THE PROPAGATOR

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY
P.O. BOX 1838 WOLLONGONG N.S.W
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MEETINGS ARE HELD ON THE SECOND TUESDAY OF EACH MONTH (EXCEPT JANUARY) AT 7:30 PM AT THE STATE EMERGENCY SERVICES BUILDING, MONTAGUE STREET, NORTH WOLLONGONG. VISITORS ARE WELCOME TO ATTEND MEETINGS.

THE JUNE MEETING : The next meeting of the Illawarra Amateur Radio Society will be held on Tuesday, 11th June at the usual meeting rooms at the SES Headquarters in Montague Street, North Wollongong.

THIS MONTHS SPEAKER WILL BE KEITH CURLE VK2OB THE CLUBS PRESIDENT WITH A TALK ON TRANSMISSION LINES. SO BRING ALONG THE XYL IF NOT THEN BRING A FRIEND TEA & BISCUITS ON THE CLUB .

LAST MONTH'S MEETING: The meeting last month was well attended and featured a discussion by Gil McPherson, technical consultant to Dick Smith Electronics on some new amateur radio kits presently on sale or under test by D.S.E. The kits shown were a UHF power amplifier kit, a UHF relative power meter and a new single band, single sideband H.F. transceiver kit.

Charlie, VK2BOZ, won a UHF power amplifier kit for guessing the (electronic) meaning of the symbol $\bar{\rho}$ as being the reflection coefficient of power. (This is another form of SWR measurement.)

In the monthly raffle, our guest speaker Gil drew the tickets First drawn ticket belonged to ..... Gil McPherson (to the usual cries of "rigged!" etc). Gil generously redonated the prize and drew out new tickets. Gerhard Mueller VK2XGA won first prize - a 36 piece socket set, and second prize, a tap and die set, went to Bill VK2DYU.

Good luck to all those who sat for the amateur examinations on May 21st.

REPEATER REPORT GRAEME VK2CAG

The last month has been very quiet repeater wise, and we have not had to visit any of the sites for any reason.

The main point worth reporting is that Mt. Murray is back to normal again after the "energy crisis" that has been causing us some concern over the last few months. The winds have come and most days the ident tone, and hence the battery voltage has been at its maximum at some time almost every day. There is energy to burn at Mt. Murray at present, and this will probably be the case until December. The onset of the windy weather has co-incided with reduced repeater activity, and this has added to the effect of having energy to spare.

I make no apology for the 3 page report in last months Propagator. It seems to have had the right effect, as there have been many discussions heard on the repeater recently, where those in contact have been heard discussing the energy problem, and it seems to be common knowledge now of the reason for the 20 second time-out restrictions that were imposed, and the reasons for the restrictions. Thanks must go to those who took it upon themselves to spread the news to those who do not get the propagator.

We have several months ahead of us now to consider carefully what action to take in order to prevent a repeat of last summer's energy problem next year. Our financial position prevents us from fitting additional solar panels at this stage, and several alternatives are being considered. One of the best suggestions heard so far is to reduce the repeater's output power when the battery gets low, instead of reducing the time-out period. This does present some technical problems, as the only efficient way of reducing the output (with a corresponding reduction in D.C. input) is to bypass the transmitter final stage, and to have the driver stage feed power to the aerial. The driver stage puts out around 6 watts.

The difference in output between the normal 25 watts and the reduced power of 6 watts is around 6db. That is equivalent to the signal that the repeater used to put out before the new aerial was erected, and that was completely satisfactory for all but long haul contacts. Most local operators would not notice any difference between the 25 and 6 watts, but the power consumed by the repeater would drop from 5 Amps to 1 Amp. It will be almost impossible to run the repeater battery flat when it is running 6 watts, as the solar panel charges at 2 Amps while the repeater is consuming only 1 Amp. It is plain to see that even with the repeater in use all day the battery has gained at least a 1 Amp charge all day which should allow virtually all night use also to get back to 'square one'. Compare this with the conditions explained in last months Propagator for the full 25 watts output!

CAN YOU WORK IT OUT —: Twelve resistors, each of 1 ohm, are joined up to form a cube's edges. The joints are electrically perfect. What is the resistance between diagonally opposite corners?

Solution on page 11 this month.

To bypass the transmitter final stage involves the use of two co-axial relays, one at the input and one at the output of the P.A. stage. Relays, unfortunately, consume energy of their own, and solid state switching is out of the question because of the losses and susceptibility to damage by lightning. The ideal relay would be one that had two coils, one to activate the relay and the other one to de-activate it, the coils needing only a momentary pulse to do the job. What is needed is something akin to a 2 position uniselector, a latching device but in co-axial relay form. Has anyone out there heard of any such device, or is willing to design and build two of them for us? The coils need to operate at 12 volts and the switch needs to be co-axial and well shielded for R.F., impedance being 50 ohms. It should not be too hard with a bit of ingenuity to modify a couple of co-axial relays to do the job.

It is envisaged that the change-over from high to low power will be done automatically when the battery voltage falls below a pre-determined level, and returned to normal again when the battery has reached a fairly high degree of charge level. It is also planned to incorporate some form of audible alert such as a tone 'beep' at the end of each transmission to indicate that the repeater is on low power. The above solution seems to me to be the most logical one to go for, and if the time does come when our finances permit us to fit more solar panels, then the above proposed system would not have to be removed as it will serve as a back-up, perhaps never being needed.

There has been some interference to Mt. Murray 6850 recently in the form of short audio tones sometimes accompanied by a buzzing sound. The repeater committee and the D.O.C. are aware of this and the source of the interference is known. There is a new paging transmitter in Wollongong on a frequency of 148.9625Mhz. TV channel 5A vision carrier is 138.250Mhz. Both of these signals are very strong at Mt. Murray. The difference between these two frequencies is 10.7125Mhz, which is accepted by the I.F. stages of most transceivers. The repeater's first I.F. freq. is 10.7Mhz, and its bandwidth is such that the above frequency can break through if the two interfering signals are strong enough. It does not matter what frequency the transceiver is tuned to, as the two interfering signals get through the RF stages and mix together at the mixer regardless of the local oscillator injection frequency. Our repeater is not the only one affected. Scanning receivers in particular are prone to accepting these signals, especially when tuned to around the 2 metre band, which is in between the two frequencies mentioned. Most scanners have an I.F. of 10.7Mhz.

There is nothing that can be done in the immediate future as the paging transmitter is on an internationally allocated frequency, and the transmitter itself is not faulty. The same frequency is in use for paging in the other capital cities around the country with no problems. Our city happens to have the only TV channel 5A in existence, and it is the presence of the two frequencies simultaneously that mix to form a third frequency which just happens to be used commonly as an I.F. frequency in most communications equipment. The interference to our repeater is only occasionally, and is not destructive interference. That is to say, it does not override other signals passing through the repeater, it only sometimes triggers the repeater when it is idle. The repeater itself has a very good front end selectivity. Although it has not been measured, with the 6 cavity duplexer in front of the already good receiver, suffice to say that the addition of extra filters to the receiver may not cure the problem and will introduce unwanted additional losses.

Continued 2066 H

E.M.E. REPORT BY LYLE VK2ALU

Moonbounce Report - June 1985.

We have not participated in any EME tests since those covered in last month's report, but several QSL cards have been received and a number of cards have been sent.

Frequency calibration and sensitivity of the frequency measuring equipment has been checked against accurate standards and are OK. It may be necessary to increase the level of rf. from the coupler at the output of the transmitter driver stage to ensure sufficient input to the prescaler of the frequency counter.

The 28MHz IF stage receiver has also been checked to determine reason for loss of sensitivity. Several valves have been replaced.

Fortunately overall system performance is not being materially affected by either of the above.

Satellite Notes.

A most interesting article for anyone involved or thinking about satellite communication is that by VK5AGR on pages 24 to 28 of the May 1985 issue of 'Amateur Radio'. Graham is to be congratulated on his work in publicising progress in this field and for his assistance given to those in VK getting started or wishing to upgrade the performance of their systems.

Satellite Pass Information

See the May issue of the Propagator for background information.

	AOS			LOS	
Day	Date	Time(EAST)	Day	Date	Time(EAST)
	June			June	
Sat	15	0112	Sat	15	1151
Sun	16	0026	Sun	16	1107
Fri	21	2004	Sat	22	0637
Sat	22	2044	Sun	23	0550
Sun	23	2111	Mon	24	0503
Sat	29	0401	Sat	29	1409
Sun	30	0307	Sun	30	1326
	July			July	
Fri	5	2220	Sat	6	0903
Sat	6	2135	Sun	7	0819
Sun	7	2052	Mon	8	0734

Lyle VK2ALU

LYLE PATISON

LIFE MEMBER ILLAWARRA AMATEUR RADIO SOCIETY - 1985

As a 13 year old, living in Lane Cove, Lyle was introduced to radio by a family friend, Merv Norris, at Greenwich. Merv's homemade TRT fascinated young Patison to such an extent that Merv gave the lad some bits and pieces to keep him occupied. This led to the beginning of Lyle's lifetime hobby of messing around with radio. Starting with a crystal set (still has some of the bits) he graduated through a TRF receiver to a 7 valve superhet on which he heard (on short wave) World War II declared.

After gaining his intermediate ceftificate at 15, Lyle left school and joined RCS while waiting for an electrical apprenticeship with the Sydney City Council. Starting on the production line at RCS, his avid interest in radio soon had him promoted to their laboratory.

An opportunity for a job as an apprentice electrical operator in the Railway Power Stations arose and Lyle found himself on shift at White Bay Power Station in April 1940.

The publishing of Radio and Hobbies in 1939 led to Lyle's interest in Amateur Radio. In between his trades tech. course and shift work, Lyle found time for self education in radio theory, regulations and morse and obtained his AOCP in March 1942 (12 WPM) but WWII kept him off air.

Lyle joined the air force reserve in 1942 and started rigorous training in morse code under the watchful tuition of a Mrs. McKenzie and graduated to 20 WPM.

In March 1943 Lyle joined the Air Force going to the UK via Canada to join an Illawarra Lancaster squadron as a navigator.

It was here that radar techniques attracted Lyle's interest - microwave, dishes, wave guides, klystons, etc., really got into his blood. After an eventful period in Lancasters (and a long walk home) WWII came to an end and Lyle returned to civies in 1946.

Back to shift work at White Bay and doing electrical diploma part time, Lyle somehow found time for amateur radio and was first on air on 166 MC on 29th June 1946 using CW (in that era you had to prove your ability to hold an experimental licence by operating on CW for the first year). A glance at Lyle's log book for that year indicated that his many calls on CW yielded no response. However, he seems to have convinced the powers to be that he was a competent operator and was allowed to graduate to all applicable modes of operation.

In those days, Prices Radio in Angel Place, Sydney was the mecca for the amateurs, that's where all fancy "disposal" gear was appearing. Soon Lyle had some of this gear cranked up on 576 MC and doing well and building what was probably the first crystal controlled rig in Sydney on 144MC.

Promotion within his work took Lyle to the country power stations at Cowra and Tamworth (with a short stint at Port Kembla in between), he still worked hard on the VHF bands, his major interest.

Lyle returned to Wollongong in 1962 and became a foundation member of the reformed club as we know it today. He spent a year as president (1967/68) and has always been actively involved in the many areas of club administration throughout the years.

The CSIRO had its initial "large" radio telescope at Dapto with the advent of time this was closed down and lying idle. Lyle longingly looked at the dish and about that time the CSIRO donated the dish to the Wollongong University. Fortunately, they knew nothing about radio telescopes but were keen to get it working. Guess who convinced them that our club would be an ideal organisation for rejuventing the old dish and the first confirmed EME contact by VK2AMW was made on 10th March 1973 after many months of hard work by club members overhauling the dish and home brewing gear for operation on 432 MHz.

Vandalism at Dapto forced the closure of its activities but Lyle worked hard to find a new location and to convince other amateurs we should help to re-establish the gear at its present location up on the escarpment. The move was made by the University in 1982 and Lyle made up new equipment for operation on 1296 MHz.

VK2AMW, our club station, is well known internationally for its EME work. This is mainly due to Lyle's untiring and persistant work.

With his recent presentation of the Ron Wilkinson Award by the Federal Executive of the WIA for his moonbounce work, Lyle's efforts have not gone unheeded.

Twenty-three years of duty to the club in its many facets of activities including 15 years as EME Co-ordinator has really earned Lyle his life membership.

With his retirement in 1984 from the Electricity Commission of NSW as Deputy Manager Tallawarra Power Station, Lyle has ample time to pursue his hobby. He and Dot are now overseas looking up amateur friends, revisiting WWII spots he knew and of course sight-seeing.

Thanks Lyle for all you have done for the amateur service generally and this club in particular.

Don VK2ZRK

HALLEY'S COMET

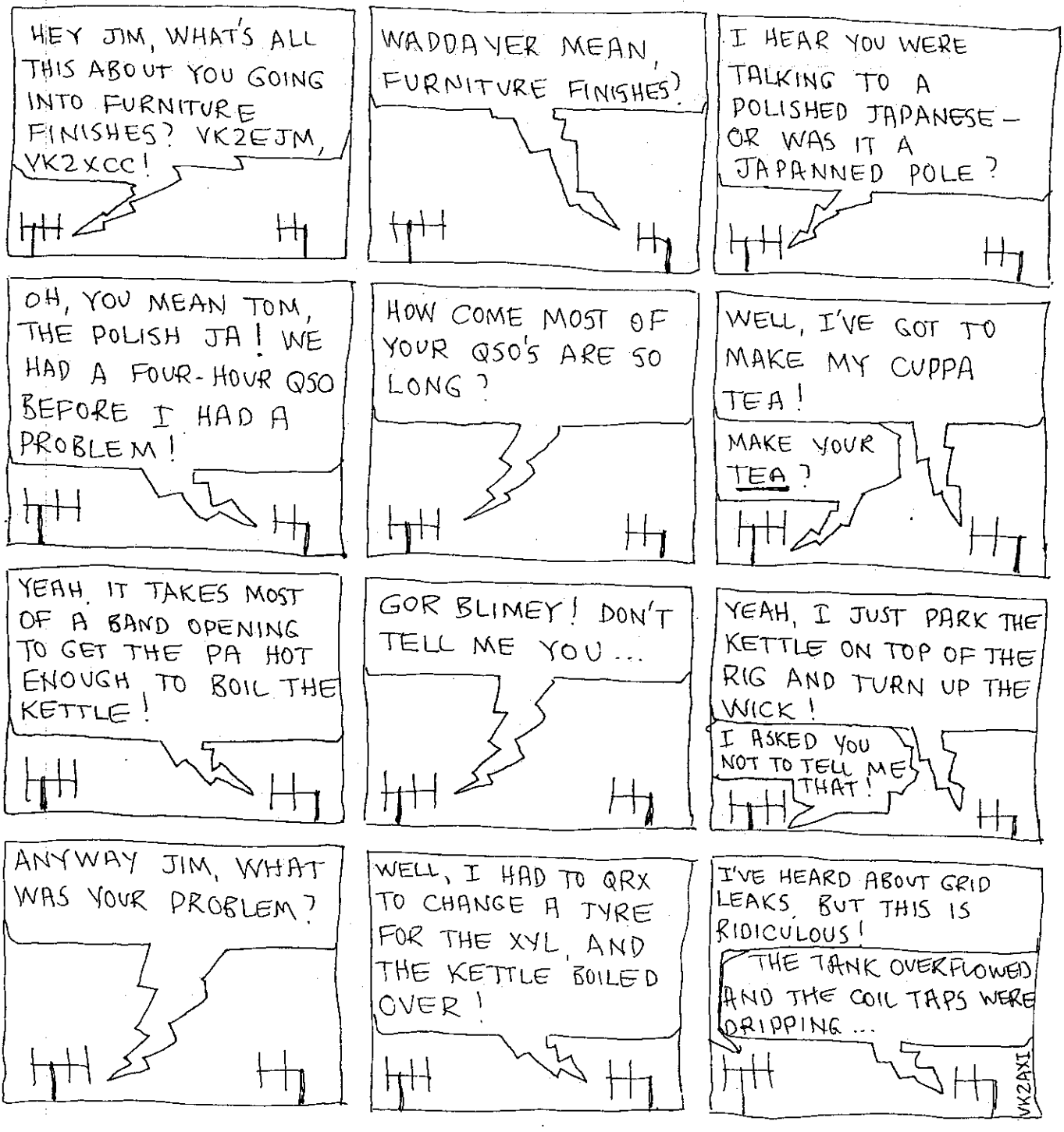
Halley's Comet, probably the best known of all the comets, is due to return to visibility after an absence of 75 years, in 1986. Below is a diary of the Comet Halley from late 1982 to the end of 1986.

1982 October 16	Comet Halley detected for the first time since 1911 using 200" Mt Palomar Telescope, at mag. 24.2 and beyond the orbit of Saturn.
1984 All year	Comet Halley moves inside Jupiter's orbit, spending most of the year between stars μ Orionis and ξ Gemini.
1985 Jan-March	Moving through Orion slowly, reaches mag. 16 and becomes within photographic reach of large amateur telescopes. Evening object in low N.W. sky.
1985 April-August	Magnitude 15, moving slowly in Taurus, evening object low in N. sky.
1985 Sept-Oct.	Brightens to mag. 12 in Oct. moves back into Orion then Taurus. Remains low in evening sky above Northern horizon heading west.
1985 November	On 12/11/84 it passes between a close pair of stars (65,67 Tauri, mags 4.4 and 4.5). At mag 8 it should be visible in small telescopes and powerful binoculars. On 16-17th it passes 2°s. of Pleiades and on 28th passes M74, a 10 mag spiral galaxy. It remains low in the northern sky each evening, reaching altitude 35° and mag 7 at the end of the month, clearly visible in binoculars. On 27th it passes Earth 91million km away - hardly a close approach!
1985 December	Moves through Pisces and on 22nd, into Aquarius. On 26th-27th it passes 1°s. of Aquarii and should be visible to the naked eye (mag 5) to country observers Will not be visible in the city. Moves into N.W. evening sky and will be highest (50°) above the horizon around 10th December.
1986 January	Heading towards sun rapidly, becoming lower in the sky each evening. Hard to find after 20th.
1986 February	Comet passes the sun 86 million km on the other side on the 9th. Not visible until 15th, low in eastern morning sky. Bright with good tail, reaches 30° altitude on 28th.
1986 March	At its best this month, bright with long tail, visible in the city. Visible in the eastern morning sky, higher each day until nearly overhead at end of month. Moonlight will detract from its splendour during the first half of the month.
1986 April	Moving rapidly, becoming low in S-W morning sky. After 2nd visible low in S.E. sky. Total lunar eclipse at 11.30pm on 24th gives last good oportunity Rises 50 above eastern horizon in evening sky later in the month, fading rapidly.
1986 June-Dec.	Remains in Sextans, Crater and Hydra. Fades to mag 10-12 in June, requiring a telescope to observe it.

Gerry R Dyke WD8LEU was fined $2000 by the FCC in Houston, Texas, for running 25 KILOWATTS of transmitter power! Eugene Sykes W400 was fined $550 in the US district court for running 540 watts in a Novice allocation where a maximum of 250 watts is permitted.

Finally, here in good old Australia, Robert Lionel Lear of Blaxland, N.S.W. was sentenced to 6 months goal in a Parramatta court on two counts of establishing a transmitter without authorization and two counts of using a transmitter without authorization. 78 items of equipment were seized and these may also be forfeited. The prosecution was under the WT act, not the new, more powerful Radio-communications Act.

FROM AMATEUR RADIO ACTION VOL 7, No 12.



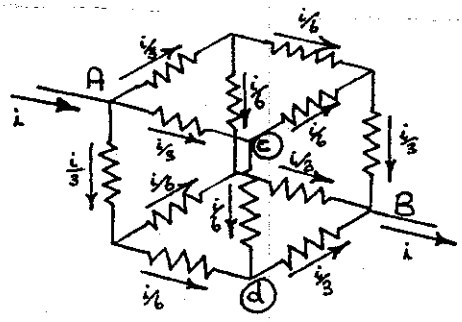
AUCTION SALE OF NEW ITEMS AT JULY MEETING.

A local distributer is disposing of most of his stock of ham gear.
The following items will be sold in July - some have a small reserve.
Kenwood AT130 Antenna tuner
Kenwood MB100 mounting bracket for TS120 or 130,
Kenwood DK5 digital adapter unit for TS520,
Kenwood BS5 Monitor scope module.
Kenwood YG3395C 250Hz CW Filter to suit TS520 or 520S.
Daiwa. CNA1001 Auto Antenna Tuning Unit.
Ferris Bumper mount aerial base
Palomar HF Transformer for Mobile impedance match
********** **********

The problem is unlikely to get worse, and with the change over of channel 5A to UHF it will disappear. The interference was quite severe when the paging transmitter was being commissioned but has subsided considerably since the initial testing was completed. No further action is being taken now that we know the facts.

SOLUTION TO "CAN YOU WORK IT OUT" (page 2) -:

Apply a voltage of V volts across points A and B. This causes a current of i amps to flow into point A. Since all



resistors are 1 ohm apply Kirchoff's Current Law to show that a current of i/3 amps flows through each branch connected to A. Continue to apply KCL for each node to obtain all currents as above.
Now apply Kirchoff's Voltage Law around a loop of circuit from A to B around AcdB to get the formulae -:

$$(i/3 \times 1) + (i/6 \times 1) + (i/3 \times 1) = V \text{ volts.}$$

$$\text{or} \quad 5/6i = V$$

But resistance= v/i

so $5/6 = V/i = R$

So equivalent resistance across diagonally opposite corners is 5/6 ohms.

OR SALE ..... FOR SALE ..... FOR SALE ..... FOR SALE .....

10 metre beam T.E.T. as new. never used

$130

Phone - 67 3836

Martin Hutchings VK2VMH

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1 Siemens M-100 Teletype $10.00

1 Hy Gain Antenna $150.00

Phone - 29 4816

Baz Ryan VK2KTA.

THE ILLAWARRA AMATEUR RADIO SOCIETY

P.O. BOX 1838, WOLLONGONG, 2500.

Meetings: Second Tuesday of every month except January at 7:30 p.m. in the SES Headquarters, Montague Street, North Wollongong.

Repeaters: VK2RAW-6850 VHF Mt Murray
VK2RUW-8225 UHF Hill 60 Pt Kembla
VK2RIL-7275 VHF Sublime Point
VK2RIL-8725 UHF Sublime Point

Broadcasts: On Sunday evening prior to Club Meeting -: 7:00 pm-RTTY 7:15 pm-Voice : Transmitted on 7275 VHF and by relay to 3.562 MHz. Callbacks after voice broadcast.

W.I.A. Relay: On 6850 at 11:00 am and 7:30 pm each Sunday.

Club Nets: 3.562 MHz SSB on Sunday at 8:00 pm and slow morse net on 28.440 MHz on Tuesday at 8:00 pm.

Newsletter: "The Propagator", published monthly to reach financial members in the week preceeding the meeting. All articles, ads, etc to the editor by 3rd Tuesday each month.

Membership: The Secretary, I.A.R.S., P.O. Box 1838, Wollongong, 2500. Full membership is $10 per annum; students and concessions $5 per annum.

Awards: The award of the Illawarra Amateur Radio Society is the Lawrence Hargrave Award. VK stations require 10 contacts with I.A.R.S. members; overseas stations require 5 contacts with I.A.R.S. members. Contact with VK2AMW is sufficient in itself for the award. Band, details of time,day frequency, stations worked +$2 or 4 I.R.C.'s to Award Manager, I.A.R.S., P.O. Box 1838, Wollongong, 2500. No QSL cards required.

Committee: President- Keith Curle VK2OB, 24 Beach Dve., Woonona.
Vice President- Bill Chadburn VK2DYU, 45 Belatina Ave, Dapto.
Secretary- Jim Hayes VK2EJH, 1 Kathleen Cres., Woonona.
Treasurer- Andrew McEwan VK2XGC, 7 Nioka Ave., Keiraville.
Auditor- Geoff Cuthbert VK2ZHU, 1 Nioka Ave., Keiraville.

General Committee: Ian Callcott VK2EXN, Wojciech Tomczyk VK2OE, Martin Hutchings VK2VMH, Jim Mead VK2EJM, Gerhard Mueller VK2XGA, Dave Routledge VK2NGS, Paul Suters VK2KPS.

Repeater Chairman: Graeme Dowse VK2CAG.

Repeater Committee: Bill Jut VK2KWJ, Rob McKnight VK2JRC, Morry Van De Vorstenbosch VK2EMV, Peter Woods VK2VCK, Ian Callcott VK2EXN, Mike Keech VK2DFK, Dave Colless VK2EZY.

EME Co-ordinator: Lyle Patison VK2ALU

Store: Ray Ball VK2XCC

Publicity Officer: Dave Myers VK2DFL

Broadcast Officer: Paul Suters VK2KPS

Propagator Editor: Jim Hayes VK2EJH, Paul Suters VK2KPS, Gerhard Mueller VK2XGA

Life Members: Graeme Dowse VK2CAG, Keith Curle VK2OB, Lyle Patison VK2ALU.