THE PROPAGATOR

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY

PO BOX 1838 WOLLONGONG NSW 2500

VOLUME 83, NUMBER 7 AUGUST 1983

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MEETINGS ARE HELD ON THE SECOND MONDAY OF EACH MONTH (EXCEPT JANUARY) AT 7.30 P.M. IN THE CONGREGATIONAL HALL, CORNER OF COOMBE AND MARKET STREETS, WOLLONGONG. VISITORS ARE WELCOME TO ATTEND MEETINGS.

2519

14 IAN BRUCE CRES.
BALGOWNIE

NOTICE OF MEETING:

The August meeting of the I.A.R.S. will be held on Monday 8th August in the Congregational Hall, and a MINI-AUCTION will be held, so bring your goods for auction and your money with you.

LAST MONTH'S MEETING:

This was held on July 11th 1983 in the Congregational Hall and some 50 members attended. President Dave VK2DFL apologised for his late arrival that had left us standing outside in the cold, no-one else having a key to the Hall!

The meeting was told that plans to provide solar panels to power the Mt. Murray repeater had been abandoned following a report of insufficient sunshine at that location, and a Guessing Competition to provide wind power equipment would be held. First prize would be a VZ200 Computer, second and third being 20 and 10 Instant Lottery tickets respectively, tickets at 50¢ each being available from the next meeting. It was later decided that proceeds from the raffle would be split between the Mt. Murray and Sublime Point repeaters, and the E-M-E Project.

Other matters raised in General Business were:

The Committee has decided that instead of an Annual Auction, a mini-auction would be held every three months - see above Notice of Meeting.

Co-ordinators are required for 1) WICEN in the City to Surf event. 2) For the Club Station VK2AMW during the Remembrance Day Contest, Aug. 3 - 4.

VK2WI are looking for announcers and engineers at Dural.

Acknowledgement is made of a donation of $10 from Brian Tucker to the repeaters.

The Club has available a full workshop manual of the Siemens M100 teleprinter and copies would be available to members.

Sunday evening net on 80 metres was in need of 'new blood' and also volunteers to act as Net Controller to relieve Mike VK2DFK and Morry VK2EMV who have done an excellent job in this capacity.

First prize in the raffle, a Socket Set, was won by Tony VK2KAJ, second prize of a Stackable Drawer Set going to Neville.

Lyle VK2ALU then gave the meeting a report on the state of the E-M-E Moonbounce Project which has taken some 500 manhours since the beginning of the year, and another 50 to 100 manhours will be required to get the project on the air on a 'lash-up' basis. Lyle told us that the Power Amp is to be mounted in the dish with remote tuning facilities, and it is hoped to achieve 120W output with a beam width of 2 degrees between half-power points. Frequency will be 1296MHz with circular polarization. Because the path loss to the moon and back is -272dB, sensitivity of the returned signal will be only 1/2000 millivolt!

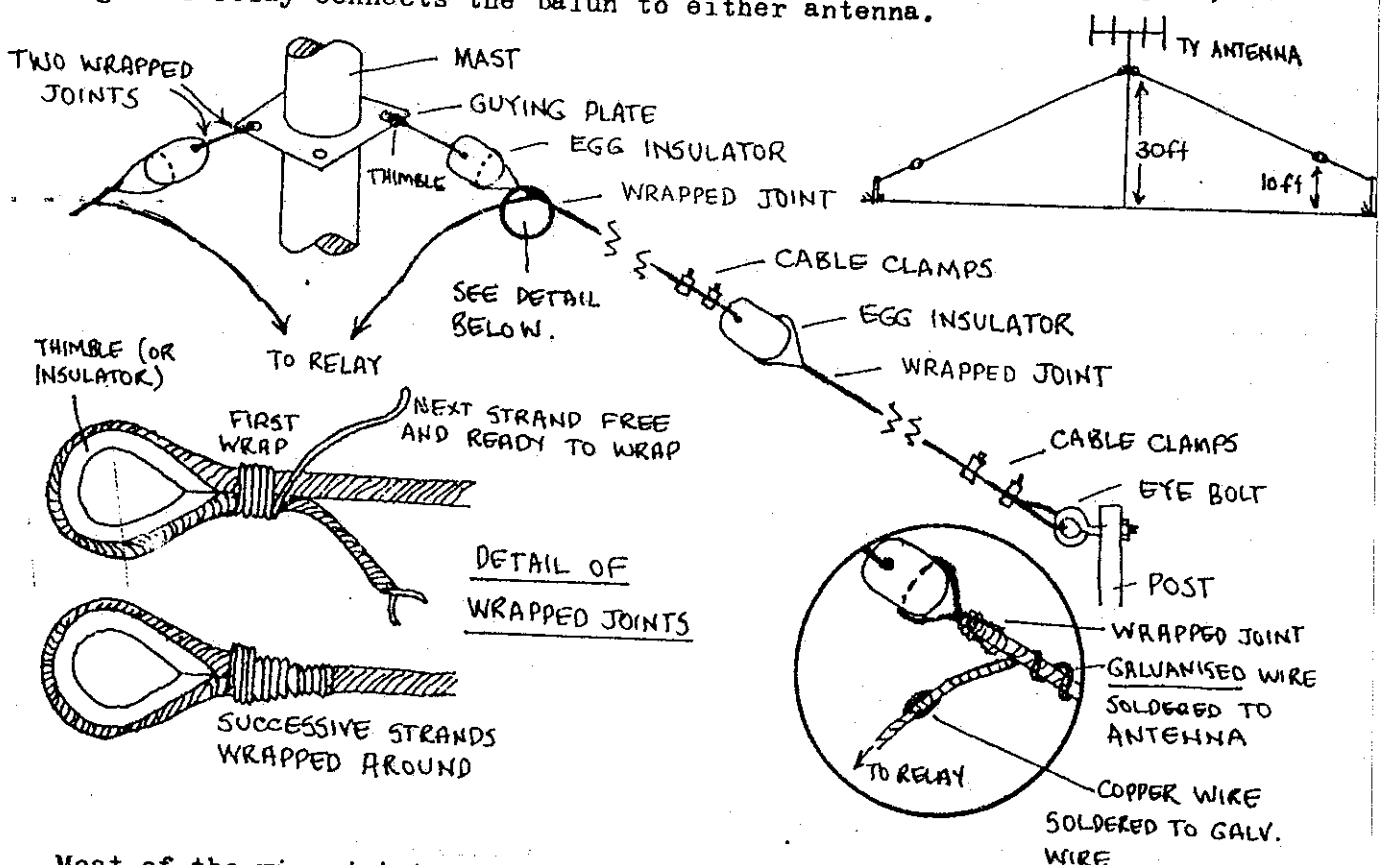
Lyle also played us a tape of E-M-E signals achieved on 432MHz with a 150 foot dish, from Z25JJ in Zimbabwe. These consisted of recognisable Morse, the tape also containing s.s.b. signals. Those present now have a better idea what the E-M-E Project is trying to achieve.

ANTENNA FOR 40 and 80 METRES

Brian VK2AXI

On 40 and 80 metres, the inverted-V antenna is a popular variation of the simple half-wave dipole. Advantages of the inverted-V are that it needs only one mast; the ends are near the ground which makes adjustments of length easier; and the radiation pattern is claimed to be equally strong in all directions, contrasted with the figure-8 pattern of a horizontal dipole. A disadvantage is that bandwidth is somewhat less than a conventional dipole.

I have installed inverted-V antennas for 40 metres and 80 metres, using a metal TV mast as the centre support and galvanised guy wire for the antennas. The two antennas are (very roughly) at right angles to each other, and act as guys for the TV mast. At the centre, the antennas are about 30 feet above the ground and at the ends about 10 feet. Lengths of the antennas are based on the table in "The Radio Amateur Antenna Handbook" by William Orr and Stuart Cowan (131 feet for 80 metres and 66 feet for 40 metres). Fifty-ohm coaxial feeder runs to a 1:1 commercial balun at the central support, and a changeover relay connects the balun to either antenna.



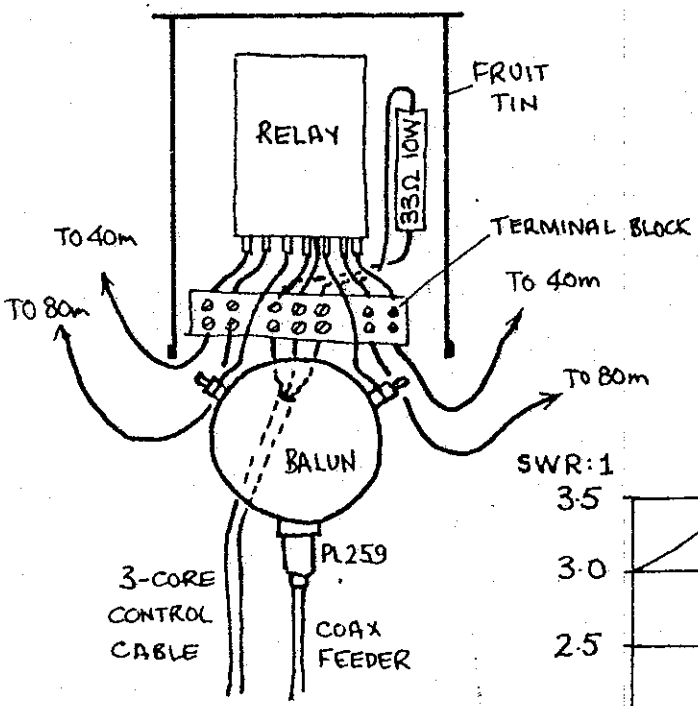
Most of the wire joints were wrapped as shown in the detail sketch, which is described in the R.S.G.B. Handbook and recommended as a very strong splice. (It's also neat and inexpensive, although a little time-consuming). Two joints were secured with cable clamps to enable lengths to be adjusted.

Feedlines to the antennas were made as shown in the detail sketch with a short length of galvanised wire attached to the antenna, and copper wire soldered to the short length; electrolytic corrosion caused by the contact of dissimilar metals will not therefore affect the antenna wires which are under tension.

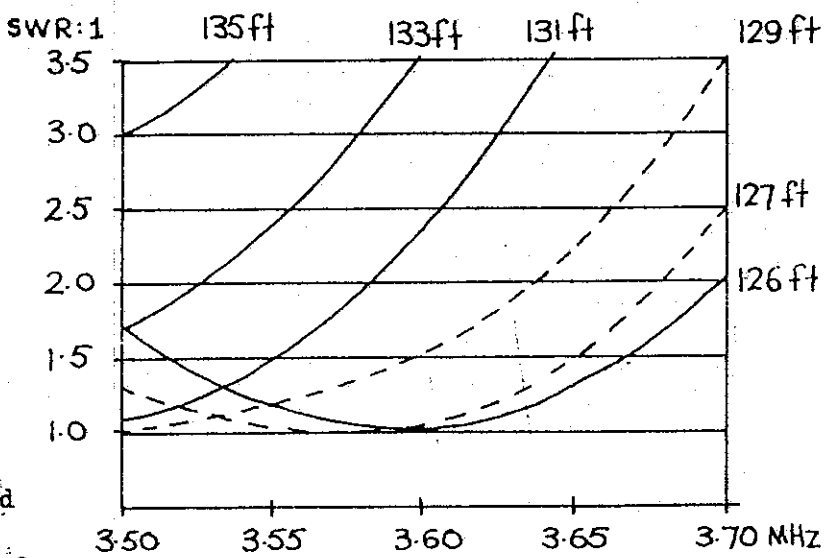
The balun and relay are mounted on the mast just below the guying plate, and are protected from the weather by an inverted fruit tin. A 33 ohm 10 watt resistor was also mounted inside the tin; when supplied with 12 volts the resistor dissipates about 4 watts which is sufficient to keep the enclosure free from dew and frost on cold damp nights. The relay coil and heating

Antennas for 40 and 80 metres - contd.

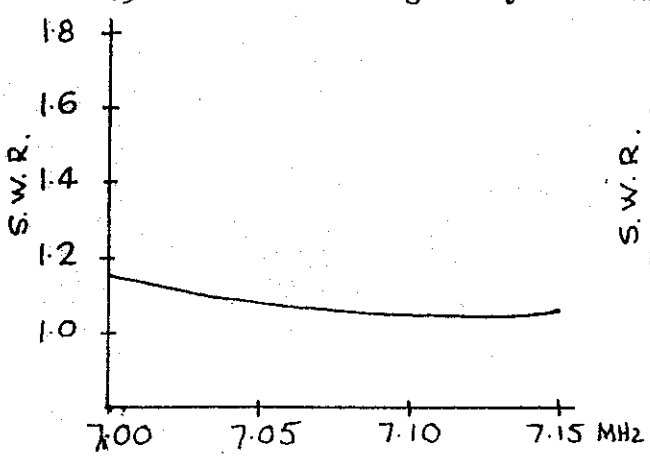
resistor are fed with 12 volts using 3-core mains flex (because I already had some). However, it allows the relay and heater to be switched independently and avoids using the metal mast as an earth return, which could cause electrolytic corrosion problems over a period of time.

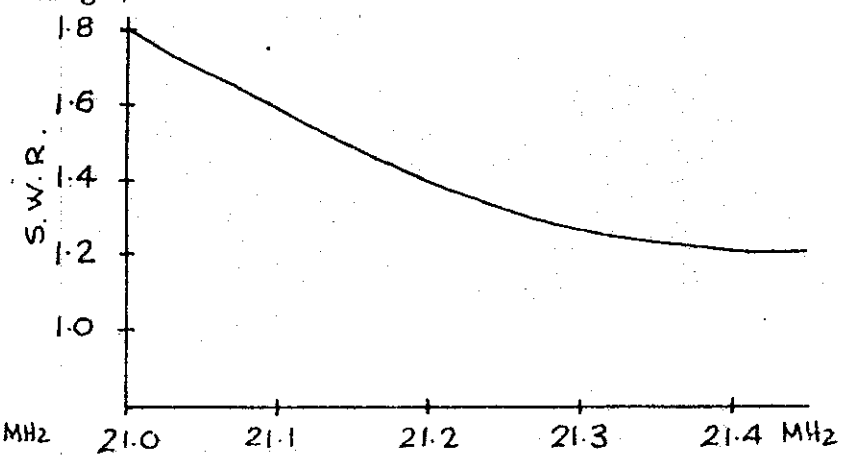


Initially, the dipole lengths were deliberately made too long (it is easier to shorten a wire than to lengthen it...). The lengths were then adjusted to obtain minimum SWR. The curves in the diagram below show how SWR across the 80 metre band changed as the length was adjusted. (The lengths shown on the diagram are approximate only, and don't allow for feeder length, etc, but the differences between lengths are quite accurate).



The diagrams below show the SWR achieved across the 40 metre band when the 40 metre dipole had been adjusted in length. Since a 40 metre dipole can also be used on 15 metres, the SWR was checked for that band and was not too bad. Although not yet tried, a slight increase in length of the 40 metre dipole might give useful improvement on 15 metres without greatly affecting 40 metres.





Results for 40 and 80 metres have been very pleasing, with consistently good reports given on 80 metres on the Yanco-Wollongong path, a distance of 255 miles.

CRACKLING NOISES ON A REPEATER ARE ALMOST ALWAYS A RESULT OF MOVEMENT OF TOUCHING METAL PARTS ON THE AERIAL OR SUPPORTING STRUCTURE. WHEN THE REPEATER IS ON AIR, ITS TRANSMITTER IS CREATING A STRONG RF FIELD STRENGTH AROUND THE SITE. A SUBSTANTIAL AMOUNT OF RF IS INDUCED INTO ANYTHING METALLIC WHICH IS IN THE NEAR VICINITY. WHEN THERE IS MOVEMENT BETWEEN METALLIC PARTS SUCH AS GUY WIRES ETC., DURING WINDY WEATHER, SMALL ARCS APPEAR WHERE THE METAL PARTS ARE TOUCHING. THE REPEATER'S RECEIVER IS TRYING TO RECEIVE SIGNALS IN THE PRESENCE OF INTERFERENCE FROM THESE SPARKS. THIS PHENOMENON DOES NOT OCCUR IN THE HOME STATION BECAUSE WE ARE NOT TRANSMITTING AND RECEIVING SIMULTANEOUSLY .

ALSO AT MT. MURRAY A NEW DECODER WAS FITTED, THAT RECOGNIZES THE TONE SIGNAL USED TO SWITCH ON THE AUXILIARY LINK RECEIVER FOR AUTOMATICALLY RELAYING THE W.I.A. BROADCASTS ON SUNDAYS.

FOUR ENCODERS WERE MADE UP BY VK2CAG, VK2EXN AND VK2EMV. THESE WILL BE DISTRIBUTED AMONG REPEATER COMMITTEE MEMBERS SO THERE IS VERY LITTLE CHANCE THAT THERE WILL BE NO-ONE AROUND ON SUNDAYS TO SWITCH THE REPEATER TO BROADCAST MODE. WE HAVE MISSED OUT ON SUNDAY BROADCASTS IN THE PAST BECAUSE THERE WAS ONLY ONE PORTABLE ENCODER IN EXISTENCE, AND IT IS TOO MUCH TO EXPECT FOR ONE PERSON TO BE AT HOME IN FRONT OF THE RIG AT TWO EXACT TIMES EVERY SUNDAY.

INCIDENTALLY, WE FOUND IT NECESSARY TO BE ABLE TO CONTROL THE LINK RECEIVER AT MT. MURRAY AFTER PREVIOUS EXPERIENCES WITH OTHER STATIONS USING THE LINK FREQUENCY AND UNKNOWINGLY KEYING UP OUR REPEATER FOR LONG PERIODS. THE LINK FREQUENCY IS ALSO A LONG-STANDING NET FREQUENCY SOMETIMES REFERRED TO AS THE 'OLD TIMERS NET'.

DISCUSSIONS HAVE BEEN GOING ON ABOUT ALTERNATIVE POWER FOR MT. MURRAY. SOLAR POWER WAS DISCUSSED AT LENGTH AND FINALLY REJECTED ON THE ADVICE OF SEVERAL AMATEURS WHO LIVE CLOSE TO THE SITE... THERE SIMPLY ISN'T ENOUGH SUNSHINE DUE TO LOCAL FOG AND CLOUD COVER. HOWEVER, THERE IS ALWAYS AN ABUNDANCE OF WIND, SO WE HAVE DECIDED TO TRY AND HARNESS SOME OF IT FOR OUR OWN ADVANTAGE, AND BUILD A WIND DRIVEN GENERATOR. IN ORDER TO DO A PROFESSIONAL JOB OF IT AND GET THE RELIABILITY WE NEED WE WILL BE PURCHASING THE SPECIALIZED PARTS, SUCH AS THE HUB ASSEMBLY.

GRAEME VK2CAG

STOLEN EQUIPMENT

SUPER PANTER converted to 10m, S/N 70003430.
Also a 50W SKIP LINIAR.

Anyone with information please contact

ALLAN CLARKSON VK2PGB

REPEATER REPORT

FIRST, I WOULD LIKE TO THANK ALL OF YOU WHO HAVE DONATED OR HAVE PROMISED TO DONATE A VHF BLOCK FILTER FROM THE RECEIVER SECTION OF THE AWA DUPLEX CARPHONE UNITS EX CAVIONS. I HAVE 3 SO FAR AND MORE TO COME. FOUR OF THESE WILL BE MODIFIED AND USED TO MAKE THE TWO 70CM. DUPLEXERS TO BE FITTED TO OUR TWO 70CM. REPEATERS. ANOTHER TWO MAY HAVE TO BE USED IN DEVELOPING THE DESIGN TO THE POINT WHERE IT IS READY TO BE USED IN THE FINAL PRODUCT.

A DUPLEXER IS A SET OF ADJUSTABLE CAVITY RESONATORS THAT ALLOWS BOTH TRANSMITTER AND RECEIVER OF THE REPEATER TO OPERATE SIMULTANEOUSLY FROM THE ONE ANTENNA. AT PRESENT ALL OF OUR REPEATERS ARE USING SEPARATE AERIALS FOR RECEIVING AND TRANSMITTING.

THE ADVANTAGES OF USING A DUPLEXER IN A REPEATER INSTALLATION ARE:-

- IDENTICAL SIGNAL COVERAGE PATTERN FOR BOTH TX AND RX (IF YOU CAN HEAR IT YOU CAN WORK IT)
- HAVING ONE ANTENNA ELIMINATES THE NEED FOR PHYSICAL SEPARATION AND ALLOWS THE SINGLE ANTENNA TO OCCUPY THE PRIME LOCATION AT THE SITE.
- HAVING ONE ANTENNA MEANS THAT A LARGER AND MORE EFFICIENT ONE CAN BE USED IN PLACE OF TWO SMALLER ONES. MORE GAIN CAN BE OBTAINED FROM ONE LARGER ANTENNA, WHICH MORE THAN OFFSETS THE LOSSES IN THE DUPLEXER (AROUND 2DB)

WE HAVE TWO GOOD QUALITY COMMERCIALLY MADE 9DB GAIN ANTENNAE AT THE 8225 REPEATER AT HILL 60. WITH A DUPLEXER INSTALLED THERE, WE CAN REMOVE THE LOWER (TRANSMIT) ONE AND PUSH THE REMAINING ONE A BIT HIGHER. NOT ONLY WILL WE ACHIEVE AN OVERALL INCREASE IN PERFORMANCE OF THIS REPEATER, BUT WE WILL HAVE A GOOD ANTENNA LEFT OVER THAT CAN BE PUT AT SUBLIME POINT WHICH WILL IMPROVE THAT REPEATER'S COVERAGE.

NEW REPEATER ++

THE NEW 70CM. CHANNEL 8725 WAS COMMISSIONED ON WEDNESDAY JUNE 29. THE RECEIVER MODIFICATIONS ARE FINALLY COMPLETE AND THE SENSITIVITY IS COMPARABLE TO THAT OF COMMERCIALLY AVAILABLE STATE-OF-THE-ART RIGS

DE-SENSITISING OF THE RECEIVER IS THE BIGGEST BUG USUALLY ENCOUNTERED IN NEW REPEATER INATALLATIONS, BUT FORTUNATELY NONE WAS EVIDENT.

CHANNEL 8725 (433.725 IN, 438.725 OUT) HASN'T MISSED A BEAT SINCE IT WAS INSTALLED. ONLY 4 OR 5 STATIONS HAVE WORKED THROUGH IT SO FAR, AND IT APPEARS THAT IT IS ACCESSIBLE WITH A HAND-HELD SET IN THE NORTHERN SUBURBS, AND OK MOBILE (AS TESTED BY NED VK2AGV) OVER MOST OF THE ILLAWARRA DISTRICT DOWN TO KIAMA. IT IS POSSIBLE TO WORK IT ON HILLTOPS BETWEEN GERRINGONG AND FOXGROUND.

MT. MURRAY

SINCE THE NEW TRANSMITTING AERIAL WAS PUT UP ON THE 19TH OF THIS MONTH (JUNE) THE REPEATER HAS BEEN SUFFERING FROM SEVERE CRACKLING NOISES WHILE IT IS WINDY AT THE SITE (THATS MOST OF THE TIME). MYSELF AND STAN VK2KSS SPENT ALL DAY ON SITE ON SUNDAY JULY 17TH. WE LOWERED THE TX AERIAL MAST AND DISCOVERED THAT SOME OF THE CO-AX TERMINATIONS HAD SNAPPED, PRESUMABLY DUE TO VIBRATION, .

WE REPAIRED THIS AS BEST WE COULD, AND WE ARE HAVING A THINK ABOUT ALTERATIONS TO THE AERIAL TO PREVENT FUTURE FAILURES.

THE ANTENNA WAS VERY WELL CONSTRUCTED, AND IT WAS DIFFICULT TO BELIEVE THAT SUCH DAMAGE COULD HAVE BEEN CAUSED BY THE WIND.

LOOKING BACK IN THE PAST, IT HAS ALWAYS BEEN THE BIGGEST PROBLEM AT MT. MURRAY TO KEEP AERIALS UP. NOW THAT WE HAVE GOT A MAST THAT HAS PROVEN ITS RUGGEDNESS ALL THAT REMAINS IS TO BE ABLE TO KEEP AN AERIAL FIXED TO IT AND IN ONE PIECE.

AN EXCELLENT HIGH GAIN 2 METRE VERTICAL

Many amateurs are familiar with the extended double zep antenna on the HF bands and the advantages it offers over other simple antennae. An extended double zep consists of two 5/8 wavelength setions fed at the junction through a phasing section. This offers high gain, due to the larger radiating section and the fact that the current lobe spacing is wider spaced than that found in a half wave dipole.

This design which appeared in QST - June 1982 is an extended double Zep with the antenna end-fed to overcome some of the problems inherent in centre feeding such an antenna. Similar sorts of feeding is used in designs such as the Slim-Jim and other J-fed types of verticals. The diagrams below show the design methods and the drawing to the right shows actual antenna construction methods.

This design offers-high gain with vertical polarisation and an omnidirectional pattern. In addition the construction methods only require hand tools and the completed design is very robust.

You could use a wide choice of materials. The phasing section I made from a piece of copper strip and the elemts were of copper nickel tube. This choice was made to ensure maximum strength and rigidity.This also alloed me to use silver solder on joints which also makes construction easier. Aluminium tube for the element and aluminium rod or wire for the phasing section would have been just as appropriate. However do NOT mix the metals as this will invite disaster from corrosion via electrolysis.

I did not use a matching device at the input and did not seem to suffer any ill effects from so doing. Assuming you are using 50 ohm coaxial cable direct connection to the the 50 ohm impedence point (i.e. where minimum SWR occurs) with the braid attached to the quarter wave section is ample matching. A better method would be to use a quarter wave matching stub or other like devices to keep RF currents off the line.

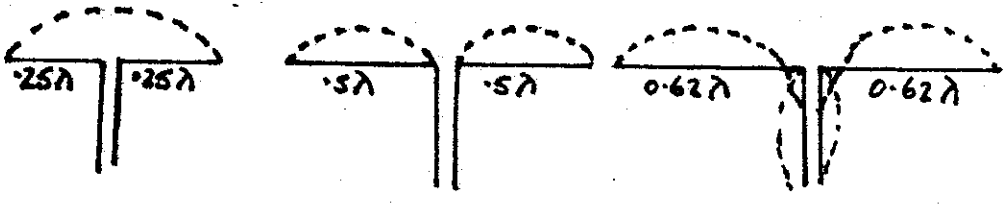
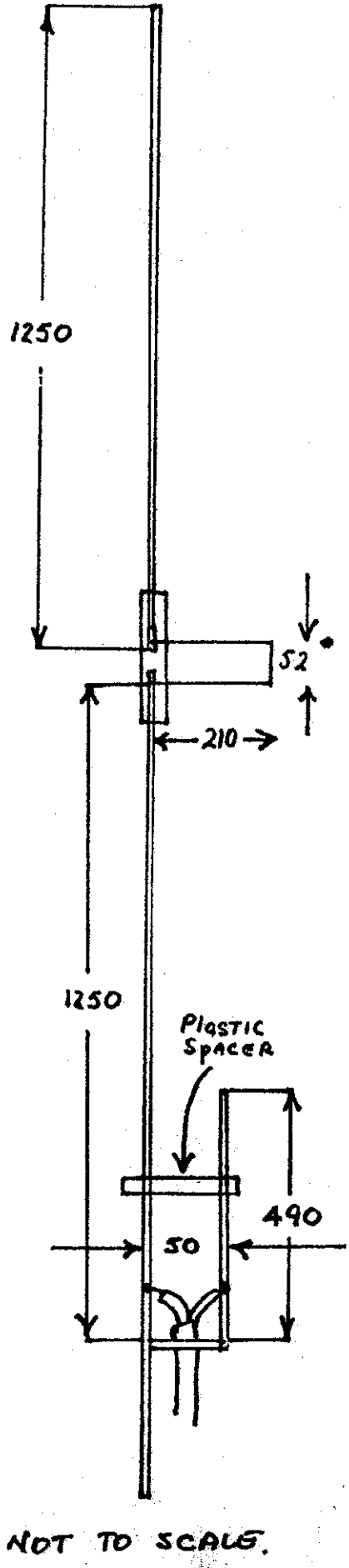


Fig. 1 Current distribution in various antennae



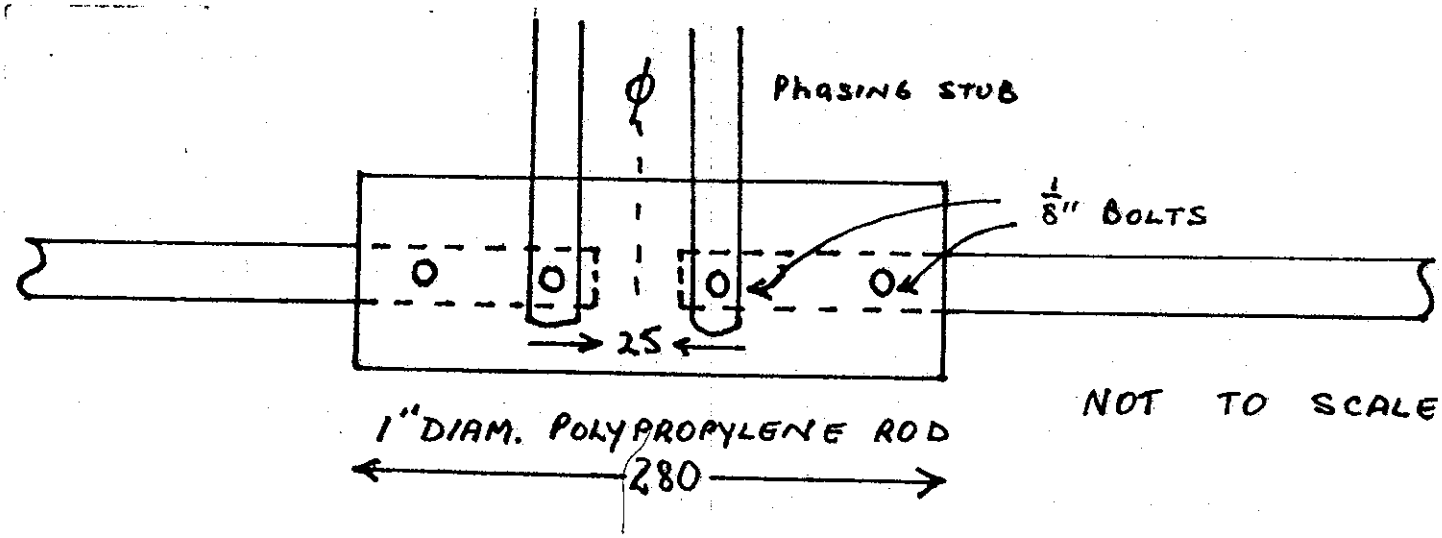


Fig. 2 Phasing stub detail

Denis VK2DMR

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IC SHORTAGE - YOU ARE ADVISED THAT TTL AND CMOS IC'S ARE IN SHORT SUPPLY AND ARE LIKELY TO REMAIN SO FOR AT LEAST THE NEXT TWELVE MONTHS. SOME OF THE VARIOUS MANUFACTURES IN THE U.S. HAVE CEASED TO TAKE ORDERS, OR ARE PROMISING UP TO TWELVE MONTHS DELIVERY. IT APPEARS THAT THE SHORTAGE RESULTS FROM DEMANDS FOR THEIR USE IN COMPUTER VIDEO GAMES. WHILE THE FACTORIES HAVE SUFFICIENT CAPACITY, THEY HAVE TO RETRAIN STAFF TO TAKE UP THE LEEWAY AND THIS WILL TAKE TIME.

FROM THE ANARTS NEWS BULLETIN, 17TH JULY 1983.

DUTY INCREASE ON SOME AMATEUR EQUIPMENT - AMATEUR TRANSCEIVERS DESIGNED TO OPERATE ON FREQUENCIES BELOW 52 MHZ ARE NOW SUBJECT TO 30 PERCENT IMPORT DUTY, WHERE PREVIOUSLY THE FIGURE WAS 2 PERCENT. THE RELEVANT BY-LAW, UNDER TARIFF REFERENCE 85.15, GIVING EXEMPTION FOR 2 PERCENT DUTY NOW STATES, 'TRANSCEIVERS DESIGNED TO BE USED BY AMATEUR RADIO OPERATORS CAPABLE FOR USE ONLY ON ONE OR MORE OF THE FOLLOWING FREQUENCY BANDS ALLOCATED IN AUSTRALIA BY THE DEPARTMENT OF COMMUNICATIONS TO THE AMATEUR SERVICE' - THE LIST OF FREQUENCIES BEING ALL AMATEUR BANDS ABOVE 52 MHZ. BOTH IMPORTERS AND RETAILERS OF AMATEUR EQUIPMENT AS WELL AS THE WIA ARE STRONGLY OBJECTING TO THIS INCREASE IN DUTY.

FROM THE ANARTS NEWS BULLETIN, 17TH JULY 1983.

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CORRECTION: DOI DOINGS, JULY PROPAGATOR.
THE 2K2 INPUT RESISTOR SHOULD BE 2M2.

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FOR SALE

Kenwood TS 520S S/N 610547 - $475.00.As new condition. Has not been fiddled with or modified.Complete with operating Manual.Very little used as my interest is mobile - portable.I have and use a TS120S.

VK2AJV Q TH R 462134

THE ILLAWARRA AMATEUR RADIO SOCIETY - P. O. BOX 1838 WOLLONGONG 2500

Meetings: Second Monday of every month except January at 7.30 p.m. in the Congregational Church Hall, Coombe Street, Wollongong. Committee Meeting - 3rd Monday of each month.

Repeaters: VK2RAW - 6850 VHF Mount Murray. VK2RIL - 7275 VHF Sublime Point.
VK2RUW - 8225 UHF Hill 60 Port Kembla. VK2RIL - 8725 UHF Sublime Point.

Broadcasts: On Sunday night prior to Club Meeting - 7.00 p.m. RTTY on 6850 VHF Repeater; 7.15 p.m., Voice on 6850 VHF, 7275 VHF and by relay on 3.562 Mhz. Call backs after the WIA relay at 7.30 p.m.

W.I.A. Relay: On 6850 VHF at 11.00 a.m. and 7.30 p.m. weekly on Sunday.

Club Nets: 3562 Khz SSB on Sunday at 8.00 p.m. and slow morse net on 28.440 Mhz on Tuesday at 8.00 p.m.

Newsletter: "The Propogator", published monthly to reach financial members in week prior to meeting. All articles, ads etc. to the editor, Leo Kleeborn, VK2YJK at 33 Lombard Avenue, Fairy Meadow 2519. Telephone 84.9751. Copy deadline 3rd Tuesday each month.

Membership: The Secretary, I.A.R.S. P. O. Box 1838, Wollongong 2500. Full membership is $7.00 per annum; students and pensioner concessional members $4.00 per annum.

QSL's: For financial members who are also financial members of the W.I.A. ONLY.
Inwards: Mike Keech VK2DFK, QTHR; Outwards: Ian Callcott VK2EXN QTHR.

Awards: The award of the I.A.R.S. 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 or contact with the Club station VK2AMW is sufficicnet in itself for the award. Band details - time, day, date, frequency, station worked + $2.00 or 4 I.R.C.'s to Award Manager, I.A.R.S., P. O. Box 1838, Wollongong 2500. No QSL cards required.

Store: The Club store operates at each Club meeting.

Committee: President - Dave Myers VK2DFL, 78 Highlands Pde., Bulli.
Vice President - Keith Curle VK2OB, 24 Beach Drive, Woonona.
Secretary - Murray McConnell VK2MY, 62 Ramah Avenue, Mt. Pleasant.
Treasurers - Geoff Cuthbert VK2ZHU, 2 Nioka Avenue, Keiraville.
Richard Fox VK2ERF, P. O. Box 1120, Wollongong.

General Committee: Mike Keech VK2DFK, Ian Callcott VK2EXN, Ray Ball VK2XCC Morry Van-De-Vorstenbosch VK2EMV, Jim Mead VK2EJM, Jock Taylor VK2JT, Roy Parton VK2KO.

Repeater Chairman: Graeme Dowse VK2CAG.

Repeater Committee: Mike Keech VK2DFK, Morry Van-De-Vorstenbosch VK2EMV, Ian Callcott VK2EXN, Dave Colless VK2EZY.

Broadcast Officers: Denis McKay VK2DMR, Paul Gardiner VK2ZQT.

QSL's: Mike Keech VK2DFK and Ian Callcott VK2EXN.

Propogator Editor & Staff: Leo Kleeborn, Editor VK2YJK, Ken Frost VK2DOI, Cartoonist Brian Wade VK2AXI.

Storepersons: Kitty and Kel Smith VK2PSK, VK2PSI.

Life members: Graeme Dowse VK2CAG Keith Curle VK2OB