loss would be less than half a decibel. Table 1 shows the results for other reverse readings. The results may be plotted on a sheet of graph paper and a smooth curve drawn through the points if you wish.

Having made the measurement you must decide if the result is acceptable. Table 2 gives attenuation figures for the two most common coaxial cables.

THE CATCH

Actually the losses you measure will be greater than will occur if the load (antenna) is correctly matched. Fig. 3.18 of the 12th Edition of the ARRL Antenna Handbook gives the corrections. Table 3 is extracted from that Figure.

Reverse Meter Reading (FSD = 1.00)	Reflected Power Ratio	VSWR	Cable loss (dB)
1.00	1.0	Infinite	0.0
0.90	0.81	19:1	0.46
0.80	0.64	9.0:1	0.97
0.70	0.49	5.7:1	1.5
0.60	0.36	4.0:1	2.2
0.50	0.25	3.0:1	3.0
0.40	0.16	2.3:1	4.0
0.30	0.09	1.9:1	5.2
0.20	0.04	1.5:1	7.0
0.10	0.01	1.2:1	10
0.0	0.0	1.0:1	Infinite

TABLE 1:
CABLE LOSS FROM VSWR TESTS

NOTES:

1. The VSWR and cable losses are calculated from the reflected power ratios and are rounded to two significant figures. Greater accuracy would require better measuring equipment than most amateurs possess.
2. FSD means full scale deflection.

Cable Type	Nominal Attenuation (dB/100m) at various Frequencies (MHz)							
	1.8	3.6	7.0	10	14	21	29	52
RG58	2.2	3.0	4.0	4.6	5.3	6.6	7.8	11
RG8	0.8	1.2	1.6	1.8	2.2	2.7	3.3	4.5

TABLE 2:
NOMINAL ATTENUATION OF RG58 AND RG8 COAX CABLES

To find the nominal attenuation of your cable multiply its length (in metres) by the attenuation at the test frequency and divide by 100. (The above data based on information from Acme Enginering Co.)

Matched line loss (dB)	Additional line loss (dB) for various VSWRs			
	1.0:1	2:1	5:1	20:1
0	0	0	0	0
0.5	0	0.12	0.64	2.9
1	0	0.20	1.1	4.2
3	0	0.38	2.0	6.3
6	0	0.47	2.4	7.2
10	0	0.51	2.6	7.4

TABLE 3:
ADDITIONAL LOSS CAUSED BY STANDING WAVES

Note that values are approximate. See text for source.

It may not be obvious but cable losses of less than 3 dB are difficult to measure accurately if we use the VSWR meter and want to know the loss when the load is matched. For losses greater than 3 dB the accuracy gets better and is quite good eough for most amateur applications.

Why does VSWR increase loss? Well the voltage across the cable is much higher in parts and so the dielectric is under more stress and so the losses are higher. Also the current is higher in some areas and so the power lost due to cable resistance rises. As power is proportional to current squared the losses increase very rapidly with increasing VSWR. (The current has the same standing wave ratio as the voltage.)

Suppose fo rexample you measure a line loss of 4 dB. It is likely that if the cable were matched at the load then the line loss will be about 3 dB. A line loss of 2 dB measured by our method will be mainly due to the VSWR and the matched cable loss will be perhaps 0.5 dB or so.

Therefore it is strongly recommended that cable loss tests be done at the highest frequency available, say 29 MHz, so that larger attenuations are measured and the errors reduced.

Perhaps some knowledgeable reader with a computer could calculate a table of cable attenuation vs. VSWR, taking into account the extra loss caused by VSWR. Most tests, even the ARRL, do not take into account the additional loss caused by VSWR, hence many people may have discarded cable without good cause. Fig. 3 shows how attenuation can be measured without these errors. Two similar power meters are required.

Don't discard the VSWR and short circuit method as it does always give indicative results. If you have two similar lengths of cable, one weathered and one in mint condition, it will give a good comparison.

HIDDEN MISMATCHES?

You may have guessed it by now but if your cable has some losses it will make your antenna match look better. From Table 1 we see that a cable with 10 dB loss will give a VSWR at the transmitter of 1.2 : 1 even if it is open or short-circuited at the antenna! The transmitter will be quite happy with such a load but you won't work much DX. Connect an aerial with a VSWR of say 4 : 1. The transmitter may put out say 10 watts. The 10 dB loss in the cable consumes 9 watts, leaving 1 watt for the aerial. It accepts 0.64 watts and reflects 0.36 watts. Only 0.036 watts arrives back at the VSWR meter, giving an indication of 1.13. If the aerial radiates all the power it accepted the system has a loss of 10 log (0.36/10) = 14.4 dB. This is a loss of about 3 "S" units and applies to received as well as transmitted signals.

So a lossy cable may give pleasing readings in the shack but it doesn't help in any other way. To be sure measure the antenna VSWR at the antenna.

73. VK3AFW. ■

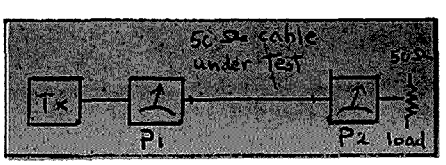


FIG 3.:
MEASURING MATCHED CABLE LOSS
Loss = 10 log P1/P2 dB
where P1, P2 are power meter readings in watts.

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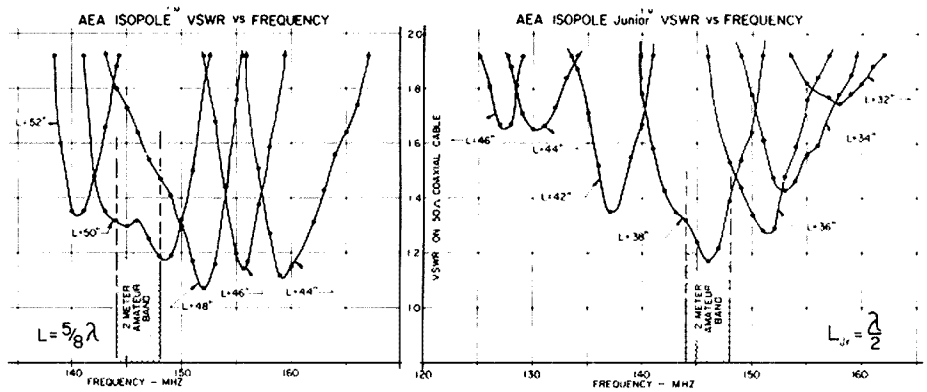
All IsoPole antennas yield the **maximum gain attainable** for their respective lengths and a zero degree angle of radiation. Exceptional decoupling results in simple tuning and a significant reduction in TVI potential. Cones offer greater efficiency over obsolete radials which radiate in the horizontal plane and present an unsightly bird's roost with an inevitable "fallout zone" below. The IsoPoles have the broadest frequency coverage of any comparable VHF base station antenna. This means no loss of power output from one end of the band to the other when used with SWR protected solid state transceivers. **Typical SWR is 1.4 to 1, or better, across the entire band!**



Outstanding mechanical design makes the IsoPole the only logical choice for a VHF base station antenna. A standard 50 Ohm SO-239 connector is recessed within the base sleeve (fully weather protected). With the IsoPole, you will not experience aggravating deviation in SWR with changes in weather. The impedance matching network is weather sealed and designed for maximum legal power. The insulating material offers superb strength and dielectric properties, plus excellent long-term ultra-violet resistance. All mounting hardware is stainless steel. The decoupling cones and radiating elements are made of corrosion resistant aluminum alloys. The aerodynamic cones are the only appreciable wind load and are attached directly to the support (a standard TV mast which is **not supplied**).

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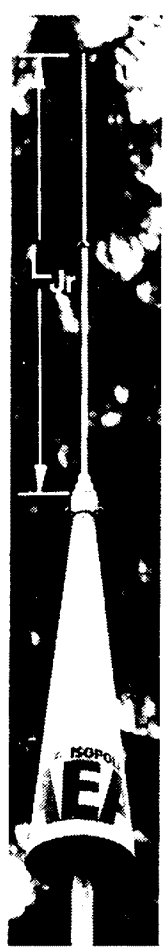
Our competitors have reacted to the IsoPole, maybe you should too! Order your IsoPole or IsoPole Jr. today from.



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LISTENING AROUND

With Joe VK2BJX, Buronga, NSW

Well, what follows right now has nothing to do with amateur radio, but because it's current news it might make a good opening for this column. The fact that we've been eating horse meat for so long without knowing it, reminds me of a little cafe near Waterloo Station, London, where, despite the food rationing still on in Britain in 1949, I could always get steak. Remarking on this "unique" service, a fellow customer drew my attention to a faded notice high up on the wall which said "Only the best horse meat served here!". It might have been Steptoe and Sons old nag for all that I know, but it tasted OK, and it shows that at least the Poms were honest about it, don't you think?

I'm satisfied that we amateurs are a resourceful lot and physical handicaps are no bar to one's operating. Take, for example, a QSO that I was listening to the other day between two Californian stations and a ZL. Much to my astonishment one of the Yanks said that he was using "an artificial voice". He had had his vocal cords removed, so he said, but that didn't stop him modulating his transmitter with the "artificial voice". His articulation was quite good, and I didn't miss a word.

Remember the Wizard of Oz — he was a wiz if ever there was. Pascoe Vale has a Wizard by the name of Jack VK3NOG. Although only a novice call holder, he's a real "wiz" on CW. A visitor to Buronga a couple of months ago operating CW with a tiny key on the dashboard of his car, he was bowling the Yanks over like nobody's business. He's an ex-PMG *operator and* sure can rip along fast on that key. After he had scuttled about half a dozen Yanks, a VK6 demurely attempted to call Jack, but Jack went back at him so fast that the VK6 decided not to challenge him and quickly departed. Thanks for that wallet, Jack — it will lessen my chances of another $40 slipping out of my pocket like it did when I was riding my bike.

Brian VK1DX is off to Antarctica at the end of this year. He'll be heading for Hobart first to do some training, thence to Canberra, and finally he'll be aboard the "Thala Dan" on 24th of December, plus his Icom 720A, heading for Mawson as a physicist with a special interest in the collation of ionospheric data which will be sent back to the ANU computers in Canberra for analysis. His call sign at Mawson where he will be for 12 or 13 months will be VK0DX, and he hopes to come up on 80 as well as other bands.

Local Buronga people cannot remember a colder or wetter winter than we have just passed through, and while I was shivering and shaking from the cold (like Elvis P.) who should I contact maritime mobile near Frazer Island but Ralph VK2PHO from that Banana Republic, Coffs Harbour. Ralph was aboard his home made yacht, the "Shara" (aboriginal for Salt Water). Before retiring to Coffs Harbour, Ralph was originally a teacher at Wentworth Central School in 1962 and knows Buronga where I am. It's a pity that Jack VK3NTR from Ararat, or Steve VK4SE from Toowoomba, wasn't in the QSO also, because they're pretty keen yachtsmen.

Tom VK3VY, of Airport West, works at Radio Australia and has asked me to look him up when next I am in Melbourne to see what makes that kookuburra laugh on the overseas service. Might take you up on that, Tom, for I would like to see what makes "RA" tick.

Reading the mail, which is my most favourite occupation except when I'm making noises for others to listen to, often makes interesting listening, like when a VK5 describing his XYL was heard to say "When you see her, she looks like a *round dumpling*". I bet she crowned him with the rolling *pin after that.*

Sue VK5NOO was heard to say one night that she reckons the men do a better job of waffling than their XYLs. Enough said . . .

My present rig, a vintage EICO 753 (mostly valves but with a transistorised VFO), has been plagued with various troubles which, one by one, are gradually being sorted out. First there was intermittent hum on the transmission which was found to be poorly mounted electrolytics in the power supply. Then there was an effect called "back wave", and there was nothing in the books that I have to indicate what could cause "backwave effect". Not even in the ARRL was there any mention of the cause of it, or a cure. What happens with backwave effect on keying is that even in the key-up position the transmitter was still putting out about 50 per cent of the full power CW. This can make it impossible to copy.

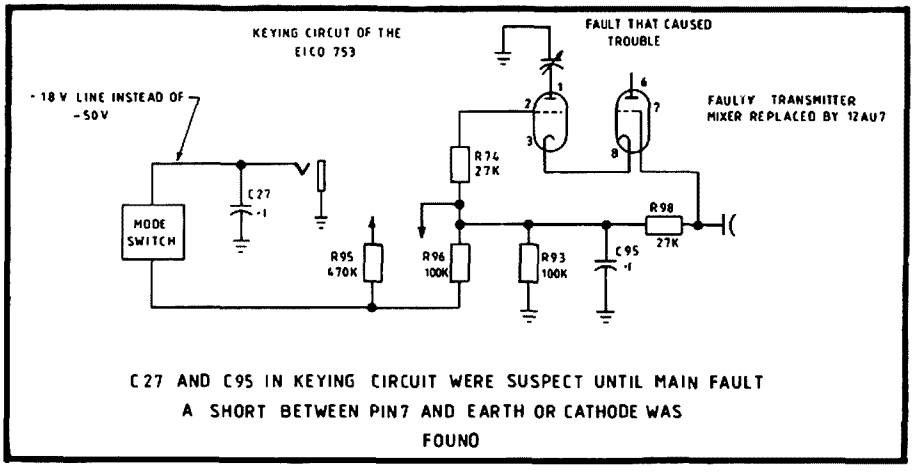
When SWL Alan Chung, of Cooma, visited me recently, we went over the keying circuit together. Two capacitors became suspect when it was found that in the key-up position instead of there being 50 volts across the key contacts, there was only 18 volts. So we were sure that either C27 (a .1 across the key near the mode switch) or C95 (a .01 in that part of the circuit connected to pin 7 grid of the 12AZ7A transmitter mixer valve) was leaking. A day or two later I observed that the backwave effect was also occurring in an intermittent fashion on my SSB. So remembering an old radio repair fault finding technique called tube tapping, I found that I got a positive response on my output meter every time I tapped the 12AZ7A itself. Checks on a valve tester soon revealed a bad short from pin 7 to either cathode or filament. I didn't have a spare 12AZ7A so popped a vintage 12AU7 in, and hey presto, the backwave disappeared. A replacement 12AZ7A has since been obtained and is now doing good service.

I've had a wonderful response on the air to the writing of this column and comments have come in from all over Australia. And I've had letters from shortwave listeners also — some long and very helpful, *the most recent* being received yesterday (15/9/81) from Rod Torrington VK3TJ, of South Pascoe Vale. He says that he has been running an EICO 753 for 11 or 12 years, having originally put it together as a kit set, and he's given me a lot of very useful information about the pitfalls that he struck along the way, and the way he overcame various problems with this set. Thank you very much, Rod, and the very many others who have helped me in so very many ways with sorting out the problems that I have had. As a result of your efforts you will now be hearing me not only on 80, but on 40 and 20 also, and on CW on all three. Some of you millionaires might be having fun with your solid state black boxes, but I sure am having some fun, and gaining much valuable experience, with my vintage EICO 753.

I've used up my space, but before I sign off, thanks again to all who have helped me with my teething problems with the EICO and for the many kind and encouraging comments that have been made on air about this column.

73, see you *all* later.

Joe VK2BJX. ■



C27 AND C95 IN KEYING CIRCUIT WERE SUSPECT UNTIL MAIN FAULT A SHORT BETWEEN PIN7 AND EARTH OR CATHODE WAS FOUND

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

At the last meeting of ALARA it was decided to hold a meeting at Valda's VK3DVT QTH on 3rd October to hand over the books to the incoming office-bearers. On air meetings will start on the 4th Monday of each month from then at 1030Z on 3.570 MHz.

Members of ALARA would like to say a very special thank you to our past president, Raedi Fowler, YF of VK3BHL. Raedi was vice-president and took the chair when our president resigned last year. This enabled ALARA to continue through a difficult time while trying to get the group on to a national level. Although not licensed, Raedi is very interested in radio and especially the YL involvement, and has been a member of ALARA since its early days. She has made a valuable contribution to ALARA in the past year.

The YL sked on Thursday night has been changed to 1030Z 3.570 MHz, and also Marlene VK5QO will be on the frequency looking for someone to chat to.

ALARA numbers are increasing and on most Monday nights a new call is heard. So, girls, please join in, it's very friendly and informal. Also it is a chance to express your views on ALARA activity.

The VK3 State Convention is to be held at Bendigo in conjunction with the Midlands Zone Convention on 20th and 21st February, 1982. So I look forward to meeting some of you at the Convention.

Remember the ALARA Contest on 14th November, 1981. Time: 0001 GMT to 2359 GMT. Suggested frequency: Phone 28.450 to 28.550, 21.160 to 21.360, 14.180 to 14.300, 3.570 to 3.600. CW 28.100 to 28.150, 21.125 to 21.140, 14.050 to 14.060, 3.525 to 3.535.

Operation: Phone and CW—Each station may be worked twice on each band ONCE on Phone, ONCE on CW. All contacts from same QTH. Standard licence and operator procedure.

Scoring: 3 points for ALARA member.

Phone: 5 points for ALARA club station. 1 point for non-member YL or OM.

CW: Double all points for CW scoring.

Further details from me or will be published in contest column of AR, also Electronics Australia and Amateur Radio Action.

Wishing you all good DX and lots of contacts in the contest.

73/33. Margaret VK3DML. ■

The WIA Book

What is it?

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.

117 Rivett Street, Hacket, ACT 2602.
10th September, 1981.

The Editor,

Dear Sir,

I have been tempted many times to put pen to paper and air my grievance but have refrained from doing so in the hope that the cause of my irration may cease but, alas — not it hasn't and in fact has worsened.

Maybe my cause is hopeless as, after all, my complaint is the so-called "Gentleman's Agreement" regarding the use of SSB in the CW segment of those bands which the novice operators share with other amateur users.

Each operator derives pleasure from his or her particular interest during the time, often limited, that one has to pursue the hobby of amateur radio. My particular interest is in CW and mainly in the 15 metre band of which we have a lousy 25 kcs for that mode.

Unfortunately my pleasure is frequently ruined by those operators who consistently disregard the agreement, to which I have referred, by their blatant and persistent use of SSB between 21125 and 21150 kcs.

I will refrain from naming the "offending" call signs for I'm sure if they read this article each will know to whom I am referring. In many instances the same old offenders can always be relied upon to be there on "their" frequency. One would think it had been allocated by DOC for their exclusive use.

Another aspect of this is my dismay that the principals in this thoughtless behaviour are novices; but not that AOCP operators are without blemish either. My point is, how can we as novices expect a fairer share of the "goodies" when we're not prepared to respect the parameters that have been set on us and show consideration to other users and their interests.

In grinding my axe I know I speak for many operators who feel very keenly about this issue, and we should let that fact be known "on air". I have heard the SSB users in the CW segment voice their objection to the QRM from the CW operator. How about that?

Look, this is a wonderful hobby from which, as I said before, we all derive our special interests and pleasure. Surely it's not asking too much of us to respect the interests of one another so that we all might have a fair go!

73 to all!

Yours sincerely,
Cec Maloney VK1NCX. ■

The Editor,

Dear Sir,

Publishing articles such as "Visiting a Ham" (AR September 1981), in my opinion, showed a distinct lack of editorial responsibility. Please do not print my name, address or call sign — I don't want to hear any CQ calls coming from my doorbell, just in case some turkey takes the article seriously.

Yours sincerely,
Name and address supplied. ■

21 Russell Avenue, Woodend, Vic. 3442
3rd September, 1981

The Editor,

Dear Sir,

In recent months we have seen a vast increase in the number of amateurs using the RTTY mode on our bands. Many of these chaps are using computers to generate RTTY. Now the snag is that these fellows have, in most cases, never used a machine to generate RTTY and therefore do not know the finer points of RTTY. The trouble is that their computers automatically insert a line feed and carriage return at the end of the line. Unfortunately, this is just not good enough. RTTY operators must always send two carriage returns at the end of each line and then they should send one line feed followed by two letter- or figure-shifts, depending on how they wish to begin the next line.

Another problem is when they wish to send some figures during their usual text, these new machines automatically insert just one shift where two should be sent.

Perhaps those chaps using computers to generate RTTY should give a thought to those of us who are forced to use old mechanical machines that do not have automatic line-feed and carriage return at the end of each line.

Yours faithfully,
Terry Robinson VK3XCM. ■

5 Masons Parade, Gosford 2250
2nd September, 1981

The Editor,

Dear Sir,

PHONE PATCHING

As one who participated in passing third party messages in the recent Telecom strike I must support the views of James Goodger VK2JO. While the indirect procedures used were of great value, sending messages concerning sickness, alleviating distress and notifying deaths and births to country relatives, I believe that amateurs could provide a more efficient and streamlined service by direct phone patching.

With the development of CB radio, two-way commercial mobile-to-base radio, and satellite communications run by private commercial firms, it is plain that there is no longer a monopoly in the transfers of messages. The reasons formerly given for denial of third party privileges were that it provided unfair competition for an essential government service. In 1981 clearly the small volume of traffic handled by amateur stations would not make any difference to the viability of Telecom.

As James says, phone patching would improve our public relations greatly and provide a much better emergency service.

Sincerely,
Lindsay Douglas VK2ON. ■

130 The River Road, Revesby, NSW 2212.

The Editor,

Dear Sir,

I would refer you to the article that appears on page 11 of the September issue of "Amateur Radio" entitled "Visiting a Ham" by John VK2ATT, in "The Lyrebird", issue No. 14, Autumn 1981.

The opening title caught my eye and the first few lines rang a bell and stirred my memory that I had read this article before; thinking on the matter "Short Wave Magazine" came into mind and so I went through my filed copies and when I came to the September 1949 issue I found the article on page 530 of that issue. The author is given as "Jimminy" and from memory I feel then pen name hid either the editor of "S.W.M." at that time, Austin Forsyth G6FO, or the assistant editor, L. H. Thomas G6GB.

Comparing the texts of the two articles I find three trivial alerations in the copy of "AR". On line 10 of the first column "strike", on line 3 of the second column "8.20" and on line 12, also in the second column "DOC"; in the original article these read "stroke", "8.30" and "GPO" respectively.

The original article is also divided into three sections by sub-headings, the first of these occurs after the word "DOC" and reads "All-round Check", the second sub-heading is after word "11.30 p.m." on line 8 of column 3 and reads "Sealing the Friendship".

There is also a note from the editor at the heading which reads "Some readers at least will know exactly what it means to suffer this sort of experience. It is all part of the game — but need it be?" A small sub-heading also appears under the main title reading "That Personal QSO".

I remain, most cordially yours,
Norman Burton. ■

LETTERS TO THE EDITOR

Charles Borg 9H1BS
22 Old College Street, Sliema, Malta
7th August, 1981

The Editor,
Dear Sir,

9H1FBS — MEANING 9H1 FIRST BLIND STATION

About fifteen days ago, amongst the usual amount of QSL cards received by post, there was a letter which contained a photocopy of the article "Operation Whitestick" which appeared in the June 1981 edition of "Amateur Radio".

This article was read to me by my mother and immediately I decided to give my contribution by writing this letter, hoping to encourage other handicapped persons who might be interested in this amazing hobby of radio.

To start with, I would like to say that I am 28 years old and have been blind for 12 years (since May 1969). My first contact with shortwave radio was a year after my blindness, when our local blind centre donated me a valve receivor. After I got the feel of the controls of this piece of equipment I started to find my way around the broadcasting bands and spent most of the day listening to broadcasting stations and typing reports to them hoping that they would acknowledge by sending me a QSL card, and sometimes other information regarding programmes, etc.

Three years passed by and through a friend I was introduced to Mr. Ron Meachan (RH1R), Head of Telecommunication Section of the Technical Institute, Paola. Ron advised me to apply for the evening course held for radio amateurs at the Institute. I attended regularly for a year and took down notes later at home with my brother's help, who at the same time as myself started his interest in ham radio.

Certain modifications had to be made to the local law regarding ham radio operations, since I was the first blind person to attempt this examination. The examination was in two parts, CW and theory. I managed passes in both sections, and my appreciation goes to all those people who helped. I now had a licence.

The next thing was to get on the air, which I did with the help of friends. I managed to acquire a small VHF transmitter (1.5 watts), together with a converter linked up with my FRG7. The antenna was a simple vertical dipole. My station was thus fully operational and presently I am the proud owner of a Kenwood TS180S, which, being a fully transistorised rig, facilitates tuning. This rig has both digital and analogue readout. Again with the help of friends I learned how to find the frequencies through counting the turns of the main tuning knob. I operat regularly on 21.160 or 14.160 from 05.00 Zulu to 06.00 Zulu beaming Australia. For the moment my shack is not furnished with audible indicators for SWR, antenna direction, etc., but from your article I gather that such aids are being constructed, so it remains for me to enquire about more details for such audio aids for the sightless radio amateur.

For my final, I would like to thank the local authorities, Mr. Ron Meachan (9H1R), the local amateurs and clubs for their encouragement and help to reach my present position in amateur radio.

Good DXing.

73. Charles Borg 9H1FBS. ■

The Editor,
Dear Sir,

REMEMBRANCE DAY CONTEST RULES

This year's radical changes to the RD Contest rules seem to me to detract greatly from the value and purpose of this long established and popular contest.

These purposes are, I believe, the encouragement of participation more than winning, and the friendly communication with the greatest possible number of fellow amateurs. Like other contests it should also promote operational skills and manners.

The elimination of varying point values between States has tended to favour the operator with the biggest punch, and has reduced the chances both of participating and of winning of the lower power operator. Under the old system one used to employ skill and experience to operate into States with high point values rather than bash in at anything available, at any cost to others. This type of skilled operation led to much less pile-ups than occurred this time.

I do not recommend a return to the acceptance of inter-callarea contacts (Rules (c) and (d) 1980). This system favoured the States with the heaviest amateur population. However, the option of working interstate stations twice on certain bands (Rule (b) 1980) seems to me to put a premium on skill and thus to conform with the spirit of the contest.

Another point I would like to make very strongly refers to the VHF operating rules. The one hour rule discriminates sharply against country operators who have not the same access to simplex operation as city amateurs.

To illustrate my point: I made, during Sunday only, 155 VHF contacts (144 MHz) with only 47 different amateurs. This means that I had 108 more contacts than would have been possible without the one hour rule, in addition to the fact that I had, in any case, 47 more contacts than a country operator outside simplex distance would have been able to obtain. Since my VHF contacts constituted 32 per cent of my total, and were obtained only during the second half of operating time, I feel that I was unfairly advantaged. I am sure that some country operators were discouraged, or will be so in future, since only few were heard on the bands. The one hour rules appears to me to lack any logic; its abandonment would make scoring more balanced.

As a positive contribution I suggest that the system of points based on distance be reintroduced, and that the weighting system for State totals should be modified. This weghting system is apparently intended to relate to the participation ratio (logs/licences). In order to assess not only participation but, what is more challenging, improvement in participation, an average participation factor over a number of years — say the last five — should be calculated and the actual year's State participation factors should be measured against the 5-year average; improvement or deterioration should be used as the weighting factor.

I have calculated, and oresent in the table, the effect of this approach. Had it been applied in 1980 it can be seen that results would have been quite different by giving an advantage to the improver States, thus giving encouragement to increased participation — one of the basic aims of this great contest.

Yours sincerely,

G. H. Cranby VK3GI (ex VK7GC. ■

POINT ASSESSMENT TABLE

State	VK1	VK2	VK3	VK4	VK5	VK6	VK7
1980 ratio	.2114	.0768	.0553	.1402	.2625	.2334	.3911
Average ratio	.2633	.0517	.0464	.1895	.2805	.1747	.2122
Variation	.8029	1.485	1.192	.7400	.9360	1.279	1.843
Point score	21229	61138	51820	72730	105577	78371	46028
Assessed score	17075	90790	61769	55820	98820	100237	84830
Position	7	3	5	6	2	1	4
1980 position	6	5	7	4	1	2	3

SILENT KEYS

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

Mr. R. F. (ROY) STEVENS, MBE	**G2BVN**
Mr. R. A. WHITING	**VK3MZ**
Mr. A. F. LEVERSHA	**VK3AER**

OBITUARY

R. A. WHITING **VK3MZ**

On the 14th September, 1981, Reginald Ambrose Whiting, the self-styled "Voice of Preston", died at the age of 70.

Reg was born in Adelaide, was educated at Pulteney Grammar School, gained his AOCP (No. 988) on the 25th August, 1932, and was issued the call sign VK5MZ.

Migrating later to Victoria, Reg exchanged that call sign for VK3MZ, and was a constant operator on 40 metres and, to a lesser extent, on 2 metres. Until comparatively recently, Reg built his own equipment, in which he took great pride. However, when a friend died several years ago he acquired a FT101B and a converted car phone, which latter he used on 2 metres FM.

In addition to his amateur radio activities, Reg was a keen gardener, and frequently talked on air about his vegetables.

A member of the Radio Amateurs Old Timers' Club, he had only one year to go to become eligible for the Club's 50-year Seal.

Reg was also a member of the North Suburban Amateur Group, which organisation he joined shortly after its inception in 1949, and was held in high regard by the members.

A man with a very keen sense of humour, Reg really enjoyed a joke against himself, as was seen in the antics of the 3 Rs — Reg, Russ (VK3AIX deceased) and Rainbow (VK3JR), who were inseparable in the 1950s.

Reg's only child and daughter, Helen, died suddenly some years ago, and he never recovered from this loss.

To Gladdie, his XYL, probably equally well known from his constant references to her, we extend our sincere sympathy on her loss. To those who knew him, the amateur bands will never be quite the same without Reg Whiting.

John Ireland VK3AJI. ■

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

Icom IC701 Tcvr, complete with IC701 PS and Electret desk mic. ICSM2, exc. cond., $900. David VK3ADW, QTHR. Ph. ($3) 857 8346 AH.

Kenwood TS820 Txcvr, as new, MC50 mic., 500 Hz CW filter, owner and workshop manuals, spare valves, $775. VK2GE. Ph. (043) 92 4900.

SE-502 22 ch. AM/SSB AC/DC 10m Txcvr, as new, little used, $60. VK2AMT, QTHR. Ph. (02) 451 4902.

ALBANY

FRG7 Rx, no mods., little used, $230. Bruce VK3VIH, QTHR 1980. Ph. (03) 719 7476 (H) or 67 6331 (Bus. — message only).

All band Lin. Amp., $320; Hallicrafters Rx, .5-30 MHz, $25; UHF AWA base stns., $40 ea.; 6 x 2m transverters, $150; MR20B low BWD, $20; 2 x 6 m converters, $40; old telephones, $30; 48 el. 432 ATV ant., $50; 2 in. CRO, $50. Offers or exchange. Jock Jeffery VK2AJY.

Heathkit HW101, good cond., power supply, speaker and hand mic., $350, ONO. C. Duddington VK6KCD, 12 Daglish Street, Narrogin 6312, W.A. Ph. (09) 271 0660.

FDK multi-quartz 16 2m FM crystal controlled Txcvr, repeaters 1 to 8 and simplex channels 40 and 50 fitted, expandable to 23 ch. plus two priority, all accessories, books and original packing, $190, ONO. VK5KDK (QTHR 1980 VK5ZMF/NCY). Ph. (08) 261 1210.

Vinten BTR10R 2m FM console cabinet base station, 50-70W, 240V AC, 6 ch., fitted with channels R42, R44, R48, S40, S50, deck mic., 600 ohm line remote control unit, handbook, maintained to factory standard, $130; Vinten BTR12X 6m FM rack mtg. or table top base station, 20W, 240V AC 52.525 MHz, fist mic., handbook, maintained to factory standard, $80. VK3ADM, QTHR. Ph. (03) 592 2168 after 6 p.m.

2m FM Rx Crystals, 10 MHz, suits 2 MHz IF frequency, simplex 49 repeater channel 1-R2-R6, $5 ea. D. M. McConnell VK3YNB, QTHR.

Yaesu FT901DM Txcvr, as new, and complete with instruction book and service manual, bargain at $850. VK3LG, QTHR. Ph. (03) 67 2338 Bus., (03) 277 2633 AH.

Kenwood TS-820S HF Txcvr, exc. cond., extra new driver and finals, hand mic., $700. VK7NKD, QTHR. Ph. (002) 43 8972).

Amateur Station Complete: Kenwood TS820S digital, Oskerblock SWR 300, Dentron antenna matcher, Drake filter, Hustler vertical antenna, Shure mic., plus coaxial cable, etc., $995. VK2NYZ. Ph. (02) 871 3956.

Yaesu FRG7 Rx with narrow band filter, orig. carton and manual, free delivery to Melbourne address, $250, ONO. Ph. (05) 727 0361.

Used Philips Video Cassettes (suit N1500B), 32 x VC 60s at $6 ea.; 32 x VC 45s at $4 ea.; 6 x VC 30s at $3 ea. Will sell separately or will consider an offer for the lot. Apply the Librarian, Mackay State High School, PO Box 489, Mackay, Qld. 4740.

Kenwood TS120V, inc. CW filter and MC35 mic., excellent cond., $46. VK7AN (ex VK7NAB), QTHR. Ph. (003) 31 7914.

Icom IC22, with reps. 2 through 8, simplex 40 and 50. In g.c., $150; Icom IC202E, with USB/LSB and Oscar crystal, v.g.c., $150; Kenwood TV502 2m txcvr, with Oscar crystal, suits TS520, etc., as new, $150. VK3NG, QTHR. Ph. (054) 82 3546.

Microwave Modules MMT432/28S 70cm Transverter, ½W in at 28-30 MHz, gives 10W out at 432 MHz, switchable 432-434 or 434-436, incl. attenuator for 10W drive, $220; microwave modules MML432/50, 432 MHz linear amp, all solid state, incl. built-in preamp automatic T/R switching, 10W in 50W out, $200; Ocom IC502 52 MHz portable Trx, very little use, $140; Kenwood TS120V, with matching SP120 speaker containing a regulated 240V AC to 13.8V DC supply, in as new cond., $500. VK2ZDJ, Griffith, NSW. Ph. (069) 62 4937 AH.

National 110 Txcvr, 250 watts, used four times, physicaly too big for my car, $400, ONO. Ph. (03) 873 3939 9 to 5, (03) 735 1350 AH.

KLM 2m Linear Amp., 140W solid state, model 10-140BL, v.g.c., $175, or swap for an IC22A or similar. VK7AX, QTHR. Ph. (004) 25 2923.

Realistic DX300 Communications Rx, 10 kHz to 30 MHz frequency range, digital readout, good cond., in orig. box, with manual, $270. VK2AZT. Ph. (069) 42 1392.

FT650 Transverter, as new, $155; 2 new 572B valves in cartons, $65; prop pitch motor, $50; 4CX250B, new, with used socket, $50; SEQ RTTY mod.-demod., with power supply, $80. VK4ZEO. Ph. (07) 377 3785 Bus., (07) 200 1406 AH.

IC22S, complete accessories, mint new and unused, $290. VK3ZSV, QTHR. Ph. (03) 596 3968.

Yaesu FT-7B Txcvr, with YC-7B digital readout, mic., manuals and xtals for 28.0 to 29.0 MHz, $600. Frank VK2NAP, QTHR. Ph. (02) 452 5172.

Kenwood TS520S and DS5 1 A DC/DC converter fitted, $600. VK2ST, QTHR. Ph. (02) 649 7385.

Wilson System II Triband Beam, as new cond., built like a battleship, complete with bencher 14-30 MHz optimized balun, F to B ratio 25 dB, forward gain 8.5 dB, $300. Ph. (03) 725 9285.

Shack Cleanout: Home-brew 20m band linear, TVI-proofed and metered, plus two coaxial switches, valves 2 x 813, internal filament, bias and relay valves 2X813, internal filament, bias and relay supplies, requires external HV supply of 2000-2500V, $110; power supply, 2500V at 1.5A plus 4000V at 1A continuous rating, well filtered, $125 (purchaser to collect due to weight); cabinet plus 4 x 1000 lube and HB socket, large fan, meters, switches, FIL Xformer, for that big linear, not assembled, $125; standard CRO tubes, 2 x 7 in. NC134 plus 1 socket, $12 the lot; 1 only 5CPI, $10; long resistance tubes, suitable for SSTV, 1 x 5FP7 inc. yolk, $18; 1 x 3FPI, $10; 2m IGL solid state xtals, ch. 2, 5 and 40, 25W out, needs alignment, $65; Marconi audio output meter, 1 milliwatt-10 watts, variable impedance, $27; Hewlett Packard VTVM 410B, including RF probe, $40. Everything must go. Ph. (03) 725 9285.

Icom IC701, late factory noise blanker, fan mods., mic., as new, carton, manuals, $750; Dentron MLA 2500 with vernier controls, as new, carton, manuals, $800; Dentron super tuner plus, $170; Daiwa RF 660 speech processor, $70; Tono 7000 E comm. computer RTTY, manuals, $700; Centronics P1 printer to suit, $350. Ph. (02) 57 4648.

Yaesu 680R all mode six metre txcvr, in mint cond., complete in orig. carton, $450; two new 4 x 150A VHF tetrodes, $30. VK4RP, QTHR. Ph. (07) 265 1357.

MOE

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SHUTE HARBOUR

IC22S with 5/8 mobile whip, cond. as new, $250; Yaesu FT75B mobile HF with DC/DC power supply and ext. VFO, $350; AWA forest phone tweaker, to go on 160m AM with 1825 kHz xtal, $80. VK3APL, QTHR. Ph. (03) 870 3715.

MEK6800D2 Microprocessor Evaluation Kit, fully assembled with full DOCs, few hours use, $120; three Collins 32RS-1C 1.6-15 MHz 4 ch. xtal locked 100W rack MTD filler type SSB txcvrs, complete with Collins phone patch/control and dir. wattmeter, plus Electrocom FS keyer, manual copy incl., $90 each, $250 the three; one Aerocom 10LA 1 kW PEP output linear amp., 2-22 MHz, with all 4 coil sets, including one new 3-1000Z valve and two used 3-1000Z, minus plate transformer, manual copy incl., $140. Prefer buyer pick up. Ian Cousins VK5IK. QTHR. Ph. (085) 672, line 252 (M).

Deceased Amateur: TS520S, $495; DX 160 communication receiver, $95; Icom regulated power supply, 3 PA, $50; Hustler 4 band vertical, $50; Cushcraft ringo vertical (2m), $10; Midland VSWR/PWR meter, $25; all in good condition. Mrs. K. Haining. Ph. (02) 649 5665 (Saturdays only).

WANTED

Drake T4XC or similar all band Tx. Jock Jeffery VK2AJY.

Two 70 cm Hand-held Txcvrs, single or multi-channel. VK2DLH, QTHR. Ph. (02) 50 7696 after 5 p.m., ask for Peter.

Monobander HF Mobile Txcvr for 40m band, will consider multi-band unit, must be in good working order. VK2ATP, QTHR. Ph. (02) 98 7151.

External VFO for Swan 350 Txcvr. VK2WC, QTHR.

Kenwood TV502 Transverter, good working cond. Les VK2VUC. Ph. (02) 570 8639.

Circuit Diagrams for BS5 and SM220, pan-adaptor for TS520S, will pay cost of photocopying. VK1RH, QTHR.

Variable Capacitors, two, both well insulated, for antenna tuner, (1) split-stator, about 10 plates each side, widely spaced, (2) single stator, about 28 plates. Tom VK3ALN, QTHR. Ph. (03) 232 4156.

Linear HF Amp. to suit Argonaut, 3W in, 50 to 20W out, will consider home-brew, need not cover all HF bands. VK3VC, QTHR. Ph. (03) 870 8085.

Copy of the ZL FT200 instruction and maintenance manual. Write Col McDougal VK2VRZ, "Woodlands", Coolamon, NSW 2701.

A Parabolic Dish for 1296, please state size, etc. Bert VK3BH, QTHR. Ph. (03) 80 1204.

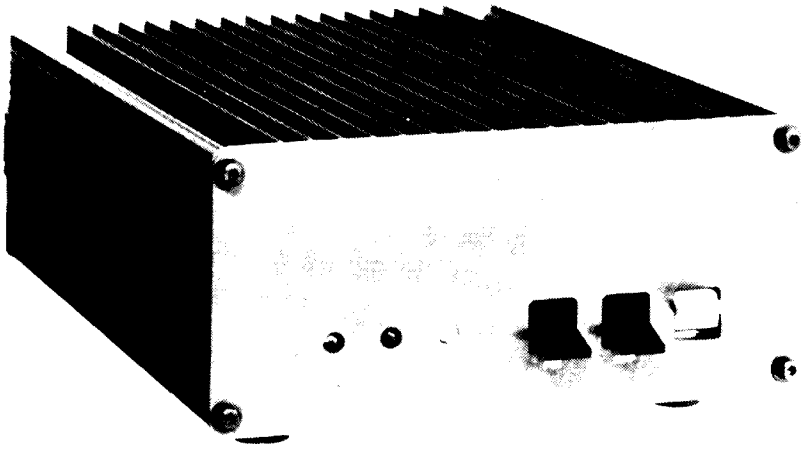
Century 21, in mint condition. VK2SU, QTHR.

TRADE HAMADS

RTTY Siemens 100A, $120; UHF FM321, all 40 ch. plus repeaters on 70 cm, $299; MLA2500 linear amp with large front panel, 2000W power output meter, 1.8 to 30 MHz, AM, SSB, CW, RTTY, SSTV, $750; FRG7 rx, 500 kHz to 30 MHz, $275; ex RAAF Pye aircraft transceiver, 110 to 140 MHz, $45; UHF FM320 transceiver, $259; new W65 18 ch. SSB CB radio, $179; new W65 40 ch., $195; 18 ch. walkie talkie, $110; 40 ch. CB with scanner, $99; 23 ch. CB, $55; 18 ch. CB, $69; 27 and 28 MHz 4 el. beam, $79; helical ant., $8.50. Different rigs coming in each day. When in Sydney drop into Park Disposals, 32 Park Street, Sydney, 2000, near Town Hall Railway. Ph. (02) 264 7515. Rigs posted anywhere in Australia, NZ, PNG, Pacific add $5.

Blank Cassettes at ridiculous prices: Mark II, by Magnetics. 2 only C90LN, $1.02! 3 only C60LN, $1.02!! The only extra is postage $2.00 for 1 to 10 cassettes, then add 50c for each additional 20 cassettes. Note: Library cases are not supplied. G.G. Communications Engineering, 14 Willam Street, Donvale, Victoria 3111. Kevin Gluyas VK3YPL.

TWO METRE LINEAR AMPLIFIERS



YAESU FL-2050

Drive: 10 watt (max. 15 watt)
Output: 50 watt (for 10 watt input)
Switchable RxAmp 12dB gain for
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YAESU FL-2010

Drive: 2.5 watt (max. 3 watt)
Output: 10 watt
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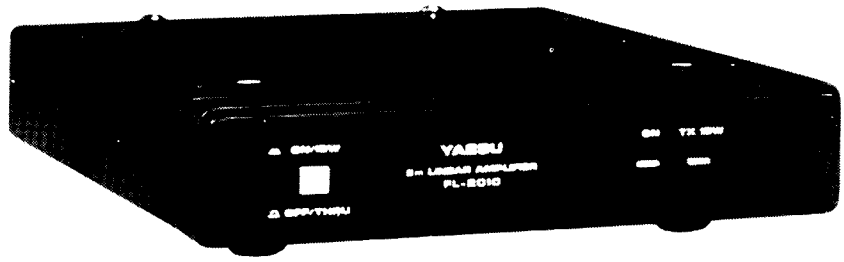

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144-148 mHz in
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430-440 mHz in
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1 watt output

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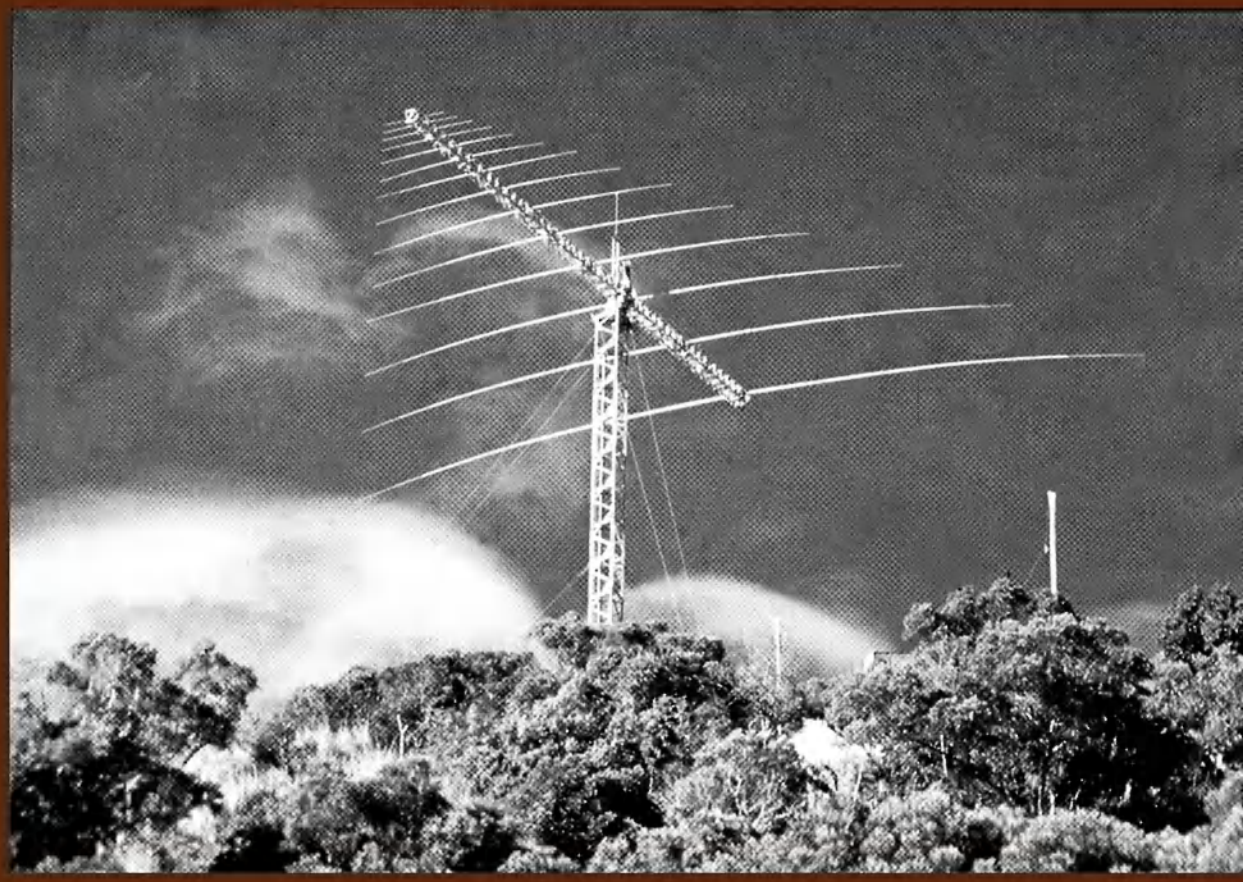

VOL. 49, No. 12 DECEMBER 1981

FEATURED IN THIS ISSUE:

- ★ DEVELOPING THE HF BEAM
- ★ QRP CW TRANSMITTER WITH BREAK-IN — PART 1
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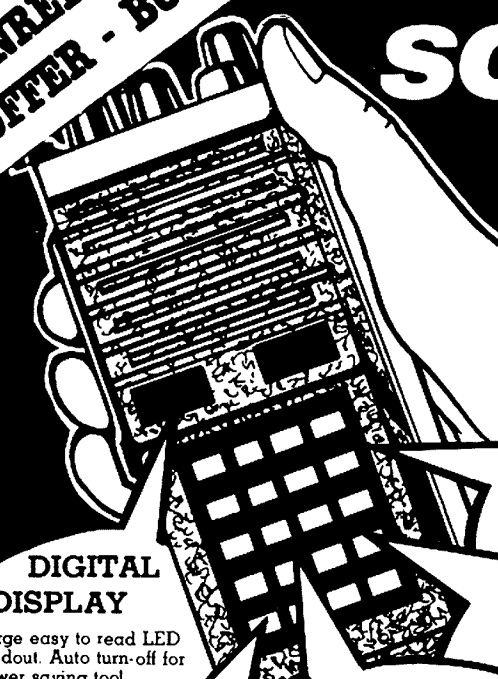

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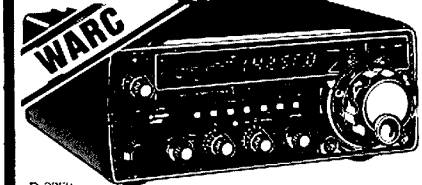

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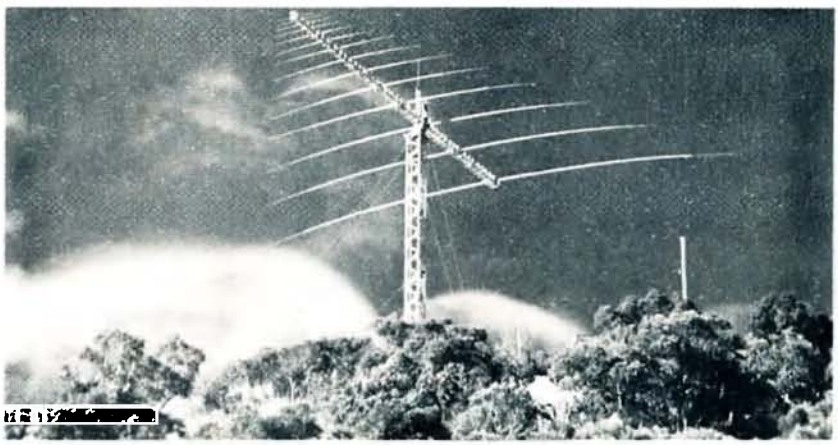

The French Naval log periodic, on the southern tip of New Caledonia. This magnificent structure stands about 65 metres high. The boom can be walked along. Yes, it does rotate with the help of a real heavy duty rotator, which is probably diesel-powered — no doubt to keep electrical interference to a minimum. What would the local council think of that?

Photo: George Brzostowski VK1GB.

QSP

THE FRIENDLY AMATEUR

"The amateur is friendly . . . slow and patient sending when requested, friendly advice and counsel to the beginner, kindly assistance, co-operation and consideration for the interests of others; these are marks of the amateur spirit."

Paul Segal's Amateurs' Coda has as much relevance today as it had so many years ago in the infancy of our hobby.

The amateur today is in a unique position to stretch out the hand of friendship and to establish and maintain a very personal form of International goodwill and understanding — but how many contacts do you overhear (even local QSOs) where COMMUNICATION does not really take place beyond the exchange of signal reports and even then it's all "5/9".

We have all been guilty of this at some time.
Perhaps Paul Segal's code should be expanded to include reference to LISTENING and therefore COMMUNICATING with the other operator.

Another year draws to a close and many of us are looking forward to a well-earned break from the tedium of modern lite — the portable gear dusted off and installed at the favourite holiday QTH — and hopefully the AMATEUR SPIRIT will prevail.

On behalf of all WIA officers and staff, both Federal and State, I extend to all readers, contributors and advertisers sincere good wishes for Christmas and a happy and worthwhile year.

P. WOLFENDEN VK3KAU, Federal President ■

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Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

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VK9, 0 — Federal QSL Bureau, Mr. N. R. Penfold VK5NE, 388 Huntriss Rd., Woodlands, W.A. 6018.

WIA NEWS

STICKERS

The DOC in Tasmania, according to reports, is issuing identification labels to be attached to, or located near, licensed radio transmitting equipment. "In the interest of licensees, this new measure will readily identify currently licensed equipment." The notice issued with the labels, which are adhesived backed, states they should, wherever possible, be affixed to the front of the licensed equipment to which they refer. The label must be clearly visible and is issued on licence renewal dates. If more labels are required they are stated to be available on written request with details of the equipment for which they are required.

In so far as the amateur service is concerned the question in many minds is the present legal authority for this action. Strong objections have been expressed and the question will be raised

WIANEWS

with DOC. There are others who see in this action portents of the proposed new legislation — see AR May 1981, page 6.

GENERAL

The Executive Meeting on 22nd October greeted JARL officer Yoshita Tanaka JA6VVS, who was on a visit to Melbourne attending a real estate congress.

An IARU proposal that 18th April be established as World Radio Amateurs' Day was voted on in favour. The IARU was founded on 18th April, 1925. Also voted in favour was the admission to membership of the IARU of the Association des Radio Amateurs de Djibouti.

An extended discussion was held on the role and effectiveness of Intruder Watching. A small sub-committee will meet in November for an in-depth assessment, particularly relating to changes in the Radio Regulations arising out of WARC 79. Another discussion item was the DXCC Award in the light of most thoughtful comments on the subject by the Federal Awards Manager, VK5WV, for publication in AR.

Yet another discussion point centred on the forthcoming IARU Region 3 Conference to be held in Manila from 2nd to 5th April, 1982.

A recent press announcement of a Public Inquiry into Telecommunications Services in Australia was examined to determine what effects this might have, even remotely, on the amateur service. First thoughts were that these would be likely to be minimal. Items for inclusion on an Agenda for an impending joint meeting with DOC were finalised.

Season's greetings. ■

Developing the HF Beam

J. A. Taylor VK3AJT
45 The Esplanade, Drumcondra 3215

Since going "commercial" after the "rack and panel" AM days of the late 1940s attention naturally turned to antenas. "Home-brewing" slipped into the background, but the interest in results persisted. What better than the antenna to become the centre of attention?

The earliest beam, around 1948, was of 3 elements on 20 and 4 on 10. The whole was rigged on a timber truss, the members being 3 in. x 2 in. oregon and the tension rods ¾ in. diameter hardwood doweiling. The ½ in. copper elements were on stand-off insulators, carried on a 3 in. x 2 in. oregon base. The assembly was rotated from the bottom using chain drive to the rotating tube from an aeroplane propeller-pitch motor. The driven element was T-matched.

Other antennas were built, some good, some not so good; some stayed up, and some came down. A Telrex array was lost in a freak wind of 110 m.p.h.

QUADS

Approximately 10 years ago it was noticed that one could bet on the fact that the very good signals from "G-land" would be from quad antennas. The quad was originally designed for use in a commercial station, at high altitude, and suffering from a form of heat static in particularly dry air. It was claimed to overcome many of the problems of rain static and man-made interference. Being in a fringe area, but having cured TVI, the comparison between trapped tri-banders and full-size elements was of interest. A quad was the ideal three band antenna with which to try out this comparison.

Much time was spent reading a great number of articles on the quad. From all these, and the information received "over the air", a design was evolved which it was hoped would be unlikely to finish up in a neighbour's backyard, and in which the technical performance would be as good as possible.

There was little information about the physical sizes and stresses in a beam of this type, and this possibly accounts for the failure of a great many quads.

Being engaged in heavy construction business, facilities were avilable for computations of loads. Items of engineering equipment were also available, but could be obtained alternatively from outside sources.

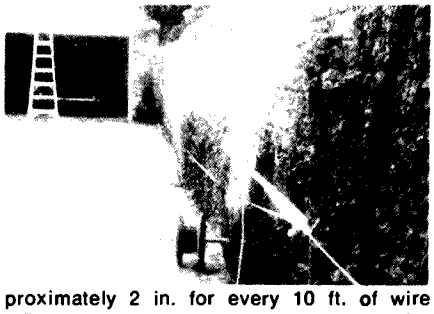
Whilst similar in many respects to the outline given in the ARRL handbook, this includes no sizes of wire or structural members. The electrical dimensions used, and now proven correct, vary somewhat from the ARRL article. The nearest published design is that of K2GAT, described in the antenna handbook by William Hood, and even this does not give any information on physical dimensions. Further, the one described here has five elements, whereas the K2GAT has four. As there is no variation in the dimensions from director to director in a quad, as distinct from the yagi, the addition of the extra element, and the lengthening of the boom from 6.9m (22 ft. 6 in.) to 8.5m (28 ft.) has little effect on the rest of the antenna.

It is not necessary to go into the reasons lor the use of members of a specified size, though all sizes are given. The electrical or RF characteristics are also given.

WIRE

The first required decision, which affected the stability of the beam, was the wire size. After hearing of wire sizes in use from 14g SWG down to bell wire, it was decided to use ⅛ in. diameter (3.2 mm). This is 11 SWG or 9 AWG enamelled soft copper. This gauge is heavier than anything quoted "over the air"; but the resonance broadens as the wire becomes heavier and the band coverage, with an acceptable SWR, becomes greater. Also it is better able to withstand high wind.

Sleeving of the wire at points of fastening was considered as being important, so it was necessary to match the diameter of the wire to the sleeving size available, namely ⅛ in. The wire was stretched with a block and tackle, as shown in photograph, the increase in length being approximately 2 in. for every 10 ft. of wire (17 mm per metre). This not only eliminated kinks, but partly hardened it. Any further stretch could damage the enamel coating. QTH is right over water, with a very high salt content.



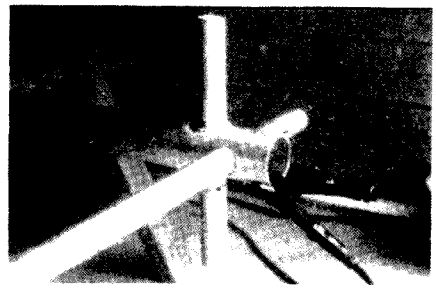
The boom was settled upon as being 2½ in. (63.5 mm) in diameter, and of a wall thickness of 3/16 in. (4.8 mm). This was the nearest readily available to the required size, which could be somewhat lighter than that used.

SPREADERS

Next in importance came the spreaders. Fibreglass, parallel right to the extremities, was chosen, of 1 in. diameter (25.4 mm) and ⅛ in. wall thickness (3.2 mm). The nearest aluminium tube available to this size was 1¼ in. outside diameter, with a wall thickness of 3/32 in., so that the inside diameter was 1-1/16 in. The fibreglass diameter was increased to this. In metrics, the above items were boom 60 mm outside diameter, and the dropper or lower vertical spreaders and the stiffening tubes were 32 mm with a 1.6 mm wall thickness. These were supplied by Alcan of Melbourne.

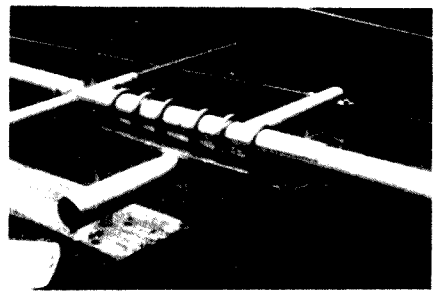
The fibreglass was especially made in Queensland by Len Butterworth Fibreglass of Brisbane, and was now ordered 1-1/16 in. outside diameter, with a wall thickness of ⅛ in., parallel sided right through. Junction pegs to fit into these fibreglass tubes, at joints, were ordered 13/16 in., but arrived at ⅞ in., and were machined down to fit into the glass spreaders.

It was decided to weld all the spreader aluminium components to the boom. This was done under argon gas, and was very successful. As the aluminium tubing softened somewhat in welding, the fibreglass horizontals were taken to meet at the centre, with 12 in. (300 mm) of the smaller diameter peg reinforcing the joint in the middle of the boom. The vertical upper fireglass spreader projected into the aluminium dropper 6 in. 150 mm) below the centre of the boom, again stiffening the junction of the spreader to the boom. The welding of this is shown in photograph.



BRACING

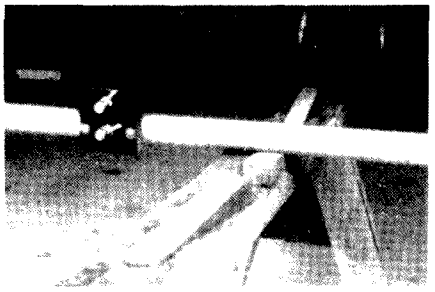
The jointing of the boom in the centre is shown in the next photograph and more importantly the method of side and vertical bracing. In a high wind, a quad develops a screwing or revolving load, and this, with side bending, was considered as being unacceptable, so the boom was not only wire braced vertically, but also horizontally. In the photograph, the vertical is shown



with a temporary cord attached in the position of the wire support. This was only to determine the length between splices of the 3/16 in. (5 mm) stainless steel yacht rigging wire, and its accompanying stainless steel rigging screws. The side horizontal tube supports for the fibreglass horizontal spreaders extend to an overall of 30 in. (750 mm) or 15 in. (375 mm) each side, at the position nearest the mast-to-boom junction only, and these longer tubes take the side supporting ⅛ in. (3 mm) stainless steel wire with stainless steel rigging screws.

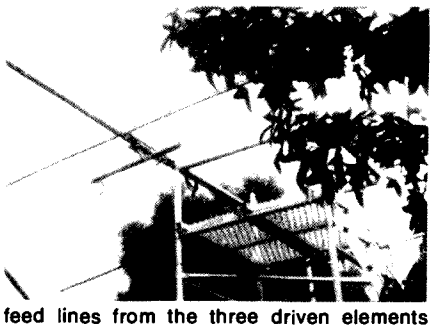
ASSEMBLY

The electrical junction block between driven elements and RG8AU coax cable is shown in the photograph. The block is



2½ in. x 2½ in. x ½ in. fibre (64 x 64 x 13 mm) and is bolted through, and electrically connected to, the lower vertical aluminium dropper, except that the hot terminal is away from the metalwork. Bolts are ¼ in. (6 mm) at the terminals, the remaining two 3/16 in. (5 mm), and all fastenings are stainless steel.

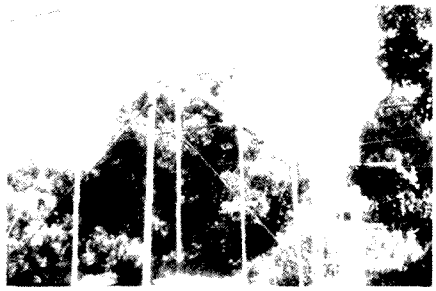
The boom of 28 ft. 6 in. (8.7m) held five radiating quads, spaced 7 ft. (2.13m) apart and 3 in. (80 mm) from the end. All spreaders and boom were fitted with corks closing the tubes, to avoid their whistling in the wind. The assembled metalwork is also shown in a photograph. Note that the



feed lines from the three driven elements are shown installed, from the junction blocks to a connecting point 3ft. (1m) below the boom. In the photo above, these are coiled together. Also it can be seen that one side of the longer horizontal support tube has been removed. This was necessary to clean up a distortion in the weld at the boom. It was, of course, later replaced. Other shorter cross members could be reached inside with a file.

All the joints (at the centre of the horizontal fibreglass and its stiffening peg, all fibreglass rods into the middle tubes, and the splice to the outer ends of the 14 MHz spreaders) were sealed with polyester resin, as used for fibreglass sheeting. The longest spreaders required a joint, with a peg stiffener inside the tube, as the greatest length of fibreglass of this size and especially made, is 12 ft. (3.66m) and the longest spreader is 13 ft. plus the 6 in. vertical through the boom, and down into the lower aluminium dropper (total 4.18m). This splice was at the point farthest from the boom, where bending moment is least. Many glues were tested to breaking point, some being highly recommended well known brands, but none nearly approached the fibreglass emulsion.

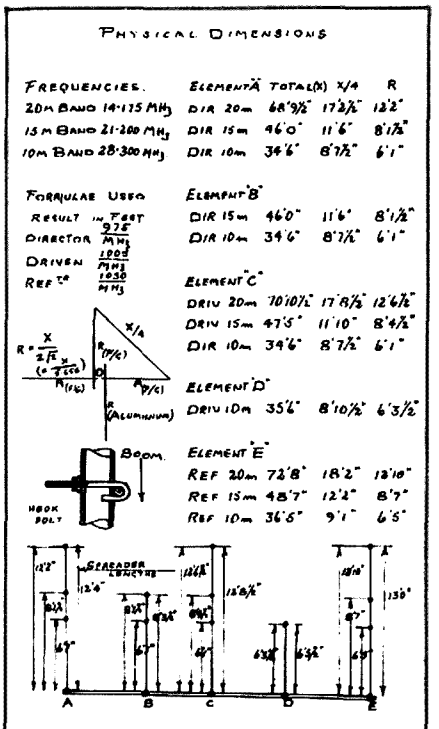
The whole beam was capable of being rotated, in its ground position, to facilitate the wiring up and this is shown in a photograph below. Two 2 in. (50 mm) galvanised



pipes 16 ft. (5m) long were driven into the ground to a depth of 2 ft. 6 in. (0.8m) and side guyed with rope. An end brace is shown. It is 3 in. x 1 in. timber (75 x 25 mm) lashed with rope to the 2 in. pipe, and nailed to a peg driven into the lawn. It is just above the garden seat in the next photo. At the top of the pipe a fitting was made, similar to a large boat rowlock, of ⅜ in. (10 mm) mild steel and over this was sleeved ½ in. (12 mm) plastic garden hose. The photograph shows the whole ready to wire up. The bending of the horizontal spreaders disappeared with the wiring in place.

It seems that most quad failures are caused by the wire elements failing at their support points. Much thought was given to eliminating this possibility, and it was decided to sleeve and stiffen the wire for 3 in. (75 mm) each side of each support point. Firstly, the stretched wire was cut exactly 12 in. (300 mm) longer than the required design length. This was so that after completion, the terminal was exactly 6 in. (150 mm) in from the end of the wire and this was an overall length check. The wire length is fairly critical. The points of support were carefully marked off, to the table given later, and each was sleeved, with the support point exactly in the centre of a 6 in. (150 mm) length of fairly hard ¼ in. (6.4 mm) outside and ⅛ in. (3.2 mm) inside plastic sleeving. At the terminal ends, a 3 in. length of the sleeving was put loosely on the wire and away from the terminal point. The sleeves were glued on solidly, with Japanese instant miracle glue produced by Selleys. At each end the 3 in. sleeve, not glued, was temporarily moved a foot or so away from the terminal blocks. The centres of the 6 in. glued sleeves were at the exact supporting points, spaced by quarter of the "total" wire length in the Table.

The supports were 3/16 in. (5 mm) stainless steel "home-brewed" hook bolts, one leg of the hook, the longer, being 2¼ in. (56 mm) threaded 1¼ in. (32 mm) and the shorter leg was 9/16 in. (14 mm). The length of the thread is in order to remove the hook from one of the two 7/32 in. (5.5 mm) holes in the spreader and still leave the nut in place, whilst the sleeved wire was fitted. Pairs of holes drilled through the fibreglass tubes attached the hook bolts, the hole nearest the boom being through only one wall. These two 7/32 in. (5.5 mm) holes were 7/16 in. (12 mm) apart to take the 3/16 in. (5 mm) unevenly legged U-bolt, as sketched.

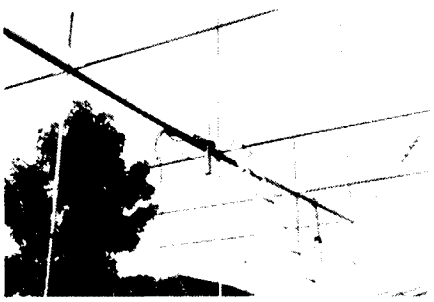


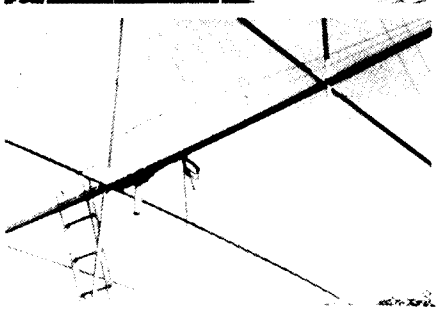
To wire up the elements, a scaffold was rigged near the centre boom splice, and the whole was capable of being rotated, so that all work on the wire was thus at ground level. Firstly one end of an inner, 28 MHz, wire was temporarily fastened at its extreme end to the terminal block on the cold side, and the whole rotated until the first sleeve on the wire was centred at the first hook bolt. The nut was unscrewed unitl the shorter leg of the hook bolt

cleared the spreader, and the sleeved wire could be fitted centrally in the hook. The hook bolt was then tightened and the wire clamped with its glued sleeve bent, not sharply, 90°. Locknuts were used on the hook bolts. Then to the next, which is the upper vertical spreader, and so on around each quad, until all was completed. The total wire length was approximately 600 tt. (180m). The wires, hand-tight only, were checked for length. The bolt-holes in the solder lugs at the terminals should be 6 in. (150 mm) in from the ends, prior to cutting off the surplus. The same applies to the parasitic elements, except that the junction block and bolts are replaced by a single 3/16 in. bolt shorting the element through the aluminium dropper. These also had lock nuts.

The fastening between the closed ends of the parasitic element solder lugs, and the connection from the driven element solder lugs to the coax were then soldered, as well as the lugs being bolted tightly together. Lastly the loose 3 in. sleeve on the wire was moved close to the lug at the terminal block, after coating the wire with Selleys glue. And you have to be quick, as it sets in seconds!

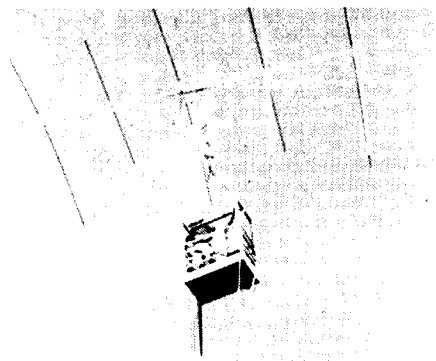
Finally, the junction blocks, the U-bolts at the spreaders, and the bolts to the closed elements, out to the ends of the plastic sleeves, were coated with three coats of the fibreglass resin and fixer. This eliminates sharp bending at the corners where the wires are fastened. Two more photographs show the unit wired up and ready to go. Note the feed line from the exciter in the "shack". This was used to check the SWR on all bands before erection on the mast.





ERECTION

The total weight of the unit including the ⅜ in. (10 mm) wrought iron boom splice plate, the 2 in. GWI rotating pipe and the ⅜ in. stainless steel U-bolts is very close to 170 lbs. (75 kg). It was erected by a 100 ft. (30m) fly jib steel erector mobile crane, the beam being lashed to the side of a dogman's work box. A photograph shows this box coming down. A Ham M2 rotator was taken down when the earlier beam, a TH6DXX, was removed.



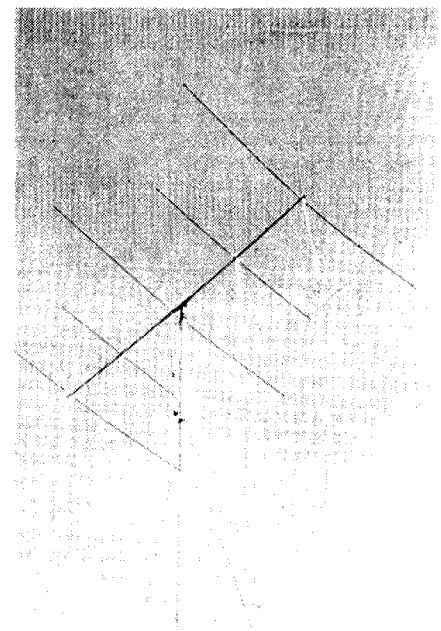
The mast height was reduced 3 ft. (1m) and the guys lowered to 13 ft. (4m) from the base of the rotator, in order that the vertical driven element aluminium dropper for 15 and 20 metres could rotate near the mast. The 10 metre driven element is separate.

The Emotator rotator has two ⅜ in. U-bolts working in slots in the aluminium blocks clamping the stub mast at the centre of the boom. Warning was received that, in tightening, the U-bolts simply spread and left the slots in the block. This was confirmed on the ground, so two ⅛ in. (3 mm) stainless steel plates, shown in the photograph, were made prior to lifting the beam. These were drilled to take the U-bolts and to prevent their spreading. It would be extremely awkward to meet with this problem 75 ft. (23m) up, with the beam lashed to the work box. My thanks to VK3ABE.

The mast is of 6 in. (150 mm) diameter boiler tube, 66 ft. (20m) long, with 6 ft. (2m) of 3 in. (75 mm) tube above, and on a concrete base, which is 2 ft. (0.6m) above the ground. With the rotator, the boom is very close to 75 ft. (23m) above the ground. The beam was balanced by supporting it in the centre of the boom junction and loading the light end by slipping eight sticks of solder inside, covered with Araldite two-part glue.

The heaviest wind the quad has suffered to date is in the vicinity of 50 m.p.h. (80 k.m.h.) and the fibreglass tubes bent somewhat less than the accepted figure of between 7½ per cent and 10 per cent of their length. This, in the longer ones, is approximately 12 in. (300 mm). It is doubtful if they bent even half of this. The aluminium dropper spreaders were more rigid than the fibreglass.

The feed is by three separate lines of RG8AU coax switched in the "shack" some 150 ft. (45m) away from the base of the mast. The coax is connected directly to the full wave element wires, and neither the driven elements, or the parasitics, are tuned in any way, other than the ground tests mentioned earlier. The final photograph is of the completed article.



PERFORMANCE

The electrical or RF characteristics are given in the table and discussed as follows:—

The formulae given by William Hood were accepted as correct, only because he said that they were. The director 975/MHz equals the length of the wire in feet. The driven element 1005/MHz and reflector 1030/MHz.

The result from these formulae varied somewhat from the dimensions given in the latest ARRL handbook, page 29-23. Then again so did the designed resonant frequencies. This antenna is theoretically resonant on the 20 metre band at 14.175 MHz, the 15 metre band at 21.200 MHz and the 10 metre band at 28.300 MHz. It has been stated by Jake K2GAT that the resonant frequency moves approximately 25 kHz in lifting, which height is assumed as being 50 ft or 0.5 kHz per foot. He did not say which way this move was, but I found no resonant point sharp enough to confirm or disprove this assertion. The SWR readings on the ground were very similar to those 75 ft. up.

A variation to this was found on the 15 band, and later, but before erection, the driven element on 15 metres was reduced somewhat. It would seem to me that the driven element formula would be nearer 1000/MHz on this band only. This may be due to a capacitative effect on the 15

metre driven element as it is in between, and parallel to, the 20 metre and 10 metre wires. My driven element was shortened by 5 in. to 47 ft. The parasitic elements were not touched.

The SWR is very low on all bands. On 20 metres it is flat until 14.3 MHz, when it rises sharply to 1 : 1.3 at 14.35 MHz.

On 15 metres It Is flat right through, not at 1 : 1.0, but about 1 : 1.2 constant across the band.

On 10 metres it is flat on the low end of 28 MHz and gradually rises to 1 : 1.6 at 28.450 MHz. It may be that the 20 metres and 10 metres elements could be reduced similarly to the 15 metre elements, as in both cases the SWR is good at the low end of the band, but worse at the high end. All of the SWR can be tuned out with the MN200 Drake antenna coupler which is in use, but not necessary.

The hoped for front to back ratio was put near 25 dB, and here results were much better. My good friend in WA, Tom VK6MK, gave me 30 dB. I know his instruments are good, and his meter is on a Collins S Line Receiver, 75S3B. John W4DPI was very careful to record the readings around the full 360°, and his verdict was 36 dB.

Reports over a month now have been better than expected, and many comparisons have led to the conclusion that the results achieved are as good as one could expect, perhaps better.

TVI

Lastly, regarding TVI, the quad has been tested by attenuating the signal of Channel 2 to 70 microvolts, at which point snow was very noticeable. TVI was only slight with the 30 L1 linear running, and none was apparent with a Collins KWM 380 barefoot. This was a vast improvement, in the fringe area of operation, over the trapped tri-bander. Tests were 62 miles (100 km) from the TV transmitter antenna.

The conclusion here is that trapped elements produce more TVI in fringe areas than full size mono band elements. (Particularly quads with no high-voltage end points.—Tech. Ed.) The check was on Channel 2 with 15 metre output, which placed the third harmonic of the transmitted signal inside the TV channel. ■

King of the Hill

John G. Troster W6ISQ

Reprinted by arrangement from "QST", Dec. 1980

ANYTHING YOU CAN DO I CAN DO BETTER... WITH LESS

"Hey Charlie, what kinda report you just get from that BZ3?"

"He gimme a 5 9 + 47 dB. What he give you?"

"Hmmmm . . . 5 9 plus . . . ahhh . . . 43 dB over. But, I'm only runnin' the little seven-element beam and it's only up 135 feet."

"Oh yeah! So I beat ya by 4 dB. Hah! And I only got my little four-element multibander at 57 feet."

"Well, actually I see I throwd the wrong antenna switch here. Guess I's only using my old rusty dipole layin' on the roof."

"QRX one . . . ahhh . . . my, my I see I'm transmitten' into a dummy load. It's amazing how good I get out with no good radiator."

"Hold it . . . look here, Charlie, the antenna wire from the final is mis-hooked up to ground! Gotta speak to Old Marge about foolin' with the wires around here."

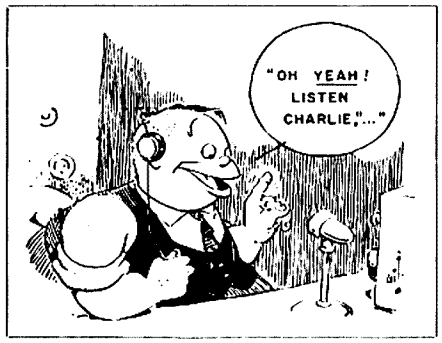
"I say . . . I just noticed my final ain't turned on . . ."

"Hmmmmm . . . can't believe it, but Old Marge must of tore out the power lines too, "cause all I got operatin' is the oscillator workin' off a dry cell. I get out pretty good for a QRPer with a hunnerdth of a watt and no antenna . . . huh?"

"Come oooonnnn . . . I got a better signal anytime and with any power you want to play with."

"Oh yeah! Listen Charlie, I could comb my hair over my antenna tuner and beat your best rig and antenna . . . anywhere."

"Well, you got more hair than I do. Listen if I wanted to whip you, I could just throw on a little dipole and turn on my exciter . . . like this . . . beat that!"



"Oh yeah . . . I'll blast your little whistler . . . with a flip of the switch on the driver . . . and when I get this antenna screwed back in the right socket . . ."

"No way . . . If I ever turned on my final and hooked up the old sixstack of beams, I'd melt every receiver out there at them antipodes."

"Look, Charlie . . . one snap of the switch here and my Doomsday Final comes on that destroys the ionosphere. So don't fool around. You don't want to be responsible for me meltin' all them ions up there."

"Ahhhhh . . . QRX . . . I hear that BZ3 again. All right, crank up everything ya got . . . pour it on . . . your best shot . . . and I'll show ya who's got the best ether agitator."

"BZ3 . . . BZ3 . . . how ya copy my terrific signal now? Hear that, Charlie? . . . he gimme a S9 + 48 dB. That's one dB better than you got last time. Go ahead. Try your miserable rig."

"BZ3 . . . BZ3 . . . how much louder is my rf bomb than ISO's? Ahhhh . . . you say . . . ahhh . . . only 46 dB over? Ahhhh . . . let me look here . . . see what I forgot to hook back up."

"Nothin' you forgot to hook up. Admit it. You got a pile of junk over there. I just beat ya . . . seeee . . . I beat ya by 2 dB . . . errr . . . this time."

"Oh yeeeeaahhhh . . . well, no wonder . . . your mountain is higher than mine by 33 feet. Half a wavelength and that's important."

"Year, but that means I gotta transmit my rf through all that more fog and rain that I get up here at this higher elevation. That soaks up rf in the worst way, ya know."

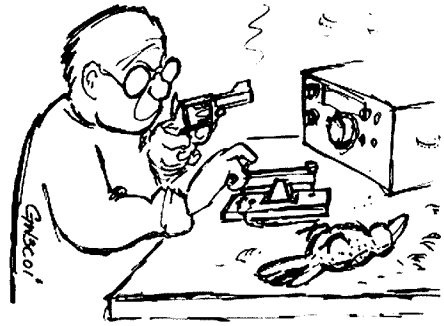
"Well naturally you're gonna beat me by 2 dB this time of day because the long-path skip has already gone by me and now you got the best skip. Wait till the skip evens out and I'll blast out some rf that'll neutralize anything you can . . ."

"Wait a minute . . . from your mountain you got a better shot out across the whole wide Pacific Ocean. I only got little old San Francisco Bay to bounce offen. It ain't as salty as the ocean neither."

"Well, I'll be . . . lookie here. Looks like I'm only usin' that dadratted little old four-element multibander again. No wonder I'm down 2 dB."

"Ohhhhh . . . what do ya know . . . my switch . . . guess I must of forgot to throw it back on. I see I'm still only using my little dinky old rusty dipole on the roof."

"For goodness sakes . . . look what I forgot to hook up . . ." ■



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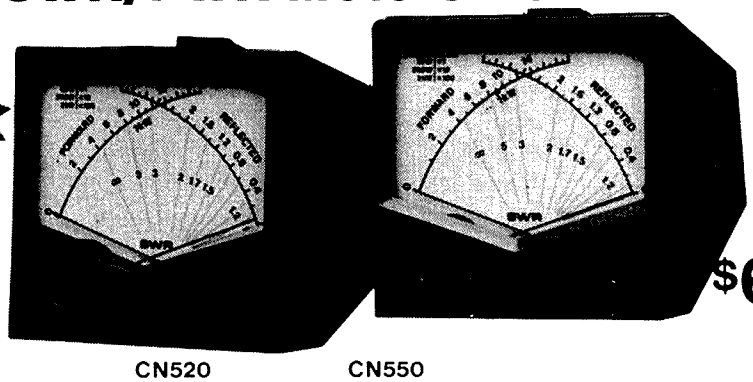
New SWR/PWR Meters from Daiwa

new

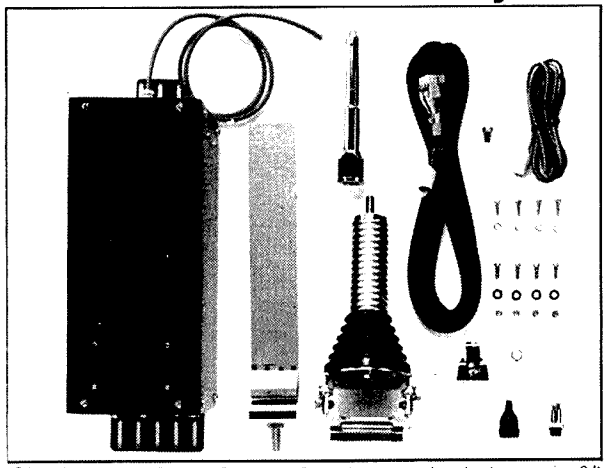


$59 $69

	CN520	CN550
Frequency:	1.8-60MHz	144-250MHz
Power Range:	FWD: 200/2kW Ref 40/400W	20/200W 4/40W
Impedance:	50ohm	50ohm
Meter Accuracy:	± 10% at full scale	± 10% at full scale
Connectors:	S0-239	S0-239
Dimensions:	72Wx72Hx95D m/m	72Wx72Hx95D m/m

DAIWA DAIWA

Mobile Automatic Antenna System



ICAH1 for use with IC720A, IC730 and IC701. All amateur band antenna using 9 ft aesthetically tapered base-loaded whip. Automatically resonated from within the case by the touch of a button.

ICOM $249

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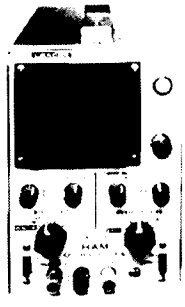
Ideal as a general CRO for the shack. Also doubles as a monitorscope to check your transmitted signal. Sensitivity 20mV, bandwidth 4MHz, screen 3". $339



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VICOM dummy load 3.5-500Mhz 25WCONT $16

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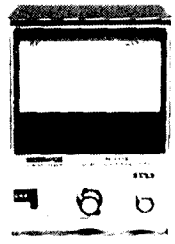
LEADER dip meter $99

LPM885
LEADER SWR/Watt meter $102



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DAIWA infrared mobile mic $139

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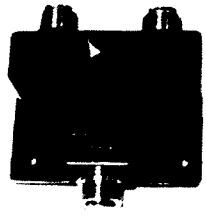
Quality 2 position switch. $24



CS401
DAIWA coaxial switch 4 positions $69

CX120P
VICOM coax relay 150W. to 2.5GHZ 12V DC $24

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KATSUMI electronic keyer with dot memory $72

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HK706
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MK1024
KATSUMI electronic keyer programmable $235

MK701
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HUSTLER universal bumper mount $28

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HUSTLER 40m resonator antenna $30

10Y/2M
JAYBEAM 10 el. 11.4dBd 2 metre beam $96

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JAYBEAM antenna 5 el. 7.8dBd. 2 metres $43

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VICOM beam antenna 2m, 10 el. 12dB gain (3) $83

VAB/2/5
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VAB/70/16 VICOM 16 el. LP/YAGI, 70cm antenna (incl balun) $65

VAW/2/5
VICOM 5/8 f-glass whip tuned 146.5MHz $13

VAW/2/B
VICOM belling-lee base $4

V4JR
NAGARA 40-10M trap vertical antenna $115

QRP CW Transmitter with Break-In – Part 1

Drew Diamond VK3XU
43 Boyana Cres., Croydon, 3136

This transmitter is for the keen Morse enthusiast. The CW portions of the most popular bands are covered and break-in operation is provided. The operator has only to start sending to place a signal on air. Whilst sending, the receiver is enabled between letters and words, so the operator immediately becomes aware of any breaker or interference. Needless sending is avoided when unsuccessful in replying to a CQ, as the station receiver continuously monitors the channel. The output power is sufficient to drive previously described amplifiers. No esoteric or special components are required, and all the parts are readily available at present.

PERFORMANCE

Bands: 1.750 to 1.812, 3.500 to 3.625, 7.000 to 7.250 and 14.0 to 14.5 MHz.

Output Power: At least 1.5W, typically 2W into 50 ohms.

Spectral Purity: Harmonically related signals at least —42 dBc, non-harmonically related signals —50dBc.

Amplitude Noise: At least —60 dBc in a 3 kHz bandwidth.

Frequency Stability: Less than 100 Hz/hour drift after one hour warm-up on 14 MHz. Improves by a factor of ½ for each sub-multiple.

This performance is accomplished with one oscillator (no mixers, multipliers or phase-locked loops) and digital dividers followed by simple low-pass filters. Operation from external 13V supply is possible.

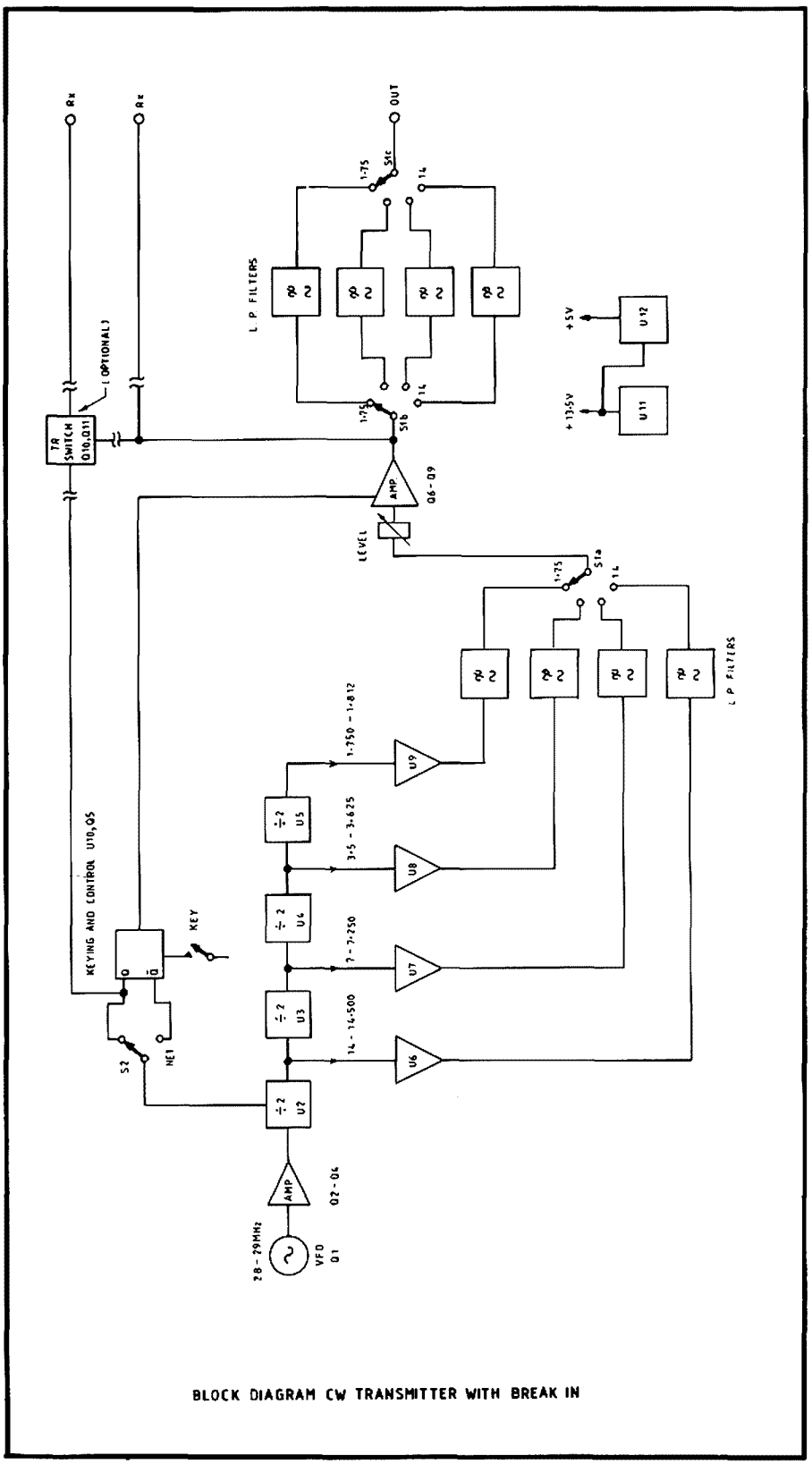
BLOCK DIAGRAM

The VFO is tunable from 28 to 29 MHz and is followed by an amplifier with sufficient voltage output to drive a TTL gate. During sending, U2 through U5 each divide their respective inputs by two, and so produced the frequencies indicated. U6 through U9 buffer the dividers, and drive the four low-pass filters. The frequency band selected by S1a is applied to the output amplifier via a level control. The amplified signal is routed via an appropriate LPF to remove any harmonics produced by the output amplifier.

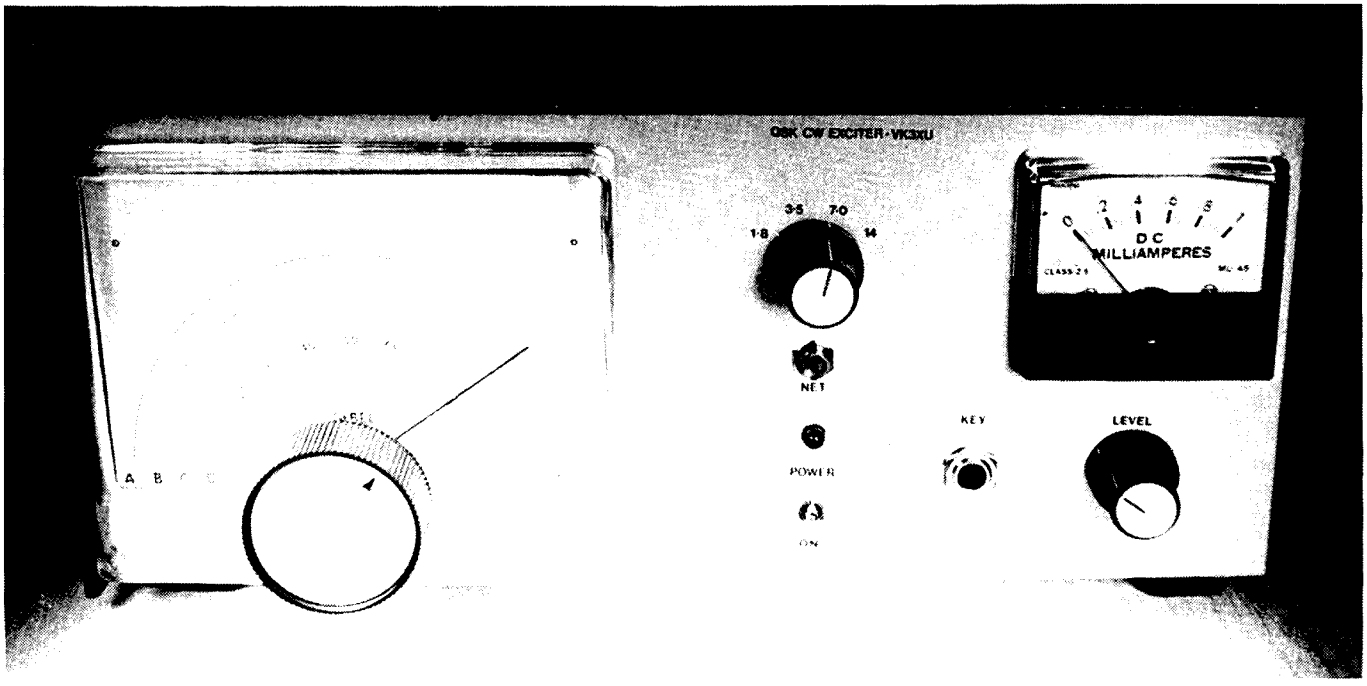
Keying is implemented with a retriggerable monostable multivibrator U10. Each time the key line is pulled low, the Q output goes high for a predetermined period set by the delay control (generally about ½ second). This high enables the dividers to operate. At the end of the delay period, the divider chain stops operating. As it is impossible for "sub-harmonics" to occur, no locally generated signal is heard during listen periods, thus allowing the VFO to run continuously. The other output from the keying circuit turns the early stages of the output amplifier on and off in a shaped fashion to form the dots and dashes from the hand keyer, keyer or keyboard.

Regulated supplies of +13.5V for analogue circuits, and +5V for digital circuits are provided by U11 and U12.

Circuit description and diagrams in Part 2.



BLOCK DIAGRAM CW TRANSMITTER WITH BREAK IN


QSK CW EXCITER-VK3XU
3·5
7·0
1·8
14
NET
POWER
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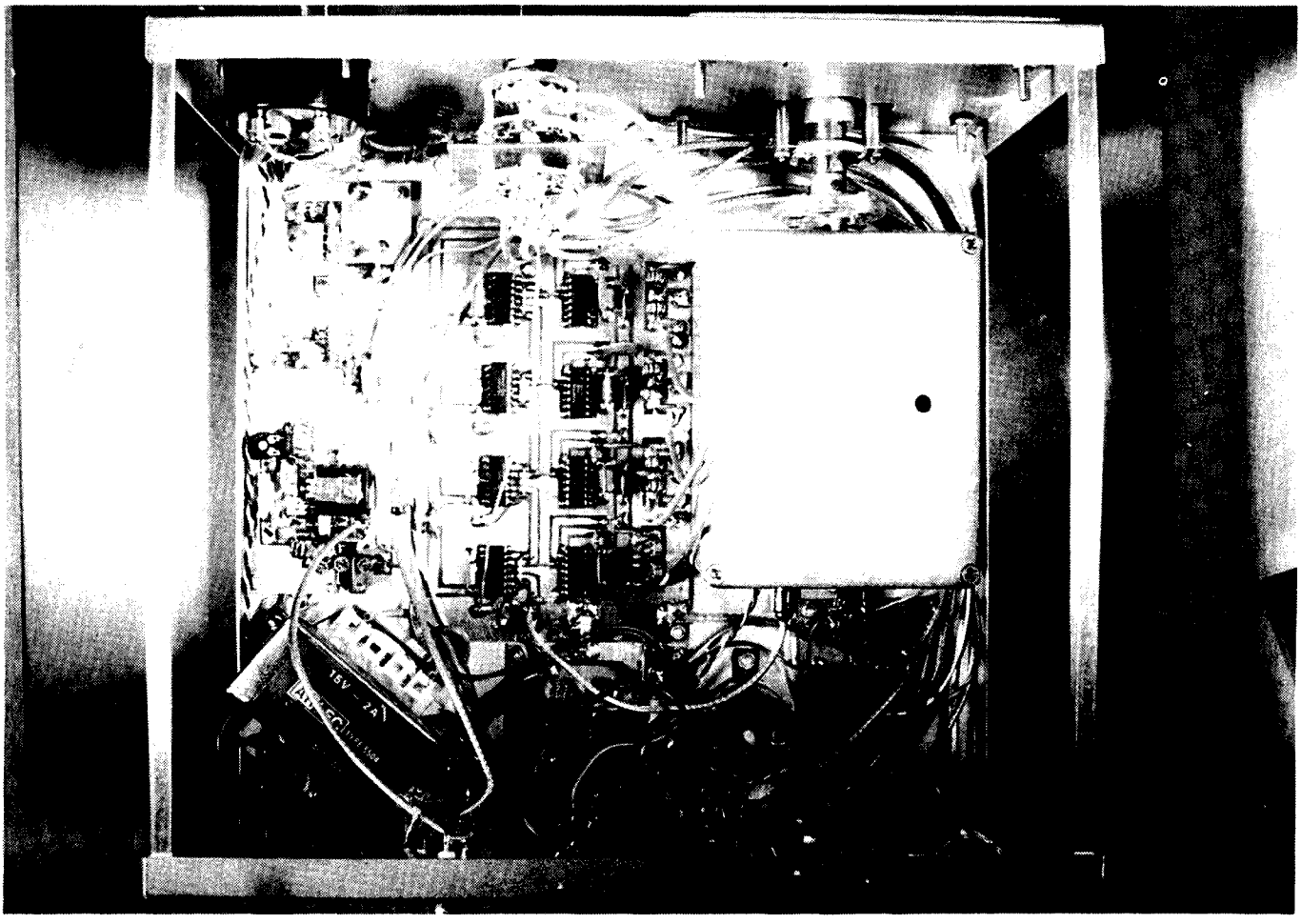
KEY
LEVEL
DC
MILLIAMPERES


18V - 2A

A New Frequency Counter — Update

Based on information supplied by
W. Beyer VK3BHW.

This is a follow-up on the article "A New Frequency Counter" published in AR January 1981. The basic information was extracted from an article by E. H. T. Van der Heyden PA0EHT, published in "Electron" March 1981. This counter has excellent performance, however a VHF prescaler as described here extends the frequency coverage up to 1 GHz.

CIRCUIT DESCRIPTION

The input is protected by two diodes connected back-to-back.

The input amplifier proper is an OM336 hybrid technology broadband amplifier, suitable in the range from 40 MHz to 860 MHz, and it is possible to extend the range to 1 GHz with careful design, thus we have plenty of margin in this application. The input amplifier is followed by the Plessey SP8631A high speed divider, as the prescaler. The BC178 transforms the output of the SP8631A to TTL level.

Some care should be taken with the amplitude of the input signal and it is recommended that the input signal be limited to a maximum of 1 volt with an external attenuator.

Supply voltage for the SP8631A is 5V DC and the OM336 requires a higher voltage to a maximum of 24V DC. Thus 16V DC is taken direct from the rectifier (see modified power supply circuit), and is switched by the BD136 which in turn is switched on by the BC107 when required; the amplifier and prescaler only receive their respective supply voltage when the counter is switched to the 500 MHz range.

The zener diode at the supply pin of the OM336 is purely for over voltage protection.

Parts list for 500 MHz input amplifier/prescaler:—

ICs: 1 IC8361A (Plessey), 1 OM336 broadband amplifier (Philips).

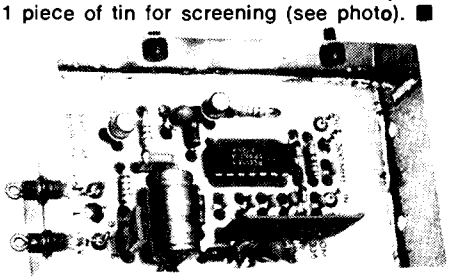
Transistors: 1 BD136, 1 BC178, 1 BC107.

Diodes: 2 HP5082-2800 or 1N4148, 1 zener diode 24V 250 mV.

Resistors: 1 10 ohm 1/8W, 2 217 ohm 1/8W, 1 270 ohm 1/8W, 1 1.2 k-ohm 1/8W, 1 4.7 k-ohm 1/8W.

Capacitors: 7 1 nF ceramic, 1 100 nF ceramic, 2 10 uF 25V tantalum, 1 100 uF 25V, 2 lead-through capacitors 1 nF.

Miscellaneous: 7 1 mm PC board pins, 1 piece of tin for screening (see photo). ■



500 MHz Prescaler.

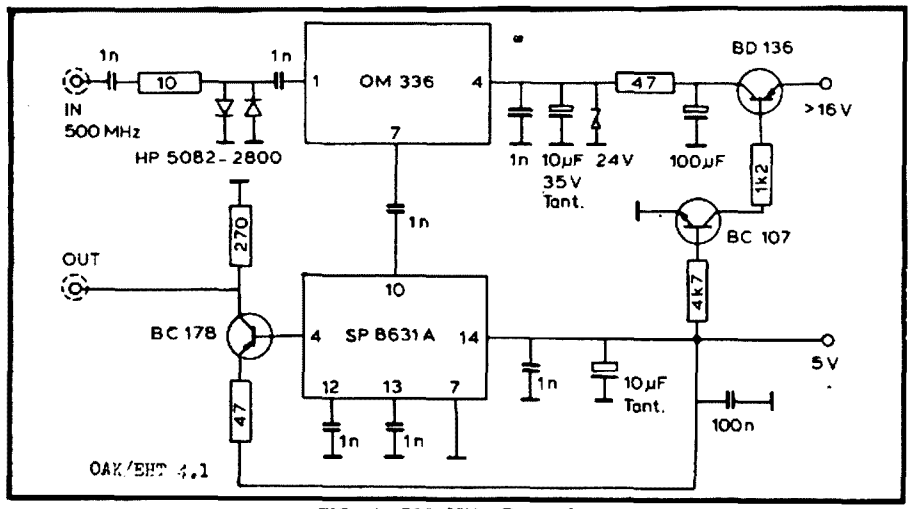


FIG. 1: 500 MHz Prescaler.

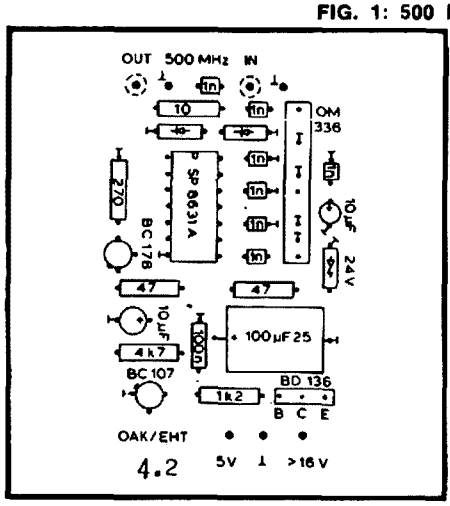


FIG. 2: Component Layout for Prescaler.

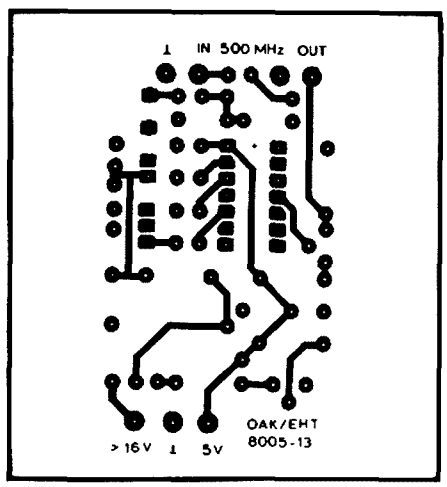


FIG. 3: PCB Layout for Prescaler.

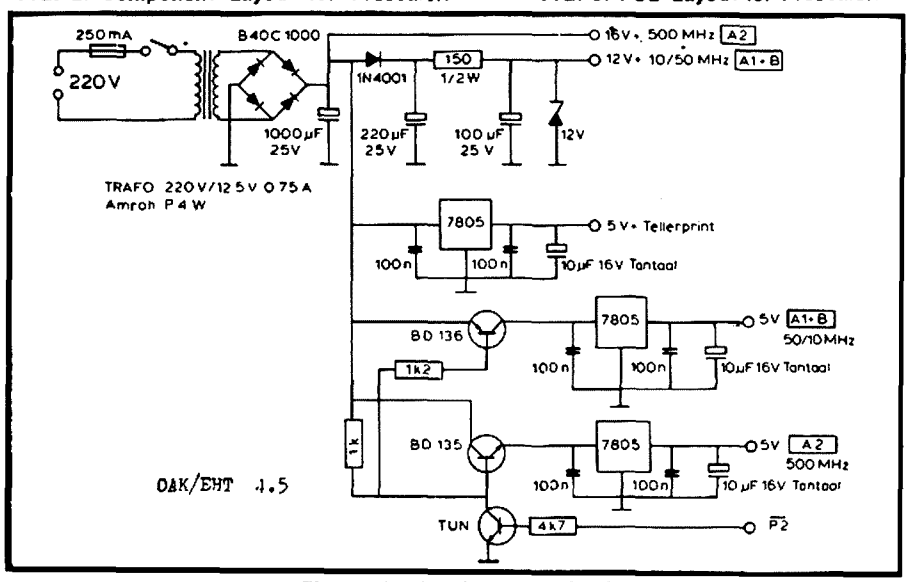
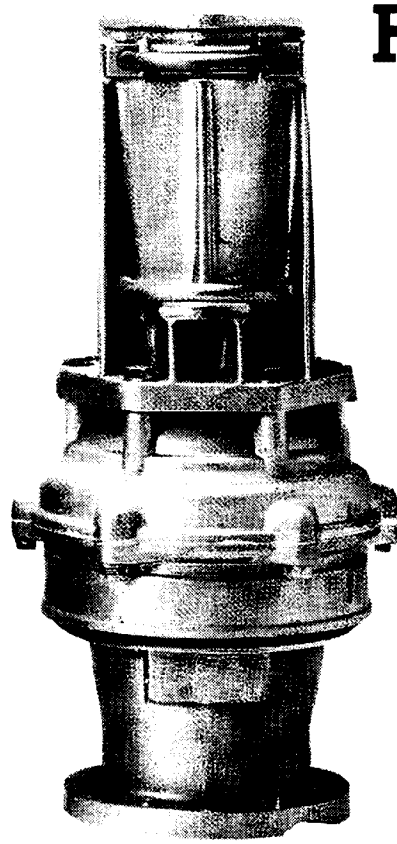
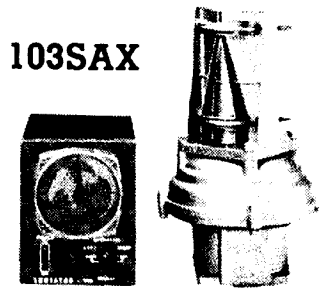


FIG. 4: Modified Power Circuit.

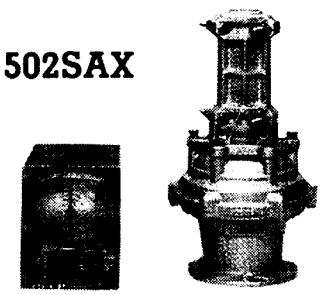
EMOTATOR ROTATORS FROM BAIL



103SAX

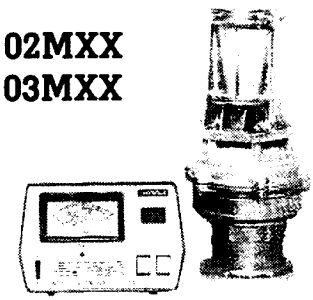


502SAX



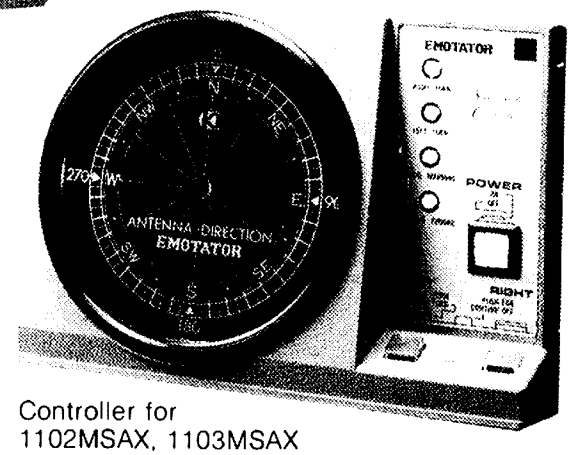
SAX MODELS HAVE GREAT CIRCLE MAP CENTRED ON S.E. AUSTRALIA

1102MXX
1103MXX



Model	A M^2	GD^2 Kg M^2	Braking Torque Kg Cm	Rotation Torque Kg Cm	Vertical Load Kg
103SAX	0.7	75	1500	450	150
502SAX	1.5	130	4000	600	400
1102MXX MSAX	2.5	300	10 000	800	400
1103MXX MSAX	2.5	700	10 000	1000	400

A: Allowable Antenna wind area
GD^2: Allowable Flywheel effect



Controller for
1102MSAX, 1103MSAX

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Stan Roberts
VK3BSR

'AR SPECIAL

Planning for Australia's Domestic Satellite System

In July 1980 the Satellite Project Office of the (then) Postal and Telecommunications Department in Canberra issued an Information Paper entitled "Planning for a National Communications Satellite System". This was followed in October by the issue of a vast mass of tender data.

Many amateurs will be interested in reading extracts from the Information Paper relevant to the general principles involved, published with permission of OTC. A general article on the subject appeared in OTC's magazine "Contact" of March 1981.

BACKGROUND

In October 1979, the Minister for Post and Telecommunications announced the Government's decision-in-principle that it would be in the national interest to establish a communications satellite system for Australia. At that time, the Minister also announced that a Satellite Project Office would be established within the Postal and Telecommunications Department to set in train the planning activities necessary for the introduction of the system.

The SPO has been operational within the Department since the end of 1979, progressively drawing on resources and expertise of OTC (A), Telecom, the ABC, the Department of Transport and the Department itself. Considerable use has also been made of two leading international consultants: the COMSAT Corporation of the USA and the European Space Agency (ESA).

TECHNICAL ASPECTS OF SATELLITE SYSTEM

A basic communications satellite system usually consists of two satellites in orbit — one a working satellite and a second spare satellite to take over immediately if the prime satellite fails. In addition a further spare satellite is normally held on the ground. A spare satellite in orbit is required because even with a satellite available on the ground, at least 3-4 months are needed to arrange for launch, positioning in orbit, and testing of a satellite.

Among the different orbits originally proposed for communications satellites, only the so-called geostationary orbit has withstood the test of time. This is a circular orbit above the equator in which the satellite circles the earth every 24 hours at an altitude of approximately 36,000 km. In view of the earth's own 24 hour rotation, a satellite placed at this altitude and moving from west to east, will appear stationary to an antenna placed on the earth.

As in many other areas of technological innovation, constraints are imposed by available resources. In the case of the satellite system the available frequency spectrum is limited in bandwidth. Care must therefore be exercised in implementing satellite systems to ensure that electrical interference does not occur between neighbouring systems nor between satellites and earth stations, and terrestrial microwave systems.

Because of the potential for interference between neighbouring satellite systems, the allocation of positions in the geostationary orbit is becoming a complex technical and administrative procedure involving extensive international liaison. Furthermore, certain sections of the gyrosynchronous orbit are becoming relatively congested, and it is becoming increasingly difficult to secure orbit locations which are satisfactory for the system, and which can also be satisfactorily co-ordinated with other systems.

In view of lunar and planetary gravity fields, solar radiation, as well as variations in the earth gravity field, it is also necessary to control the satellite's altitude and position by means of on-board corrective units.

Since a geostationary spacecraft in fact is an earth satellite, it is carried by the earth around the sun once a year, and periods of earth eclipse therefore occur at regular intervals. During eclipse the earth's shadow falls across the panels of solar-powered cells which normally provide power for the on-board communications equipment. This phenomenon takes place during the two annual equinoxes (early March to mid-April and early September to mid-October) when shadowing occurs for up to a maximum of 65 minutes per day; outside these two periods the satellite would be in 24 hour daily sunlight. In order to prevent a complete communications breakdown during eclipse, communication satellites generally carry on-board rechargeable batteries; in the case of high-powered direct-broadcast type satellites, however, it may not be economical to carry the additional payload required for the heavy batteries; in such a case, it would be necessary to place the satellite at such a longitude that the eclipse occurs outside the daily prime transmission period.

SYSTEM COMPONENTS

The development of satellite systems is a process concerning the inter-dependence of the earth sector, the space segment and the launch in a total transmission system. Each of the three components is described below.

EARTH SECTOR

The typical communications earth station would be located in an electrically quiet area, as close as possible to its associated domestic communications centre. The station would have equipment to transmit signals to the satellite, to receive and process signals from the satellite and to point the large antenna towards the satellite.

The communications equipment consists of a high power transmitter, a sensitive receiver, equipment for combining the communications traffic received from the terrestrial network (multiplex baseband equipment), and radio equipment interfacing the baseband equipment with the transmitter and receiver. The antenna would be aimed at the satellite by mutual setting to the satellite's celestial co-ordinates; it may then be switched to an automatic tracking system that compensates for any slight station movements of the satellite. Small antenna can be permanently fixed in position. The power system for the station generally consists of a reliable source of commercial power, backed-up by standby diesel generators; the most vital equipment is often powered by an uninterruptible no-break power supply.

SPACE SEGMENT

Communications satellites consist of a number of subsystems, such as spacecraft structure, control systems, antennae, receivers, transponders and power supply.

When in orbit, a satellite maintains its correct altitude in relation to the earth and its correct location in the equatorial orbit by means of the stabilisation methods described below, augmented by an electronic control system and an auxiliary gas jet propulsion system.

The spin-stabilised satellite uses a gyrostat configuration in which the spinning spacecraft body provides the basic stabilisation. Antennae and electronics would be mounted on a stationary, i.e. de-spun, platform as the antennae must be permanently orientated toward the earth in order to concentrate the radiated energy in that direction. The so-called body-stabilised satellite, on the other hand, stabilises the satellite structure by means of one or more on-board fast spinning momentum wheels.

The process whereby a community of earth stations gain access to one common satellite and establish separate communications paths simultaneously through the satellite is called multiple access. In such a system, the received signals would be separated either in frequency (frequency division multiple access or FDMA) or in time (time division multiple access or TDMA); thus, the signal would be received

at the uplink frequency, amplified, converted to the associated downlink frequency and amplified again in one of a number of transponders to a sufficient power level to sustain the atteuation involved in the long path back to earth.

LAUNCH CONSIDERATION

The US space agency NASA, has two classes of rocket launch vehicle available. The Delta class is capable of placing satellites weighing about 500 kg into synchronous orbit which is adequate for the domestic satellites such as ANIK (Canadian), WESTAR (US) and PALAPA (Indonesian). The typical Atlas Centaur class with 915 kg capacity is more suited to the larger domestic satellites such as COMSTAR and to the INTELSAT series of international satellites.

It should also be noted that Europe is developing Ariane, an expendable vehicle with similar lift capacity to Atlas-Centaur.

Conventional expendable launch vehicles consist of a series of stages coupled together with the first stage engine at the base and the satellite at the apex. The first stage engine is used to lift the assembly off the ground in a ballistic trajectory designed to intersect the equator. The next stage is first fired to achieve an elliptical parking orbit of 186 km apogee and 1800 km perigree. On passing the equator the second stage fires a second time, so as to place the satellite in a larger elliptical (transfer orbit) of 550 km perigree and 35,800 km apogee. At apogee the satellite is at the distance required for circular geostationary orbit and needs only an impulse from a small onboard engine to inject it into that orbit.

Also under development is the NASA manned Space Transportation System (STS or Shuttle) which will be based on a manned low altitude orbital vehicle which will in effect replace the first stage of the rocket launchers. During a shuttle launch the satellite assembly will be carried within the cargo bay of the orbital vehicle until low elliptical orbit is reached. It is then off-loaded and separated from Shuttle. The assembly includes an auxiliary rocket engine to perform the same function as the conventional second stage rocket engine. A so-called SSUS engine (Solid Spinning Upper Stage) is coupled to the satellite for this purpose.

The first commercial use of the Shuttle is planned for the early 1980's, and following this NASA will discontinue the use of conventional expendable launch vehicles. As far as the economics of Shuttle launches is concerned it is still too early to make definitive statements; expect that it seems likely that the Shuttle will have a major impact on future design of satellites, in order that maximum use can be made of multiple spacecraft launchings, a concept which will be closely associated with the Shuttle.

TRACKING, TELEMETRY AND COMMAND

In order to maintain satellites in their correct positions and to ensure that they are functioning correctly, It is necessary to provide a tracking telemetry and command (TT&C) system. In the INTELSAT system this is the responsibility of a worldwide network of special stations. One of these is located at Carnarvon, WA, and is operated by OTC.

SYSTEM DEFINITION

Consultation and system development

Planning and development activity associated with the design of a national communications satellite system has been an iterative process. System definition has evolved progressively, in parallel and interacting with consultative activity on potential service requirements.

Throughout all developmental stages, planning has taken progressive account of updated information on potential service requirements, in the light of cost and technological considerations.

The evolution of system definition has progressed from a conceptual design premised on identification of a range of baseline services.

Space segment

With consultancy assistance from COMSAT (USA) and the European Space Agency, the SPO has developed a specification for the Australian system along the lines outlined below. The basic design assumes the use of up-to-date but space-proven hardware with the obvious objective of minimising technical risk and providing maximum economy. The RFT envisages purchase of three spacecraft (one operational and one spare in orbit and a standby on the ground) with an option to buy a fourth.

Transponder capacity

The satellite will have a capacity of up to 25 transponders per spacecraft. Transponder definitions envisages facilitation of a wide range of modulation techniques at the user's discretion.

Frequency bands

The satellite will operate in the 14.0 - 14.5 GHz frequency band in the uplink and in the 12.25 - 12.75 GHz band in the downlink.

Coverage areas

In the earth to space (uplink) direction the satellite will have a national beam, i.e. it will be capable of receiving signals from anywhere within Australia. Downlink transmissions will be receivable in the following coverage configurations:

- a National beam (illustrated in Appendix C, Annexure 1)
- four spot beams, covering WA, Qld, SA/NT and NSW/Vic/Tas respectively. These beams will be primarily for the HACBSS service, but could also be used for the Fixed Satellite Service (illustrated in Appendix C, Annexures 3 to 6 inclusive)
- possibly a spot beam covering Papua New Guinea.

Operational system design life

The satellite will be designed to operate for at least seven years. It will be provided with ample battery capacity to continue operation during eclipse periods.

Orbital locations

The orbital locations tentatively chosen for the satellite system are 150°E and 164°E, above the equator. Confirmation of these positions will be subject to international co-ordination. Another position set tentatively at 160°E will be selected for a spare satellite in orbit, keeping in mind that the latter could provide some pre-emptible capacity.

The spacecraft

The satellite has been designated as a "D-class spacecraft" capable of being launched on one of three alternative classes of launch vehicles.

Launch vehicles

- Delta class — an expendable launch vehicle developed and marketed by the US National Aeronautics and Space Administration (NASA) and capable of launching one D-class satellite.
- Ariane — an expendable launch vehicle being developed by the European Space Agency (ESA) and approximately capable of launching two satellites of approximately D-class size; and
- Space Transportation System (Shuttle) — a recoverable launch vehicle being developed by NASA and capable of launching a wide range of satellites including the D-class.

Spacecraft control

The request for Tender will also include a requirement for two Tracking, Telemetry Command and Monitoring stations and for a Spacecraft Operations Control Centre which would be associated with one of these stations. It is expected that one TTC & M station would be located somewhere in eastern Australia and the other either in central or in western Australia. The Satellite Control Centre would be capable of exercising full control over the satellite system from Australia.

Earth stations

The National Satellite System is planned to include several classes of earth stations specified in accordance with technical parameters formulated to ensure compatibility between the space and earth segments consistent with international regulatory requirements. The RFT will include specifications for those earth stations having a major impact on system design and/or public sector costs as listed below:

(a) Major city earth stations for multi-purpose use;

(b) Transmit/Receive Television and/or Radio earth stations for location at ABC production studios;

(c) Remote Telephone Satellite Services;

  (i) Homestead Telephone earth station (one circuit)

  (ii) Community Telephone earth station (2-12 circuits)

  As options, these stations could provide for reception of HACBSS TV and radio signals, as well as a

conference facility which could be used for School-of-the-Air.

(iii) Emergency Telephone earth stations (2-12 circuits).

(d) Minor Earth Stations (suitable for the School of the Air service, etc.).

(e) Homestead and Community TV and Radio Broadcast Only earth station.

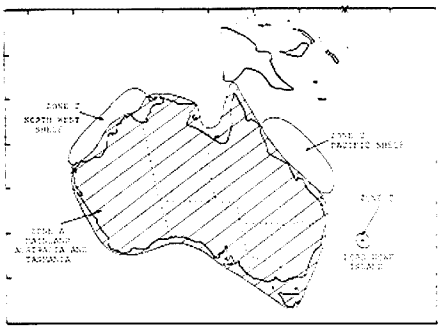
(f) Department of Transport Earth Stations.

(g) Receive only Television and/or Radio Earth Stations for location at ABC provincial television transmitter sites from which the programs will be re-transmitted terrestrially.

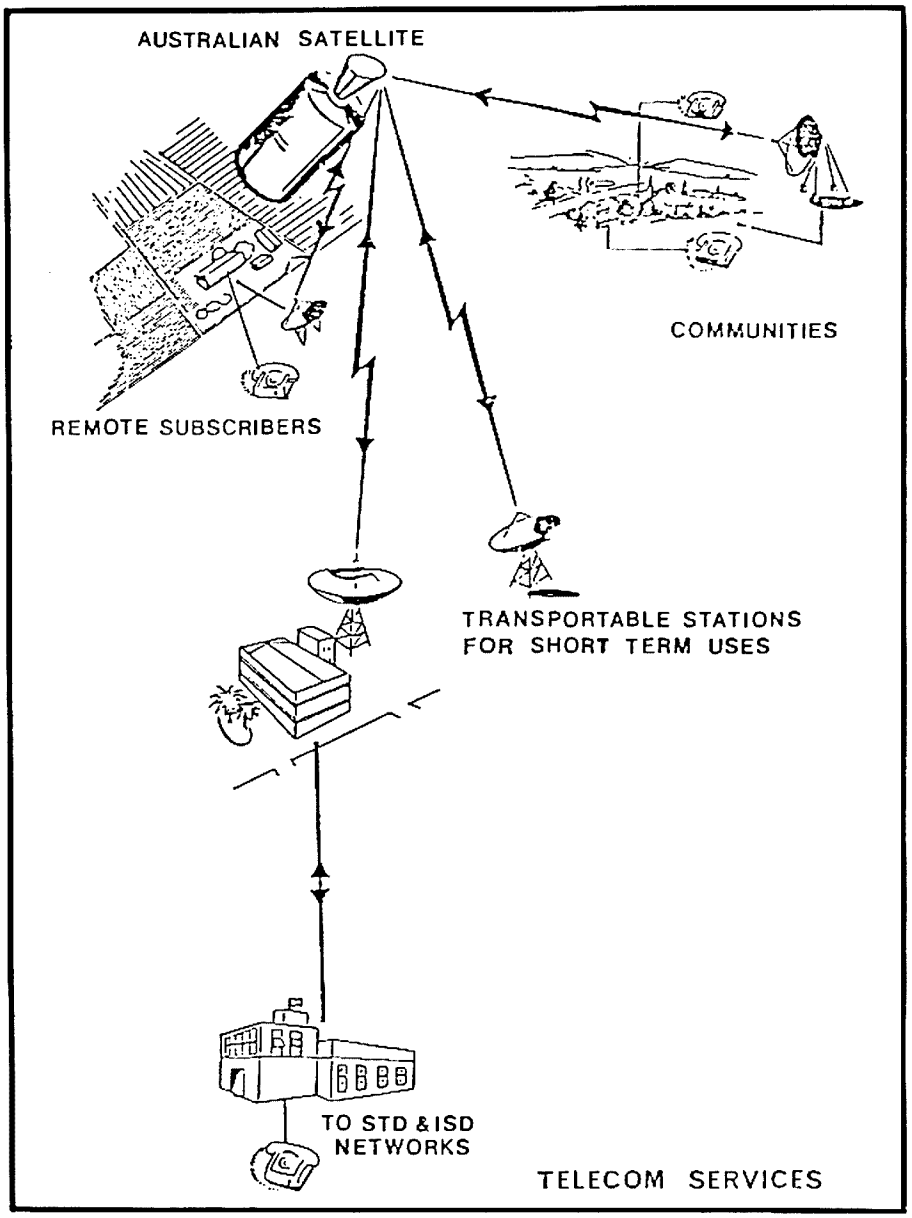
(h) Telecom Transportable Satellite thick route earth station to provide additional major route traffic on a temporary basis.

The HACBSS earth stations will be a pilot purchase for assessment purposes. The Remote Telephony Satellite Service earth station will also be purchased in limited quantities initially, to permit field trials prior to purchasing substantial quantities for general installations.

The Minor Earth Stations will be purchased in limited quantities on a once-only basis to help develop an Australian source for multi-purpose type earth stations. ■



Taken from Appendix C Annexure 1.



The Amateur's Code

ONE
The Amateur is Considerate . . . He never knowingly uses the air in such a way as to lessen the pleasure of others.

TWO
The Amateur is Loyal . . . He offers his loyalty, encouragement and support to his fellow radio amateurs, his local club and to the Wireless Institute of Australia, through which Amateur Radio is represented.

THREE
The Amateur is Progressive . . . He keeps his station abreast of science. It is well-built and efficient. His operating practice is above reproach.

FOUR
The Amateur is Friendly . . . Slow and patient sending when requested, friendly advice and counsel to the beginner, kindly assistance, co-operation and consideration for the interests of others; these are marks of the amateur spirit.

FIVE
The Amateur is Balanced . . . Radio is his hobby. He never allows it to interfere with any of the duties he owes to his home, his job, his school, or his community.

SIX
The Amateur is Patriotic . . . His knowledge and his station are always ready for the service of his country and his community. ■

QSP

FALSE TEETH RFI

According to QST, Feb. '81, ARRL has opposed an aplication to FCC by Clairol Corporation for a waiver of the FCC rules so that the Corporation can market an ultrasonic denture cleaner without having to comply with standards dealing with radio frequency interference. ■

TELEPRINTER CODES

Feb. '81 QST reports that four amateurs have received special temporary authority from the FCC to experiment with a teleprinter code similar to the commercially used "Moore ARQ Code" (described in CCIR Recomendation 476) and to report their findings to the FCC at the end of one year. These amateurs, members of the Amateur Radio Research and Development Corporation (AMRAD), will be trying to develop an error-free mode of amateur teleprinter communications. ■

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Townsville: Robco Equipment 72 2633

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Moe: Codlin Communications 27 4516
Hamilton: Hamilton Electronics 72 3333
Ballarat: Wecam 39 2808

South Australia
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I.C.S. 47 3688
Mt. Gambier Sel Services 25 2228

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Netronics 46 3232
Kalgoorlie: Hocks TV 21 1906

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VICOM

Model M100

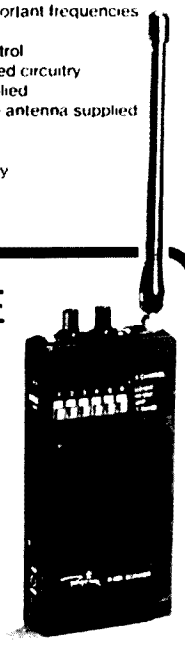
The 10 channel, no-crystal scanner!

FEATURES:
- No crystals required
- 10 Channels
- 6 Bands
- All frequency search
- Priority
- 10 programmable R.A.M. Channels
- Search Hold to stay with important frequencies
- Search and scan delay
- Manual Search or Scan Control
- Custom frequency-synthesized circuitry
- AC supply and DC cord supplied
- Detachable, swivel telescope antenna supplied
- Attractive, durable case
- Top-mounted speaker
- Regency quality and reliability

$399

Model H604E

The hand-held scanner gives you the action wherever you go.



FEATURES:
- 6 Channels - so you'll hear all the action
- 4 Bands - LoVHF, HiVHF, UHF, UHF-T
- Advanced circuitry - combines small size with great performance
- L.E.D. channel indicators - bright and long lasting
- Channel lock-outs - select only the channels you want to hear
- Step Control - advance channels one at a time
- Two Antennas - Flexible antenna and wire antenna included

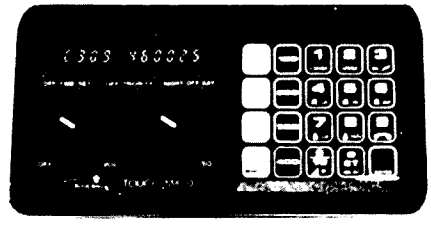
$169

price does not include crystals

Model M400

Hear all the action on 30 channels covering over 15,000 frequencies.

FEATURES:
- No crystals required
- 30 Channels
- 6 Bands
- All frequency search
- Priority
- Digital readout quartz clock
- 30 programmable Channels
- Search Hold to stay with important frequencies
- Quartz elapsed time clock records up to 100 hours
- Programmable Search increments
- Search and scan delay
- Manual Search or Scan Control
- Custom frequency synthesized circuitry
- AC supply and DC cord supplied
- Detachable swivel telescope antenna supplied
- Nickel Cadmium memory battery included
- Attractive durable case
- Top-mounted speaker
- Regency quality and reliability



$449

Quarrelsome Components

Greg Buckingham

"I'm the most powerful," said the battery.

"I'm the best," said the Ohm.

"Well, you're all no good without me," said the volt.

And so the argument continued on and on, without an end in sight, each one bickering and placing counter attacks upon the other's argument.

"Is there no end in sight to this continual senseless argument?" queried a lonely light bulb.

"I know I'm best" . . . "I won't give in" . . . "Cant' they see they are beaten?" The replies came quicker than electrons through a wire.

"Well," said a passive light globe, "the only fair way to settle who is boss would be in a Court of Light."

"I do believe you're right" . . . "That will end it once and for all" . . . "Now we will see who is right", came a volley of replies.

So at last it was settled — the community of Electrolysis was buzzing with excitement as the day of the trial drew near; the gentleman who is to take charge of proceedings is — Judge Capacitance.

"Order! order! . . . we will have no induced reactance in this court of light. If anyone fails to obey this rule, then they will be banished to the storage cell," retorted the Judge.

The Judge continued . . . "We are here today to hear the case between Messrs. Battery, Volt, Current and Ohm, and we, that is the jury of magnets and myself, will then decide upon our verdict."

"Protons and Nuclelı, the defendants as mentioned previously, will represent themselves in this case, and all components will swear on the Bakelite," continued the Judge.

"Calling Mr. Ohm to the dial," bellowed Sgt. Sieman.

"Let us hear your case please, Mr. Ohm," said Judge Capacitance.

"Judge, magnets of the jury, Protons and Nuclelı, it is an unequivocal fact that I am the most important part in any electric circuit. I, and I alone, have the ability to place a veritable strangehold on proceedings if I so desire," said Mr. Ohm.

"Rubbish! What a lie!" cried Mr. Volt.

"Mr. Volt, may I inform you that unless you remain silent, you will be transformed from this court," said the Judge in a stern manner.

"Thank you your Capacitorship," replied Mr. Ohm. "As I was saying before I was so rudely interrupted, if I wished I could swell up, increasing my resistance, effectively blocking the path used by the Battery, Volt and Current. Thank you, your honour, I rest my Omega," said Mr. Ohm.

"Mr. Current to the Dial," ordered the Sergeant.

"I would like to get straight into it, as I haven't got time to play about," said Mr. Current. "You know I've got a crop of Lumens that are intensifying all the time, and they are not getting any lighter to carry, let me tell you all about this. If I put my mind to it I could melt Mr. Ohm like mercury In a vapor. You know I'm the one that does all the real work In the circuit because, without me, who is going to go from one end of the flamin' circuit to the other? How do you think things are going to work if I decide to stop halfway? Well, that's finished me, can I go now?"

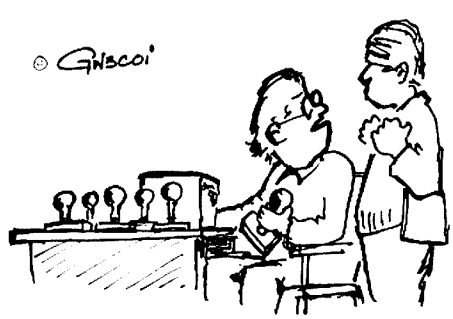
At this stage of the proceedings, the jury of magnets are in quite a flux about the case. It appears quite obvious to the people of Electrolysis that the jury's domains are misaligned and it will take a strong coercive force in order for them to think straight.

"Tap, tap, tap," the relay goes, demanding silence before the session will continue.

"Mr. Volt to the dial," demands Sergeant Sieman.

"Well Sir, I, Viscount Volt 5th, cannot help but feel intimidated by these snide remarks of the common components. So far as I'm concerned, these so-called valuable (and I use the term loosely) components can do what they like, but if I'm not there to push Mr. Current around, he is not going to go very far, so all this piffle about going around the circuit is utter nonsense and I don't want to hear any more about it. Now Mr. Ohm could swell up till he bursts, because until I decide to push Mr. Current through him, he is an absolutely useless feature of the circuit.

"In summing up, Mr. Learned Judge, it is quite plain, I'm sure, even to the jury of magnets who, by the way, appear to have very little permeability, that without great Viscount Volt 5th nothing will happen in the circuit. That is all I desire to say now. If I may, I shall adjourn back to the lovely Island of Voltmeter and my charming wife Voltaire."



"People of Electrolysis," said the Judge, "We have heard the evidence of three components here today and, as the time is drawing on, the court will close and resume at precisely 10 watt hours tomorrow. The jury will be required to spend the night at the hotel Magnetic Keeper, and may dine on magnetic nails or steel filings . . . court adjourned."

The town was divided in a three-way split, each believing it was supporting the right component, yet feeling no mutual attraction to any. Ten watt hours chimed out and the streets in the tiny town of Electrolysis were deserted, as all the judges and electrolytes were in the court room.

"Calling Mr. Battery," cannoned the Sergeant Sieman.

"I will not bore you with a long lecture," said Mr. Battery, "I am a component of facts. The fact is this . . . I am in the circuit to provide the volts to push the current through the ohms. Now, being a reasonable component, it has come to my attention that we are all vitally important to one another, if we are to have the circuit operational. Therefore, I put it to the jury to accept my idea of what equal status we all possess. Thank you," said Mr. Battery.

"Magnets of the jury, what is your verdict? Attraction or repulsion?" asked the Judge.

"Your Honour!" squeaked a voice from the crowd, "I am the most important part of the circuit."

"Who said that?" said the Judge.

"It's me, Sir," said the shy timid voice. "You see my Lord, that if I don't close, the battery can't supply the power, the volts can't push the current around the circuit, the current can't complete the path, and the ohm will not be able to resist because there will be nothing to oppose, so you see, your Honour . . . I am the most important!"

"Magnets of the jury, considering this new evidence that has been brought to my light, will you pass down your verdict?" said the Judge.

"Your Honor," sparked the head electromagnet of the jury, "we have found that as a North Pole is to a South Pole, so is a swtich to a circuit."

The electrolytes spilled out into the street with their new hero upon their shoulders . . . they adorned the switch with robes and a crown with the inscription "THE MOST IMPORTANT COMPONENT IN THE CIRCUIT" emblazoned across the front in bold atoms. ■

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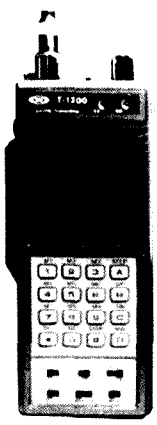

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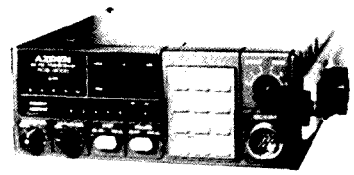

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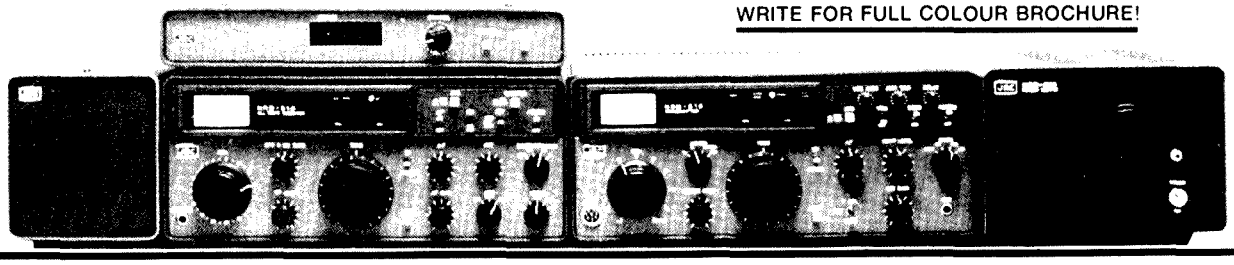

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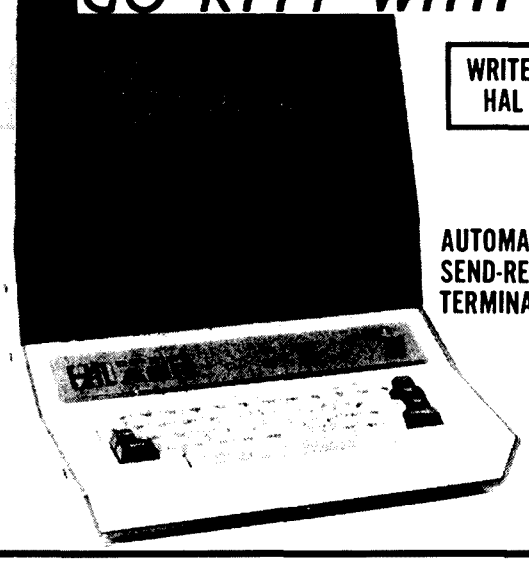
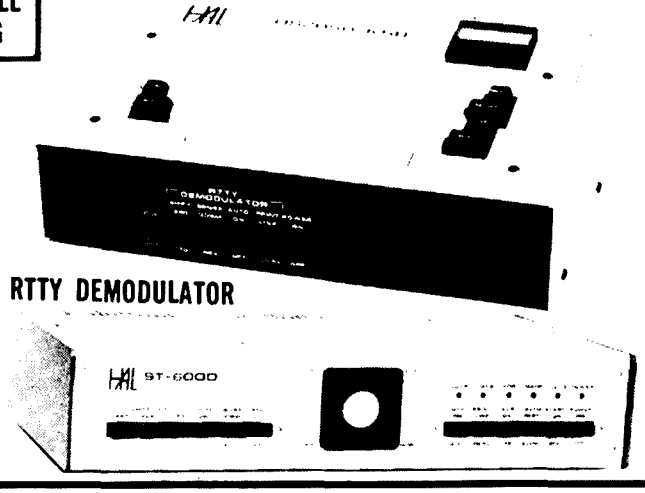


AUTOMATIC SEND-RECEIVE TERMINAL



RTTY DEMODULATOR

FORWARD BIAS

ANNUAL SUBSCRIPTION INCREASE

The annual subscription for 1982 for VK1 is to be increased to $27.50, an increase of $2.50 over the fee for 1981.

In his budget for 1982 our Treasurer, Kevin VK1OK, has allowed for the following items of expenditure:—

Repeater costs $200, Forward Bias Notes $288, NAOCP/AOCP classes $300, QSL Bureau $350, meeting room hire $150, licences $102, administrative costs $115.

With an anticipated membership of approximately 200 the VK1 component of your subscription will be a little over $7. To this must be added the Federal component of $20, bringing the total subscription to $27.50 for all full and associate members. Note that the fee for other members of the same family (with no copy of AR) will be $18.20 and for bona fide students $17.25.

Pensioners in possession of a Department of Social Security Pensioner Medical Benefits Card should apply to the Divisional Committee if they seek a concession on their subscription fee.

You may ask what you get for your $27.50. The following is a list of the benefits I see in being a member of the WIA.

From Federal: Amateur Radio magazine, free Hamads, an intermediary between you and the DOC, a voice in the international allocation of frequencies, the RD, Ross Hull and other national contests, the Intruder Watch Service, the EMC Service.

From VK1: The QSL Bureau, three excellent local repeaters, NAOCP and AOCP classes, book sales service, monthly meetings for your information and enjoyment and (in wee small print) this column.

WICEN ACTIVITIES

The VK1 WICEN Group will provide communications facilities for the ACT Pistol Association Championships to be held over the long weekend in January. These championships are to be held at the three pistol ranges located at Mount Majura (2) and Mount Ainslie.

WICEN operators will work with the Range Officers at each of these venues to provide a communication service covering the transmission of results to the central control at Mount Majura and in arranging for the movement of competitors between the various venues.

A total of 18 volunteers will be required to cover this exercise. Volunteers should contact Rob VK1ZAI for further details. Meals and refreshments (?) will be provided by the ACT Pistol Association.

1982 CALL BOOKS

A further supply of the 1982 Call Book has been received by the Book Sales Manager, Ken VK1NDK, and will be available at future General Meetings. While on this subject, congratulations to all at Federal who were concerned with the compilation and printing of this Call Book. It's well worth the price.

REPEATER NOTES

Peter VK1DS, our King of the Mountain, and a group of his merry men visited Mount Ginini recently to check up on the repeater installation after a long and particularly severe winter in the high country.

Despite the fact that Mount Ginini (5800 feet ASL) has been covered by up to 8 feet of snow for the last few months and completely inaccessible since about last May, our Channel 7 VHF repeater has operated during that time without fault.

It is hoped that the new UHF repeater, which has been on test for several months in town, will be installed on Mount Ginini before Christmas.

FOX HUNTS

After several years in the doldrums "fox hunting" has been revived in VK1. Several hunts have been conducted recently and others are planned. Good to see our near neighbours in VK2 — the Queanbeyan mob — joining in and, I understand, organising some of these events. Fortunately we have very few "wild turkeys" in VK1 and it would appear that any who are game enough to try would very quickly come under notice of the battery of "sniffers" currently being constructed. And let's not forget the Doppler Scan.

To each of you and yours from me and mine, a joyful Christmas and a happy and prosperous New Year.

7. VK1KV. ■

VK2 MINIBULLETIN

NOTICE

The Annual General Meeting of the Wireless Institute of Australia, New Soulh Wales Division, will be held at 10 a.m. on Saturday, 27th March, 1982 at 14 Atchison Street, Crows Nest, N.S.W. Agenda items for this meeting may be submitted to the Divisional Secretary, P.O. Box 123, St. Leonards, N.S.W., 2065, up to 10 a.m. on Thursday, 25th February, 1982. Nominations for election to Council close on the same day, Thursday, 25th February, 1982. Nomination forms may be obtained by ringing or writing to the Diivsional office.

(Sgd.) Susan Brown VK2BSB
Hon. Sec., WIA, N.S.W. Div.

Any ordinary (i.e. full) member of the NSW Division may stand for election to Divisional Council. Would members please note that no business may be discussed and voted on at the AGM unless all members receive notice of such business (see Article 31). Please make sure that any motions you wish discussed reach Divisional office before Thursday, 25th February.

COUNCIL REPORT

At the October meeting, Divisional Council adopted guidelines for Affiliated Club Broadcasts. These are:—

1. Only those club stations relaying Divisional broadcasts be permitted a five minutes news segment.
2. Affiliated club broadcasts to be limited to five minutes maximum duration immediately following Divisional broadcasts.
3. Transmission to be on repeaters used for WIA broadcast relay or by station conducting an HF relay.
4. The content to be news and information of a local nature only.
5. Identification to be the affiliated club call sign, the name of the affiliated club, and should include the name and call sign of the operator and a statement that what follows is new from the particular club concerned, and not from the WIA.
6. Broadcasts to adhere strictly to the guidelines laid down for WIA broadcasts.
7. All affiliated clubs conducting such broadcasts to advise the NSW Division WIA of times and frequencies used.
8. Call-backs may be taken at the discretion of the affiliated club concerned.

At present the following affiliated clubs are authorised to relay Divisional broadcasts — Westlakes ARC on 1812.5 kHz, Orange ARC on channel 6700, Central Coast ARC on channel 6750, Summerland ARC on channel 6800 and Illawarra ARS on channel 6850.

Council has regretfully decided to discontinue personal AOCP lecture classes as from the end of 1981 because of insufficient students and a consequent heavy financial loss.

Certifficates of Affiliation, designed and prepared by Steve VK2VHP, were received with approval at the October meeting. All clubs at present affiliated with the NSW Division (32 in all) have been issued with a certificate.

This year, for the first time, Divisional Council was pleased to award the "Dick Smith NSW Educator of the Year Award" to Kim Stevens VK2ASY. Kim was nominated by Orange ARS for his sterling efforts in educating prospective amateurs in the Orange area during the year. Congratulations, Kim! There were several nominations which were received too late to be included in Council's decision, so we hope the nominators will re-submit them for next year's award.

Many thanks to Trent Sampson VK2YHA/NDK, who has volunteered and been accepted as VK2 Contest Publicity Officer for 1981/82.

Also at the October Council meeting Steve VK2VHP presented a comprehensive report on his investigations into the relocation of the Divisional office to the Parramatta area. Council has decided to present a detailed submission to members at the 1982 AGM in March.

PREVIEW OF THE GOSFORD FIELD DAY, 1982

Mark your calendars now for the largest Field Day in the southern hemisphere! (Any challenges for this claim can be addressed to Box 123, St. Leonards, Hl.) It's on again on Sunday, 21st February, 1982, at Gosford Showground, Showground Road, Gosford. Events include an open scramble, pedestrian direction finding fox

hunts on 144.3 AM and 146.55 FM, ladies' and gent's quizzes, children's events, outings to the Reptile Park or bus trip, etc. The excellent disposals stall will also be on again. Items for disposal must be booked in advance — contact Bill Smith VK2TS at RMB 4525, Gosford 2250 or (043) 74 1207 AH for forms and lot numbers. See you there!

ORANA ARC

For a new club, they certainly know how to get the ball rolling. Along with negotiations for a proposed new VHF repeater in the Warrumbungles, the club has been busy educating some 20-odd candidates for the latest Novice exam, which it is hoped could be held in Dubbo. In addition, they have found time to put on amateur radio displays at Wellington and organise successful family barbecues.

ORANGE ARC

Another very active club in the west with many activities, including WICEN participation in the recent two-day bike trials and an interesting monthly magazine "Mini Tuned-in" edited by Ross VK2BRC. From the magazine, a report by Wally VK2DEW on the bike trials: ". . . The briefing on the Saturday started on time and everyone received their map, access notes, log sheets, etc. Frank VK2ZFE and Jack VK2DDN set up the portable two metre repeater and Jack stayed with it as caretaker/relief operator in case of failure. Thanks, Jack, for staying for the night and for assisting in the search (for a lost rider). While this was going on, Robert VK2ZRJ and Eddie VK2YJO were fitting their rigs in the two Datsun 4 x 4 vehicles of the clerks of the course. As well, a data link was established to trial headquarers on 432 MHz, thanks to VK2BVU and VK2BHM, who lent their FM321s. Apart from noise on 80 metres and a crackle on 2 metres, both days went off first rate!"

Details of four clubs affiliated with the NSW Division.

WAGGA AMATEUR RADIO CLUB

PO Box 71, Kooringal 2650.

Call signs: VK2WG, VK2NWG, VK2RWG.
Nets: Saturdays at 1200 hrs. on 28.49 MHz.
Meetings: Last Friday at Wagga Rescue Club, Bolton Street, Wagga.
Classes: NAOCP May to November, Wednesdays 1930, at Rescue Club; AOCP each second year.
President: Jeff VK2KBK; Vice-President: Allan VK2KAW; Secretary, Russ VK2AZR. Other Committee: Bob VK2DJQ, Neil VK2YWR/VTD, Peter VK2DUS.
Magazine: 10 issues per year of "QRM", edited by Rex VK2YA.
Repeater: VK2RWG on 6750, ERP 50W, time out 3m, sited at Flakeney, 20 km SE of Wagga.
Field Day: Whisper has it, or was it just an ugly rumour, that Wagga will be hosting next year's SWARS Convention over the long weekend in October.

ST. GEORGE AMATEUR RADIO SOCIETY

PO Box 77, Penshurst 2222.

Nets: Tuesday at 1930 on 14.11 MHz, Tuesdays at 2000 on 26.52 MHz, Thursdays at 2000 on channel 6800, Sundays at 0800 on 3.555 MHz, all using VK2LE.
Meetings: First Wednesday at 1st Allawah Scout Hall, South Hurstville.
President: Derek VK2AZS; Vice-President: Jim VK2NPA; Secretary: Gordon VK2BGA. Other Committee: Brian VK2ZBP, Allan VK2XF, Paul VK2ZSA, Ellis VK2DDW.
Magazine: Dragnet (quarterly), edited by Jim VK2NPA, also Dragnette at each meeting.
Repeaters: VK2RLE on 6800, ERP 250W, time out 4 min., located at Heathcote. VK2RDX on 6650, ERP 45W, time out 4 min., located at Mount Bindo, near Oberon.

SGARS also has a very active WICEN group, a computer group and an annual picnic and dinner.

ORANGE AMATEUR RADIO CLUB

PO Box 1065, Orange 2800.

Nets: Sunday at 2030 on 6700 using VK2AOA ("Fred" net). Sundays at 0800 on 3.61 MHz using VK2BVW (Western Districts Net).
Meetings: First Fridays at 1930 in Canobolas High School, Orange.
Classes: NAOCP.
President: Peter VK2TK; Vice-President: Kim VK2ASY; Secretary: Ross VK2BRC. Other Committee: Rob VK2ZRJ, Eric VK2VOH, Bruce VK2DEQ, Frank VK2ZFE.
Magazine: "Tuned In", quarterly, edited by the committee. "Mini Tuned In", approximately monthly, edited by Ross VK2BRC.
Repeater: VK2RAO on 6700, ERP 100W, time out 3 min., located at Mount Canobolas.
Field Day: Usually November at Molong.

LIVERPOOL AND DISTRICT AMATEUR RADIO CLUB

PO Box 690, Liverpool 2170.

Nets: Sundays at 0930 on 3.58 MHz, Mondays at 2030 on 6550, both using VK2AZD.
Meetings: Second Tuesdays at Liverpool Public School, Bigge Street, Liverpool, 0930 hrs.
Classes: AOCP and NAOCP at above school, Tuesdays 1900.
President: John VK2KDJ; Vice-President: Arthur VK2DUW; Secretary: Kevin VK2PZ. Other Committee: John VK2VUK, Adrian VK2KCI, Dave VK2DPJ.
Field Day: March in Liverpool area.

COMING EVENTS

1st February (Sunday): Gosford Field Day.
25th February (Thursday), 10 a.m.: Close of agenda for AGM and of nominations for Council.
27th March (Saturday), 10 a.m.: Annual General Meeting, NSW Division.

Merry Christmas and Happy New Year to all!

Susan Brown VK2BSB. ■

VK6 NOTICE

VK6 DIVISIONAL CHRISTMAS MEETING

on 15th December is to be held in the Ballroom of Herdsman Motor Hotel, Wembley, at 1930h.

VK4 WIA NOTES

CHRISTMAS GREETINGS

Firstly this month, season's greetings to all readers from the VK4 Division.

COUNCIL ELECTIONS

Queensland members will shortly have the opportunity to elect the 1982 VK4 Council. There are 12 members on the Council and they are responsible for the management of the affairs of your Division. They can, however, only be as effective as members allow them to be. So keep in touch with your Councillors, feed them ideas and support them as necessary.

NATIONAL FIELD DAY

It's time to be making arrangements for your involvement in the John Moyle Memorial Field Day 1982. Queensland amateurs and clubs have been prominent in this event for a number of years now and 1982 will be no exception. This is always a good opportunity to try out your portable WICEN equipment and find out if it is as reliable as you think it is.

EDUCATION

Council has examined the educational problems made evident by the release of the recent exam pass rates. As a result, the educational kits offered through the Book Shop are being upgraded by the addition of study guides, sample exams, a call book and a copy of the Regulations Handbook to the theory book, syllabus, cram book and Morse tapes already offered. A sub-committee has been formed to carry out this upgrade. Other sub-committees have been formed to look at the production of instructor training programmes, a "History of Amateur Radio in Queensland" and a series of "Amateur Radio Techniques" seminars. All these activities are aimed at the creation of well-rounded amateurs socially and technically, with an emphasis on education past the licence level.

These committees are going to need significant assistance from members if the aims are going to be achieved so be ready to step forward when the time comes.

INTERFERENCE

The local DOC has requested that mobile amateur stations keep clear of radio communications sites whilst transmitting. This reminder has come about due to some interference recently in the Maritime Mobile Service in SEQ. Keep this in mind and pass the word around.

RTTY REPEATER

The SEQTG has been testing their microprocessor controlled RTTY repeater. The repeater can be transparent or can perform a number of functions using Baudot and ASCII codes. It promises to be a very versatile installation and has coverage over most of SEQ.

UHF REPEATERS

The Brisbane VHF Group's UHF repeater is now installed on the Channel 0 tower on Mt. Cootha and is giving wider coverage than first expected. The Sunshine Coast Club now has an operational repeater on Mt. Buderim with equally good coverage. ■

AMSAT AUSTRALIA

R. C. Arnold VK3ZBB

PREDICTIONS

DECEMBER 1981

	OSCAR 8				OSCAR 9			
	Day	Orbit No.	Eqx GMT	Eqx °W	Orbit No.	Eqx GMT	Eqx °W
1	335	19063	0115	84.2	839	0100	149
8	342	19160	0044	66.6	945	0126	156
15	349	19258	0036	74 8	1051	0016	138
22	353	19356	0107	82.8	1157	0040	144
29	333	19454	0139	91.1	1263	0103	150

Note: The UO9 predictions are derived from observations during the first 200 orbits and may not be reliable as the satellite has yet to stabilise (as at 28/10/81).

UOSAT OSCAR 9

By the time these notes are published amateurs will be aware of the faultless launch of UOSAT, the British educational satellite, at 11.27 on 7th October, 1981.

The orbit parameters are very close to those predicted and are:—

Orbit period 95.45 minutes, increment 23.89 degrees, height 530 km, inclination 97.47 degrees.

Many amateurs listened to a description of the launch direct from Vandenburg Air Base and keenly awaited telemetry information from the satellite. This was first heard by Colin VK5HI on orbit No. 2 as high speed telemetry (probably 300 band ASCII) on the General Beacon on 145.825 MHz. Subsequently, Peter VK7PF deciphered this telemetry and the information was conveyed to AMSAT via Charlie VK3ACR.

At the time of writing, only the General Beacon is operating and we eagerly await operation of the other beacons and experiments — probably late November.

Information on new frequencies in use and any other data on the operation of the satellite would be welcomed by Charlie VK3ACR (phone (03) 762 2903).

Meanwhile, congratulations are in order to the workers behind UOSAT. To the University of Surrey team, to AMSAT-UK, AMSAT-DL and AMSAT itself which organised the launch.

UOSAT OSCAR 9 is sun synchronous and two or three orbits are within sight of Australia each afternoon between 2 p.m. and 5 p.m. local time. This is not too convenient for the working amateur but ideal for educational programmes in schools. As has already been demonstrated by VK7PF and others, data can be recorded automatically and decoded at leisure.

Travelling north-south, the satellite will also appear in the early hours of the morning, i.e. 12 hours from the afternoon times, but generally speaking, amateurs will confine their activities to the south-north afternoon passes. Determination of the time to listen is quite easy:—

1. Take the time of the first equator crossing for the GMT day as published or advised on WIA broadcasts.
2. Add to this time several increments of 95.45 minutes to give the times of the subsequent four or five orbits' equator crossings.
3. If you are in a southerly location, e.g. Melbourne, add 79 minutes to the above times. If you are further north, add a little more, e.g. 83 mins. for Mackay. This will give the approximate times you will first hear the satellite. The time of a pass will last up to 12 mins. 20 secs. The most likely orbits to be heard are the second, third and fourth of each day.

The signal on the General Beacon on 145.825 MHz is NBFM and is very strong, the normal FM receiver with ground plane antenna will provide adequate reception.

Without hesitation, AMSAT-UK has given the Wireless Institute permission to reprint its "UOSAT Technical Handbook" and this will be done over the coming months with the incorporation of amendments and updates. Thanks again to AMSAT-UK and its Secretary, Ron Broadbent. As I said last month, AMSAT-UK is a worthwhile organisation to join; it publishes some good material in its periodical. By the way, if you want something from AMSAT-UK or any other similar organisation, don't forget to give them something towards the cost and postage; like the WIA, they exist on a shoestring.

Here is the first segment of the UOSAT Technical Handbook which deals with Telemetry and Data Beacons.

TELEMETRY (Dr. Lui Mansl, UOS/AMSAT-UK)

The telemetry system has been deliberately designed to cater for a wide range of user ground station facilities and to provide a high degree of flexibility. 60 analogue channels and 45 digital status points are monitored around the spacecraft, encoded and are available for transmission via the VHF, UHF and SHF beacons in the following formats:—

1200 baud ASCII, 45.5 baud RTTY.

600 baud ASCII*, 300 baud ASCII*, 110 baud ASCII, 10 or 20 w.p.m. Morse code (Channels 00-09 only).

75 baud ASCII*, synthesised voice (in conjunction with the primary s/c computer).

The telemetry format is: 1 start, 7 data, even parity bit, 3 stop bits.

The format marked * are options on the 1200 baud output and are not available smiultaneously. Any selection of the primary formats are available to the UHF and VHF data beacons simultaneously, with the data format on the 2.46 GHz SHF beacon being that currently selected for the VHF data beacon.

The 1200 baud family also have the facility to dwell on any selected analogue channel.

The analogue telemetry channels have an encoding resolution of 0.1 per cent and an accuracy of 2 per cent, however the high current measuring channels suppress the least significant digit.

It is anticipated that the two VHF and UHF data beacons will carry different data formats to cater for the widest possible audience.

DATA BEACONS (Bob Haining, UOS/AMSAT-UK)

Two VHF and UHF beacons provide the primary engineering and experiment data links to the outside world and have been designed to provide a healthy satellite-to-ground transmission link to enable reliable and straightforward reception by the simplest of ground stations. A standard, unmodified NBFM VHF or UHF amateur receiver and a small, fixed, cross-dipole antenna should suffice to gather data from most orbit passes. The addition of a+10 dB gain yagi steerable in azimuth only would provide coverage of the low elevation passes. The data sources available to these beacons are:—

Telemetry, ASCII, Baudot, Morse Code.

Primary s/c Computer: Serial o/p. port No. 1, serial o/p. No. 2, speech synthesiser.

Video Display Expt.: Camera image data, text/news/schedules/graphs.

General Data Beacon: Frequency, 145.825 MHz; power output, 350 mW; modulation, NBFM ± 5 kHz devn.; total DC/RF efficiency, 45 per cent; unwanted signal levels, > —65 dB ref. carrier; max. doppler, ± 3.1 kHz.

Engineering Data Beacon: Frequency, 435.025 MHz; power output, 650 mW; modulation, NBFM ± 5 kHz devn.; total DC/RF efficiency, 40 per cent; unwanted signal levels, > —65 dB ref. carrier; max. doppler, ± 9.3 kHz.

DATA TRANSMISSION FORMATS

High speed data at 1200 BPS from the telemetry, computer and video display expt. are transmitted as phase-synchronous AFSK using 1200 Hz ("0") and 2400 Hz ("1") synthesiser notes. The "1"-"0" data transmissions occur at the zero crossings of the tone waveforms thus reducing the DC component of the data modulation spectrum and resulting in exactly one cycle of 1200 Hz representing a data "0" and exactly two cycles of 2400 Hz representing a data "1". This method lends itself to quite simple but effective decoding techniques.

Data at speeds other than 1200 BPS are transmitted asynchronously using 1200 Hz ("1") and 2400 Hz ("0") tones, except Morse code in which a 1200 Hz one only is employed.

(The next section of the book will be published next month.) ■

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Plus $5.00 Rail	
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M400-1 — 400 MHz S/Steel ¼ Wave	**$6.00**
M450-1 — 450 MHz S/Steel ¼ Wave	**$5.50**
M500-1 — 500 MHz S/Steel ¼ Wave	**$5.00**
Plus $5.00 Rail	

SPECIAL OFFER: $199.00 for complete H/F set
"90 days only"

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M10-1 — 10m Hamtenna 60"	**$36.00**
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M40-1 — 40m Hamtenna 60"	**$38.00**
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Also available — Long Range Receiving Antennae

M100 — 1 MHz Whip + Lead Assy. 60"	**$20.00**
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M102 — 80 MHz Whip + Lead Assy. 40"	**$18.00**

PLUS — Base accessories, adaptor fittings, bases, base, lead and connector and extension leads.

AND — SPECIAL WHIPS MADE TO ORDER.
YES! You give us the frequency and we will provide the Whip to ITU Spec.!!

"HAMTENNA" DEALERS WANTED!

Authorised Dealerships available in all States.
Enquiries invited NOW!!

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AT LONG LAST — The amateur mobile antenna that's guaranteed to work and to work better than what you're probably using now! Backed by a **5 years unconditional no-worries warranty — yes 5 years.** Exclusive "world release" and soon to be available in the U.S.A. and then throughout the world, the "Hamtenna" is produced in Australia on one of the most sophisticated and automated production antenna lines in the world, and each antenna is pre-tested to ITU Plenipotentiary Conference Standards (W.A.R.C. Geneva, 1979).

"GOLD HAMTENNA"

Also available **Gold Plated** to "Hamtennas" gold standard ("with certified certificate of value"). Example — When ordering "Gold Hamtenna" IXGM20-1 add $10.00 extra for "gold".

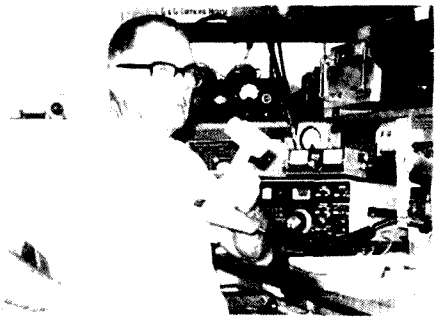
KIT VERSIONS
LESS $10.00 off A.D.P. (Solder and epoxy not supplied)

NOTE:
All "Hamtennas" are designed for use with a resonant length of coaxial cable, i.e. ⩽ multiples of ½ wave lengths at frequency of operation.
(⩽ means less than or equal to.)

Formula: Wave length ÷ 2 × 39.37 ÷ 12 × .666 = coax length in feet and inches.
All "Hamtenna" leads are made to this formula.

VHF-UHF

AN EXPANDING WORLD



Eric Jamieson, VK5LP
Forreston, S.A. 5233

VHF/UHF BEACONS

Freq.	Call Sign	Location
For 28 MHz beacons refer October 1981.		
50.005	H44HIR	— Honiara
50.008	JA2IGY	— Mie
50.020	GB3SIX	— Anglesey
50.023	HH2PR	— Haiti
50.025	6Y5RC	— Jamaica
50.035	ZB2VHF	— Gibraltar
50.036	HC1JX	— Quito
50.038	FY7THF	— French Guiana
50.040	WA6MHZ	— San Diego
50.048	VE6ARC	— Alberta
50.050	ZS3E	— South Africa
50.060	PY2AA	— Sao Paulo
50.070	VP9WB	— Bermuda
50.070	YVZZ	— Caracas
50.080	TI2NA	— Costa Rica
50.088	VE1SIX	— New Brunswick
50.100	KH6EQI	— Pearl Harbour
50.498	5B4CY	— Cyprus
51.022	ZL1UHF	— Auckland
52.013	P29SIX	— New Guinea
52.150	VK5KK	— Arthurton
52.200	VK8VF	— Darwin
52.250	ZL2VHM	— Palmerston North
52.300	VK6RTV	— Perth
52.320	VK6RTT	— Carnarvon
52.330	VK3RGG	— Geelong
52.350	VK6RTU	— Kalgoorlie
52.370	VK7RST	— Hobart
52.400	VK7RNT	— Launceston
52.420	VK2WI	— Sydney
52.425	VK2RAB	— Gunnedah
52.435	VK3RMV	— Hamilton
52.440	VK4RTL	— Townsville
52.510	ZL2MHF	— Mt. Climie
52.800	VK6RTW	— Albany
144.400	VK4RTT	— Mt. Mowbullan
144.420	VK2WI	— Sydney
144.475	VK1RTA	— Canberra
144.500	VK6RTW	— Albany
144.550	VK5RSE	— Mt. Gambier
144.600	VK6RTT	— Carnarvon
144.700	VK3RTG	— Vermont
144.800	VK5VF	— Mt. Lofty *
144.900	VK7RTX	— Ulverstone
145.000	VK6RTV	— Perth
147.400	VK2RCW	— Sydney
432.440	VK4RBB	— Brisbane
432.450	VK3RMB	— Mt. Bunningyong

The only point of note this month regarding beacons is the firing up of the **VK5VF 2** metre beacon again. **Mark VK5AVQ** got the old beacon going again pending the outcome of something to replace it. The 6 metre beacon remains silent and operators will have to rely on the **VK5KK** beacon which unfortunately doesn't run 24 hours a day for various reasons — one of which is that **David VK5KK** likes to be on 6 metres himself at times, and when he is then the beacon is silent. However, with the advent of increased Es activity for the next two months there should be enough general 6 metre activity from VK5 to make other places aware of band openings.

VK2RCW BEACON

This being a rather unique beacon, the following details have arrived from **Mark VK2DI** . . . "This beacon was conceived and built by **Barry VK2AAB** and operates under the sponsorship of the Hornsby and Districts Amateur Radio Club. It runs an FM transmitter which is modulated with a microprocessor keyed audio oscillator. The idea of the beacon is that it can provide 24 hour CW practice for anybody who has a 2 metre FM receiver capable of being tuned to 147.400 MHz.

"The present location of the beacon is Normanhurst, just north of Sydney. The transmitter runs about 5 watts to a ground plane antenna which seems to cover the major part of the Sydney metropolitan area.

"The micro used is a 2650, and the software provides for a range of speeds from around 5 .w.p.m. to about 15 w.p.m. It takes about an hour to cycle through this range.

"The frequency 147.400 MHz was allocated by the NSW Division for the beacon, which being an FM device was not really suited to placement in the conventional beacon segment of the band.

"The beacon has been accepted by the great majority of Sydney 2 metre operators, and has without doubt played a significant part in the education of those aspiring toward the AOCP and NAOCP."

Thank you for that information, Mark, you have probably answered a few former questions of why the beacon operated so high in the band and why it transmitted CW.

BEACON INFORMATION NEEDED

Over the months I have been asking for information of the operating habits of the various beacons around Australia. After about 12 months of asking I have received information from the custodians of the following beacons: **VK2RCW, VK7RNT, VK7RST, VK7RTX, VK4RTT, VK4RBB, VK2WI, VK5WI, VK3RMV.** Information is required from the following: **VK5KK, VK5VF, VK8VF, VK6RTV, VK6RTT, VK6RTU, VK3RGG, VK3RTG, VK2RAB, VK4RTL, VK6RTW, VK1RTA, VK5RSE** and **VK3RMB.** So that makes nine replies and 14 still to reply. **PLEASE:** Will custodians or someone responsible send information as soon as possible detailing call sign, frequency, power, antenna, mode and speed, location and height above sea level if possible. I am frequently being asked for such information by letter and on the air, and it

would be useful for such information to be available through the pages of the Call Book. Until everyone replies I cannot proceed. Would you please oblige?

NATIONAL VHF FIELD DAY

It seems Murpy's Law has been at work again. Last month I gave details of the National VHF Field Day to be held on 12th and 13th December to coincide with the first weekend of the Ross Hull Contest. Well that weekend is the second weekend of the Ross Hull Contest (see October 1981 AR for announced details of the 1981 Ross Hull Contest starting on 5th and 6th December). The Geelong Amateur Radio Club advised me the dates would be 12th and 13th December, so that's what they are — it will cause less confusion to leave them as announced last month than to try and alter them. The October 1981 issue of the Geelong Newsletter confirms the 12th and 13th, so there you are! Your scores should be postmarked not later than 13th January, 1982.

On the matter of Field Days I note the New Zealanders will be holding their annual December VHF Field Day on 5th and 6th December. It is to be hoped propagation will be better than it has been for some years now for an exchange of information between the two countries — most times no contacts have eventuated.

OVERSEAS CONTESTS

The 1981 Fall SMIRK Party Contest was scheduled for 7th and 8th November, 1981, but arrived too late for inclusion in the November issue, and as scores must be postmarked not later than 22/11/81 it made an impossible situation, especially as the scores must be on the new forms and no supplies have been sent, but requires entrants to obtain them from WB5SND. For such contests to be taken up at all in countries such as Australia or New Zealand information needs to be forwarded to the various magazines many months before to allow for printing deadlines, and no one should expect individual entrants to have to send to an overseas address for an entry form! Such forms should be available from at least one address in the country being asked to participate.

With thanks to **Bob VK5ZRO** for sending details of a JA-VK 6 metre contest. The first period was to be held from 20/11 to 29/11/80 and to be open to 6 metre operators in Japan and Australia, with the object of cultivating mutual friendship and raising activities on the 6 metre band. Frequency 52.000 to 52.500 MHz modes CW, SSB and AM.

Whilst the above information doesn't help the November contest, a similar contest is to be held from 0000Z on 12/3/82 to 2400Z on 21/3/82, and I propose giving you full details of the contest in the February 1982 issue; seems little point in duplicating all the information at the moment.

Again it is a pity the news was not sent direct much earlier, it was only due to the vigilance of **Bob VK5ZRO** that we know anything of it now.

To sum up: Contests of any kind, from wherever, should be in my hands three months before the date of the contest to allow for publication at least one month ahead of the period of the contest. The distribution dates of "Amateur Radio" do vary from time to time, and a contest appearing during the first week of a particular month may well be over before you receive that month's copy of AR. Hence the need for at least a month's notice to prospective operators. WILL ALL CONTEST ORGANISERS PLEASE NOTE!

BAND CONDITIONS FAIR

Overall, the past month or so hasn't been the most exciting. There have been numerous openings extending from a few minutes to several hours between Australia and Japan, some dates being 3/10, 4/10, 8/10, 11/10, 12/10, 13/10, 15/10, 16/10, 17/10, 18/10 (this being the earlier deadline required for the December issue!).

Bob VK5ZRO has been on holidays and been having quite a ball working JAs. 13/10 open to JA1, 2, 3 and 4. On 16/10 opened three times to JA, first at 0001Z and the last at /311Z. Signals 5 x 9 from JA7, 8 and 9 ,mainly on 50 MHz, with a few signals eventually appearing on 52 MHz and being worked. Bob also reported hearing FO8DR on CW on 15/10.

The above, plus an occasional Es contact interstate, the VK5 scene has been very quiet, both on 6 and 2 metres.

Readers should be interested to know that **Graham VK5GW** will be operational on 6 and 2 metres during 1982 from Oodnadatta in the far north of South Australia. He should be running reasonable power to good antennae and the distance of 600 miles or about 1000 km satisfactory for Es contacts. **Geoff VK8GF** in Alice Springs should be able to work Graham on 2 metres without a lot of difficulty.

OTHER AREAS OF INTEREST

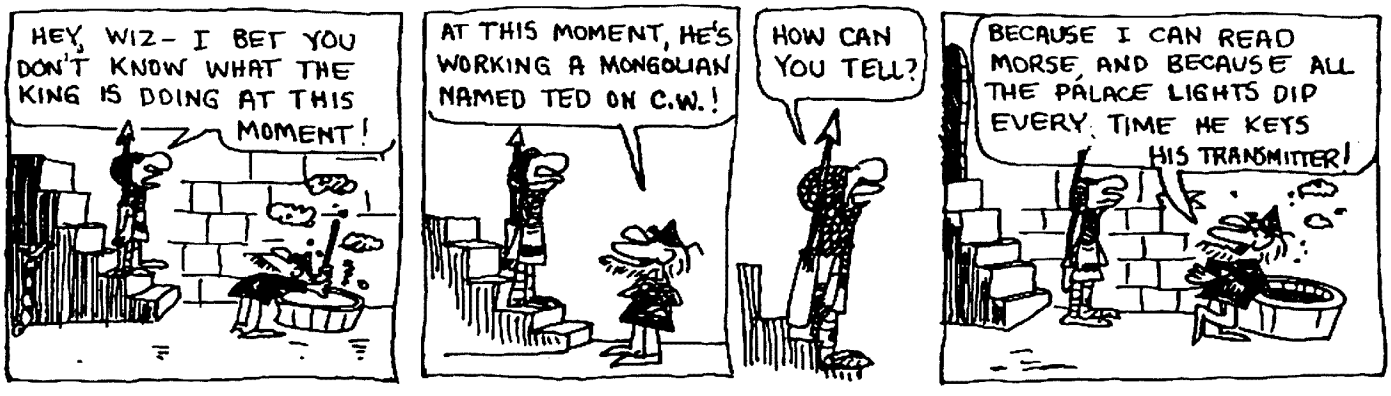
As news is scarce in this month of October, with its early deadline for December issue, it may be appropriate in the absence of any letter this month, to mention that, centres around 6 metres in the main, with 2 metres from time to time, plus a little 70 cm, opportunities do exist for other areas of activity to be mentioned, all I need is for someone to write about the activity.

What about some information on what is going on in the VHF/UHF spectrum with ATV, RTTY, FM, EME, microwaves, special construction projects, antennae, etc. Maybe we can make these columns more interesting, particularly during the periods when operating news is scarce. All you need to do is to write to me at the address shown above, I will do the re-writing or editing if it is needed. These columns will be enhanced by the information you, the readers, are able to supply in support of what I can muster. You must remember I still need to work to keep the wolf from the door, so I don't have unlimited time to be operating. Your help is still needed!

It's December again. With this issue sees the start of my 13th year of writing these columns, the continuation of which has only been possible with the large amount of help received from my many correspondents, some of many years standing. I am indeed grateful for your support. My thanks to the Editor and the Publishing Committee for their continued understanding of my various idiosynchrosies. and to the type setters who have to read my typewriting. But it will be Christmas soon; may I wish you all a happy and safe festive season, with plenty of DX and a new transceiver in the Christmas stocking.

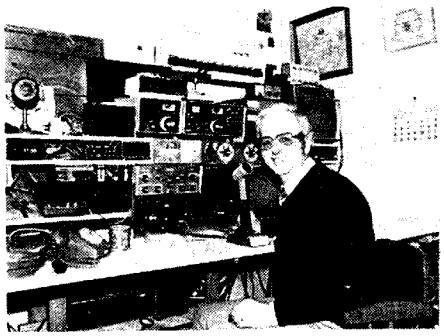
Closing with the thought for the month: "It's a rule of company life: the less important you are on the table of organisation, the more you'll be missed if you don't show up for work."

73. The Voice in the Hills. ■



From the Propagator, August '81

HOW'S DX



Ken J. McLachlan VK3AH
PO Box 39, Mooroolbark 3138

Again October provided excellent DX on the higher bands. Excellent openings were observed on 10m by calling CQ at odd hours.

It is apparent that a lot of people listen or scan the band without calling CQ. I admit that I, too, am a bit lazy, and employ a continuous cassette, which has the desired effect, saving the voice for the desired QSOs.

Proficient DXers are becoming a little "browned off" on trying to find that elusive country which is masked behind either the "woodpecker" or "motorbike" syndrome, self-appointed "policemen", operators who don't possess a "dummy" load, or if they do don't use it, coupled with deliberate QRMers, propagation conditions affected by solar flux and all that jazz, plus many other day to day variances, which are supposed to make life interesting, can make this aspect of the hobby very disheartening.

We as individuals can do little to assist in alleviating these problems. We can refrain from using the recognised DX SSB, calling frequencies of 3.795 (VK equals 3.695), 7.085, 14.195, 21.295 and 28.495 MHz for "rag chewing" and idle chatter generally on top of a DX station.

These frequencies are monitored by avid DXers world-wide for expeditions who have generally spent considerable time, effort and money to get to that rare location, and they should in my opinion be given the privilege of using it as should operators from the much wanted countries. Please give the operators from these countries the courtesy of a free frequency, and maybe this courtesy could brush off on to other amateurs.

As a SSTVer it is found that similar conditions exist, generally due to ignorance that QRM on a SSTV signal and any "plash" will deteriorate the received picture or destroy it. This leads to frustration and a build up of ill-feeling between both operators in their respective modes. To alleviate this, readers of this column can assist by being aware of the internationally accepted frequencies for SSTV, which are 3.670, 7125, 14.230, 21.360 and 28.680 MHz.

Personally it is felt there is room on the bands for all the different aspects of the hobby.

(I question the viability and accepted practice of establishing "special mode transmissions", i.e. SSTV, smacks in the middle of the busiest phone band we possess. Surely it would be better for all concerned and less interference problems experienced if special modes such as SSTV were relocated around 14.670-14.075 MHz? Food for thought??—Ed.)

KF10/CE0 SAN FELIX

Bob Read WB1GDQ made it to the much wanted island, apparently on his own, which was a let down considering that some 12 operators were scheduled for the visit originally. It is a bit hazy as to why the visit was curtailed abruptly, not even making a 48 hour operation — but at least a few VKs achieved it for a new country. Congratulations.

Father Dave CE0AE has advised that the Chilean authorities will not recognise certain first letters in the suffix as belonging to a particular island under its jurisdiction (i.e. CE0Z Juan Fernandez) — so calls in future will be just CE0. Work it and find out later!

ZL5

Two new operators on McMurdo Base in the Antarctic using the call signs ZL5BA and ZL5GH for the next 12 months.

Operation will be as the workload permits and QSLs via the ZL Bureau. These will be processed when both Alister and George return from their tour of duty in November 1982.

SPECIAL QSL CARD

A special card for the commemoration of the attack on Pearl Harbour will be available to amateurs who make contact on either CW or SSB between the hours of 02.00 UTC December 5th and 8.00 UTC on December 6th this year. Frequencies to watch for SSB are 14.295 and 21.370 MHz, for CW 14.040 and 21.040 MHz. The call sign is KH6SP. QSLs direct to ARS — KH6SP — "Navubase", Hawaii 96860, Central Pacific.

It is believed **SWLs** will be catered for also.

DXCC — ARRL STYLE

Don Search W3AZD, Assistant Communications Manager at Newington, in a letter outlined the current position with some countries and stations which applies to their credit list.

IA0KM

Now accepted for all QSOs but please don't submit cards before 1st January, 1982.

G3JK1/5A

Still awaiting documentation.

9U5JM

Awaiting requested documents.

Cards **not** accepted by credit — unauthorised operations: A6XJA, HP2XBA (prior 1/10/79), K4YT/5R8, VK4KV/D, TG9AA, TG9CH, TH8JM, VR1BE/KH1, XZ5A, XZ9A, 4W2AA, 7Z2AP, 9U5DS, A6 on or after 11/2/79 all Walvis Bay, K1CO/PJ7.

The following were alleged shipboard operations: J3AAE, J3ABD, W0YR/VP2V, WB8HUP/VP2V, ZB2A, ZB2FU, ZB2GM, 604LS.

If you have one of these cards, don't cry, but hold on to it, it may be a collector's item.

BY AGAIN

Tom Wong VE7BC back on business In this much wanted country, but of course will be unable to operate. However, as on previous trips, it is believed he will distribute many more copies of ARRL's Radio Amateurs' Handbook, plus other "goodies" such as small construction kits to the needy. This will further cement the excellent relations which currently exist between the amateur and "budding" amateur fraternity.

Also it is believed Tom will commission five Yaesu transceivers, four Hy-Gain beams and ancillary equipment which will be set up at four selected sites for future use. Two question arise: (1) When? (2) Who is going to be the first VK (that needs it for a new country) to enter it in the log on either CW or SSB?

There will be no prize for this achievement however!

DX JOTTINGS

Wanting a card from 5N0RBB, XV5AA, or HS1AFA? Well try WA7QDG at 5904 Dayton Avenue — No, Seattle, WA 98103. He has all the logs for his expeditions at the new home QTH — so it is worth a try.

Those who worked George FB8WG on Crozet and didn't get the QSL address as his XYL is staying in Corsica during the tour of duty on Crozet. QSL to —

Madame de Marrez,
Santo Severa 20228,
Luri, Corsica Island,
France, Europe.

Incidentally, green stamps are OK and the cheapest method to pay for postage.

Remember Herik FR0FLO, who went touring around the Indian Ocean recently, calling at Europa, Juan de Nova and Mayotte? The total tally of 14,578 QSOs was the score. Quite an impressive effort, and the QSLs are well in hand, he says.

3Y BOUVET

Remember the Glouoso and Juan de Nova Expedition in April last year? Well Dieter DK9KD, according to reports, has organised a trip to desolate Bouvet in January.

Dieter, who is renowned for his ingenuity and know-how, has obtained the licences which are 3Y0A and 3Y0B, but funds are still a problem and financial help is required because transportation alone is in excess of $20,000. QSLs, if they make it, will go to DK9KD and, on past performances, should have a quick turnaround. This is a good one to start 1982 with and let's all hope it comes off. As CW and SSB, plus a 80m through 10m operation is planned.

THE CW BANDS WITH ERIC L30042

160m

KP4KK/DU2, ZL1HY.

80m

JA5CZE, VE1ZZ.

40m

DJ9GD, EA7BDL, HL50C, HP1XVY, KH3AB, T12PZ, T2ETA, VE7ZZZ, 4U1ITU, YO4AVR/MM.

20m

G3GJQ/CN8, CP6EE, EA9HG, FK0AD, FM7WU, FY7YE, GU5KJB, HB0NL, H18LC, HK3DDD, J28DM, LU7AMU, ON4VJ/LX, PY1MAG, P29EJ, T30BG, VP9GK, XE3U, ZK2BGD, ZL0AES, 9U5WR.

15m

C21N1, EA6DD, HK0BKX, LU8YYO, OA4FW, SV0AA, TG9RB, T30BG, ZK1BD, ZS5MY, 4X6NDT, 8J1RM.

10m

CT1ALR, CX6CW, N7ET/DU6, GJ5DQC, KL7MF, LA3UL, VS6CF, VU2VTM, XE1RV, DL2GG/YV5, Y79YL, ZS6AXM, 4S7MX, UA3XBP/4K1, 4U1ITU.

QSLers OF THE MONTH

FG0GD1/FS, FR0FLO, G4MAE, GD4BEG, GD4KNE, H18MOG, H18PGG, H44MM, KC6MW, KG6RT, LX2BQ, OA4SS, K4FW/VP2K, VP8PK, 5W1DC, 8P6AU.

QSL MANAGERS WHO GAVE SUPER SERVICE

DJ9ZB, I0MGM, I8YCP, W4FRU, W4VDE, WA3HUP.

Some stations don't QSL via a Bureau. One of these is LX2BQ, who requires equivalent IRCs, addressed envelope, and the QTH is Box 22, 9 Rue Tudor 6852, Rosport, Gr D Luxembourg, Europe. This is one operator that openly states his stand.

QSL ROUTES

H6XJA — PA0LP.
G3GJQ/CN8 — RSGB Bureau.
CT2CQ — W4LKM.
FP0GAQ — K8CJQ.
FY7YE — W5JLU.
GJ5DQC — DF3JD.
J28DM — F2GA.
OY9R — K21JL
T30BG — OE2DYL
T2ETA — OE2DYL
ZL0AES — K1MM.
8J1RM — JARL Bureau.
5N9AC0/8 — 1V3ACP.
9U5WR — SP6FER.

QSLs DIRECT QTHs

EA9HG — Box 513, Ceuta, North Africa.
FB8WG — Madame de Marrez, Santo Severa 20228, Luri, Corsica Island, France.
T30DB — PO Box 494, Betio, Tarawa, Kirribati.
VO2CW — via VE3ICR, 74 Hiland Avenue, St. Catherine's, Ontario, Canada.
ZF1MJ — PO Box 1215, Grand Cayman si., BW Indies.

SOME STATIONS WORKED IN VK ON SSB

10m

A51PN, BV2B, CR9AN, DK2OC, EA3CUD, F5RV/FC, GJ3DVC, H18PGG, JX7FD, KC6DG, LA7AH, PA0WV, TF3SV, XZ9A, 3B8LH, 4U11TU, 7P8BJ, 8Q7BF.

15m

A51PN, F5RU/FC, FB8WG, GD3KHE, HV3SJ, JX7FD, KC6MM, KP4GN, M1D, OK1MP, OX3BX, OY9R, ST0SA, T19FAG, XZ5A, ZK1BR.

20m

A51PN, BV2B, F5RU/FC, F9MD, FB8WG, H18PGG, JX7FD, LA7WV, OZ3EA, T19FAG, TA1MD, XZ5A, XZ9A, Y23FM, plus many others.

CW QSOs ON THE LOW BANDS WITH MIKE VK6HD

Band's haven't been specatcular.

160m

W1-W0 except W9, KP4KK/DU8, YB9ADE.

3.5 MHz

DL, EA, EA8QJ, FO8DF, G, G1, GM, HB, OH, OK, ON, OZ, SM, SP, UA, UA9, UL7, UP, UQ, VEs, W1-W0, YO, YU, ZS5LB.

7 MHz

FP0GBG, 9U5WR.

For assistance and information for these notes thanks to L30042, L30820, VK2DXH, VK3PU, VK6HD, VK6IH and VK6NE.

To all readers season's greeting from this QTH and hopes that 1982 brings you those much wanted countries and everything you wish yourself.

73. Ken. ■

FACES BEHIND THE KEY AND MIKE

Milan OK1DWC

Taka JA1BWA

Aron EA3CUD

Index to Volume 49 — January to December 1981

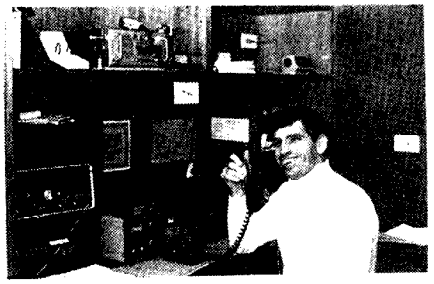
TRANSMITTERS AND TRANSCEIVERS

TRY THIS

SPOTLIGHT ON SWLing

Robin Harwood VK7RH

5 Helen St., Launceston, Tasmania 7250



Another year has drawn to a close, and it is about time we evaluate the shortwave scene over the twelve months and try and see if we can predict what 1982 has in store for us.

It has been quite evident that conditions during 1981 have been variable, with frequent ionospheric disturbances, e.g. solar flares and magnetic storms. Performances on the higher frequencies, particularly the 11 and 13 metre broadcasting bands, have dropped off quite sharply. The 100 watt HCJB transmission on 26020 kHz is very rarely observed these days. Similarly, propagation on the 10/11 metre bands has also deteriorated markedly. This is to be expected and there will be frequent disruption to communication after the sunspot peak in late 1979/early 1980.

Earlier in the year it was apparent that several international broadcasters were going to curtail their programme output due to financial stringencies imposed by their administrations. However, with the international situation altering, especially in eastern Europe and the Middle East, there has been a noticeable increase in broadcast hours, particularly from the larger organizations such as the VOA, Radio Moscow, Deutsche Welle, etc., while the voices of the smaller nations are also being raised to present their points of view on the international frequencies.

It is also becoming obvious that many stations are increasingly coming under government control and censorship, reflecting official views and couched in cliches. Those independent stations outside of governmental restrictions are getting fewer, but their audience is increasing, so much so that they are unable to process the flood of mail that is coming into the station.

In Europe, where the State has virtually a monopoly on broadcasting, there has been an emerging "underground" radio broadcasting scene. Thousands of unofficial stations have come on the air, in Italy and the Benelux countries particularly. Technically pirates, they are able to avoid the law due to loopholes in the legislation in the respective countries, and the licensing authorities are undermanned and are otherwise engaged in other more serious enterprises than pirate hunting.

Fortunately this unofficial radio scene has been largely contained on the FM band. I have myself observed the situation in Italy, whilst in Europe in 1979. My transistor radio was severely cross-modulating on the FM bands in Venezia because it couldn't cope with the 40+ stations active in that region alone. All one had to do in 1979 in Italy was to go to the nearest police station and register your station's frequency and go on the air! However, I believe this has since been modified and tightened somewhat.

Of course there have been problems with the mushrooming growth of this phenomenon, with serious interference to other telecommunication users. It has been reported that the Flight Control Centre in Athens (Greece) was unable to communicate with arriving and departing aircraft because an unofficial station's transmitter was emitting parasitics on to the Flight Control's channel. The official monitoring services were unable to track down the source of the transmission, despite exhaustive direction-finding measurements. So the job was handed over to the Secret Police, who very rapidly silenced the transmitter in a matter of hours using non-technical methods!

Another growth area in international broadcasting over the past 12 months is the clandestine programme outlets. This is directly attributable to the tensions and intrigues apparent in world politics at the present time. It should be pointed out that clandestine broadcasts are different from

unofficial radio, in that they utilize the resources of official outlets who, being sympathetic to their cause, give material and financial backing to their activities. Their frequencies are variable, naturally, because administrations generally take countermeasures, and emit jamming noises on the same frequency. Unfortunately, those who occupy nearby channels get the backwash from these jammers affecting their programmes as well.

Among the new clandestine outlets noted over the year has been the following:— The Voice of Re-Unification (N. Korea), the Voice of Malayan Democracy (S.-E. Asia), R. Libertade Costa Rica, as well as numerous outlets in the Middle East, Latin America and ,surprisingly, Florida. Interestingly, the US Government is planning to open a clandestine Radio Free Cuba towards the end of the year.

With events in Eastern Europe being prominently in the news during the year, it is therefore not surprising that the official Radio Free Europe/Radio Liberty has come under scrutiny during the year, with attempts to silence its voice by means of terrorist attacks, as well as the conventional jamming of their programmes from within their target areas. It is highly probable that funds and facilities will increase for RFE/RL. Yet I predict that facilities for the production and/or transmission of their programming will possibly be moved into safer locations in Europe and the north-western Pacific.

The presence of OTHR pulses has not diminished either in 1981, although the duration of the pulses on any given channel has been shortened. One interesting report that I noticed in the press is that NATO has been experimeting with a new microcomputer-based transmission system, involving the alteration of the signal frequency at an extremely high speed, so that only a fraction of the information will be sent on any given channel over a one second pulse. All that will be observed will be a plip or plop lasting a tenth of a second.

Another method currently being employed by many utility users on the VHF/UHF regions is encoding the information digitally, the combination only being known to the receiver fitted with the digital synthesizer. This has an advantage in that many services can share the channel, yet the traffic remains private to that one service.

During the year the appearance of a new breed of receivers emerged. This of course was the Sony ICF 2001. By means of keyboard entry, all that is needed is for the frequency to be punched in. The retention of the frequency in memory was also made possible, thus eliminating the time-consuming process of searching for your favourite channel. As more of these became available, the price per unit dropped. I am sure that more manufacturers will produce receiving equipment along these lines, for it is clear more people will want to listen to independent sources of information than is at presently available through conventional outlets.

In amateur radio during this period, there were no really significant developments. Increasingly the hobby is becoming fragmented into smaller interest groups, and I predict that it will be difficult in the days ahead to get a consensus of opinion or unity, as each group will narrowly be concerned in their spheres of interest.

It is noteworthy as well that some of the SWL organizations in the South Pacific have formed a Council to promote the hobby, together with the organization of inter-club co-operation in contests, conventions, etc. This South Pacific Association of Radio Clubs (SPARC) is made up from the Southern Cross DX Club and the Down Under DX Circle in Australia, and the New Zealand DX Radio Association (NZDXRA) and NZ DX Radio League. This regional council will be affiliated with AUARC in the USA and the European DX Council.

Another development has been the experiments by two broadcasters with alternative modes. Kol Israel continued to slow scan TV broadcasts, but the results were far from satisfactory. Because of the limited nature and scope of the audience to intercept the signals, I am reliably informed that Kol Israel has abandoned them permanently.

The second experiment of note has been the Radio Nederland transmissions of computer programme data. It had limited success mainly due to some propagational anomalies and multipath echoes bringing up reading errors in the feeding of the information to the computer. Those in Europe were able to retrieve the programme because these effects didn't show up, as they did in other parts of the globe. Another problem was the cassette interface with the computer. The variation of speed between the record and playback is sufficient to cause errors, as users will find out when they feed their programme back into the computer. I also believe that Radio Nederland is planning to have further computer experiments with other models during the January editions of Media Network.

In conclusion, may I extend my wishes for a happy Christmas and hope that the new year brings all that you desire.

73. Robin L. Harwood. ■

WICEN

R. G. HENDERSON VK1RH,
Federal WICEN Co-ordinator

I recently received several questions on WICEN policy from a regional co-ordinator and as the answers are of importance to all WICEN operators I will answer them through this column. Where possible I will relate my answers to recorded WIA policy — where that is not possible and the matter is considered important by Divisions they may wish to raise it at the next Federal Convention.

Q1: What is WIA policy concerning third party traffic on Amateur Bands?

So as to facilitate WICEN exercises and operations the long term WIA aim has been to achieve third party traffic privileges not unlike those prevailing in USA. Several Federal Convention motions record this action. At the 1981 Convention the desirability of third party message forms following the general format of the emergency services forms was strongly recommended. AR has since published message form layout for general use. See August 1981 AR, page 38.

Q2: What is WIA policy regarding third party networks?

Having achieved third party traffic privileges (be it still limited at present) the WIA believes it natural that individuals and groups might wish to pass traffic in accordance with the agreed guidelines. Unlike the ARRL the WIA has set up no official WIA traffic networks.

WICEN opinion is that third party traffic networks which are operated within the agreed bounds (which hopefully will be included in the next reprint of the Handbook!) provide a traffic handling service for individuals which is not available through WICEN.

Remember WICEN provides a communications service for the counter-disaster authorities not the individual. WICEN is activated at the request of these authorities.

Q3: Can all these services co-exist peacefully?

As Federal WICEN Co-ordinator I see three levels of involvement in community services by the amateur: The first is full SES (or VRA) *involvement*, probably as a communications officer/instructor/operator for a SES group. This calls for a significant commitment of time and an awareness of the constraints under which they operate. Problems which should be avoided are using amateur equipment on SES frequencies (amateur gear is not type approved) maintaining or repairing SES equipment without the necessary valid service technician qualifications and using amateur gear and frequencies in preference to existing SES equipment. Nevertheless SES needs volunteers and I would expect a number of amateurs to become so involved.

The second level is WICEN, that is as trained licensed operators with equipment available to assist the counter-disaster authorities in an emergency. The average WICEN operator is willing to work in an emergency but not to be exercised every weekend on community aid communications. The implications of compensation, authenticity and liability are important.

The third level involves third party networks providing message communications for the general public, normally running at low key but assuming importance in times of public communications breakdowns. Here the liability of the operator is not defined nor have the industrial implications (e.g. strike breaking) been subject to test. Some concern has been expressed that third party activities may detract from the "respectability" of amateur radio and a fine balance will need to be achieved.

So in a long-winded way I have said that all three can co-exist and indeed there is a place for each in the community.

Q4: What are the third party regulations?

We are advised by DOC that although new regulations have yet to be arranged they will be along the lines of those applying in the USA but will not include "phone patching" (at the time of writing!).

"The transmission or delivery of the following amateur radio communications is prohibited:

- International third party traffic except with countries that have assented thereto.
- Third party traffic involving material compensation either tangible or intangible, direct or indirect to a third party, a station licensee, a control operator or any other person.
- Except for any emergency communications as defined in this part third party traffic consists of business communication on behalf of any party. For the purpose of this section, business communication shall mean any transmission or communication, the purpose of which is to facilitate the regular business or commercial affairs of any party."

ACCEPTABILITY

WICEN suffers from a continuous identity crisis in achieving acceptability by the counter-disaster authorities. At the national and State levels WICEN has been written into most disaster handbooks and communications plans but at the working level acceptability and the consequent activations can only be achieved by hard and continuous liaison.

The harsh reality can be expressed in this hypothetical example: Would you as a harrassed police sergeant under pressure and in charge of a local disaster have confidence in an unknown amateur operator (perhaps slightly scruffy in appearance) who appears in a "beat up" car bristling antennas and offers his services? Obviously no, so liaison must be made before the disaster, capabilities established and mutual respect achieved.

Ponder the thought that third party traffic networks are also suffering an identity crisis and are striving to achieve respectability with their fellow amateurs by means of communtiy service. ■

ROATC

Considering the number of members who check in to the two nets on the first Monday of each month, the first two of the pilot QSO parties arranged in conjunction with the New Zealand Old Timers' Club were poorly supported in the number taking part and in the number of logs submitted.

As there seemed to be some difference of opinion in VK and ZL about contacts made with a station on SSB, and then again on CW, it was agreed that logs would be re-scored on the basis of one contact per station on either mode, but not on both.

3.5 MHz

8 VK and 3 ZL logs submitted, VK3XB, CW, 360 points, being the leader.

7 MHz

10 VK and 6 ZL logs submitted, VK3XB 945, VK3KS 945, both CW/SSB, leaders.

The third contest on 14 MHz in September was better supported, with 20 VK and 6 ZL logs submitted.

Call	Mode	QSo	Score
VK3XB	CW/SSB	26	1300
VK3KS	SSB	26	1300
VK6HC	SSB	22	880
VK2HQ	CW/SSB	17	680
VK6MG	CW/SSB	17	595
VK2UX	SSB	14	560
VK5APW	SSB	14	490
VK3LC	CW/SSB	19	475
VK3FC	CW/SSB	13	455
VK3PR	SSB	13	390
VK3UJ	SSB	11	385
VK3RJ	CW	14	350
VK5RK	SSB	11	330
VK7BJ	SSB	9	270
VK7RY	CW	8	200
VK3YW	CW	8	160
VK3HC	SSB	8	160
ZL3AV	CW/SS	18	630
ZL2AB	CW/SSB	15	450
ZL2US	CW/SSB	17	425
ZL4ID	SSB	13	390
ZL2BU	CW	8	80
ZL2WL	SSB	5	50

Ray Jones VK3RJ and Dan Wilkinson ZL2AB were clear leaders in the age stakes!

Those who took part voted the tests a good way "to learn something about other OTs", but the lack of contestants made the going rather hard and it is thought that no one saw out the full time of four or six hours (14 MHz). It was good to hear and contact two USA members of our club, W6GTI and W6THN, who burned a lot of midnight oil to take part.

Present thinking, subject to arrangement with the ZLs, is for a party on 14 MHz in early March and for a September one on 7 MHz with perhaps a shorter duration than in 1981.

Any comments would be appreciated.

REMEMBER — Monthly nets:First Monday 0000Z, 7120 kHz; 0200Z, 14150 kHz.

John Tutton VK3ZC. ■

CONTESTS

Reg Dwyer VK1BR
PO Box 236, Jamison 2614

CONTEST CALENDAR

December

5/12/81-10/1/82	ROSS HULL VHF	AR 10/81
4/6	ARRL 160m CW	CQ
12/13	ARRL 10m PHONE/CW	CQ

January

10	ROSS HULL VHF	AR 10/81
9	"73" 40m PHONE	
10	"73" 80m PHONE	
16/17	"73" 160m PHONE	
23/24	WHITE ROSE SWL CONTEST	
29/31	CQ WW 160m CW	

February

6/7	JOHN MOYLE FIELD DAY 6 AND 24 HOUR	AR 12/81

SCORING FOR ALARA CONTEST

Points

Phone

3 points for ALARA member.
5 points for ALARA Club station.
1 point for non-member, YL or OM.

CW

Double all points for CW contacts.

SWL

3 points for ALARA member and 1 point for non-member when in contact with an ALARA member.

Logs

Single log entry. Logs to state time, date, band, mode, call sign worked, report and serial number received, report and serial number sent and name of station worked. Logs also to show CLAIMED POINTS, full name of operator, call sign of operator and full address and to be signed by the operator. No logs *will be returned*. Logs must be legible, either typed or printed, no carbon copies. Logs must be received by the Contest Manager by 14th February, 1982.

Contest Manager

Margaret Loft VK3DML,
28 Lawrence Street,
Castlemaine, Victoria 3450, Australia.

Certificates

Certificates will be awarded to the following:—

Top score ALARA member in each country and VK call area.
Top score non-member YL in each continent.
Top score non-member OM in each continent.
Top score SWL in each continent.
Top score VK Novice.

Unfortunately the details of this contest arrived too late for publication, but we now include the scoring system for those of you who entered.

John Moyle Memorial Field Day Contest—Rules 1982

Amateur operators and Short Wave Listeners are invited to make this contest, held in the memory of the late John Moyie, 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 26 hours available.

CONTEST PERIOD
From 0400Z 6th February, 1982, to 0600Z 7th February, 1982.

OBJECTS
The operators of portable field stations or mobile stations within the VK and P2 call areas will endeavour to contact other portable, mobile or fixed stations in VK, P2, ZL and foreign call areas on all bands.

CALL AREAS
Shall be defined as:—

(a) Within VK/P2: VK1, VK2, through VK0.
(b) Outside VK: Lord Howe (VK2), ZL and foreign countries.

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 open.
(d) Portable field station, transmitting phone, 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 hours, 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 (10-160) during the period of the contest provided that 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 division. 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.

21. All CW-CW contacts count double. Cross mode contacts count single.

22. Logs to be postmarked no later than 28th February, 1981, and sent to FCM, Box 1065, Orange 2800.

RECEIVING SECTION
This section is open to all short wave listeners in VK and P2 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.

The decisions of the FCM are final and no correspondence will be entered into. ■

COMMENTS
After publishing the request for comments on the proposed change of date for the contest, I have received numerous replies in answer.

The comments from the majority are in favour of not changing to May or July because of the poor weather conditions in southern VK, which would severely hamper the efforts of the VHFers to gain the heights of snow clad peaks for their propagation together with other winter problems.

The decision has to be announced now to allow us all sufficient time to prepare for the contest. Therefore, 1982's John Moyle Field Day will be held on February 6th and 7th, which is the usual time of year. The rules for the 1982 contest are also in this edition.

Many thanks to all who commented and best of luck in the contest.

73. Reg. ■

EDUCATION NOTES

Thank you to all those who have sent me comments or thoughts on education. I may not always have time to answer all individually, but I do appreciate hearing from you and have collected many new ideas.

I hope those of you who used the sample Novice exam papers found them useful. Once again I would appreciate comments from anyone interested. I still have copies of Morse exam tapes from DOC at both 5 and 10 w.p.m. If you would like copies, please send me a blank tape before December 12th, as I will not have access to copying facilities over the holiday period.

While still on exams, the November AR listed sections of the Regulations Handbook which have been declared non-examinable. This change will operate from the February exams. Of course this does *not* mean that these regulations do not apply any more, just that candidates will not be asked questions about them.

I have recently been asked to provide lists of reference material for each section of the syllabus at each level. This would seem to be a very useful idea. I know I have my own preferred references, but there are probably a lot of very good sources of information which I have not found yet. How about letting me have your reading lists, especially of useful articles in magazines which might be held at club rooms and available for loan or copy, and I will try to put them all together. The completed list could then be circularised or perhaps serialised in AR for next year's classes.

I am gradually amassing a collection of both Novice and AOCP test questions. These could be useful for class instructors or students who are trying to work through on their own. I would be pleased to exchange sets of questions with anyone interested. I hope to have a trial AOCP paper ready for use by early January.

A final thought for clubs and classes. How long is it since you invited a member of your local ambulance service to give you a talk and demonstration on resuscitation techniques? Make a booking for next year. Make it a night when members can bring along family or friends — the ones who might some day have to try to do the reviving. It can be a night well spent.

73. Brenda VK3KT. ■

Confucius XU4CH say:

A diplomat is an OM who thinks twice before he says nothing on 80 metres.

☆

When it comes to get in on a band opening, he who hesitates — is a SWL.

☆

Confidence is the feeling you had just before you found out you were outside of the band.

CLOSE-UP

A RADIO ACTIVE FAMILY

The photograph shows the Charles family of Hyde Park, S..A

Back Row (left to right): son Kim VK5KIM 1981 (VK5NKC 1978), OM Ted VK5YQ 1935 (VS2BF 1946), son-in-law Graeme VK5ZGE 1981 (Ernabella).

Front Row: XYL Joy VK5YJ 1981 (VK5NRQ 1978), daughter Joyanne VK5KJH 1981 (VK5PJH 1980).

Ted Charles, who started it all, says his last contribution to AR was in 1948 — glad to have you back, Ted!

Ted's 1935 AOCP examination paper is also reproduced. ■

COMMONWEALTH OF AUSTRALIA

POSTMASTER-GENERAL'S DEPARTMENT.

AMATEUR OPERATOR'S CERTIFICATE OF PROFICIENCY.

SOUTH AUSTRALIA. JANUARY, 1935.

THEORY.

TIME ALLOWED - 2 hours.

(2) What is an Accumulator?

(b) Detail the action you would take to keep the Accumulator always in a state of maximum efficiency.

(a) Give ohms law for ascertaining voltage, current and resistance.

(b) Suppose you found it necessary to use a 12 volt source for supplying energy for the filaments of a 4 - valve receiver with 6 - volt valves. How would you do it without employing a resistance? (State your reason and show your working.)

(3) Explain with the aid of graphs the theory of the 3 electrode Vacuum Tube as -

(a) A detector and

(b) An Amplifier

(4) (a) What is meant by the term "Push Pull" as applied to wireless circuits?

(b) Give a diagram of a low powerod transmitter employing such an arrangement.

(5) Sketch a radiating system for use on 40 metres. Show all lengths, distances etc., and explain how such are determined.

(6) What is meant by the terms Class A; Class B; and Class C; as applied to amplifiers?

(7) Why is an electron-coupled frequency meter to be preferred to other types? Give reason for your answer.

REGULATIONS.

(1) What are superfluous signals and what regulations govern their transmission?

(2) What signals would you transmit in acknowledging receipt of a distress message?

(3) Give the abbreviated signals for the repetition of figures.

—oOo—

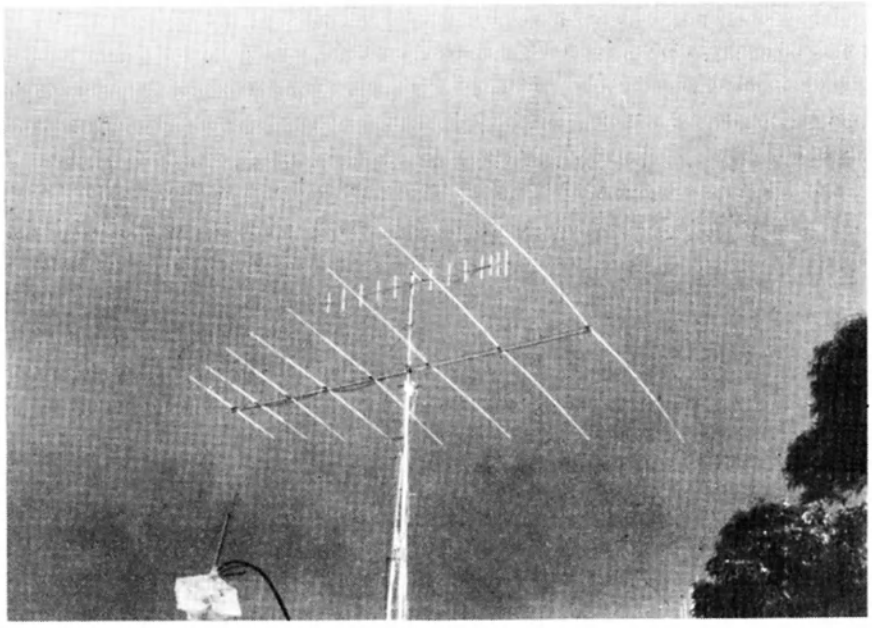
AROUND THE TRADE

ATN COMMERCIAL GRADE LOG PERIODIC HF ANTENNAS

ATN manufactures a range of HF, wide band log periodic antennas designed for amateur and commercial users. For example, the ATN 13-30-8 is an 8 element that covers continuously from 13 to 30 MHz, including new WARC frequencies, CB, 20 metre, 15 metre and 10 metre amateur bands, plus a multitude of commercial overseas broadcast services and all on an 8.5 metre boom. This is a true LP type as are many others in this series.

ATN's low loss and tough insulators space the elements above the boom for optimised performance which ensures correct, simple and straightforward cross-over phasing between adjacent element feed points. ATN HF LP antennas are supplied with a 2 kW PEP balun and are constructed of Australian produced tubing in 6063-T81 temper. Elements are swaged and tapered and the longer elements have positive rake to eliminate unsightly sag. The antennas have a full 12 months warranty.

For further details on all models contact ATN at 56 Campbell Street, Birchip 3483, phone (054) 92 2264, or agencies: Vic. — (03) 873 3939 and 789 3412; Tas. — (002) 47 6674, (003) 31 7075; W.A. — (09) 328 9229; S.A. — (08) 47 3688; Qld. — (07) 397 0808. ■



ATN 13-30-8 antenna.

TELEREADER CWR685 COMMUNICATIONS COMPUTER

CW Electronics have released the Telereader CWR685 communications computer. This unit incorporates an internal CRT display and provides for reception and transmission of standard 5 unit baudot code RTTY and ASCII as well as as providing a flexible Morse sending and receiving unit.

The unit works off a 13.2V 1.6A supply, so mobile RTTY is possible.

The Telereader is a compact unit with the main display unit and separate keyboard.

Further details and supplies may be obtained from CW Electronics, 416 Logan Road, Stones Corner, Brisbane. Phone (07) 397 0808. ■

Telereader CW R685.

AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

Most readers would be familiar with the duties required of the WIA Federal Awards Manager. Briefly, this is to administer records and issue the six awards available from the WIA to any overseas or Australian amateur operators and SWLs as well as writing this column. However, you may not know that at least 60 per cent of my time is spent on administering one award, the DXCC. I would like to advise readers of the increasing difficulty I am experiencing with the DXCC.

The crux of the problem is trying to decide about validity or otherwise of some of the DX operations which have taken place over the past couple of years. Many recent DX operations and some current amateur radio activities have been or are shrouded in controversy over whether they are legitimate operations and therefore count for DXCC credit. This has been caused by a variety of reasons, but the principal contributing factor has been the attitude taken by those groups or individuals who administer the DXCC awards. I include myself in this category without reservation.

Traditionally, all previous FAMs and myself have followed the countries criteria and judgements announced by the ARRL. This body has the manpower, financial backing and support to engage, if necessary, in quite complicated, expensive and time consuming investigations through regular diplomatic channels to obtain information required to make accurate judgements about, e.g., the DXCC validity of certain amateur radio operations in other countries. In addition, the ARRL has a committee of interested DXers to provide advice as required. I do not know how this advisory committee is constituted but, for the purposes of this writing, it is not relevant.

The point is that the WIA does not have the manpower and resources to set up its own advisory committee to administer the WIA DXCC, nor do I think this is necessary. If we continue to regard amateur radio as a relaxation and pleasant way to make many good friends, we should not clutter up our hobby with various committees and groups of people to beat others over the head with dogmatic ideas about what (e.g.) constitutes a legal DX operation. If we face the facts, only a small proportion of our total membership is interested in clambering up the so-called DXCC Roll of Honour. However, this is the group I have to deal with and the job is becoming more difficult. In my view, we have some problems which will get worse, and I and subsequent FAMs will have to try and solve.

For the WIA DXCC we have a quite detailed set of rules which have been adequate to cover all DXCC requirements up to the present time. Two of the rules are:—

Rule 3.4: Credit may only be claimed for contacts with stations using regularly assigned Government call signs for the country concerned.

Rule 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.

Herein lies the problem. The rules are quite specific but the questions to be answered are:—

1. Who decides whether a DX operation has been sanctioned by the "regularly assigned" Government?
2. Who identifies the "Government" of the country, i.e. the correct persons or sources to be asked about the operation?
3. Who has final say on the interpretation of the words "regularly assigned"?

The short answer is the FAM WIA!

Over the past couple of years certain decisions have been made about some DX operations where, in my opinion, it is evident that these have been made on other than solely apolitical considerations. This has left me, as FAM, somewhat confused and I now find that my personal opinion may be at odds with, e.g., some overseas operators or awards managers, sponsors of some DXpeditions or DX commentators in some of the amateur radio magazines and news sheets, etc.

For example, I don't think it is practical to ask some DX operators to produce written evidence that they have permission to operate before granting DXCC recognition. Some Third World countries that have had very little or nil amateur radio since gaining independence from their colonial fathers do not have the administrative machinery to approve in writing the activities of a visiting amateur operator. Such approval may be in the form of a verbal agreement with the appropriate official of the host country in his office or even over a friendly glass of wine at the local hotel. The point is that it is not always possible for some DXpeditioners/visitors to produce copies of amateur licences as we know them and as are required in Australia. Therefore, is this a reason for not giving DXCC recognition? There are other cases where the visiting amateur may travel in and out of the country several times or travel within the country and still not be required to possess an amateur operator's licence which is recognised by us. He may choose not to provide copies of any papers he may possess when asked by a DXCC awards manager. Is this sufficient reason to deny him DXCC recognition? Surely he would have his equipment confiscated or would be denied further access into the country if his amateur radio activities were not desired and/or approved by the host country.

There are further complications where visitors from certain countries are not welcome, whereas others would have free access and are permitted to operate within the host country with no restrictions. The position gets complicated again when we assume that because it is "so and so" from "such and such" a country operating, it must be OK, whereas if an unfamiliar call sign appears on the band, he may or may not be asked to produce papropriate paper-

DXCC Award

For those amateurs who chase DX or merely collect "countries" when they happen to hear a new one on the band the WIA Federal Awards Manager, Bill Verrall VK5WV, has written an informative article on the subject which will be serialised in AR.

The issues he raises are a matter of concern to the IARU, the larger amateur societies and down. There are other matters of concern which he does not raise and QSL Bureaux Managers would find no difficulty in listing undesirable spin-offs also.

In this changing world it is vital to preserve and enhance the good image of amateur radio, blending the new with the old, to ensure its well-being and viability for future generations. Many powerful users of the spectrum are only too eager to find "excuses" for amateur abuse of privileges and thus do not deserve spectrum space.

But there are many amateurs today who will say there is nothing wrong going on, nothing illegal is being done, nothing is harmful because "I get some benefit". Has anybody obtained the opinions of XZ5A by would-be amateurs in Rangoon? Who issued the licence for the 1S1 DX operation on Spratly? How about the "Principality of Hutt River"?

Because the Australian DXCC Award is small compared with "Big Brother" DXCC Award of the ARRL it has been convenient to follow their precedents. Is it not time to call a halt for a breath of fresh air and to re-assess our position? It is not beyond the bounds of amateur ingenuity to devise some other "country" criteria for DXCC purposes and deal with the QSL situation as a separate issue.

No two amateurs would agree with all of Bill's comments and conclusions. Indeed his ideas from the UN-DU Award would not necessarily resolve the South Shetland operations nor would they comply with the ITU "banned" countries lists.

All constructive comments should be mailed direct to the WIA, Box 150, Toorak, Vic. 3142. (Ed.) ■

work for DXCC authentication, in other words, there is a great deal of inconsistency about who we ask for copies of their amateur licences.

To sum up, I think the licensing requirements of some countries have changed to such a degree over the past few years that we will have to review and perhaps modify our interpretation of WIA DXCC Rule 3.4. It is possible that, with the insistence on what we say is acceptable amateur radio licensing requirements, some countries may even construe this as unacceptable interference in their own internal affairs. What right has any DXCC manager have of dictating amateur licensing requirements to another country?

I spend as much time either listening or operating on the DX bands as I can, I also have regular access to some of the DX bulletins, and have developed a network of some good friends and "spies" within the business, who often provide me with very useful snippets of information. I also have our written DXCC rules and it has often been necessary for me to refer some DXCC aspirants to these rules or quote a rule to get myself out of trouble. I always aim to comply with the rules to the letter.

I can always lean on Rule 5.4 when I feel I need other opinions but this is not practical because there are not two members of FE available for consultation in VK5. Furthermore, after I have completed my term of office, FE may appoint my successor from within a State other than VK3, so the position will be the same for the incoming FAM. With all due respect to the other members of FE, the advice that they would give would be greatly influenced by my recommendations because they may not be involved in DXing side of amateur radio through no fault of their own.

When one of these controversial DXCC recognition questions comes up, there are two ways I can go.

OPTION ONE

I can pin a copy of the WIA DXCC rules up on the wall, check the QSL card against the rules, and accept it or flatly reject it, and quote the rules to the sender if he or she complains. I can then hang my hat on any information or, in most cases, lack of information that I have about the operation, i.e. if there is any suggestion of doubt, reject the claim. From then on, I am unable to involve the WIA or myself in a lengthy and formal investigation of the claim because we do not have the resources or opportunity as previously mentioned. Up to this point In time, I have been guilty of this attitude, but this amounts to sticking one's head in the sand. I am sure that this is no longer acceptable to many DXers within VK, and no longer appropriate under the changed circumstances within the DX working environment which exists today.

Also this attitude is no longer acceptable to me because I now possess a couple of QSL cards which I would like to add to my own DXCC score, but cannot as yet within the traditionally accepted interpretation of the DXCC rules.

OPTION TWO

This is based on the premise that if the FAM is satisfied that the operation is valid and acceptable for DXCC recognition beyond a reasonable doubt, the claim should be recognised, *but* subject to the proviso that the FAM reserves the right to delete claims previously accepted if conclusive evidence is forthcoming from any legitimate source, that the operation was illegal and therefore not acceptable for DXCC credit. The FAM could then base his original decision on verbal evidence, or unofficial evidence in books, magazines, etc., hearsay, his own on air experience or in the final analysis, even a gut feeling! My proposal would be to announce such a decision about a specific operation in the Awards Column, provide a time limit for any constructive comments, and if nobody can come up with solid written evidence to the contrary, the DXCC claim would be recognised — but with the right of deletion still retained by the FAM as mentioned above.

Under Option Two, the FAM would not become involved in time consuming exercises in trying to obtain information which may or may not be available and we could have a system which is compatible with present-day circumstances and may be acceptable to a majority of VK DXers.

To illustrate the points I have discussed herein, here are a few comments about some of the difficult operations I have encountered since I have been FAM.

LU3ZY

This station has been operating on an intermittent basis from the South Sandwich Islands for at least three years. I initially rejected DXCC claims for this station and based my decision on what I regarded as reasonably reliable written information. When challenged, I embarked on a written exercise to three countries and ran up against a brick wall. This piece of real estate is still in dispute by certain countries and I obtained conflicting and inconclusive advice. I reversed my decision and accepted the QSL cards for DXCC credit, based upon a precedent which had been set by the ARRL.

VE1MTA

I accepted QSL cards for DXCC credit for this operation from Sable Island and after some weeks had to delete all credits because of advice that this was an unauthorised operation.

G3JKI/5A, 600DX, ANY 9U5

I am not aware of any restrictions on amateur radio activities within these countries which would preclude these operations from DXCC credit.

HH0N Navassa Island

This is a small rocky uninhabitable island with a lighthouse of approximately half a square mile in area situated at 19'N, 75'W, i.e. it is within 250 miles of the mainland of Haiti. If this island was administered by Hati, it would become a "deleted" country and count as Haiti for DXCC purposes. At the time of writing, the latest information was that this operation is not acceptable for DXCC credit because permission from the USA coastguard was not obtained. Be that as it may, I see no difference between the HHON operation and the 1S1DX operation from Spratly Islands which are claimed by about four different countries.

This is the exact opposite situation to the previously mentioned LU3ZY operation where this piece of real estate is in dispute and we will accept DXCC credit from two different countries for the South Sandwich Islands. Without getting involved in the politics of the HHON operation, how do I credit the QSL cards? Shall I credit them as Haiti, Navassa Island or throw them in the bin? When I receive my first HHON QSL and therefore have to make a decision, I will probably credit this one at Haiti.

1A0KM Sovereign Military Order of Malta

I worked this station in December 1980 and, at the time of writing, the status of this possible addition to the DXCC countries list was still under consideration. By coincidence, I saw a BBC produced documentary shown on the national television network a few months ago which traced the history of this Order which is represented in Australia by the St. John's Ambulance organization. There is no doubt in my mind that this "country" should be recognised under the same criteria as for the Vatican, San Marino and to a certain extent Mt. Athos. There is no point in including this "new " country in the WIA DXCC countries list at this time unless the ARRL do the same, because this would be the deciding factor on whether there would be any further amateur radio operations from this QTH. However, if SMOM is ultimately included in the ARRL countries list, I will accept QSL cards from the original operation for DXCC credit.

XZ5A/XZ9A Burma (Kawthoolei)

This is the operation which finally prompted me to try and do something about these hard ones.

There is no doubt that this station is operating from a QTH within the boundaries of the country of Burma as shown In my world atlas and a write up of the station was provided by Ken VK3AH in the September 1981 AR. However, current advice is that amateur radio activities are banned in Burma. If this is so, why has this station been operating almost continuously since May 1981?

Another question: Is the State of Kawthoolei being administered by a government in fact or a government in exile? This seems to be almost identical circumstances to that which resulted in the creation of the new DXCC "country" of Southern Sudan (ST0).

My personal opinion is that XZ5A/XZ9A should be accepted for DXCC credit for Burma without reservation. When wearing my FAM's hat, I will not accept this card for DXCC credit at this time but I definitely have not closed the book on this one.

In conclusion I can sum up by saying that for 99.99 per cent of the DX stations we work, we assume that they are legitimate operations and accept the QSL cards for DXCC credit without question. For the remaining 0.01 per cent, we work them but will not accept their QSL cards for DXCC credit unless and until they produce written evidence of authorisation as we require it! This is not relevant for current and future circumstances and if we continue to reject operations such as HHON and XZ5A for DXCC credit, our WIA DXCC award may lose credibility with many of our DX operators.

Needless to say, I am looking for your comments. What group are you in, the conservatives or progressives? Also, I recommend that you read this column next month when I will include some of my further comments about the DXCC.

On behalf of my XYL and willing helper, Joan, and myself, I wish all readers compliments of the season and good luck with your wallpaper hunting in 1982.

STOP PRESS

The Sovereign State of the Knights of Malta, whose headquarters are in Rome, Italy, is now approved as an additional country to be added to the WIA, DXCC countries list — new total 319 countries. I will now accept 1A0KM QSL cards for DXCC credit for the previous operation in December 1980 and all subsequent operations from this QTH. The Knights of Malta QSL manager is I0MGM. ■

ALARA

AUSTRALIAN LADIES' AMATEUR RAOIO ASSOCIATION

At the final meeting in Melbourne, held at Valda's QTH, nine ladies attended, including Geraldine VK2NQI from Sydney; lovely to meet our new President.

Retiring President Raedi YF VK3BHL welcomed all to the meeting and presented office-bearers with their badges. She wished them and ALARA a happy and successful year Mavis VK3BIR thanked Raedi for her work over the past 15 months. We hope to see you some Monday nights, Raedi.

A spray was presented to Raedi and also to Mavis VK3BIR for their efforts and appreciation was conveyed to both.

Rhonda VK3ZYL is our historian and it will be good in future to read of the early days of LARA (as it was then).

It was good to see some of our members in the VK6 YL luncheon group photo; always nice to put a face to a call sign.

Congratulations to Mavis VK3KS for the gold cup in SW section of DX YL to North America contest. This is cup number 6 in YLRL contests.

Freda VK2SU has been issued with the first ALARA Award all CW by a YL. Good work, Freda, and congratgulations to OM on new call in the family.

Girls, if you would like to join ALARA please write to Valda Trenberth VK3DVT, C/- Brighton PO, Church Street, Brighton 3186, Victoria. A copy of our new information sheet will be sent to you, this has all details of fees, skeds and is interesting for new girls to read.

New office-bearers: President Gerladine VK2NQI, Vice-President Joyce VK2DIX, Secretary Jessie VK3VAN, Treasurer Valda VK3DVT, Editor Marlene VK5QO, Historian Rhonda VK3ZYL, Librarian Jean Truebridge, Publicity/Contest Manager Margaret VK3DML, State Co-ordinators Geraldine VK2NQ, Mavis VK3KS, Sandra VK4NUE, Jenny VK5ANW, Gill VK6YL, Helene VK7HD.

Thank you to all of you for your support of ALARA and hope it is an enjoyable association with you all.

Thank you to all who participated in our first contest and look forward to meeting again next year.

This is my last report for this year and I have enjoyed talking to you all in this column, so will take this opportunity to wish each and every one of our readers a very happy Christmas and a safe and prosperous New Year. I hope you will all be with us again next year, until then take care.

33/73/88 to all.

Margaret VK3DML. ■

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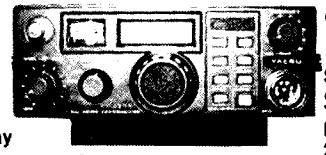

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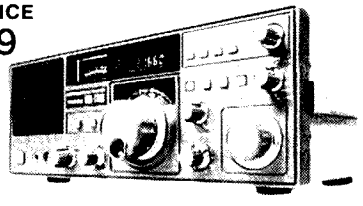

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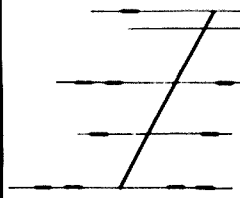

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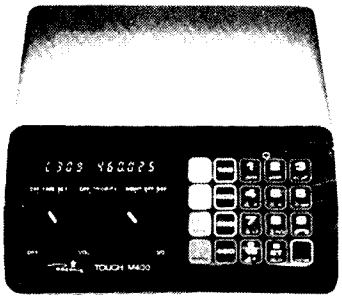

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TECHNICAL EDITORS

NOVEL PHASE LOCK CIRCUIT

In "Electron" for May 1981 Klass Spaargaren PA0KSB described a receiving converter using a novel local oscillator locking technique which is a form of Phase Locked Loop. The receiving converter for a 2 metre multimode transceiver provided reception of signals from frequencies of a few kHz to 30 MHz.

The converter uses an oscillator locking technique which is economical of components and allows an oscillator in the frequency range of 116 MHz to 144 MHz to be locked to a 1 MHz reference oscillator signal.

The oscillator and locking circuitry is shown in Fig. 1 and the reference crystal oscillator in Fig. 3.

The following is a description of operation of the circuit.

THE OSCILLATOR

The oscillator can be tuned from 116 to 144 MHz by means of the panel mounted potentiometer which controls the DC voltage applied to the varicaps. The oscillator frequency is adjusted until the system locks. Usually the two frequencies being compared are fairly close together and locking is easily achieved. However, as we are looking at a large frequency difference between frequencies of 1 and 130 MHz so a different technique is used.

The principle used here is called the "sample and hold" detection method. This method enables phase lock to be obtained between two frequencies that are far apart and it is still effective.

This sample and hold system is not new but may not be well known to radio amateurs. So here is a description of how it works. See Figs. 1 and 2.

The Sample and Hold circuitry consists of T5 and the 150 pF capacitor. The BF900 with both gates strapped together functions as an electronic switch. The gates are controlled by short pulses at the 1 MHz frequency so that the switch will conduct for a short time every one millionth of a second. The input of the electronic switch sees the frequency that needs to be phase locked. If the switch conducts or samples on the same point of the HF sine wave every time then the 150 pF capacitor will be charged to the value Vu. See Fig. 2A. While the switch is closed and thus not sampling the capacitor will hold or remember the sampled voltage. The equivalent circuit is shown in Fig. 2B. Obviously the load on this 150 pF capacitor has to be extremely light for the voltage to remain the same. So a CA3140 FET input op amp was chosen.

An interesting point of this principle is that the DC voltage at its output remains the same regardless of whether the sample is taken each 130 or 131 cycles. See Fig. 2A.

Thus this phase detector is independent of the input frequency. Although this is not completely true in practice as will be explained later on.

The CA1340 FET input operational amplifier increases the sample capacitor voltage by about 10, and this output goes back to the varicap in the voltage controlled oscillator and so completes the phase lock loop.

In the loop as described here, consisting of the voltage controlled oscillator, phase detector and operational amplifier, the oscillator will lock at any 1 MHz harmonic.

Suppose the VCO starts to change frequency. Then the sampling would now take place on a different part of the wave form resulting in a change in the DC output voltage which in turn would counteract the original change in frequency with the overall result being that the 130 MHz frequency remains in phase lock with the crystal derived 1 MHz signal.

For stable action of the loop, which could be described as an amplifier with heavy feedback, a stabilising network of a 10K resistor and a 10,000 pF capacitor is placed in the feedback path of the CA3140. The situation described so far applies for a locked or near locked condition. But now for the bitter part where we are completely out of lock. When the 130 MHz is not in lock with the 1 MHz, then sampling will take place on a different spot all the time and the 150 pF capacitor will receive a voltage that starts to look like an AC voltage depending on the frequency difference of the 1 MHz and the 130 MHz signals. If the frequency to be locked is near to an exact multiple of the reference signal the loop will still be able to get to a phase locked condition. However when the initial frequency difference is large there will be a situation where the amplifier output just can't follow the instantaneous phase difference and no phase lock will occur.

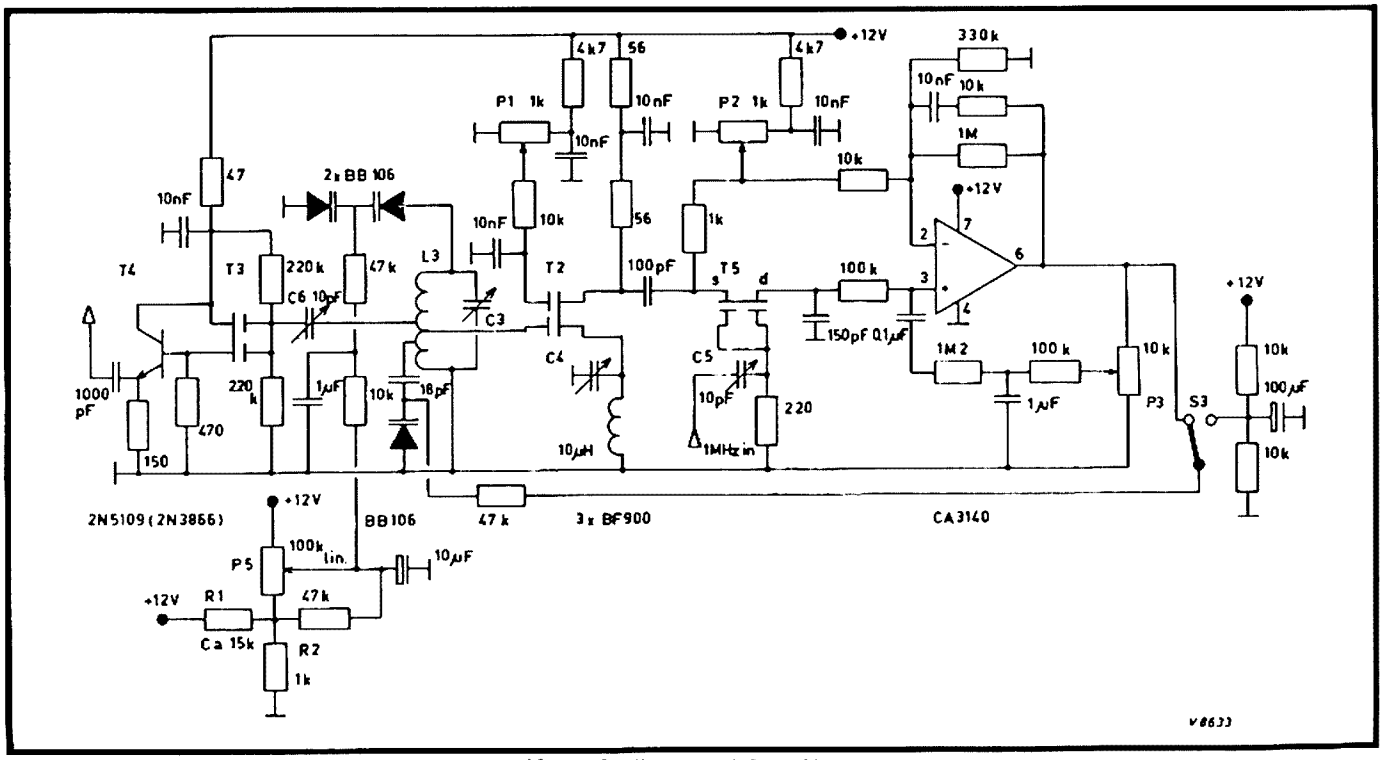


FIG. 1: Oscillator and PLL Circuit.

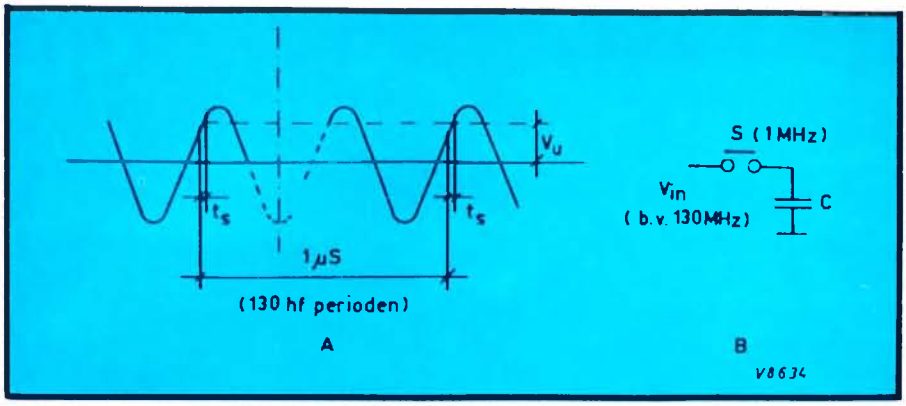


FIG. 2: Sampling.

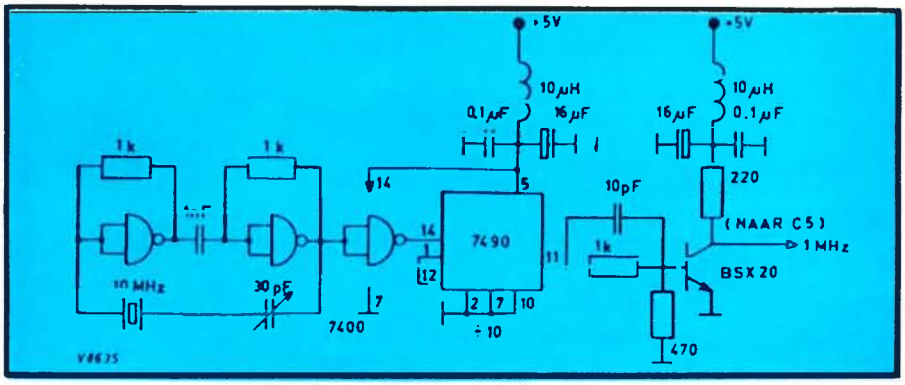


FIG. 3: Oscillator and Pulse Shaper.

But this no lock condition is overcome by a special positive feedback circuit from the output of the op amp to its non-inverting input. This *search* circuitry will force the DC output to oscillate slowly up and down. At the instant that it passes the value which corresponds to a harmonic of the 1 MHz phase lock will be achieved.

At that point we can visualise that the loop has extra negative feedback which is very strong and stops the slow DC oscillation.

Thus with this search system we only have to adjust the C2 capacitor until we are roughly near a 1 MHz harmonic and the PLL circuit will then lock in at the precise phase relation.

1 MHz PULSE GENERATOR

A 10 MHz crystal is used which is divided by 10 through a 7490. Possibly a 1 MHz could be used without the need for the 7490 but I had a 10 MHz crystal on hand. With the trimmer the crystal can be calibrated to exactly 10 MHz. The 10 pF capacitor together with the BSX20 differentiates the square wave from the 7490 improving the risetime. The differentiated square wave is used to steer the gates of the BF900 FET T5.

Thank you to Bill VK3BHW for bringing the original article to the attention of the Technical Editors and for providing a translation of the major part of the original article.

VK3AUI. ■

Operation Barrington Tops

A search mission to locate missing Cessna aircraft VH-MDX, missing since the 9th of August 1981 with five men on board.

Following an unsuccessful seven day search for the light plane in which aircraft crews and ground searchers were exposed to "unacceptable risks" due to prevailing weather conditions NSW Police decided to mount an intensive ground search on the weekend of the 19th and 20th September.

Specialised volunteer groups were contacted to search the most probable crash area, the most heavily forested, rugged, inaccessible part of NSW.

Although the search failed to find the aircraft it proved that specialised volunteer groups can work together and with the statutory authorities in a major operation. 542 men and women from the Police, State Emergency Services, Army Reserve, Forestry Commission, Hunter District Water Board, National Parks and Wildlife Service, Hunter Valley 4X4 Club and many Volunteer Rescue Association squads were involved.

The Wireless Institute Civil Emergency network was activated by the NSW Police. Amateurs came from Hunter Region, Central Coast Region and Taree WICEN to provide radio links between the Police Control Centre at Dungog and various groups of searchers. Amateurs manned field stations deep in the Barrington Tops for up to 52 hours, literally bedding down next to their radios. Operators had to provide and establish portable stations on 146.0 MHz, 146.9 MHz (repeater ½900), 7.05 MHz, 3.6 MHz and 439.0 MHz. Radios on the VRA rescue frequencies were provided by the squads involved. WICEN also provided a TV crew to film SES and WICEN personnel in the operation for training purposes.

After seeing the rugged area they were required to search, the Police Air Wing Chief Pilot requested a portable on the WICEN frequency in case they had to make a forced landing. This was provided but fortunately was not needed.

When one seemingly undeliverable message was offered to the other services involved a comment was heard "Give it to WICEN, they can do anything"; the message was delivered.

Amateurs operating in the search area were VK2s BVO, YUP/PEP, KAL, BJC, KBN, DCW, NZW, AVO, DVL, GL, BSC, ZED/PED, BUL, ZRT, BVT, BVI, BVQ, YCB, BMK, YFJ/NLO, VWD, BRF, ZVF, NUM, AOH, ZMK, BMM, KCS and DKP.

VK2BOT and VK2BGF operated in Taree, VK2TS and VK2BUQ manned stations in Gosford and VK2NL, DHG, NFF, NWA, AGS, DI and DEX operated in Sydney.

A special thanks must go to Ray Wells VK2BVO, Central Coast Region WICEN Co-ordinator, Max Francis VK2BVO, North Coast Region WICEN Co-ordinator, and Charles Withers VK2BVI, Taree local WICEN Co-ordinator for their support in this large operation.

Kim Piper VK2DKP,
Hunter Region WICEN Co-ordinator. ■

Roma Piper VK2NZW hands a 2 metre transceiver to Police Chief Pilot Peter Leslie, who requested it for emergency communications in case of a forced landing. Photo: Mike Richter VK2BMM

National EMC Advisory Service

Tony Tregale VK3QQ
Federal EMC Co-ordinator

"BE PREPARED"

This may be a good time of the year to give the shack a "bit of a check-over" — perhaps review that "bird's nest" of cables behind the equipment racks, shorten the excessively long cables, check equipment earth bonding and check antennas for loose corroded connections . . . A complaint of RFI can arrive at any time — the new neighbour with his unfiltered equipment, the Christmas present with "rabbit ears", or the robot with the disc memory.

As most of us know only too well, the majority of RFI complaints are not caused by problems in the transmitting equipment but by deficiencies in the receiving equipment. However it is most important to keep a close "eye" on those unwanted harmonics, which not only help to cause RFI but can also become a drain on your hard earned power. Transmitter alignment should be carried out with the aid of a spectrum analyser in order to ensure that all harmonic levels are as low as possible (or to manufacturers' specifications) before the signal is fed to the low pass filter arrangement.

Use of a low-pass filter alone does not make any provision for *dissipation* of the unwanted harmonic energy produced by the transmitter. Since there is a high degree of impedance mismatch between the coax cable and the input of the low-pass filter at frequencies above the cut-off frequency, there is a high VSWR on the feed cable between the transmitter and the filter at harmonic frequencies. Also, since there is usually no provision for external dissipation of this energy and since harmonic energy is continually being produced, dissipation occurs only in the final amplifier stage and in the cable. Consequently there is a likelihood of harmonic energy radiation from the transmitter itself, as well as possible harmonic energy radiation from the cable because of leakage, faulty connectors and so forth.

An obvious solution is to use a high-pass filter having a 50 ohm resistive load connected in shunt with the feed cable, e.g. by means of a coaxial T connector. Such a high-pass filter should be designed to have the same cut-off frequency as the low-pass filter, to have a 50 ohm input and output impedance, and to have series M-derived end sections so that its input impedance at frequencies below cut-off will be high.

The result will be that harmonic energy is dissipated in the 50 ohm load connected to the output terminals of the high-pass filter. The shunt effect of the high-pass filter will be negligible at low frequencies because of the high input impedance of this filter below cut-off. There will be no high currents and voltages at harmonic frequencies since the SWR at the harmonic frequencies will be close to unity. Harmonic energy will be dissipated outside of the transmitter chassis, and not all in the final amplifier, so the final stage will run a bit cooler. Of course, all this leads to less TVI. This concept of complementary filters has been used for many years in hi-fi installations for separation of high and low frequencies.

Station earthing is another area which tends to get overlooked. A good station earth system can play a large part in alleviating RFI problems.

The *true electric ground* is a common reference point in a circuit which is at the same potential as the earth. Earth is literally taken as ground, but not all earth provides a good ground as the electrical conductivity of the earth varies widely, depending upon the soil and its moisture content. The best true grounds are the salt water ocean, where conductivity is higher than that of earth, and a salt marsh. The next best ground is the earth itself, especially mineral-bearing soil. The poorest ground is dry, sandy or rocky soil of low mineral content. Many areas of the world have this poor soil and it is thus necessary to simulate a good earth ground.

The efficiency of an earth grond depends upon the resistance, or Impedance, of the ground path. If the ground circuit resistance is high, considerable noise voltage may be built up between the earth ground and the point of the equipment that is supposed to be at ground potential.

Ground resistance is made up of the resistance of the ground lead and the ground rod(s) driven into the soil, plus the resistance of the earth-to-rod contact and the resistance of the earth surrounding the rod. The resistance of the lead, the rod and the rod-to-eatrh contact are usually insignficant when compared to the resistance of the earth around the rod.

Bureau of Standards tests have shown that if the ground rod is free of paint or grease and the earth is packed tightly around it, the contact resistance is negligible. The resistance of the earth around the rod, however, is not negligible. Earth resistance in the vicinity of the rod can be considerable, but the majority of effective resistance is generally within a radius of six to ten feet of the rod. Beyond that, the area of earth involved in the ground return path is so large that the resistance is unimportant.

Soil composition tests run within an area corresponding to the near-region of a ground rod indicate ground resistance may run from an average figure of about 14 ohms for low resistance, highly conductive soil to as high as 500 ohms for rocky, gravelly soil. It was also determined that the water content of the soil affected ground resistance. For example, a given sample of soil having a moisture content of 10 per cent exhibited a resistance of 350,000 ohms per cubic centimetre (350 k-ohms/ccm). Increasing the moisture content to twenty per cent brought the resistance down to 10 k-ohms/ccm. A moisture increase to thirty-five per cent reduced the resistance to about 5 k-ohms/ccm.

Moisture content of average soil varies from about 10 per cent in dry seasons to around 35 per cent In wet seasons. This is why the measured resistance of a ground rod will often double from a wet spring to a dry fall.

Mention was made in September AR regarding the production of an "Australian RFI Directory of Assistance". I am pleased to report that positive progress is being made; a full list will be published in the new year. The pre-publish file includes the following equipment manufacturers: AWA, General Electric, Healing, HMV, Luxor, Mitsubishi, Philips, Rank Arena, Rank Electronics, Rank Nec, Sharp, Sony, Thorn.

In closing for this year I would like to thank all those who have assisted with the EMC service over the past twelve months. I look forward to receiving your most valued assistance next year. ■

INTRUDER WATCH

The Australian Intruder Watch is receiving an overhaul. IW in this country will progress from a supportive role to the point where it is a significant and fully effective organisation. Support from Executive, Divisions, Co-ordinators and individuals is essential if this is to happen.

Published procedures and adequate educational material are high on the list of priorities. It is hoped that this will allow effective participation by all who become involved. In the meantime, amateurs and SWLs who are bothered by intruder operation on our exclusive bands should indicate their interest by sending a written complaint to their Division IW Co-ordinator.

There is great reluctance to send intruder reports, and this is understandable. Not all of us have the skill and experience to convert QRM to an accurate and meaningful report. Do not let this stop you. You have a right and a duty to complain when great chunks of bands are stolen. Practice in reporting will soon bring your contribution to a high standard. There is certainly no shortage of practice material, so go to it!

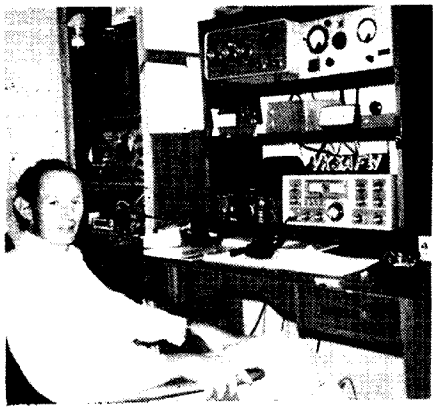
Our "Intruder of the Month" award is shared by two stations. They are:—

"UMS", reputed to be Russian Merchant Navy shore to ship. Uses A1 CW, F1 RTTY and F4 FAX, on 14141, 14171, and especially on 21032 kHz. Operation is intermittent, all daylight hours.

"CQ5", A1 CW on 21115 kHz at 0400, 0600, 0800 and 1000 GMT, Monday to Saturday.

Bob McKernan VK4LG,
Federal IW Co-ordinator. ■

NOVICE NOTES



Edited by Ron Cook VK3AFW

QUESTIONS AND ANSWERS

Some time ago one of the readers of this column wrote in suggesting that we include a questions and answers section. Fine, we said, please send in some sample questions. As nothing has been forthcoming, I have selected some based on the sample test questions for Section M (Theory) of the AOCP examination as published in the current issue of the Amateur Operators' Handbook.

Q.1: What is the front-to-back ratio of a beam antenna?

A.1: The front-to-back ratio of a beam antenna denotes the ability of the antenna to reject signals arriving from the rear. Like all ratios it can be (and frequently is) expressed in dB. (Q.1½: What Is a dB?) dB is an abbreviation for deci-Bel or one-tenth of a Bel. The Bel is an Inconvenient size for practical use so the dB Is used in engineering and scientific applications. If we have two different powers P1 and P2 then their ratio in dB is given by:—

Ratio = 10 log (P1/P2) dB.

See Table 1.

TABLE 1. Ratios expressed in dB.

Ratio	dB
1	0.00
2	3.01
4	6.02
5	6.99
10	10.00
20	13.01
40	16.02
50	16.99
100	20.00
400	26.02
1000	30.00

Nof if we went to express power ratio but can only measure voltage — a common occurrence — providing the circuit resistance remains the same we can use a similar formula.

Now Power = (Voltage)^2/Resistance and if V1 gives P1 and V2 gives P2, we get

Ratio = 20 log (V1/V2) dB.

This takes into account the squaring of the voltage. So a 10 times voltage ratio is a 10 × 10 = 100 times power ratio, or 20 dB.

Back to the antenna. A beam antenna has at least two elements arranged so that signals arriving from the forward direction are gathered In and added together to provide a greater signal. Signals arriving from other directions are added so as to produce cancelling effects and so are made weaker. A typical beam provides a front-to-back ratio of 10 to 20 dB with up to 40 dB rejection of signals off the sides.

Q.2: What are keying chirps and what causes them?

A.2: When a CW transmitter is keyed we expect to receive a CW signal of constant pitch. If the pitch changes during keying it sounds rather like a cricket chirping, hence the name chirp. Chirp is a shift in frequency of the CW signal when keying takes place, and Is not to be confused with thermal drift. As a transmitter warms up or when the room temperature changes a relatively slow change of frequency may take place. Th's is thermal drift. Chirp is an unwanted shift in frequency that takes place in a fraction of a second. It is objectionable because it causes the transmitter to use more bandwidth than necessary and makes copy more difficult.

It could be caused by lack of regulation of the oscillator DC supply. When the key is depressed the transmitter supply will drop a little and if the oscillator supply is inadequately regulated then the oscillator will shift frequency.

If the transmitter is not well designed the keying may operate on a stage close to the oscillator and cause the load seen by the oscillator to vary between key down and key up. This will also cause the oscillator to shift frequency on key down and return on key up.

Inadequate filtering of the keying circuit may cause key clicks but not chirp.

Q.3: How many pF in a microfarad?

A.3: Capacitance is measured in Farads. This is another unit which is inconveniently large so sub-multiples are used. Table 2 shows the sub-multiples.

TABLE 2. Prefixes and sub-multiples.

Prefix	Sub-multiple	Symbol
milli	1/1,000	m
micro	1/1,000,000	u
nano	1/1,000,000,000	n
pico	1/1,000,000,000,000	p

Most amateurs still use only picofarads and microfarads. From the table we see that 1,000 pF must be the same as 0.001 microfarad. Strictly speaking, we should not use either description as it is 1 nanofarad.

So 1 uF = 1,000 pF
= 0.001 uF
= 0.000 001 mF

and 1 uF = 1,000,000 pF

and 1 mF = 1,000 uF.

We really should use whatever unit provides us with a value between 1 and 999.999. For example, a 4,700 uF capacitor is a 4.7 mF capacitor, 0.047 uF is 47 nF and 1,500 pF Is 1.5 nF. Amateurs are so used to uF and pF that they may be one of the last to abandon the old habits and accept fully the correct International System (IS) terminology. Fortunately we have at least dropped uuF in favour of pF.

Q.4: A series capacitor and inductor have zero series Impedance at resonance. What is their impedance at other frequencies?

A.4: Pure reactances have no losses or series resistance, they have only reactance.

Impedance is a term that applies to any reactive circuit and is usually expected to include a resistive component.

The reactance of an inductor is given by

$$XL = 2\pi fL$$

when f is in Hertz
and L is in Henry
then XL is in Ohms.

The reactance of a capacitor is given by

$$XC = 1/(2\pi fC)$$

when f is in Hert
and C is in Farads
then XL is in Ohms.

For a series circuit the reactances are additive. Now the current through both elements is common and the voltages across each have a unique relationship — they have opposite polarity. As the supply voltage V = IZ = IX = VL — VC, where Z = impedance, X = reactance, VL = voltage cross L, and VC = voltage across C, the reactances must have signs attached.

Actually X = XL — XC
= $2\pi fL - 1/(2\pi fC)$.

At very low frequencies $2\pi fL$ is small and $1/(2\pi fC)$ is large, so X is capacitive. At very h:gh frequencies $2\pi fL$ is very large and $1/(2\pi fC)$ is shrinking away to a small value. So X is inductive. At some intermediate frequency XL = XC and X = 0. This is of course the resonant frequency.

f res = $1/(2\pi\sqrt{LC})$ and all frequencies described before as high or low are high or low relative to f res. At frequencies greatly removed from f res the circuit acts as if only L or C were present but near resonance different effects occur. As the frequency rises towards resonance the reactance falls rapidly so that while X is still capacitive, C seems to be Increasing. Below but near resonance the circuit looks like a much larger capacitor than C. Above resonance the reactance is inductive but it seems as though L has been reduced. And of course at resonance both L and C have vanished. This odd behaviour is apparent if the formulae are studied.

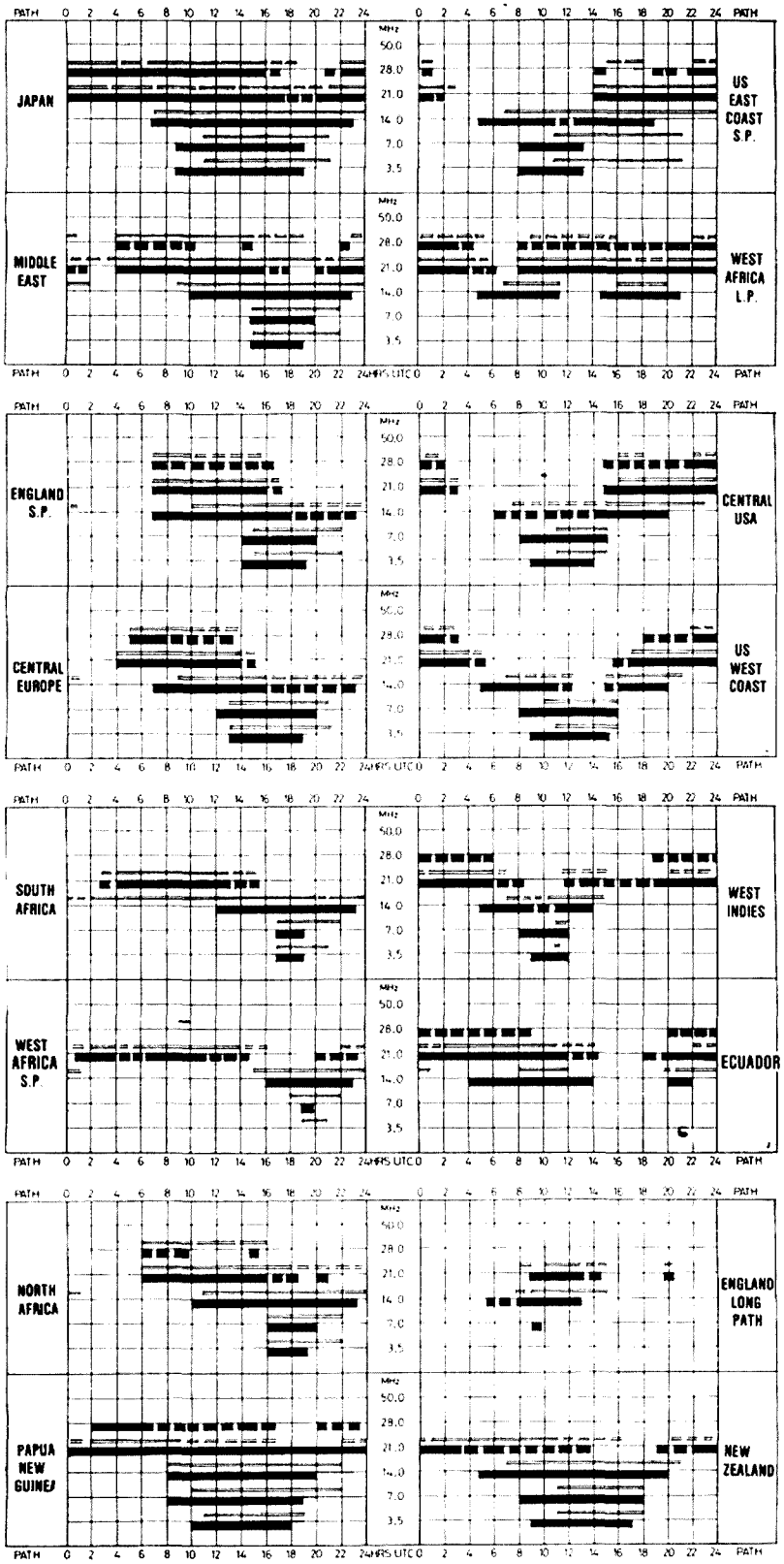
Well if you liked this approach let me know and it will be repeated (with different questions of course). If you have any questions of your own why not write in — I'll try to answer them.

73. Ron. ■

The WIA is in busines for more members. Please help.

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



LEGEND

FROM WESTERN AUSTRALIA

FROM EASTERN AUSTRALIA

BETTER THAN 50% OF THE MONTH, BUT NOT EVERYDAY

LESS THAN 50% OF THE MONTH

Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

Changed your address or callsign?

Let us know and we will bring our records up to date.

The Active Short Monopole Receptor

Ross F. Treharne VK5IQ

An active antenna was described by Barnes (1981) and Cook (1978, 1979), and some are available commercially. These receptors do work remarkably well but it should appreciated just how they do work.

In most circumstances it is not the little piece of wire called the antenna which actually picks up the signal. More commonly it is the outside of the feeder, or the "counterpoise", or the roof gutter, or receiver chassis, or mains lead, or what not, which actually collects the energy from the electromagnetic wave and injects the signal into the pre-amplifier. The so-called antenna just acts as a return path for this signal. The role of "antenna" and "earth" are in fact reversed. Therefore in looking to the radio pick-up characteristics of these little wonders it is important to understand that the effective connection with the electromagnetic waves is governed by the mounting arrangements as much as anything else.

This interchange of roles is not new, Treharne (1980). The first example was probably the "Little Wonder Aerial Eleminator" advertised in the mid-thirties when radio sets had aerial and earth terminals. The "Little Wonder" consisted of a sealed box with two terminals. One was connected to a water-pipe earth and the other was connected to the aerial terminal of the radio set. The earth terminal of the radio set was, of course, connected to the chassis of the set. The chassis was not earthed, except via the supply power lead or mains earth wire, if any.

This arrangement gave excellent reception, the power mains or mains earth wiring acting as the antenna. The antenna terminal was, of course, earthed. Sometimes, as a safety measure, the "Little Wonder" contained a capacitor between its terminals but it worked just as well with a piece of copper wire. It was not uncommon to eliminate the eliminator and just use copper wire but this was unsafe if the mains transformer developed a fault and the earth wires fell off the water pipe at the same time.

The modern-day active antenna behaves in a similar manner except that for shortwaves the feeder rather than the mains (hopefully) does the collection of the radio energy. The very high impedance input of the pre-amplifier permits the signal to be better matched into the very high impedance return element.

Of course some signal is picked up on the short, so-called antenna, but it is microscopic (e.g. 20 dB down) compared with that from the feeder, etc. A demonstration of this can be made by using a dipole instead of a monopole. If care is taken to balance both sides of the dipole the feeder-induced signals will disappear leaving a small signal which is truly collected on the antenna; see Treharne and Johnson (1971).

In this application to direction finding it was important that the phase centre of the receptor be accurately known, hence the need to balance out the feeder pick-up. For normal shortwave reception this does not apply and some extra pick-up from the feeder is in order — unless this also brings in noise from domestic appliances as well of course. If you inadvertently put one of these active monopoles on an extra good ground plane do not be surprised if the signals become weak.

A further extension of ths line of reasoning may be made to medium wave antennas or motor cars. Clearly the car body itself collects more energy at 1 MHz than the 30 cm whip. The whip is just an earth return. Even at 11 (or 10) metres the very short centre loaded whips are not really antennas, just return elements. Again the short helical whips for 80 and 40 metres probably do not radiate as much energy as the car body but do provide a match. However, tall whips on 10 metres and quarter or five-eighth wave whips, etc., on the higher frequency bands do actually become antennas and the car body does act as a ground.

Finally, in the 1930s, when motor cars had running boards, the family Buick was fitted with a Airchief radio which had an antenna mounted under the running board. This so-called antenna provided a capacity return for the signal collected on the car body through the antenna coil in the receiver to ground.

So, please understand how the modern little wonders work.

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1978 — Cook, R. R., Amateur Radio, November, p. 15.

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1971 — Treharne and Johnson, IREE Convention Digest, May, p. 220.

1980 — Treharne, Symposium Problems in Radio Communications, IREE, Adelaide, Extracts of Papers, Paper No. 33. ■

HAVE YOU CHECKED YOUR CALL-SIGN IS CORRECT ON YOUR AR ADDRESS LABEL?

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.

10 Butler Street, Mallala 5502
21/9/81

The Editor,
Dear Sir,

Due to pressures of work over the last few years I am finding it difficult to operate — thus only very few contacts being made. I have recently received some QSL cards — all DX and mainly SWL — obviously someone is using my call sign and surname as handle. This worries me as I was once an SWL and was delighted to receive QSL, especially from DX.

Would the person who is carrying on this illegal operating please refrain from doing so and be a "gentleman" and start studying for a licence.

73. Lorraine M. Earl VK5LM. ■
October 12, 1981

The Editor,
Dear Sir,

Would like to correspond with and possibly set up skeds with amateurs in your country, so wondering if it would be possible to place a request in your magazine.

Tnx and 73. Shelby W. Haukos KB0JW. ■

PO Box 109, Mt. Druitt, NSW 2770
October 15th, 1981

The Editor,
Dear Sir,

In regard to the letter by Jerry Ricketts VK5NRG, October AR 1981, the subject of SSB QRM in the CW segments, is I fear only the tip of the iceberg. Jerry states that 15 metres seems to be a "safe haven" for these inconsiderates. I would tend to agree, however I suggest that he also have a listen, or try to work the other novice allocations "QRM" free! (80-15-10).

The low end of 28 MHz is plagued by CB rogues and Asian FM stations, and they know they can't be caught. In fact they'll challenge you to do so! Both full and novice calls can be heard on SSB in this segment with their rag-chews as well.

21 MHz will become a shambles as the solar cycle wanes, and more refugees from 28 MHz crowd into the 75 kHz band width seeking DX or VK contacts. I admit everyone has a right to a spot in the spectrum, but under such crowded conditions, it is no wonder that the "side banders" will QSY to the CW segments. If the contacts are brief, most keymen will give them a clear go, but prolonged "nets" of 4-6 hours must be the limit surely! Incidentally, how many of those that do ask QRL think to listen on a vertical antenna, or turn their beams/quads around the 360 degrees just to be sure? Precious few, I'm sure.

Knowing that various regions in the world have different allocations of frequency and mode of operation it is easy to have a small part of the spectrum loaded to the hilt with many transmission modes at peak times, and no one can deny them their right to be there. They, as well as myself, have fought hard to obtain those privileges, and I defend their right to do so to the letter. But I will defend to the death my rights that I have worked hard to earn. Chances of an early upgrade in licence seem slim to me, and every little bit of spectrum that is accessible to me is very precious indeed. My privileges and rights were set by the guidance of those that went before me, and were hard fought for. The rules they laid down may not be exactly to my liking, but I will respect them, as they are the rules for the majority, not the few.

To those that persist in not abiding by the "agreements" made by your fellow operators, please consider the chaos that you cause. Not only in this country but also to DX stations, trying to work VK. In all fairness, fellows, please give us a fair go!

Jerry, I suggest you come to VK2 and listen to the AOCPs that operate SSB in the CW segments — boots and all, not to mention the novices, too. A recent QSO on 21.135 ± had ZL, VK2s, VK1, VK4s, VK6s, VK8, G3, ad infinitum, but despite

previous polite requests to the principles of this net. It is still touted as a daily net in the CW segments. In closing, I would ask those who disregard the agreements, please respect our rights and privileges and we'll respect yours as well. Otherwise it's feasible that controls may be needed and ultimately we stand to lose our amateur service privileges.

Yours fraternally,

Colin Stevenson VK2VVA ■

The Editor,

Dear Sir,

I would like to comment on interferences caused on WICEN frequencies during "exercises".

On the weekend 9-11th October, 1981, WICEN operators from Regions 3, 4 and 5 of the Queensland WICEN net provided communications for the annual horse endurance trials between Warwick and Nerang, a distance of 200 km through some of the roughest country imaginable (with the exception perhaps of some parts in VK7 land).

Because of the terrain and the fact that a number of "novice stations" participated, all operations were done on 3.60 MHz, both night and daytime operations. Why 3.605 MHz? Quite simple, 3.600 MHz, the official WICEN frequency is, at night time, impossible to work on in Queensland and northern New South Wales because of severe interference from a broadcast station, thus 3.605 MHz is a WICEN frequency in VK4.

It is therefore with regret that I have to report that some radio amateurs persisted in using 3.605 MHz as a rag-chew frequency, despite several requests to leave the frequency clear. It may be of interest to those amateurs to learn that on some occasions early on Friday evening, when one horse was missing, their signals made communications between the control points very difficult. Excuses such as "I can't hear them, so they can't hear me" are nonsense. It only indicates that the antenna system in question needs proper line-up or reconstruction, specially since mobile antennas were able to receive those stations.

The moral of the story: If asked by a WICEN station to QSY, please do so, lives may be endangered.

Thank you on behalf of WICEN in all States.

John Aarsse VK4QA,
VK4 Region 4 Co-ordinator. ■

TECHNICAL CORRESPONDENCE

The Editor,

Dear Sir,

I have read with interest the series in the magazine "A Review of Antenna Noise Bridges". The author has covered many aspects of bridges and bridge balancing thoroughly. I must congratulate him on his ingenious method of balancing the series component of reactance in his own bridge design in May 1981.

There is unfortunately one serious defect in all the bridges described and this defect is worst in the bridges, Figs. 1b and 1c, making these bridges basically unsound in principal.

A bridge has four terminals and one of these is usually earthed. In a bridge, either one side of the generator can be earthed and the detector must be floating or one side of the detector can be earthed and the generator must be floating. Many of the bridges in the article use transformer ratio arms with a 1 : 1 ratio. This is done by using two windings bifilar wound and this is an excellent way of producing accurate 1 : 1 ratio arms but a quadrifilar wound transformer with a high capacitance between the secondary, earth and also to the generator will not be floating but will be tightly coupled to the generator and earth.

Capacitance between the secondary winding of the generator and other parts of the circuit will be effectively in the form of a delta across the secondary and to earth. Capacitance between the secondary and earth will be represented by capacitance shunted across the standard and the unknown arms. Capacitance between the secondary and the generator could produce a worse effect by applying an error signal to the detector.

These stray capacitances are shown in Figs. 4a to 4d. It might at first appear that they are balanced and therefore inconsequential but consider that the standard arm, the detector and the unknown arm are connected in turn between the three secondary taps and earth. Therefore all these strays are effectively shunted across the bridge arms.

In sophisticated bridges these errors are eliminated in several ways. Direct capacitance coupling between the transformer secondary and the generator is eliminated by the use of electrostatic shielding. This method is referred to in one of the circuits. One method of eliminating capacitance to earth from the transformer secondary is by the use of a Wagner balanced shield. Methods used to eliminate these effects in more advanced bridges are unfortunately quite undesirable for these simple noise bridges but good isolation must be obtained to minimise errors. Quadrifilar wound transformers are absolutely the worst method of doing this.

The circuits of Figs. 1b and 1c are even worse than this. They have no isolation between the transformer primary and secondary at all. Both circuits use resistance ratio arms. Presumably the detector is earthed in both bridges although only one is shown earthed. The common of the circuit is not shown earthed in Fig. 1b, although that of Fig. 1c is earthed. This makes little difference as the capacitance of the circuits to earth is sufficient to regard all commons as at least partially bypassed to earth. These bridges have in effect 6 arms instead of 4. The bridges may work when the standard and unknown are of equal resistance but the errors under any condition would be considerable. The statement in the text that the balun gives good isolation between the bridge and the generator is incorrect. Actually the bridge is tightly coupled to the generator through the balun.

It is regrettable that this excellent treatment of bridge balancing has been marred by a basic misunderstanding in bridge methods, although it would appear that the authors of all the bridges mentioned show a similar misunderstanding. These bridges may give a reading and they are most likely to be correct mid-range but it largely depends upon how the various strays add and subtract.

J. Adcock VK3ACA. ■

AUTHOR'S REPLY

John's letter adds weight to my warnings of the importance of having a good transformer. If he had been unable to make his noise bridge work to his satisfaction, then strays may have been the trouble; but then again he may have been expecting too much from the little instrument — a rather primitive device compared with expensive laboratory type RF bridges.

That transformer is very important! I have been contacted (by letter and on air) by a number of hams to discuss aspects of the noise bridge. Some have struck trouble, just as I did earlier on, when using "any old toroidal core" for the transformer. The material of the core, as well as the number of turns, are part of the transformer design; unfortunately I am not too familiar with this specialist subject. The W6BXI/W6NKU design has a 14 turn quadrifilar winding on an Amidon T50-2 and is excellent, just as are the transformers in the Omega-T and Palomar bridges, particularly if they have been rewound as quadrifilars as in the W6BXI/W6NKU design. This seems to disagree with John's findings. There is some confusion amongst noise bridge enthusiasts as to whether these multifilar wires should be twisted together or wound side-by-side. I am a "twister" myself because I think twisting is more likely to make inter-filar capacitances equal.

Regarding the baluns of Figs. 1b and 1c of part 1 of my article, as used in the WB2EGZ and Galbraith bridges, this is part of that same specialist subject. Like John, I did not have much success when I tested that type a long time ago, perhaps that was before the importance of the core material had dawned on me, and perhaps I did not persevere for long enough, but I was anxious to move on to the RX bridges at the time.

Reverting to what we should expect from a noise bridge; the strays must cause errors, and that includes the strays in the transformer and in the components and wiring of the bridge circuit. These are what limit the bridge's impedance and frequency range. A good noise bridge can give quite accurate readings of impedances close to 50 ohms non-reactive, for frequencies up to 30 MHz. Stray-caused errors start to become apparent as the impedance being measured deviates from this value, particularly at the higher frequency bands. However, the May 1981 AR series bridge can provide good practical accuracy of readings for impedances in the entire 2 : 1 SWR range over the whole HF spectrum. The W6BXI/W6NKU parallel type bridge is just as good except at the high end of the spectrum.

Perhaps I may use this opporunity to mention some recent developments. The 1981 ARRL Handbook, I believe, has a description of a noise bridge with a novel noise source. It contains a 555 IC which chops the noise at an audio rate, creating a distinctive sound to assist in balancing in the presence of other noise from antenna or receiver. I haven't received my copy yet, but I understand that a different core and transformer design is used.

Bruce Henderson VK2DFH and friends have a very worthwhile project well under way, constructing noise bridges for incorporating in antenna tuning units for some of our sightless friends, to enable them to tune their antennas aurally. Good work, Bruce. We look forward to seeing this written up in AR some time.

Bill Cavanagh VK2WC has made a number of measurements to compare the results from a series and a parallel bridge and he was pleased to report that after doing the necessary series/parallel conversions the two bridges' readings showed very good agreement.

Bob Slulzkin VK3SK. ■

TECHNICAL EDITOR'S COMMENT

After discussions with both Bob and John I feel it is necessary to add further comments.

Both agree that measurement errors will occur due to the primary and secondary windings being capacitively coupled. For some particular transformers Bob has found that the errors are acceptable for a VSWR not exceeding 2 : 1.

John, being a measurement enthusiast, is concerned that the transformers as described have inbuilt errors that could be avoided.

The purpose of the transformer is to provide:—

(i) a floating voltage source independent of the earth;

(ii) a pair of equal arms for one half of the bridge.

John has recently suggested to me an alternative transformer construction. The primary would be wound as a single winding covering almost one-half of a torroidal core. The secondary would be bifilar wound to cover almost all the remaining half. This physically separates the primary and secondary, thus reducing very much the interwinding capacitance. There will be a reduction in the magnetic coupling too, so a core covering the HF range with a high permeability would be required.

This seems worth testing and, for the experimenter, I would like to offer a further suggestion. Commercial bridges use a form of Faraday screen to eliminate inter-winding capacitances. Most amateurs would find it difficult to manufacture a copy of such a winding.

If the primary winding wire were replaced with a piece of very thin coaxial cable then a trifilar winding could be made. The secondary wires would be twisted together and wound with the primary so as to cover the complete circumference of the torroid. The inner coax conductor would become the primary and the screen would be connected to the centre tap of the secondary. We would have a driven Faraday screen which guarded the secondary from capacitively coupling to the primary yet allowed tight inductive coupling.

Bob Slulzkin's article represents an advance in the state-of-the-art of measurement for radio amateurs. Further advances, such as suggested by John Adcock, are there to be made and Bob will be assisting to make them. I look forward to hearing of more progress soon.

VK3AFW. ■

SILENT KEYS

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

Mr. R. JAGO VK2YJJ

OBITUARIES

Mr. W. JENVEY VK4AZO

Bill Jenvey VK4AZO passed away on 11th August last at Noosa Heads, Queensland, aged 77 years. Bill had a long and varied involvement in communications. His father started with the Victorian Post Office as a telegraphist and was their Chief Engineer at the time of his retirement. He was also the first person in Australia to send a radio message ship-to-shore in 1901.

In December, 1918, Bill joined Oakleigh Post Office in Victoria as a telegraph messenger. A year later he moved to the Central Telegraph Office, Melbourne, and then transferred to the PMG Wireless Branch. While there he studied for his First Class Certificate of Proficiency in radio telegraphy. This course consisted of radio operating and radio and electrical theory and practice. On obtaining his certificate, Bill went to sea as radio operator on the Government lighthouse service ship, the Lady Loch.

In August, 1926, Bill was one of the operators chosen by AWA to work in the Victorian Police Wireless Branch, which had just started fitting patrol cars for wireless telegraphy. Victoria was the first State in Australia to so equip its police cars. They used a small portable transmitter receiver in the car with a collapsible mast mounted on the running board. At Russell Street Headquarters there was a large aerial and two masts, while AWA had a two kilowatt transmitter and valve receiver. Efficient communication in Morse was maintained over about 32 km from headquarters.

Bill remained with the Police Department for 12 years, developing and upgrading the system. During this time he studied by correspondence for a wireless technician's course with the Marconi School of Wireless. On obtaining his certificate in 1938, he became a technician at Braybrook Receiving Station, Victoria. He remained there for six months and then transferred to the AWA laboratory at Ashfield, Sydney, and was promoted to Engineer.

Bill's duties at Ashfield involved working on the development of an Air Force AT5 transmitter and AR8 receiver, which became standard Australian Air Force equipment. Many Australian amateurs used the AT5 and AR8 equipment after the Second World War when it became available from disposals. In 1943 Bill transferred to Melbourne Beam Development Laboratory, working on improving Australia's international communications links with Loidon, Montreal and other cities. Bill's next move was in 1947 to York Street, Sydney, as traffic plant engineer. In 1952 he was sent to Spring Street in charge of the installation and amalgamation of the cable and wireless service into a combined operating room. His next major assignment was organising, with assistance, the relay of facsimile pictures of the Queen's coronation to Sydney and Perth, using portable Times equipment temporarily installed in the Sydney and Perth GPO. In 1955 Bill was involved in planning the communications link for the Melbourne Olympics. He then went to Melbourne to supervise the installation of equipment at the Melbourne Cricket Ground, venue for the games, and to organise the multitude of radio circuits which were required. In 1957, he was promoted to Supervising Engineer, followed by Chief Engineer in 1962. From then until his retirement in 1964 Bill wa sassociated with the Coast Radio Service, instituting a programme of replacing coast radio stations which had been built out by domestic housing.

Bill was first licensed in 1928 with the call sign OA3AY, which became VK3AY in 1930. Other VK call signs held were VK2ZO and VK4AZO. In 1975, 11 years after retirement from OTC, Bill (at 70 years of age) revalidated his Frist Class Operator's Certificate and spent a term at Nauru as station manager. While there he kept in touch with his friends under the call sign C21ZO. On returning to Australia he retired to Nelligen, inland from Bateman's Bay, and became a member of the Mid South Coast Amateur Radio Club. Because of a deterioration in his health, he joined his son Randall and family at Noosa Heads, where he spent the remeinder of his days.

Bill is survived by his daughter Norma and son Randall, to whom we extend deepest sympathy. Because of his pleasant and friendly manner, Bill made friends wherever he went. It could truly be said that he was one of "nature's gentlemen".

The funeral took place at Buderim Crematorium on 13th August. A memorial service held at Sydney's Northern Suburbs Crematorium on Friday, 21st August, was attended by a large gathering of Bill's friends, including management and staff of OTC and members of the amateur radio fraternity.

Submitted by Ivan Agar VK2AIM. ■

COL GIBSON VK3FO

Col Gibson died on August 16, 1961, at Maldon, Central Victoria (his birth-place), after a relatively short illness, at the age of 75 years. The word "relatively" is purposely chosen. Col, a victim of poliomyelitis since early childhood, was too involved with living (and amateur radio) to bother about his life-long dependence on crutches, four-legged walking sticks — and ultimately a wheel chair.

Born only 11 years after Marconi's first public demonstration of "wireless" (Morse code over 4 miles), Col, from his early youth, was an enthusiastic radio experimenter. In 1923 (at the age of 18) he gave a public demonstration of "wireless" reception to an enthralled audience in the Mafdon Shire Hall, using his own home-built equipment. Again, 33 years later, he gave his first public display of TV in Maldon.

As a young man, Col Gibson was forced to move to Melbourne in search of employment. After some years in the leather trade and another short "career" with a large photographic firm, he graduated to picture theatre operating — and thence to his true goal — his own radio and electrical shop in Centre Road, Bentleigh. Gaining his amateur licence in 1947, he soon became a dedicated worker for the WIA. Ultimately he was elected Secretary of the Victorian Division, a position in which he gave memorable service.

In the early fifties Col moved "home" to Maldon and opened an electrical shop in the main street of the now "First Notable Town in Victoria". He devoted his spare time (apart from amateur radio) to writing — his published works including "The Gold Mines of Maldon" and a history of Education in the Maldon District.

At Col's funeral service radio amateurs from far and wide joined the local residents in paying their last respects to a great citizen. But perhaps the most revealing tribute was a message in the local newspaper from the young members of the Roller Skating Club: "Always ready with a smile and chat. We'll miss you greatly." Physical disability and generation-gaps presented no barriers to Col.

Deepest sympathy to Col's wife Pat, daughter Cheryl and son Andrew in their close personal loss . . . but also sincere thanks to all three for helping Col to give so much to amateur radio — and humanity — in his final years.

Murray Palmer VK3AMP. ■

INTRUDER WATCH

The new Federal Intruder Watch Co-ordinator is

BOB McKERNAN VK4LG

P.O. Box 50

Sandgate, Queensland 4017

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FOR SALE

Yaesu FT7 Txcvr., mint cond., extra xtal, 10m CW, handbook, $350. VK2KDX (VK2NXD). QTHR. Ph. (02) 607 6261.

Kenwood TS520S Txcvr., AC-DC, as new, in carton, with *handbook*, 12 hrs. use, spare new finals; Kenwood DGS, as new, MC50 desk mic., SP50 external speaker, 5 band trapped dipole; best offer over $500. L30833, QTHR. Ph. 45 2966.

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Icom 22 2m FM Txcvr., repeaters 6700, 6800, 6850, 7000, channels 40 and 50 and others, car mount bracket, manual, mic., orig. carton, $145. Dave VK4ADI. Ph. (071) 82 3236.

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Yaesu FT227R Txcvr., with VE2AED scanning unit, $250. VK2BZY, QTHR. Ph. (048) 61 1683.

Amateur Gear: TS520S, as new, $485; TS120V with mobile bracket, mic., low pass filter, also fitted 27 MHz, A1 cond., $425; power supply 12V 4A, $25; HF linear amp. 200W, as new, $150. Ph. (02) 918 3628.

Kenwood Shack, as new, orig. packing, complete with manuals, TS520S DC-DC converter, CW filter, MC50 mic., AT220 tuner, DG5 digiscan, external VFO520 and SP520 KR400 rotator, 3 el. yagi, 18 AVT vertical trap, Heather electric keyer, quantity coax, etc., $1550, ONO. Bob VK2VFR. Ph. (063) 62 5540 AH.

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Circuit Diagram for Trio 9R59DE Rx, will pay costs. Roger L60136, QTHR (1908).

Bug Key, Vibroplex original or Lightning Bug model. Frank Lewis VK2DMW, Farm 151, Leeton, NSW. Ph. (069) 55 6458.

EXCHANGE

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