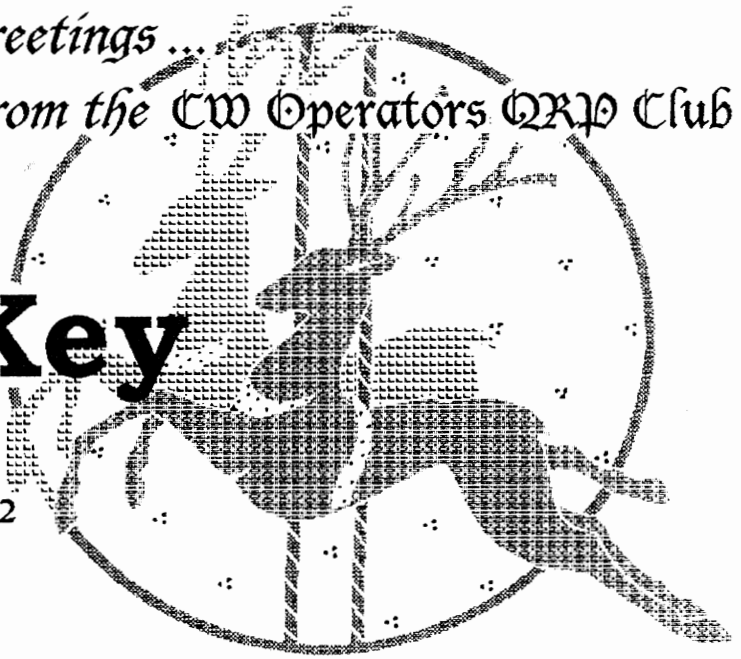
Season's Greetings ...

... from the CW Operators QRP Club



Lo-Key

December 1992
Issue No. 36

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CW NET - Ted Daniels VK2CWH
TUESDAY NIGHTS
Daylight Saving - From 0845 UTC
On 3529kHz, or lower if QRM

SSB NET - Steve VK5AIM's roster
FRIDAY NIGHTS
Daylight Saving - From 0930 UTC
Near 3620kHz

** Scramble #23 on 80m Thurs 21 Jan.*

** Scramble #24 on 40m Thurs 11 Feb.*

FROM THE EDITOR'S DESK

By Don Callow VK5AIL #75

***Membership and P.R.**: The VK6 team again 'flew the flag' for QRP and our Club at the N.C.R.G. Hamfest in W.A. with good results. Also, quite a few of this quarter's new members found out about us through the excellent publicity in a recent issue of Electronics Australia magazine. EA is a very well read and well respected electronics magazine, with plenty of Amateur Radio items, so this was bound to be a 'winner'. In September our membership reached 200 and we have 216 on the list in this issue - Next target 300 !*

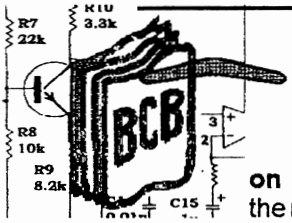
*New member **John Rickard VK3MF** wrote: "you have encapsulated my main interests in the aims of your club". Another new member, **Nev Poole VK4CBR** said: "Home Brewing is an addiction I haven't been able to shake, much to my XYL's disgust. QRP seems like an excellent idea and I'd certainly like to learn more ..." [A familiar story - Hi !]*

***To the new members:** We hope you enjoy your membership. P lease spread the word about our club when you are in QSO's etc. This is a great way of getting more members.*

***Lo-Key Contents**: This issue has quite a diverse mix of subjects, with 32 pages instead of the usual 28. 32 is the most we can manage without doubling postage costs. If YOU send me articles or notes about your activities we will certainly have more 32 page issues.*

***VK5 Outing**: **Steve Mahony VK5AIM** reports about this on page 26. This may well have been the first such social event for the VK5 members - and, hopefully, will not be the last.*

72 Don VK5AIL cuqc



BOOMERANG CIRCUIT BOOK

BCB #3 is now on its 4th 'flight' - the mailing list, in order, is: Dave VK3DVB #183, Murray VK3JHX #234, Ray VK2COX #226, Steve Jackson #238 and Ron VK4EV #130.

It will go around again as soon as we get another 5 names - first for Flight 5 is Donald VK6FQ #272.

The papers for BCB #4 are now being assembled. Those who have nominated to date are Murray VK3JHX #234, Peter VK6BWI #66 and Donald VK6FQ #272.

Contents: In the light of several comments received, we will keep the current format for BCB #4. So it may include items from any area of Amateur Radio likely to be useful to our members, such as QRP operation, all aspects of CW, homebrewing QRP rigs and suitable receivers, antenna projects, various explanatory and theory papers etc. However, we hope to include a special set of papers on ***CRYSTAL LADDER FILTERS***.

To add your name to the list for BCB #3 or #4 or both, VK members should contact Don Callow VK5AIL at 5 Joyce St., Glengowrie SA 5044 or Kevin Zietz VK5AKZ at 41 Tobruk Ave., St Marys SA 5042. cuqc

KEVIN'S KOMMENTS

By Kevin Zietz VK5AKZ #43 Treasurer and Membership Secretary
41 Tobruk Ave. St. Marys SA 5042 Australia

WELCOME TO NEW MEMBERS:

265	VK5ADG	Doug Adam	INGLE FARM SA
266	VK3IJ	Neil Trainor	LAVERTON VIC
267	VK6RJ	John Wirth	BROOME WA
268	VK6AND	Andre' DuPlessis	LESMURDIE WA
269	VK4CBR	Nev Poole	GLADSTONE QLD
270	VK5ATQ	Trevor Quick	HOUGHTON SA
271	SWL	Arnold Herkelman	TEMORA NSW
272	VK6FQ	Donald Fraser	RIVERTON WA
273	VK2BFN	Adrian Clout	HEZELBROOK NSW
274	VK3MHM	Ron Steinfeld	GLEN WAVERLEY VIC
275	VK7EB	Ted Beard	LINDISFARNE TAS
276	VK4CWM	Len McGowan	AYRE QLD
277	VK3MF	John Rickard	HEATHMONT VIC
278	VK6JCF	Bob Johnson	MANJIMUP WA
279	SWL	Thuan Thi	KARAMA NT

AND WELCOME BACK TO:

98	VK2AP	John THURSTUN	BLACKHEATH NSW

To start off this months offering I am going to repeat that it is ok to pay subscriptions and other payments with the same cheque etc. and you can pay subs ahead of time if you wish. It is also ok to include your subs with other correspondence if it saves you postage. As long as you let us know your intentions the club system can handle the above.

The accounts sent out with this issue are for subscriptions and other pro-rata adjustments to extend your membership to 31 December 1993. We try to bring everyone to this date to make the budget estimates easier, at the end of that 'thing' called a financial year (headache time !)

As you may have already seen some recent publicity and activity of members have accelerated our membership growth this quarter, keeping your committee rather active.

It's the time now to **wish ALL a HAPPY CHRISMAS and a SAFE NEW YEAR** while I get back to setting up all those accounts ! (I dont dare to talk about the computer this month.)

73 Kevin

OOOC

THE MAX BRUNGER AWARDS FOR BEST TECHNICAL ARTICLES - December 1991 to September 1992

By Rob Gurr VK5RG
Adelaide Hills Amateur Radio Society


The late Max Brunger VK5OS #2

Again this year such a good selection of articles was submitted, that choosing the best became difficult. I was helped somewhat by the Guidelines for the 1993 Max Brunger Awards for Best Technical Articles, published in Lo-Key #34, June 1992, Page 4. The relevance to the spirit and aims of the Club, likely usefulness to members, originality of content, and layout and degree of completeness, certainly gives an adjudicator a clear lead to the most appropriate articles.

With the above in mind it was still not easy to reject some items, as they were of outstanding value....for example, the article entitled **"Audio Amplifier Stage", by Ian Smith VK8CW #91** [in Lo-Key #33 March 1992], was the first I wanted to build up myself, as it has a great application for all types of receivers. It regrettably did not fit the Logo: "We do more with less", and I sought further a transmitter article, that meets this definition.

The chosen article for the Open Section, is the adventurous progress into VHF CW, made by Peter Parker, VK6BWI, #66, for his "The Milliwatt Two", in Lo-Key #32 December 1991.

The selection for the Test Equipment Section, is the very useful, and essential "RF Sniffer" by Dave Archer, VK3DVB, #183, in Lo-Key #33 March 1992.

I volunteer a comment: there is an increasing trend to writing articles that are pertinent, and interesting modifications to equipment that has been described in another Magazine. This is good, however when the only supporting diagrams and text centre around the part modified, it leaves anyone not familiar with the original article wondering what it is all about. To give references is good, however few of us have direct access to these originals, hence the value of the modification may be lost. What really is needed is a brief rewrite of the complete project, as ***you*** have built it and have it working...you are not bridging copyright, as you are now describing your own original project. I think the Management Committee may have had this thought in mind when setting "Layout and Degree of Completeness", in the criteria.

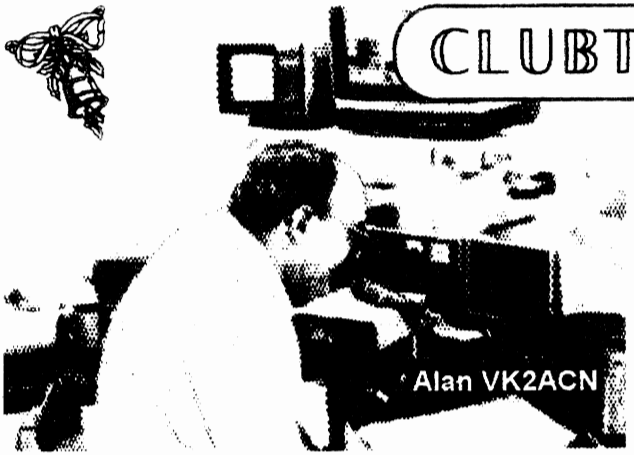
Again a wonderful Competition....I am pleased to have been able to contribute, and wish all happy CW/QRP contacts, in the forthcoming year.

Rob Gurr

Rob Gurr, VK5RG

Continued opposite

CLUBTIVITIES



This photograph has been 'borrowed' from the QSL card of **Alan James VK2ACN #182**. QTH Lavington N.S.W., who is pictured using what appears to be a home-brewed breath-operated key....or could it be a ***microphone ?!***

Seasons Greetings from the Executive Committee to all members. And a special thanks to those who have supported the CW Ops QRP Club by undertaking the many tasks associated with the various activites or who have contributed to Lo-Key.

Kevin VK5AKZ #43 and Don VK5AIL #75

Continued over

TECHNICAL ARTICLE AWARDS [Cont.]

COMMITTEE COMMENTS

✿ Firstly, thankyou to **Rob Gurr VK5RG** for taking the time , once again, to be our [neutral] judge. What a difficult task - better you than us, Rob !

✿ In view of Rob's comments [opposite] and after discussion with him, we have decided to award a well-deserved consolation prize to -

Ian Smith VK8CW. The prize is a winner's certificate and a credit of $20.00 with the QRP Kit-Set Centre.

Otherwise we might not get any receiver articles and, as they say -
If you can't hear 'em, you can't work 'em !

✿ **Congratulations to the three winners - well done !**

And - *Yes, VK6 has triumphed again !* Peter VK6BWI is a prolific writer of articles and [obviously] a keen experimenter. Prizes are: Open - Certificate, one year's free membership and $25 credit at the Kit-Set Centre, during 1992/93. Test Gear Section - Certificate and $25 Kit-Set credit.

✿ *Keep sending in articles* - those published in December 1992 to September 1993 [inclusive] may be eligible for one of the 1993 awards. Rules were in Lo-key #34 June 1992 page 4.

✿ Last and certainly not least, we extend our thanks to **Mrs. Roma Brunger** for her generous contribution which allowed us to expand the technical article award system.

Don VK5AIL Kevin VK5AKZ oxxo

NCRG Hamfest

Peter Parker VK6BWI #66 has news of the VK6 team at the Nothern Corridor Radio Group's Hamfest -

"Present at the stand were Rod VK6KRG, Martin VK6BER, myself and later Rev VK6SA. We used all the material sent over for the 'big day' and gave away all the Lo-Key's etc. Rod thought there was more interest this year.

The stand was virually the same as 1991, although Rod had a component display of items sold by the Club, and my DSB 3.5 and 'Lunchbox' were on display, also the 'Peel 80' was brought along.

The winner of the Homebrew Competition was a 10MHz FM tcvr.

Other members present at the Hamfest included Marlene VK3WQ, John VK7JK and Keith VK6KC."

Morse Opinion

Here are some excerpts from correspondence received from **Rex Black VK2YA #131** -

"Glad to see the 'CW NET' reach its 1000th weekly session last weekend. [Editor: - 20 Sep. - Rex is referring to the Sunday morning net on 40m]. This shows that Morse is by no means a dead mode despite the frantic efforts of many anti-Morsers to see it disappear."

*"I deplore the spread of computer generated Morse - a slow and drawling mode at 5 wpm and Heaven forbid that we accept that style at the operating level. **Bill VK2WAS** and I do the Slow Morse (NSW) each Sunday evening and both of us use hand-keys and try to send well-spaced code. Too many of the Slow Morse senders make up their practices from subject areas far removed from Amateur Radio. I try to include snippets of info that can relate to the Theory and Regulations. Some Questions & Answers practices can be very useful in reinforcing the other examinable subjects."*

"I have been making up more Morse Practice Cassettes. Is there any production of cassettes in VK5 to help the Novice and upgraders ? I have sent a lot of such tapes interstate - NOT - REPEAT NOT - as a commercial venture but on a cost basis only."

"You might put in a suggestion in LO-KEY that Radio Clubs might put tapes into City and Town Libraries. Here in Wagga I made up a batch from 5 to 15 wpm and these are very popular just before exam times. Also to local TAFE, where there was a course in "AR" last year. Also, sample examination tapes - made onto "Rock and Roll", cassettes with the "music?" wiped off!

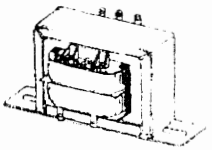
Changes etc. ....

Vincent ROBERTS #36 is now VK2UY, was VK2CVR. It's still good Morse practice !

Greville Knight VK7ABH #133 has moved north up the east coast to Queensland [Kallangur], like many others - except they go there to retire not to work !

No, Bob Johnson VK2DRL #124 hasn't moved west - it's 'Hello' to new member Bob Johnson VK6JCF #278 !

OOQC



QRP KIT-SET CENTRE

Don Callow VK5AIL #75
5 Joyce St. Glengowrie S.A. 5044
Telephone (08) 295 8112 (day/night)

A full Club Sales Price List was printed in June Lo-Key so in this issue there are mainly changes and additions to the list.

ADDITION ...

BF960 Low noise UHF DG Mesfet
C070 2 per pack [+ data] for $2.00
BF960 Low noise UHF DG Mesfet.

CHANGES TO DETAILS ...

C097 Club Lists - Updated each quarter.
Diskette version - You no longer have to provide a diskette when ordering this.

C097	1 set	0.50	[on paper]
	1 set	1.50	[on diskette]

Club Lists. Latest quarterly issue, comprising updated versions of:-

** Membership List with names, call-signs and addresses (those approved for publication) as published from time to time in Lo-Key;
** Lo-Key Index, including Technical Articles and General sections; and
** Club Sales Price List. Complete list.
** Two copies of the Club's promotional brochure are also included.

Diskette version - The price of the version on diskette includes the papers and copies of the three Club Lists in IBM-PC compatible format. Nominate your word processor name - if I can't supply your format or you don't nominate one, you will get ASCII text files. Also, the diskette now includes a copy of the BASIC program for Great Circle distance/bearing calculations. If you advise the name, latitude and longitude of your station's location I will customise the program for you. See 'How Far Away was that Station ?' in Lo-Key #36 Dec '92.

SPECIALS

The usual $4 per order for postage applies.

G-CLUB CIRCUIT HANDBOOKS

We have a few of these left -

- The last of our C098 printing run. Price $9.00 [will return to the normal $10. which is still a VERY cheap price.]
- A 'pre-owned' book in excellent condition [it was donated to us]. Price $6.00.

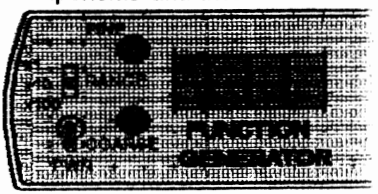
This handbook comprises 100 pages of gems [a 'goldmine of gems' ?!] from the G-QRP Club's SPRAT.
If you are looking to obtain this book and still keep some dollars for the next 'Buy and Sell' event, then this is a good opportunity.

CLIPSAL KEY FINGER RESTS

For model 610A straight keys. These keys and spare parts are no longer manufactured. The disks can break if you drop the key or drop something on it. Only five have been obtained, so if you need one or want a spare - *Get It Now !* Price is **$2.10 each.**

***DIGITAL FREQUENCY METER ADAPTOR* FOR YOUR EA FUNCTION GENERATOR**

This kit goes inside the case of your existing [EA April 1982] function generator to give it the ability to measure frequencies to 300kHz and beyond. There is a bonus: it greatly improves the linearity of the coarse frequency control. A small PCB, components and instructions [from EA] are supplied.
Price is **$9.50.**



Continued on p.32

QRP TUNER-METER

By Barry Samuel VK5BLS #209

Introduction

This complete antenna tuner utilises the club's low power SWR meter and dummy load kit designed by **Drew Diamond VK3XU #49** and the matching circuit from a QRP mini tuner which was designed by **Hans-Jo Brandt DJ1ZB** [See References 1 and 2].

It's combined features include:

1. A sensitive SWR meter.
2. 5 Watt dummy load.
3. Ability to feed straight through the SWR section only, if the tuner is not required.
4. Low powers of about 1 Watt will give full scale deflection of the meter.
5. Random wire antenna feed available.
6. Ability to handle about 5 watts of power output.
7. The antenna is always at D.C. ground potential.
8. Operating range from 3.5 to 30 MHz.

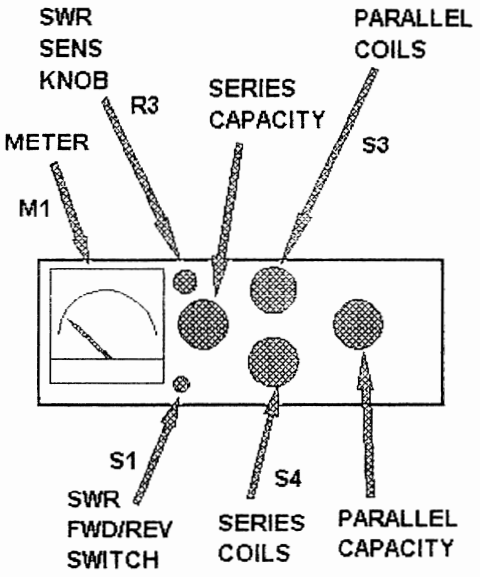
In the following paragraphs, I will endeavour to explain the theory, construction details, parts placement and use, so that a beginner with a bit of help could construct one.

The unit works well if good earths and/or counterpoise wires are used! It matched my G5RV, 10/15 metre dipole and random wire antennas. It would make a great companion to the Club Communicator! I use it with my small transceiver to set up a portable, home brew station of which I am very proud.

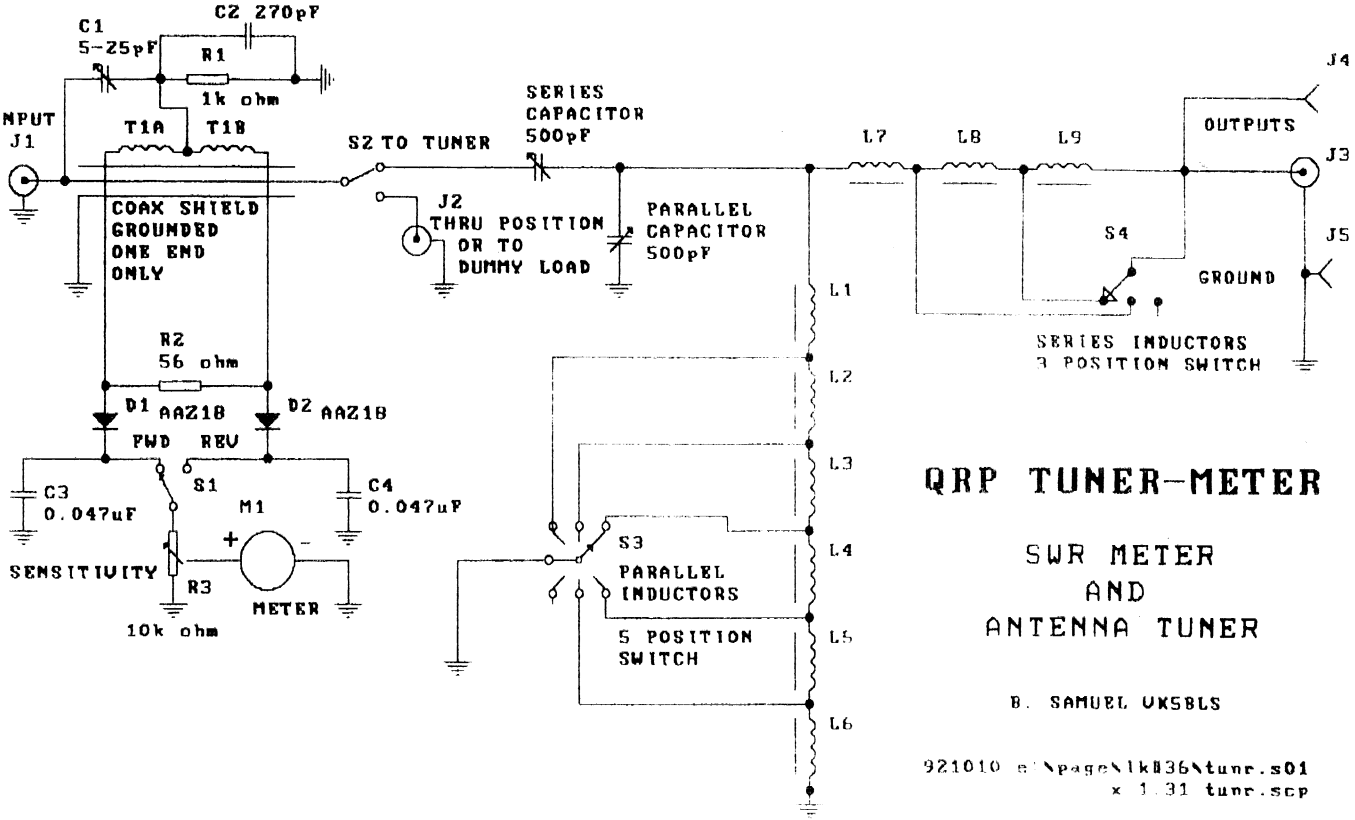
Theory of the sensitive SWR meter

(From Reference 1.)

"The signal travelling from In (Tx) to Out (Ant.) establishes an electric field between the inner and outer conductors, and a magnetic field around the conductors. The coax line forms the primary of transformer T1, and so the alternating magnetic field induces a voltage in the centre-tapped secondary winding, which is loaded by R2. C1 samples the electric field, and is so adjusted that when the load on the outside is 50 ohms resistive, the voltage injected into the tap of T1 aids the voltage in one half, and exactly cancels the voltage in the other half. Now, any



FRONT VIEW


C1
5-25pF
C2 270pF
R1
1k ohm
INPUT
J1
T1A
T1B
COAX SHIELD
GROUNDED
ONE END
ONLY
S2 TO TUNER
J2
THRU POSITION
OR TO
DUMMY LOAD
SERIES
CAPACITOR
500pF
PARALLEL
CAPACITOR
500pF
L7
L8
L9
J4
OUTPUTS
J3
J5
S4
GROUND
SERIES INDUCTORS
3 POSITION SWITCH
L1
L2
L3
L4
L5
L6
R2
56 ohm
D1 AAZ18
D2 AAZ18
FWD
REV
S1
C3
0.047uF
C4
0.047uF
M1
SENSITIVITY
R3
10k ohm
METER
S3
PARALLEL
INDUCTORS
5 POSITION
SWITCH
QRP TUNER-METER
SWR METER
AND
ANTENNA TUNER
B. SAMUEL VK5BLS
921010 e:\page\lk836\tunr.s01
x 1.31 tunr.scp

load which departs from 50 ohms resistive will cause less cancellation on the voltage in the other half, and so an indication may be given as to the degree of mismatch."

Theory of the "QRP mini A.T.U."

(From Reference 2.)

" - In this circuit three (minimum number) series coils in the output lead have been added. With high impedance loads they are short circuited, and the smaller coil has no noticeable effect in this case even on 10 meters. But if low impedance loads are present, the series coil is causing a pretransformation. In the range of 3.5 to 30 MHz, few inductance steps are necessary to achieve this: The low impedance appears to the rest of the circuit like a high impedance in parallel with an inductance, and thus can be matched like normal long wire aerials.

The pretransformation effect could also be achieved by series capacitors, but coils were preferred to maintain an advantage of the old 1977 circuit: The aerial is always at d.c. ground potential, an important feature in areas of high static electricity.

To maintain high Q on all inductivity steps, separate toroids are used. It has been observed that using a single toroid with taps would have been a questionable solution. If the taps are used and the coil end left open, the coil Q will be reduced roughly in proportion to the active circumference of the toroid, with the danger of a self resonance in the unused portion of the coil. On the other hand, if the taps are short circuited to the coil end, the self resonance will appear at a much higher frequency. But as soon as a certain portion of the toroid is short circuited, the coil Q will decrease to a value of 40 or so and remain there almost independently of what tap is used. This would mean a very lossy matching circuit, and therefore separate toroids were preferred. When matching within a 50 ohms line, from 2 watts fed into the ATU 1.7 watts will appear at the output."

In my unit, power losses were roughly the same, but on 21.030 MHz they were up to 0.8 Watts for the 2 Watts input I used. I am not sure if this is normal. My non-standard layout or test procedure may be responsible and I would love to see others who build similar units, improve upon that. I include some of my test figures in the table 'Some Typical Power Losses' below.

SOME TYPICAL POWER LOSSES.

Frequency MHz.	Power in	Power out via SWR meter only.	Power out via SWR and ATU combined.
3.600	2 W	1.6 W	1.5 W
7.030	2 W	2 W	1.75 W
14.030	2 W	1.75 W	1.6 W
21.030	2 W	1.8 W	1.2 W *
28.100	2 W	1.9 W	1.6 W

* Worst case.

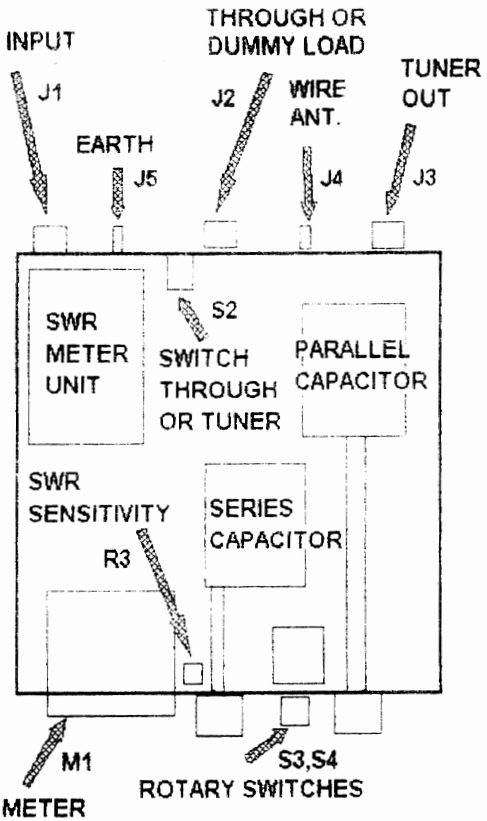
Test Method

The test method used was:

1. To adjust a TS520 transmitter down to 2 Watts output as indicated by an AT200 A.T.U. with 50 ohm dummy load.
2. Then, to insert the mini ATU unit into the coax line between the TX and ATU.
3. Then I matched the mini ATU to the 50 ohm dummy load and noted power indicated by the AT200 for the two cases as shown in the table above.

Diagrams

The diagrams are intended to show the placement I used. This may aid the constructor. The circuit diagram will indicate how the items are wired up. I tried to space the power transmitting wires as far apart as possible and clear from metal objects like the case and capacitors.



Construction

This is quite easy and I handled it in two parts.

The first was the construction of the SWR meter sub-section and dummy load. This is well covered with a small constructor's manual in the kit and of course the original article (Ref. 1.) so I won't cover it here. The coils are then wound on the toroids and are mounted directly on the backs of the rotary switches. This makes for a very compact layout. I was not sure about wire size for these windings, so just used as large a diameter as possible to make one layer on the toroid with the greatest number of turns.

The second part is the construction of the total unit. I placed all the components in the box to see if all would fit in and then screwed them all down and wired the components together. The series capacitor was mounted on a wooden block to insulate it from ground. You can see from the diagrams how the parts fitted in for me. I used some air spaced variable capacitors in the tuner, which were found in my junk box, but the original design used much smaller solid dielectric types such as are used in small transistor radios. I used wooden dowels to act as drive shafts for the capacitors to avoid problems with "hand capacitance" when tuning up. For flexible couplings on the drive shafts, I used flexible neoprene petrol hose of 6 mm internal diameter. (No glue or clamps were needed.) It all fits into a Dick Smith metal cabinet (185 X 70 X 160mm)

DSE catalogue number H-2744 - and is not too much of a squeeze. The original A.T.U. by DJ1ZB used a box 106 x 72 x 28 mm! The meter is a Dick Smith supplied item catalogue number Q-2020.

The 'economical' 1 to 12 position adjustable rotary switches I used were of limited use, as they almost immediately broke off their internal "limit stops". So don't economise on these, as removing them to replace them and resolder all the coils is a bit of a nuisance!

Coil winding details

These are as follows:

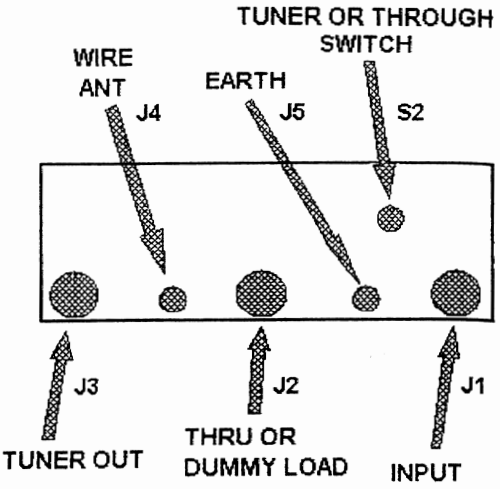
T1 Secondary 15 turns 20 B&S on Neosid 4327/2/F25 core. Primary 4 cm of RG58C/U with the outer grounded one end to form a Faraday shield. (Secondary centre tapped)

L1 11 turns on Amidon T-50-6 toroid
L2 10 turns on Amidon T-50-6 toroid
L3 13 turns on Amidon T-50-6 toroid
L4 17 turns on Amidon T-50-6 toroid
L5 20 turns on Amidon T-50-2 toroid
L6 26 turns on Amidon T-50-2 toroid
L7 9 turns on Amidon T-50-6 toroid
L8 13 turns on Amidon T-50-6 toroid
L9 28 turns on Amidon T-50-2 toroid

(Wire size: I used as large as could fit on to the toroids. See the text.)

Setting up the SWR section

This is covered in the manual you get with the SWR kit. It consists mainly of setting switch S2 to "thru or dummy load" position. Connect up the 50 ohm dummy load to output J2. Key the transmitter. Switch S1 to "FWD" position and adjust R3 to get maximum meter reading. Then switch S1 to "REV" position and adjust C1 to get zero reading on the meter. This is to get the SWR meter to read zero when a 50 ohm load is present.



REAR VIEW

Using the A.T.U.

Here you must devote some hours of experimenting and recording of successful settings. Use your antennas and pick your own favourite operating frequencies. Do this at times when no interference will be caused to others, as you will be quite some time doing it.

Set up the SWR meter and switch it to "REV" setting with switch S2 to "tuner" position. Then briefly key the transmitter while setting the series and parallel inductance switches to all possible combinations. For each case adjust the series and parallel capacitors to all their possible combinations of settings while looking for a "dip" in the SWR reading. It sounds hard, but after a while one becomes quite good at it. When a "dip" is noted, be very careful as a match is near! Carefully adjust the capacitors until a zero SWR is achieved. Then record the settings, or else you will have to do it all over again every

time you use your QRP rig!

An R.F. impedance bridge would be a much better way to find settings for each band, as QRM would be avoided.

Here is a sample of my settings for a quarter wave length wire with the another same length wire laid on the ground as a "counterpoise" or "earth".

EXAMPLE A.T.U. SETTING FOR 80 METER BAND

FREQUENCY	SERIES CAPACITOR	PARALLEL INDUCTORS	SERIES INDUCTORS	PARALLEL CAPACITOR
3.515 MHz	10 o'clock	4/6 in use	1/3 in use	4 o'clock

Need help?

I am in the process of moving house and at the moment living in temporary accommodation. But I regularly check in to the club's SSB net on Friday nights, and so I could be contacted then. I would be most happy to help with any advice. Also a lot of much more experienced "home brewers", experimenters and designers may be on the net as well. If they can't help you, no one can!

In conclusion

This is a fairly easy project to make. The parts are all easily available to club members. It works well at matching various antennas to low power transmitters. It could be made in a much more compact form, but then would be much harder to construct, service or modify. Power losses are of some concern around 21.100 Mhz. But I still regard it as a quite successful unit.

Parts list

Kit K006 Sensitive SWR meter.
(Available from the CW OPS QRP Club)
Metal cabinet
Dick Smith cat. no. H-2744
50 Microamperes meter
Dick Smith cat. no. Q-2020
3 x U.H.F. Connectors.
(PL 259, BNC, RCA etc.)
2 x Binding posts or screw type terminals (use different colours).
1 x SPST switch.
1 x Rotary switch 5 position.
1 x Rotary switch 3 position.
2 x 500pF variable capacitors.
Various Knobs to suit your taste.
3 x Amidon T-50-2 (red) toroids.
(Available from QRP Club)
6 x Amidon T-50-6 (yellow) toroids.
(Available from QRP Club)
Wood, plastic or perspex to insulate one of the variable capacitors.
Nuts, bolts, P.K. screws, wire etc.
Labels for the controls and connectors.

All parts were either bought from the Club's QRP Kit-Set Centre or Dick Smith Electronics.

References:

1. "A sensitive SWR meter." By VK3XU from AMATEUR RADIO April 1983. [Ed. - Also Lo-Key #19]

2. "Mini QRP A.T.U." By DJ1ZB from SPRAT 1988-89 Number 57.

cqqc

ANYONE FOR THE 1000 MILES - PER WATT AWARD?

A.S. CHESTER G3CCB

Everyone knows this award with its well-intentioned aim to provide a simple measure of radio performance against minimal power. What is not immediately obvious is that the operator cannot stray very far from the 1 watt level without introducing a rapidly increasing error In one direction or the other. In fact, an increase in power over 1 watt will quickly reduce the chance of award achievement, while a decrease in power will just as quickly enhance it!

The reason for this apparently odd state of affairs is simply that the power required for radio propagation is NOT proportional to distance as the award title implies but to the SQUARE of the distance (all other thing being equal) The bit in brackets is a necessary condition which admittedly is only perfectly met in free space but the square law cannot be thrown out altogether merely to account for a few complications at ground level.

If the miles per watt idea was ever meant to be taken seriously, and I have no reason to believe otherwise, it can be saved from extinction by observing that the distance worked must be divided by the square root of the power used to obtain a measure of performance which can only be expressed in terms of miles per ROOT watt. Thus 300 miles with 3 watts will produce a modest 173 MPRW with 0.1 watt while 1000 miles with 0.1 watt will result in an award-winning 3,200 MPRW.

The manipulation of the square root by pocket calculator should not present much difficulty but there are often advantages to be gained in using an abac or nomograph from which relationships can be seen at a glance and limits quickly established. A chart specifically designed for the QRP operator is given.

Editor's Note:

Leith Cotton VK5LG #154 told me about this article while I was preparing the item on his **1000-Mile-per-Watt Award** [Lo-Key #35 p.2 & cover]. Leith's award was for the achievement of 37,033 miles/watt [59,600 km/watt]. The **QRP ARCI Awards Chairman Bob Gaye K2LGJ** [25 Hampton Parkway, Buffalo, NY 14217-1217 U.S.A.] in The QRP Quarterly for April 1992 p.39 said:-

"This award is issued to any Amateur transmitting from or receiving the transmission of a QRP station such that the Great Circle Bearing distance between the two stations, divided by the QRP station's power output, equals or exceeds 1000 Miles-per-Watt."

In the article above, reprinted from SPRAT #57 [Thanks go to G-QRP Club], G3CCB took the view that the inverse square law part of propagation theory should be used to calculate the "miles per root watt". Otherwise, the lower power stations would have an advantage over those with higher outputs.

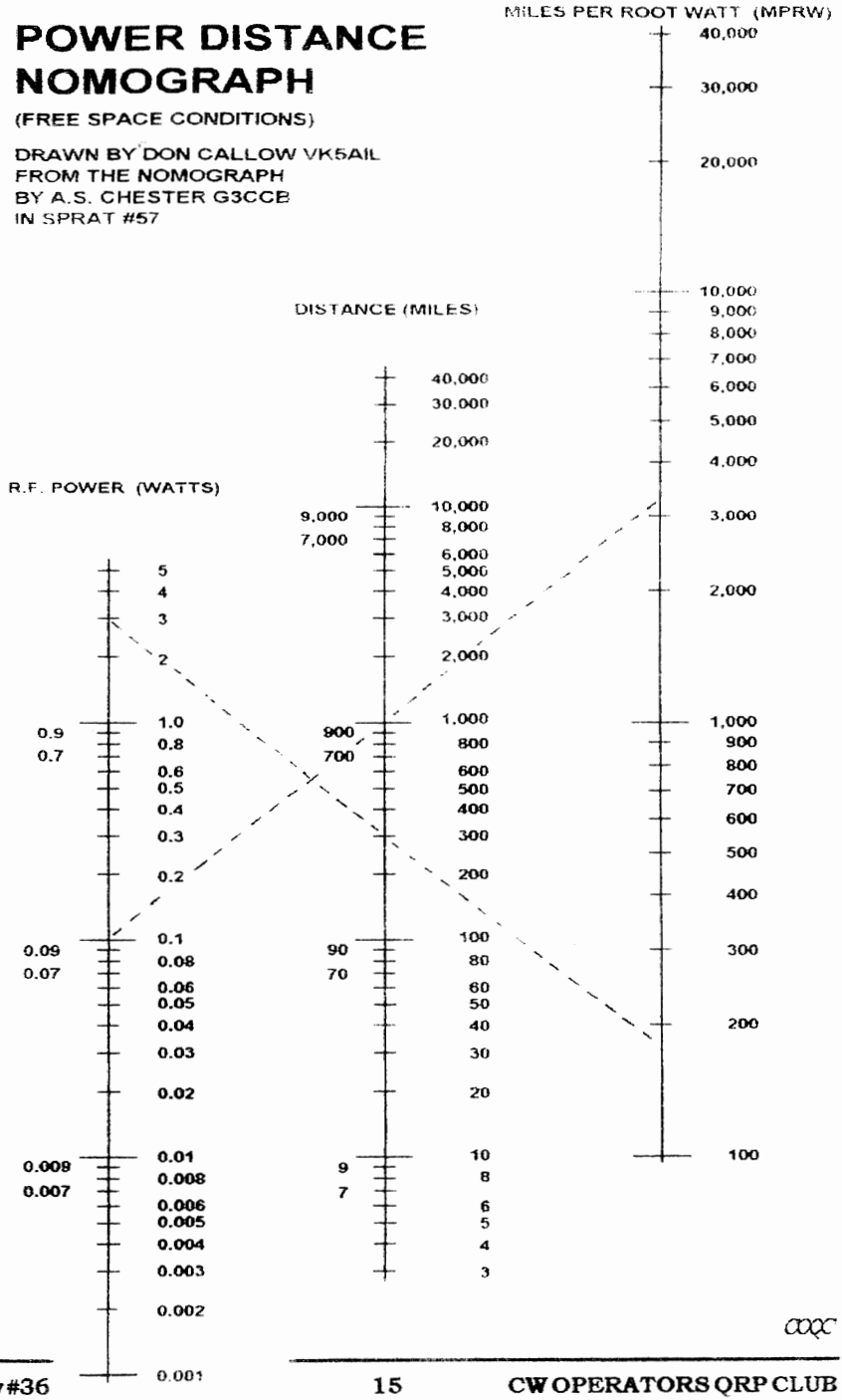
G3CCB makes some valid points and he describes a legitimate approach, however there are many other factors which determine the likelihood of successfully receiving signals from different power transmitters over different distances. In the end, its the QRP ARCI calculation that counts for ***this*** award - and at least it's simple !

Elsewhere in this issue is a computer program useful for calculating QTH-to-QTH distances. QRP ARCI's was in QRP Quarterly Jan.'90 [which I missed, unfortunately].

POWER DISTANCE NOMOGRAPH

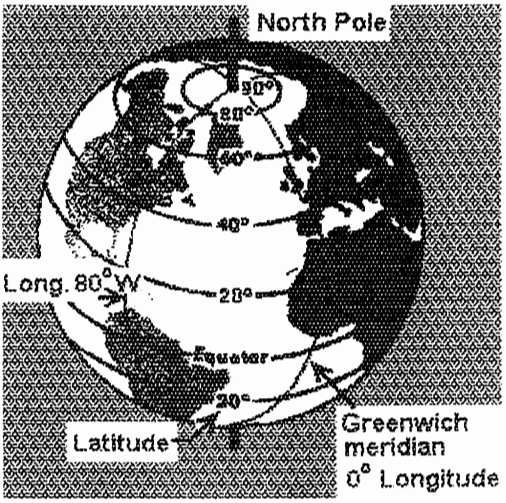
(FREE SPACE CONDITIONS)

DRAWN BY DON CALLOW VK5AIL
FROM THE NOMOGRAPH
BY A.S. CHESTER G3CCB
IN SPRAT #57



HOW FAR AWAY WAS THAT STATION ?

By Don VK5AIL #75



Most of us would like to know the answer to this question, especially after working some DX, but many give it up [too hard], except for making a rough guess from an atlas. If you have access to a computer it's easy to find out distances with adequate precision. At least it is if you have a program.

The program opposite was written to run on an IBM-compatible PC using QBASIC, which comes with the Microsoft MS-DOS 5 operating system. It should run without amendment on QUICK BASIC and also on the earlier versions such as GW-BASIC and BASICA. The old versions need ALL lines numbered, not just those 'names' required for program flow control.

This program is based on one published in Amateur Radio magazine in February 1986: "Beam Headings and Great Circle Distances" by Tony Belts VK6ZBU. Tony's inspiration was a similar article in AR in September 1985: "Calculate Beam Headings and Great Circle Distances" by Fred Robertson-Mudie VK1MM. The only change I made, before I ***really*** started fiddling, was to alter the arctangent function from Tony's ATAN to ATN.

To keep the program short I have not bothered about a printer output, because you are usually want only one or two figures; nor are there comment/ remarks lines in the program listing. In the listing there are numbers such as ❾ which indicate how many spaces you should type in for a neat looking screen output. Don't forget you can type in a question mark "?", which BASIC will miraculously turn into a "PRINT", thus saving a minute or so towards the hours you need to get your programs working correctly. This one will work first time, of course ! In truth, it has had only limited testing, and would be two pages long if it were made [more] bullet-proof.

One of the advantages of writing your own version is that the program defaults to your own QTH city, latitude and longitude. You will need to get out the atlas and replace mine with your own, in line 200, unless you live in the south-western suburbs of Adelaide. I have used a different [easier, I hope] format for location than the other programs. For example, latitude 25 degrees 45 minutes South is entered as 25.75S or 25.8S or even 26S, rather than the usual -25.8 degrees. The subroutine lines 600-700 does the conversion, not you, which is as it should be. Don't forget to include the letter.

Good luck - thank goodness we don't have to figure out the maths !

```
100 CLS : KK = 111.12: DR = 57.296: NN = 60: SS = 69.06
200 HTH$ = "Adelaide": HAT$ = "34.99S": HON$ = "138.54E"
ZZ$ = HAT$: GOSUB 600: HAT = ZZ: HAT = HAT / DR
ZZ$ = HON$: GOSUB 600: HON = ZZ
GC$ = "GREAT CIRCLE DISTANCE & BEARING": PRINT GC$
PRINT "FROM ❺ Home QTH ", HTH$: PRINT "    ❾    Latitude ", HAT$; " degrees"
PRINT "    ❾    Longitude ", HON$; " degrees"
PRINT : PRINT "Enter QTH values in degrees and decimals"
PRINT "with S or N after latitude & E or W after longitude e.g. 168.2E"
PRINT : INPUT "TO  ❼  Remote QTH name ❷"; QTH$
INPUT "    ❾    Latitude    ❾    "; LAT$
ZZ$ = LAT$: GOSUB 600: LAT = ZZ: LAT = LAT / DR
INPUT "    ❾    Longitude    ❽    "; LON$
ZZ$ = LON$: GOSUB 600: LON = ZZ
LDF = (HON - LON) / DR
EE = SIN(HAT) * SIN(LAT) + COS(HAT) * COS(LAT) * COS(LDF)
DD = -ATN(EE / SQR(ABS(1 - EE * EE))) + 1.57079
CC = (SIN(LAT) - SIN(HAT) * EE) / (COS(HAT) * SIN(DD))
IF CC >= 1 THEN CC = 0: GOTO 300 ELSE IF CC <= -1 THEN CC = 180 / DR: GOTO 300
CC = -ATN(CC / SQR(ABS(1 - CC * CC))) + 1.57079
300 C = INT(CC * DR)
IF SIN(LDF) < 0 THEN C = 360 - C
R = 180 + C
IF R >= 360 THEN R = R - 360
PRINT : PRINT : PRINT GC$
PRINT "TO "; QTH$; "    ❾    FROM "; HTH$
PRINT : PRINT "DISTANCE =", INT(KK * DD * DR); " km"
PRINT , INT(SS * DD * DR); " miles"
PRINT , INT(NN * DD * DR); " nautical miles"
PRINT : PRINT "BEARING ❷=", C; " degrees", "[Short Path]"
PRINT , R; " degrees", "[Long Path]"
400   PRINT : INPUT "Any more to do [Y or N] "; K$
IF K$ = "Y" OR K$ = "y" THEN 100
500 CLS : END
600 YY = 1
IF RIGHT$(ZZ$, 1) = "E" OR RIGHT$(ZZ$, 1) = "e" THEN YY = -1
IF RIGHT$(ZZ$, 1) = "S" OR RIGHT$(ZZ$, 1) = "s" THEN YY = -1
ZZ = YY * VAL(LEFT$(ZZ$, LEN(ZZ$) - 1))
700 RETURN
```

This program is now available on diskette along with the Club Lists [C097 on the Club Sales Price List]. See 'QRP Kit-Set Centre' item elsewhere in this Lo-Key.

cxqc

*[This item - an interesting mix of information, comment, opinion and humour - is from the journal of the First Class CW Operators' Club. Many thanks to the editor of FOCUS, **Chris Page G4BUE**.]*

HOW TO DO IT ON THE AIR

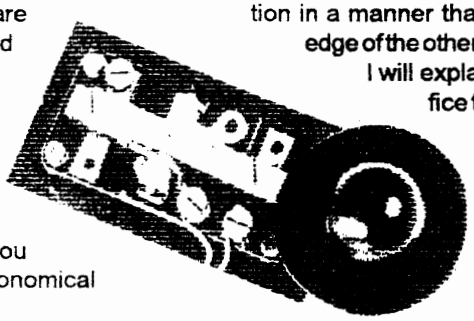
by Mort Mortimer G3JZV

[Written for the students attending Mort's last morse class - G4BUE.]

Here is advice to those about to go on the air for the first time. In fact, it wouldn't hurt some old timers to read it; but, would they take any notice?

Up to now you have been concerned only with sending and receiving letters in plain language sentences or five figure blocks of numerals as mutually exclusive exercises. You will recall that if you got sent a numerical test without warning, it took the best part of some time to cotton on to the fact that here were numbers, not letters.

Now for the bad news (by the way, it's all bad news from now on). Actual on-the-air operating always involves mixtures of letters and numerals. We can do it in writing: B4 = before; 2U = to you - and think it is very amusing. When it comes to us in code, it seems a cruel joke, but eventually you will realise it is just economy of time - yours, as well as his. This is most important, and cannot be overstressed. If you are talking to an idiot (and it will happen, I assure you), then to save time, you spell things out. Talking to someone who is approaching your own mental stature, you will use brief and economical constructions.



First, you must learn to mix letters and numerals. When your licence hits the doormat you will find to your horror it contains both; that is in your CALL SIGN! Unless you have influence you are stuck with that until you emigrate. Also, when working from another address or location, you are enjoined to add "/P" although the morse test doesn't require that you know the code for "/". You know it makes sense, as the Government used to say in their advertisements for something else utterly indefensible that they hadn't bothered to work out silly excuses for.

So, we begin on an essay outlining the exchanges you will make in conversation on the air, or "QSO" as it is often called. It is hard to avoid digression. These three letter things beginning with Q are called (try to suppress your incredulity) "Q-codes". They were invented before you were born. They were meant to be easy ways of expressing requests, instructions and declarations to do with radio operation in a manner that required no knowledge of the other operator's language. I will explain later, but let it suffice to say forget anything you "know" from cretins' band work. They are wrong. So are most of the amateurs you will hear on the air and tend to copy. If you

had no better knowledge and copied Portsmouth speakers you would say "I does" but we want to do better than that, surely? "PSE K"? - not on your Nellie.

As with all human intercourse, someone takes the lead. Let us suppose it is the operator who cannot contain himself any longer. He wants to have a chat. He is too idle to tune around and find someone, so he puts out a general invitation. This is the rock-bottom basic amateur radio activity. It is called "calling CQ". It is done by calling CQ, thus: "CQ CQ CQ de ZA1JZV ZA1JZV +"

Don't say you can't remember the morse for "+". The number of times CQ and the call sign is sent is not prescribed by law in letters of stone. It is determined by the common sense (ah!) of the sender. Just think; do you want to sit listening for an hour and a half while an idiot says "CQ CQ CQ CQ CQ..." and his call a hundred times?

You know the morse for "+", it's been sent hundreds of times during lessons. It is sometimes written as AR because it would be A and R run together, just as it could be EC. Never mind, it means "end of message". After that, anything is "operating procedure" as opposed to actual meaningful text. If you're not yet in contact with somebody it is pointless (= stupid) to say "K" which means "OVER".

On a really dead, quiet band it may possibly make sense to repeat the CQ call several (no more than three) times before terminating with the + or AR. Otherwise, you listen and try again. If you are working at 60 words a minute, a second is enough. But, the golden rule of all successful satisfying work on the air is LISTEN.

Right, then; you have put out a CQ. God help me, what is this? A reply?

Let us assume it is from someone literate, and skilled. Firstly, he will recognise that you are a beginner. He will recognise that there is no shame in that. He is replying because your signal is very strong, and he is afraid you might live close by! His call will be:- your call sign once or twice; he knows you are a beginner and realises you may need two goes...DE his call sign. If this were all in colour, I could make it clearer, but otherwise I'd have to put in so many quotation marks it would get very messy. The DE is vital. Idiots leave it out. The casual listener tuning by doesn't know what's happening, and may well start calling one or other of you. DE means "this is" or "here is", so his call first, yours second. Never "Jim calling Fred", but always "Fred, this is Jim".

If you can read his call, you will reply more or less in this fashion. I show a stereotype form, which you can adjust with experience. In English, you would say something like:- "his call DE your call", pause for breath, "Thanks for the reply. You are horribly strong (thinks...hope he doesn't live near me). I am at Fredsville and I'm called Ermintrude. Are you getting this, or have you given up/fallen asleep or what?" This is the end of my message. Here is the housekeeping bit:- "his call DE your call over to you".

In perfect, strict code this comes out as (assuming call signs Him and You):- "HIM DE YOU = TU UR 599 IN FREDSVILLE (if you sent it well, once is enough) & NAME IS ERMINTRUDE = HW? + HIM DE YOU K"

You may think it is curt, abrupt and rude. But, consider the one commodity we all lack. Time. It is his time you waste, as well as your own, so make it neat. Repetition is all very well in its place. Learn to say enough, but no more. Think how incredibly boring it is to listen to plebeians repeating, reiterating...

He will reply with the like, with perhaps a stimulating comment to invite fur-

(How to do It on the Air ..Cont.)

ther discussion or to suppress it. "XYL QRM" is a favourite standby, as is "DOR" meaning the doorbell is (or, I say it is) ringing. It may develop from here, or you may have had a funny turn by now and given up. I keep writing "&" when I remember to. The morse for it is dit short space di-di-dit, and is code for the sign "&", NOT no, never, not "ES". Likewise, the laugh or exclamation mark is di-di-di-di-space-di-short space-dit. It is "Ho" in original morse NOT no, never, "HI". Very few people know this, in the words of some actor or another. Don't keep it to yourself, tell the world. They won't listen.

Let us go over it again. I assume both operators are good, and each knows the other can hear from long experience of conditions, time etc. but have little to tell each other except to be polite, without being effusive, and slick without curtness. HE is in italics, YOU are in ordinary print (= is BT run together):-

CQ CQ CQ DE ZA1JZV ZA1JZV +

ZA1JZV DE G0XYZ G0XYZ K

G0XZY DE ZA1JZV = TU & GM = UR 589 IN CRUDVILLE CRUDVILLE & NAME IS MAJOR MAJOR = HW? + G0XZY DE ZA1JZV K

ZA1JZV DE G0XYZ = PSE MY CALL IS G0XYZ G0XYZ = TU MAJOR - RIG HR IS IC735 & ANT DIPOLE = QRU NW SO 73 & GUD DX + ZA1JZV DE G0XYZ K

R G0XYZ DE ZA1JZV = R = OK UR CALL BUT PSE AGN UR NAME & QTH = RIG TS940 & 4EL YAGI AT 55M = HW NW? + G0XYZ DE ZA1JZV K

...and so it goes on. He misread your call (it couldn't have been your sending) and you corrected it without undue emphasis. He replied in an unmistakable manner to show he'd got it and greatly hinted that you forgot to say who and where you were. It's not all that hard, really, just very economical of effort. At the time of sending it's economical, but bewildering to learn.

There are just a few actual rules, which are:-

1. NEVER send "and", always use "&", which is dit di-di-dit.

2. NEVER omit "DE" between his call and yours. Never mind that lazy old men do it, or youths think it's clever.

3. NEVER say "+K" (AR K). Only Noah does that, when his spacing goes to pot, giving his address. Don't say "PSE K" either. Leave that to foreigners.

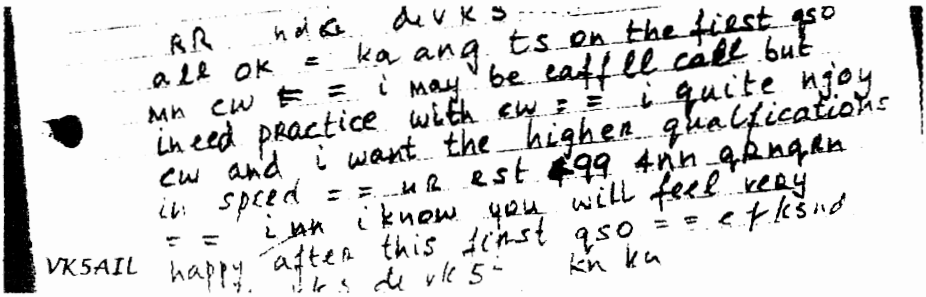
4. NEVER begin with silly throat clearings like "dah-di-dah-di-dah" or "di-di-di-dah-dit". Just begin.

6. NEVER say "BK" if you mean "K", or "5NN" if you mean "449".

6. NEVER say "KN", it's wasted on the idiot and an insult to the wise.

7. NEVER say "it's been my pleasure", some of us have hypertension.

There are probably other things, too, but if you can remember those you'll be doing better than many FOC members!



Next, one hopes, a fairly complete list of abbreviations and economical misspellings. It is important to use these, because a lot of dx may well know and use these forms even when speaking to their own countryman. Likewise, they may well be unaware of the full-blown English.

Many foreigners say "PSE" and "TNX" to each other, partly from habit and partly because it saves switching the brain. They may not know the full English version. Remember economy. "PSE" is quicker, not only than "tuska dara" or "spasibo" but also quicker than "please" - even if you are a dedicated European there is nothing chauvinistic in this.

In the following list, I have not bothered with ordinary abbreviations such as GMT, dB, UK or USA! There are limits!

ABT = about.
ADR for address; double letters may often be sent single to save effort if there is no ambiguity.
ANT(enna).
AS run together means "wait". It saves needless long-winded QRM.
AT for antenna height (dipole AT 200 metres. See UP.)
BC = broadcast.
BCNU = be seeing you.
BD (rare) = bad.
BK = "break in" - I can hear when my key is up or QSK. This is misused by idiots as if it were quicker than "K". Avoid this.
BN = between. Now rare.
BT run together is the equals sign "=" used as a separator between ideas in a QSO. If you need punctuation, you are writing Victorian prose.
C = yes. Either short for confirm, or a pun on "si".
CB Gentlemen don't say that!
CCT = circuit, as in diagram.
CK = check.
CONDX = conditions, like propagation conditions.
CPI = CPY = copy (what I think I under stand you to mean).
CQ = who will talk to me, this call is from me (DE).
CU or SU = see you (yes honestly!).
CUD = could.
CUL = see you later.
CW = The mode!
D sometimes = th, as in DIS and WID.
DA = day, with considerable saving...
DE between call sign being called and caller's call sign.
DK = German for TNX (DanKe).
DN = down. Sometimes, in highly specific circumstances, just D as in D2 for "down 2kHz".
DR = dear.
DX There is none. Condx are bad.
ES it isn't, it's "&".
EUrope(an).
FB is very odd, and is said to stand for fine "business" and is used as an adjective, as in FB WX.
FD = folded dipole.
FER is the usual on-air spelling for "for".
FONE is used to spell "phone" either as a speech transmission or the landline.
GA = both go ahead and good afternoon.
GB = goodbye.
GD = good day.
GE = good evening.
GL = good luck.
GM = good morning.
GN = good night.
HI is misspelt HO in American morse. It is a laugh or exclamation mark! It can mean High or Hiya!
HR = here. Try not to say "QTH HR" because it's tautological repetitious redundancy, and stupid.
HW means how and is used at the end to combine all such guff as "How did u get all this".

(How to do It on the Air...Cont.)

IN valuable simplifier as in "UR 579 IN GLOBEVILLE"

IP = input power (to transmitter. Getting rarer now everyone can "measure" their output).

K = "over to you".

L = LO = low.

MI =my.

N = no in short exchanges, where there is no ambiguity expected.

NC = ND = no contact, nothing doing.

NR = number (repeat request in contests).

NW = now.

OB, OC, OG, OM, OP, OT etc = old boy, chap, girl, man, pederast, timer etc.

OK is worth mentioning because one sometimes hears "dit-dit dahdidah" where the dit-dit is the American Morse "O" as mentioned above.

PD is badly sent "and" from people who don't understand the morse for "&".

PSE = please.

Q = is a matter for further on.

R is the original telegraph form of "received" and was put into WW2 phonetics as "Roger" and never did become "Romeo".

RMX = remarks.

RPT = repeat.

RPRT = report, it's quicker than saying RST which means readability-strength-tone, always 5NN for contests or DX.

RX = receive(r).

SA (y).

SK run together = last signal to come from my key.

SU = CU = see you.

TKS = TNX = thanks.

TTY = teletype, sometimes RTTY.

TT = that.

TU = thank you.

TX = transmitter.

U = you.

UFB perhaps = ultra FB, and may be German. We don't say it.

UR = your and you're.

WK = work.

WKG = working.

WD = word or would.

WID = with.

WL = well or will according to context.

WUD = would.

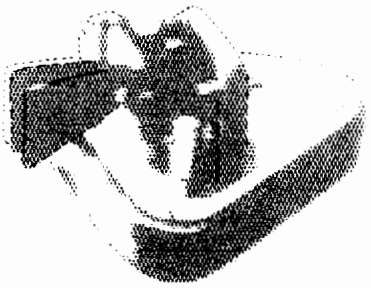
WX = weather.

XCVR and XMTR are given in American books, but we don't say those. We use the old fashioned longer forms RX and Tx.

XYL = ex YL, so hence wife

YDY = yesterday.

YL = young lady, originally in the sense of one's current inamorata. It now means any person not actually male, even if 100. YM has not been used correspondingly to my knowledge, yet.



What a load of rubbish! You have to know it, though, to make sense of what people say on the air. Bear in mind, as I keep saying, foreigners may not know the correctly spelt long-winded English form. A lot of English natives are pretty ignorant, for that matter. Therefore, do not copy what others do until you are sure they are right. This way, you will avoid being likened to idiots who say "+K" and all sorts of solecisms.

Now we come to the Q-codes. These, as stated above, are for getting complicated ideas across in the minimum of time without needing normal human language. There are hundreds of them. They cover

KANGA *US* By Don Callow VK5AIL 5 Joyce St., Glengowrie 5044 SA

Kanga US is a company set up by **Bill Kelsey N8ET** to import into the U.S.A.QRP kits manufactured by Kanga Products in England. You may have seen these featured in the G-QRP Club's journal SPRAT.

Bill has produced a catalogue/price list [$US] with a description of each of the kits and other items available. I can provide a photocopy on request, but please provide a $1 stamp to cover our costs.

Also, you will need to confirm prices [including shipping/handling applicable to Australia] and other relevant details with Bill before ordering.

The address is:-

Kanga US
Bill Kelsey
3521 Spring Lake Drive
Findlay Ohio 45840 U.S.A.

p.s. Bill is member #264 of the CW Ops QRP Club and has a stock of our promtional brochures which he will make available to prospective members at Hamfests etc. in the U.S.A.

air and sea navigation, emergencies both medical and mechanical, traffic (i.e. telegram) handling and all sorts of things. Some are supplemented by numerals. Thus "QOD 1" means "can you communicate in English?" - a very useful one! It is not used by amateurs.

Amateur usage modifies or constricts the full International Telecommunications Union definitions in many cases, although fools insist on referring to ITU regulations when they are rebuked for stupid usages. QSL? means "can you acknowledge receipt" meaning documentary proof, in ITU terms. Amateurs use it to mean a card confirming a QSO. Some fools, however, insist on saying "QSL", particularly in contests, when they mean "R". Don't ever do it, it is stupid.

Most message handling Q-codes are in the QR- to QT- part of the alphabet. The commonest in amateur use are:-

QRA (rare) name or call sign.
QRG frequency (rather than FRQ).
QRH varying QRG, drift or chirp.
QRK readability, 1-5; sometimes, money!
QRL busy, or I am busy.
QRM interference, from other signals.
QRN interference, from atmospherics.
QR0 high power (strictly, "increase power").
QRP low power, etc.
QRQ high speed (strictly, "increase speed").
QRS low speed, diddle diddle.
QRT close down, or die.
QRU no more to say, exhausted..
QRV ready, or able to work ("QRV 28MHz").
QRW please tell him I want to work him.
QRX wait (more urgent, as a doorbell, is AS run together).
QRZ who is calling me? I didn't get the call sign.
QSA (rare, now) strength 1-5.
QSB fading, usually down!
QSD defective keying (technical or manual).
QST USA, call to ARRL members.
QSV send VVVV for me to tune in.
QSX wait until I call you.
QSY change frequency (or band, even).
QSZ (rare) please send words twice. QTC I have something special for you (!) QTH town or location.
QTR correct time, GMT.

AWARDS AND CONTESTS

By Ian Godsll VK3DID #112
25 Monaco St.
PARKDALE Victoria 3194

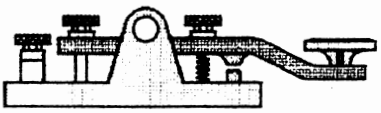
Greetings to All Members!

Sadly, Members evinced very little interest in the recent Scrambles. Admittedly there were comments about very high levels of QRN, so the two logs received may not have been indicative of the number of participants. Results are shown above.

My thanks to **Ron VK4EV #130** who sent along a most interesting suggestion for a **QRP Weekend**. FB Ron and hopefully the Committee will consider this very soon and make some comment in the next issue of Lo-Key.

I hope that all Members have thought about their attitude to any "no-code" licensing. It is certainly my opinion that the code will maintain its place in our ranks simply because of its demonstrated efficiency and place in the history of radio communications. I think that there will always be someone attracted to the ideas of communication other than by voice.

However if we, as members of this CW Club, do feel strongly enough about the code, then our belief is rather pointless if we do nothing about practising and promoting that belief. ***So, let's hear from you all !***



Results of Scramble 21

1st Place Ron VK4EV #130 16 pts
2nd Place Wes VK2WES #162 10 pts

SCRAMBLE 22

There are no placegetters, as **Phil VK3AAM #224** was the only member [*tnx Phil !*] to submit a log, with - unfortunately - no contacts due to QRN.

Summer Scrambles 1993

Scramble 23 - Thurs. 21 January
3.535 - 3.515 MHz 1030 - 1200Z

Scramble 24 - Thurs. 11 February
7.035 - 7.015 MHz 1030 - 1230Z

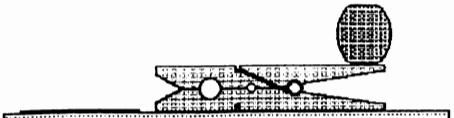
Rules and scoring are shown opposite. Please make a big effort to participate.

Very best wishes for Christmas.

73,

Ian VK3DID #112

p.s. Scramble 21 Winner's Clothespeg Key trophy and certificates for both placegetters will be in the post around the same time as Lo-Key.



SCRAMBLE RULES

TRY A SCRAMBLE, especially if you are not keen on contests - you will be pleasantly surprised. Homebrew or similar equipment is preferred, but you are most welcome to wind down the power output of your black or grey box and join in. Winners receive unique **Clothespeg Key Trophies**, donated by **Steve Mahony VK5AIM #184** and all placegetters receive a handsome **CW Ops QRP Club Achievement Certificate.**

AIM: To score maximum points by working as many CW stations as possible.

DURATION/TIME: As specified - usually 1-1/2 or 2 hours.

MODE: CW only. Club members to use QRP (5W max. output to antenna).

CALL: No control station to check into - just tune up, start calling, and enjoy yourself. The call to use is **CQ QRP TEST** and Club Members should of course use the /QRP suffix. There is no need to exchange serial numbers.

SCORING:

QRO VK ...1 point QRO DX ...5 points
QRP VK ...5 points QRP DX ...15 points

ENTRIES: Send log extracts to me without delay please. Just show time of contact (UTC), callsign of station you had QSO with and /QRP if he/she was a QRP station, name of operator (if you know it), signal reports given and received, and points claimed.

RESULTS: Results usually appear in the next Lo-Key after the event.

cuqc

CW NET NEWS

By Ted Daniels VK2CWH #89

Wombat Hole
Bylong Rd, Rylstone NSW 2849

QRP CW Net Report for quarter to late November 1992 -

The first month of this period was a write-off, as I was unable to take the net due to a prolonged dose of flu.

October was good, with an average of about four starters per night. Most were from the 'old faithful' group of QRP CW Net operators. The only new stations were two ZL QRPers. Neither was a Club member, but conditions were not good enough to try any recruiting.

Matt, ZL1ATW #34 has made up two xtal locked transmitters with about 120mW output, and was hoping to give the one on 80mx [3.533MHz] a try out on the net, but conditions have so far not been good enough.

Since Daylight Saving started, the score is QRN 2, QRP 1 !

I remember, now, why I changed to 40mx last daylight saving period !

72's Ted.

p.s. No volunteers for CW Net Controller yet, so I will carry on for the time being.

cuqc

VK5 QRP Group Picnic Report

By Steve Mahony VK5AIM

Thanks to **Don VK5AIL's** excellent map and instructions in Lo-Key, all found their way to the site in North Adelaide.

The persons travelling the furthest were **Reg VK3BPG and his wife Peggy**, in their Campervan. Reg explained that this event was an excellent reason for a "shake down" cruise for the new van. That's quite a journey, as it would have been a round trip of more than 1500 km from QTH at Crib Point south of Melbourne.

Our Treasurer/Secretary **Kevin VK5AKZ** was there; Don brought along **Leith VK5LG**, a ***real*** oldtimer. The northern districts were well represented by **Barry VK5BLS, Steve VK5AIM and a visitor Doug VK5ADG**. Doug, who is a keen QRP'er and a long-time member of the **G-QRP Club**, was signed up on the spot! **John VK5JO** represented the eastern suburbs.

We all settled down on folding chairs under the shade of a huge old pine tree in the park. After introductions all round we commenced to discuss QRP matters and it was not long before the various pieces of home brew equipment came out of cardboard boxes and plastic bags etc.

Don VK5AIL had his Regulated Power Supply, along with one or two bags of components from the 'equipment supply department'. Leith VK5LG brought his little QRP Transmitter that won him the 1000 Miles per Watt award. Barry VK5BLS had his 80m QRP Tx along with his QRP ATU [Ed. - as published in this issue of Lo-Key]. Steve VK5AIM showed his Infra Red Morse Key - you break the beam with your finger - along with an all-brass dual paddle. John VK5JO had a couple of examples of his QRP Receivers with the simple X-Tal filters. He explained that they were "Heinz" varieties, based on many designs from various QRP/Amateur Radio magazines.

Reg brought out his "Travelling QRP Station", trusty HW-7 all complete with key, PSU, ATU, etc., and all in a little wooden cabinet for travelling. It was not long before the lids and covers were off and everyone was peering inside

[Continued opposite]

TECHTIVITIES - *Sources of Valves*

Leith VK5LG #154 has sent in a copy of the **Resurrection Radio** VALVE PRICE LIST [April 1992], which covers quite a broad range. A few examples:- 807 $20.00, 6146 $32.00, 12BY7 $14.00, 6AC7 $12.00 & 6GV8 $12.00. If you are 'in the market' for valves you may wish to get the current information. A SSAE to Resurrection Radio at 51 Chapel St., Windsor, Victoria 3181 will be rewarded with a catalogue. Telephone [03] 529 5639. Mail orders are accepted.

Amateur Radio Action Vol.15 No.7 [27 Oct. 1992] contains a **Stewart Electronic Components** Summer 1993 Communications Products catalogue. On page 68 is a list 'Transmitting and Receiving Tubes', with prices. Comparisons can be a trap, as specifications, quality, warranties, freight charges etc. may not be the same, but Stewart's 807 [ceramic base] is $11.00, 6146 not found, 12BY7A $32.40, 6AG7 [not C] $15.90 & 6GV8 $7.80. Stewart's are at 44 Stafford St., Huntingdale [P.O. Box 281 Oakleigh, Victoria 3166]. Telephone [03] 543 3733.

VK5 Picnic [continued]

and having explained the 'goings on' in the box.

My wife,Sue, said "it was like the kids at primary school's 'show & tell' sessions! And only you "QUEER RADIO PEOPLE" as she has christened our group, "would sit in the middle of a field, peering into boxes of junk!"

We were so engrossed in our 'show & tell' that it was 2 o'clock/13:00Hrs before any one thought of lunch. As it was the first day of Daylight Saving in VK5 I'd like to believe that our *tummys* had not caught up with the time!

While some stayed and munched sandwiches and chatted, some who had other commitments for the day left, with cheerio's and "I'll hear you on the Friday night QRP Club Net".

All agreed that it was an excellent get together and another one should be held in the not too distant future.

It was suggested that the next such event could be held at a member's QTH, where home brew gear could be connected up to an antenna system and demonstrated. An evening may even be better when 80m would be a workable band.

Thanks to all who attended,

Steve VK5AIM

[*And* ***thanks to YOU Steve*** *for organising a most successful outing* ..... Club Committee]

CW OPERATORS QRP CLUB
MEMBERSHIP LIST - 1 DECEMBER 1992

#	CALL	NAME		ADDRESS			
96	G3RJV	George	DOBBS	498 Manchester Rd	ROCHDALE LANGS OL11 3HE		ENGLAND
50	G8PG/GW8PG	Gus	TAYLOR	37 Pickerill Rd	GREASBY MERSEYSIDE L49 3ND		ENGLAND
228	K4JOD	Dennis	ABDALLA	9843 S Chelsea Rd	COLUMBIA SC	29223	USA
201	K5VOL	Red	REYNOLDS	835 Surryse Rd	LAKE ZURICH IL	60047	USA
74	K7DAP	Alan	MacALEVY	E660 Pickering Dve	SHELTON WA	98584	USA
197	K9PNG	Jim	JONES	615 N. Benton St	PALATINE IL	60067	USA
264	N8ET	Bill	KELSEY	3521 Springlake Dve	FINDLAY OH	45840	USA
71	NW6F/XE2IM	Bob	JACOBS	APDO 73 MULEGE	BAJA CFA SUR		MEXICO
52	P29IL	Ian	LESLIE	P.O. Box 175 GOROKA			
				EASTERN HIGHLANDS PROVINCE		PAPUA NEW GUINEA	
9	W3TS	Mike	MICHAEL	P.O. Box 593	CHURCH LANE HALIFAX PA	17032-0593	USA
31	W5QJM	Fred	BONAVITA	P.O. Box 2764	SAN ANTONIO TX	78299-2764	USA
67	W6SKQ	Bob	SPIDELL	45020 N. Camolin Ave	LANCASTER CA	93534	USA
18	WA2YMW	Bill	BREARE	P.O. Box 867	HICKSVILLE NY	11802	USA
106	WB0NQM	Richard	LUCAS	412 Cattleman Crs	LAWRENCE KA	66049	USA
101	WB8ZWW	Wayne	WATSON	1204 Broadway	SPRINGFIELD OH	45504-2329	USA
17	WF6U	Hollis	BUTTON	1025 Parr Ave	CAMPBELL CA	95008	USA
188	ZL1ATN	Gilbert	LONG	2/22 Moana Ave	OREWA AUCKLAND		NEW ZEALAND
34	ZL1ATW	Matt	MEENAGH	223 Te Tomo St	Te Awamutu	2400	NEW ZEALAND
208	ZL1AWZ	Tim	LEITCH	38 David St	MORRINSVILLE		NEW ZEALAND
29	ZL1BYY	George	CARTWRIGHT	6 Haycock Ave	MT ROSKILL AUCKLAND		NEW ZEALAND
60	SWL	Trevor	THOMAS	P.O.Box 150	RAVENSTHORPE WA		6346
90	SWL	Ray	ROSE	55 Hunter St	GATTON QLD		4343
177	SWL	Lorenz	ECKARD	15 Angus Crs	KUREELPA QLD		4560
231	SWL	Geoff	OSBORNE	C/O Box 105	MEEKATHARRA WA		6642
236	SWL	Martin	HAZELL	18 Towradgie St	NARRAWEENA NSW		2099
237	SWL	James	WALKER		LOWER MITCHAM SA		5062
238	SWL	Steven	JACKSON	RMB 4820	GOSFORD NSW		2250
248	SWL	Peter	NEUTEBOOM	P.O. Box 534	CANNINGTON WA		6107
250	SWL	Greg	DAVIS	36 Bainbridge Close	CHISHOLM ACT		2905
271	SWL	Arnold	HERKELMAN	136 Camp St	TEMORA NSW		2666
279	SWL	Thuan	THI	25 Livistona Rd	KARAMA NT		0812
163	VK1BL	Ted	GARNETT	24 Brigalow St	O'CONNOR ACT		2601
182	VK2ACN	Alan	JAMES	424 Prune St	LAVINGTON NSW		2641
121	VK2AGC	Garry	COTTLE	22 Johnston Rd	BASS HILL NSW		2197
189	VK2AIQ	James	GLENN	78/122 Dry Dock Rd	TWEEDHEADS SOUTH NSW		2486
5	VK2AKE	Jim	EDWARDS	P.O. Box 385	BOWRAL NSW		2576
210	VK2AOH	Nick	EICHHORN	20 Autumn St	ORANGE NSW		2800
98	VK2AP	John	THURSTUN	P.O. Box 44	BLACKHEATH NSW		2785
152	VK2ATJ	Thomas	KING	P.O. Box 140	KENSINGTON NSW		2033
180	VK2AW	Basil	DALE	27 Grandview Pde	GOROKAN NSW		2263
32	VK2BBX	Bill	BALOGH	23 Bathurst St	LIVERPOOL NSW		2170
347	VK2BFN	Adrian	CLOUT	137 Lower Valley Rd	HEZELBROOK NSW		2779
219	VK2BJI	Dave	KENT	P.O. Box 564	PARKES NSW		2870
233	VK2BUS	Chris	PROUD	5 Chadwick Crs	FAIRFIELD WEST NSW		2165
22	VK2BVH	Brian	HALPIN	5 Carramar Crs	MIRANDA NSW		2228
161	VK2BWW	Bill	WATTS	P.O. Box 263	NAMBUCCA HEADS NSW		2448
16	VK2CBI	Ken	ELKINGTON	44 Boland Ave	SPRINGWOOD NSW		2777
171	VK2CDO	Ype	TIMMER	Box 18	BOWRAVILLE NSW		2449
11	VK2COH	Cec O.	HEALEY	121 Jamison Rd	PENRITH NSW		2750
226	VK2COX	Ray	TURNER	6/276 Bunnerong Rd	HILLSDALE NSW		2036
89	VK2CWH		Ted	DANIELS Wombat Hole Bylong Rd	RYLSTONE NSW		2849
159	VK2DCD	Maurie	CAMPS	Box 72	COLEAMBALLY NSW		2707

#	CALL	NAME		ADDRESS		
95	VK2DMV	Paul	IRELAND	109 Victoria St	COFFS HARBOUR NSW	2450
192	VK2DN	John	HARPER	75 Brisbane St	ST MARYS NSW	2760
124	VK2DRL	Bob	JOHNSON	19 Britannia Rd	CASTLE HILL NSW	2154
144	VK2EPD	Peter	CANNON	"BINALONG"	FORBES NSW	2871
126	VK2ERA	Rob	ABEL	6 Laurel St	KOOTINGAL NSW	2352
56	VK2ESR	Stephen	RAPLEY	12 Phillis St	ENMORE NSW	2042
173	VK2ETW	Trevor	WILKIN	BORONIA	COONABARABRAN NSW	2357
240	VK2EWT	Peter	TRUSCOTT	130 Foxvalley Rd	WAHROONGA NSW	2076
35	VK2EXD	Col	McDOUGALL	"WOODLANDS"	COOLAMON NSW	2701
202	VK2FC	Doug	CHAFFEY	89 McClelland St	CHESTERHILL NSW	2162
217	VK2FKE	Bill	SCOVELL	13 Tulani Ave	DALEYS POINT NSW	2257
216	VK2FKU	Warren	ROGAN		DRUMMOYNE NSW	2047
128	VK2FNF	Jim	MCNEILL	15 Pacific St	ANGOURIE VIA YAMBA NSW	2464
166	VK2GJW	Jim	WATSON	Smiths Creek Rd	STOKERS SIDING NSW	2484
227	VK2IRJ	Ian	JONES	59 Main St	CUDAL NSW	2864
207	VK2JG	Noel	HILL	28 Kangaroo St	LAWSON NSW	2783
156	VK2KB	Allen	FAIRHALL	7 Parkway Ave	NEWCASTLE NSW	2300
165	VK2KSD	Stan	DOGGER	Tunnel Rd	STOKERS SIDING NSW	2484
249	VK2KW	Alan	HORSPOOL	20 Braemar Crt	ORANGE NSW	2800
174	VK2MCH	Philip	McHUGH	P.O. Box 816	COOMA NSW	2630
239	VK2NBF	Mick	UREN	4-81 Bream St	COOGEE NSW	2034
230	VK2NLU	Eddy	TURNER	50 Pinaroo Crs	BRADBURY NSW	2560
245	VK2NRX	Rex	BUNN	"SILENT GROVE"	Chinamans Gully Rd METZ VIA ARMIDALE NSW	2350
205	VK2PA	Peter	ALEXANDER	"NANDARI" Rollands Plains	VIA TELEGRAPH POINT NSW	2441
41	VK2QB	Leo	PINKEVITCH	20 Cathrine St	KOTARA SOUTH NSW	2289
251	VK2SKY	Richard	MURNANE	7/15 Grafton Crs	DEE WHY NSW	2099
36	VK2UY	Vincent	ROBERTS	60 Edgar St	FREDERICKTON NSW	2440
30	VK2VBO	Brian	O'BRIEN	14 Belgrave St	NEUTRAL BAY NSW	2089
142	VK2WAS	Bill	SHORT	129 Simkin Crs	KOORINGAL WAGGA WAGGA NSW	2650
162	VK2WES	Wes	TYLER	P.O. Box 43W	WEST GOSFORD NSW	2250
256	VK2WQ	Keith	SHERLOCK	174 Hall Pde	HAZELBROOK NSW	2779
206	VK2XTX	Alex	BERKUTA	39 Tripoli Way	ALBION PARK NSW	2527
131	VK2YA	Rex	BLACK	562 Kooringal Rd	WAGGA WAGGA NSW	2650
224	VK3AAM	Phil	CARNE	2731 Nepean Hwy	RYE VIC	3941
85	VK3ADX	Merv	QUINN	12 Wesley Crt	BALLAARAT VIC	3350
169	VK3AHU	Harvey	UTBER	P.O. Box 40	VIOLET TOWN VIC	3669
125	VK3ANP	David	WARING	Banksdale Rd	HANSONVILLE VIC	3675
150	VK3APH	Tony	GOLDSWORTHY	1522 Main Rd	RESEARCH VIC	3095
235	VK3AUC	Alan	COOK		BEAUMARIS VIC	3193
204	VK3AVH	Harold	TRIBE	20 Morotai St	SORRENTO VIC	3943
255	VK3AWC	Bill	CURRIE	P.O. Box 107	MORDIALLOC VIC	3195
111	VK3BBI	Bob	LUKES	22 Dorothy St	EAST BURWOOD VIC	3151
178	VK3BDH	David	DUNN		EAST BRIGHTON VIC	3187
82	VK3BGH	Graeme	HARRIS	9 Loma St	RINGWOOD EAST VIC	3135
149	VK3BIE	Douglas	PEARCE	4 Lockwood St	POINT LONSDALE VIC	3225
97	VK3BMC	John	CARWARDINE	38 Barcelona St	BOX HILL VIC	3128
53	VK3BNC	Bob	TERRILL	7 Locksley St.	WENDOUREE VIC	3355
252	VK3BOL	Peter	LAYCOCK	P.O. Box 28	HURSTBRIDGE VIC	3099
7	VK3BPG	Reg	BEDFORD	45 Milne St	CRIB POINT VIC	3919
13	VK3BXA	Eric	IRVINE	P.O.	THOONA VIC	3726
55	VK3BXG	Graeme	BROWN	RMB 8375 Pryor Rd	DROUIN VIC	3818
114	VK3BYA	Derek	MC NIEL	17 Manning Rd	MALVERN EAST VIC	3145
157	VK3BYW	Frederick	PIESSE	61 Munro St	EAST KEW VIC	3102
260	VK3CDR	Ray	DEAN	19 Myoora Dve	MOOROOLBARK VIC	3138
138	VK3CFI	Maggie	IAQUINTO		COLAC VIC	3250
19	VK3CGE	Neil	EMENY	1 Beaumont Crt	MONTROSE VIC	3765
4	VK3CQ	Gilbert	GRIFFITH	7 Church St	BRIGHT VIC	3741
134	VK3CQK	Ralph	ROBERTSON	P.O. BOX 23	KYABRAM VIC	3620
225	VK3CQP	Vic.	HEARNE	54 Marshall St	WODONGA VIC	3690

#	CALL	NAME		ADDRESS		
199	VK3CTM	Tony	MORRIS	22 Boyd St	BLACKBURN VIC	3130
123	VK3CUC	Ken	SHIELDS	47 Sullivan St	INGLEWOOD VIC	3517
12	VK3CVF	John A	ELLIOTT OFG	R36.67 BOX 400C	MELBOURNE VIC	3001
59	VK3DBR	Barry	RIDGEWAY	BOX 116	BEECHWORTH VIC	3747
39	VK3DGE	Garry	NEWTON	12 Bayliss Place	VERMONT VIC	3133
168	VK3DGR	Graham	RUNCIMAN	P.O. Box 76	COLAC VIC	3250
112	VK3DID	Ian	GODSIL	25 Monaco St	PARKDALE VIC	3194
110	VK3DJI	Joe	LESLIE	79 Mitchell St	BENTLEIGH VIC	3204
246	VK3DKE	Lynn	EADY	5 Yarra St	YARRA GLEN VIC	3775
183	VK3DVB	Dave	ARCHER	41 Greville St	HUNTINGDALE VIC	3166
261	VK3DWF	Bill	FANNING	21 Smoult Dve	MELTON VIC	3337
47	VK3DXH	Lindsay	LaPOUPLE	33 Cassels Rd	BRUNSWICK VIC	3056
164	VK3ED	Geoff	BUTTERWORTH	Lot 4 Coburns Lane	TOOLERN VALE VIC	3337
194	VK3EOP	Peter	GROVE	P.O. Box 255	CHADSTONE CENTRE VIC	3148
262	VK3ERS	Rob	SPALDING	P.O. Box 3	COROROOKE VIC	3254
229	VK3ESC	Michael	TOMS	36 Canterbury St	RICHMOND VIC	3121
155	VK3FDT	Dave	TOMPKIN	P.O. Box 78	LARA VIC	3212
122	VK3HG	Trevor	STARRITT	"JENALAN" RMB 2340	TATURA VIC	3616
266	VK3IJ	Neil	TRAINOR	133 Bladin St	LAVERTON VIC	3028
234	VK3JHX	Murray	LEWIS	7 Shalimar Crt	VERMONT SOUTH VIC	3133
6	VK3JY	Steve	PHILLIPS	37 Mangarra Rd	CANTERBURY VIC	3126
93	VK3KRL	Simon	ANDERSON	12 Ramsey St	EAST BURWOOD VIC	3151
277	VK3MF	John	RICKARD	14 Dickason Rd	HEATHMONT VIC	3135
274	VK3MHM	Ron	STEINFELD	784 Highbury Rd	GLEN WAVERLEY VIC	3150
263	VK3NCM	Ray	TAYLOR	Tandara Rd	TANDARA VIC	3571
62	VK3PUC	Mark	JEFFREY	311 Peel St Nth	BALLARAT VIC	3350
176	VK3PUI	Ian L.	BOYD	P.O. Box 337	BALLARAT VIC	3350
254	VK3SSB	Lex	HIBBURT	11 Nursery Ridge Rd	RED CLIFFS VIC	3496
212	VK3UG	Rodney	CHAMPNESS	17 Helms Crt	BENALLA VIC	3672
215	VK3VAG	Jim	REID	301 Clarendon St	BALLARAT VIC	3350
24	VK3WQ	Marlene	BROWN		YARRAMBAT VIC	3091
214	VK3WRB	Richard	WALLACH	8 Whalley Crt	DONCASTER EAST VIC	3109
49	VK3XU	Drew	DIAMOND	Lot 2 Gatters Rd	WONGA PARK VIC	3115
143	VK3ZF	George	COVENTRY	28-42 Happy Hollow Dve	PLENTY VIC	3090
218	VK4AAD	Ian	CAMPBELL	44 Banksia Dve	FOREST GLADE QLD	4306
27	VK4ACL	Bob	NEVILLE	124 Roscommon Rd	BOONDALL QLD	4034
94	VK4ATZ	Ted	WALTON	U42/56 Miller St	KIPPA RING QLD	4020
45	VK4BIL	Bill	RAHMANN	28 Fontayne St	ASPLEY QLD	4034
44	VK4BSD	Stan	DEAN	380 St. Vincents Rd	NUDGEE QLD	4014
269	VK4CBR	Nev	POOLE	9 Maple Ave	GLADSTONE QLD	4680
221	VK4CMY	Doc	WESCOMBE-DOWN	P.O. Box 793	WARWICK QLD	4370
193	VK4CRS	Chris	ROY-SMITH	14 Carige Crt	BILOELA QLD	4715
276	VK4CWM	Len	McGOWAN	20 Catherine St	AYRE QLD	4807
130	VK4EV	Ron	EVERINGHAM	30 Hunter St	EVERTON PARK QLD	4053
258	VK4FV	Peter	TAYLOR	36 Sundance Way	RUNAWAY BAY QLD	4216
99	VK4GH	Murray	YOUNG	36 Raintree Bvde	Little Mountain CALOUNDRA QLD	4551
21	VK4KFF	Donald	STIELER	89 Rosemary St	CABOOLTURE QLD	4510
203	VK4LA	Glyn	GIBBINGS-JOHNS	P.O. BOX 966	BILOELA QLD	4715
104	VK4LKF	Kerry	FIELDING	22 Ellis St	LAWNTON QLD	4501
113	VK4MUQ	Bill	MARTIN	92 Clarke St	GARBUTT TOWNSVILLE QLD	4814
15	VK4RE	Roy	HILDRED	P.O. Box 387	TOOWOOMBA QLD	4350
14	VK4SF	Jack	FORD	222 Warwick Rd	CHURCHILL IPSWICH QLD	4305
167	VK5ABY	Barrie	BRICE	21 River Way	FULHAM GARDENS SA	5024
265	VK5ADG	Doug	ADAM	73 Maxwell Rd	INGLE FARM SA	5098
253	VK5ADY	Trevor	DAYMAN	21 Filsoll St	ELIZABETH DOWNS	5113
75	VK5AIL	Don	CALLOW	5 Joyce St	GLENGOWRIE SA	5044
184	VK5AIM	Steve	MAHONY	19 Kentish Rd	ELIZABETH DOWNS SA	5113
43	VK5AKZ	Kevin	ZIETZ	41 Tobruk Ave	ST MARYS SA	5042
232	VK5APS	Peter	SPENCER	4 Paxton St	CLARE SA	5453
259	VK5ARG	Alan	RICHARDSON	48 Robinson St	WHYALLA SA	5609

#	CALL	NAME		ADDRESS		
270	VK5ATQ	Trevor	QUICK	Churchett Rd	HOUGHTON SA	5131
8	VK5BA	Malcolm	HASKARD	Bassnet Rd	ONE TREE HILL SA	5114
57	VK5BJF	Jeff	WALLACE	Box 344	CLARE SA	5453
209	VK5BLS	Barry	SAMUEL	43 Olinda St	CRAIGMORE SA	5114
170	VK5BVM	Mick	SCHMIDT	37 Arthur St	PENOLA SA	5277
172	VK5BZ	Brenton	ZERBE	5 Chelmsford Gve	ANDREWS FARM SA	5114
257	VK5FE	Fred	WARD	36 Yarnbury Rd	ELIZABETH NORTH SA	5113
223	VK5JO	John	BISHOP	26 Surrey Cr	LOWER MITCHAM SA	5062
154	VK5LG	Leith	COTTON	64 Weroona Ave	PARKHOLME SA	5043
196	VK5NLY	Graham	LOCK	27 Tumut Dve	MT GAMBIER SA	5290
145	VK5PAS	Brian	COOPER	128 Queen St	PETERBOROUGH SA	5422
1	VK5ZF	Len	O'DONNELL	33 Lucas St	RICHMOND SA	5033
268	VK6AND	Andre'	DuPLESSIS		LESMURDIE WA	6076
54	VK6ATM	Terry	MAITLAND	P.O. Box 12	WYALKATCHEM WA	6485
220	VK6BEK	Shaun	PATSTON	9 St Leonards Ave	WEST LEEDERVILLE WA	6007
211	VK6BER	Martin	REECE	8 Koel Way	THORNLIE WA	6108
64	VK6BLA	Frank	LANGFORD	10 Clipper Way	HALLS HEAD WA	6210
247	VK6BRO	Richard	HOSKING	56 Lynton St	MT HAWTHORN WA	6016
66	VK6BWI	Peter	PARKER	14 Marquis St	BENTLEY WA	6102
222	VK6ELL	Elliot	GREENFIELD	21 Henley Rd	ARDROSS WA	6153
272	VK6FQ	Donald	FRASER	17 Jillian St	RIVERTON WA	6148
80	VK6IS	Peter	SCALES	P.O. Box 47	CHIDLOW WA	6556
278	VK6JCF	Bob	JOHNSON	P O Box 22	MANJIMUP WA	6258
25	VK6KC	Keith	WILLIAMS	6 Shelton St	WAIKIKI WA	6169
28	VK6KRG	Rod	GREEN	106 Rosebery St	BEDFORD WA	6052
191	VK6LT	Bill	TOUSSAINT	9 Desford Close	SHELLEY WA	6155
103	VK6MX	Warren	MEAD	347 Serpentine Rd	ALBANY WA	6330
241	VK6NQ	Merv	TURNER	P.O. Box 738	ALBANY WA	6330
243	VK6QO	Stanley	MOLLOY	53 Burtonia Way	FORRESTFIELD WA	6058
267	VK6RJ	John	WIRTH	P.O. Box 427	BROOME WA	6725
61	VK6SA	Rev	SUTER	BOX 261	MANDURAH WA	6210
147	VK6XC	Ben	KOH	13 Sovereign Plce	FORRESTFIELD WA	6058
133	VK7ABH	Greville	KNIGHT	28 Coppin St	KALLANGUR QLD	4503
65	VK7AJ	L.	WILLIAMS	19 Gloucester St	LAUNCESTON TAS	7250
244	VK7CS	Alex A.	SZOPKO	25 Beach Rd	LEGANA TAS	7277
242	VK7DMJ	Daryl	HONEYWOOD	HUONVILLE TAS 7109		
275	VK7EB	Ted	BEARD	148 Derwent Ave	LINDISFARNE TAS	7015
26	VK7FN	Neil	FITZPATRICK	P.O.	SCAMANDER TAS	7215
40	VK7JK	John	ROGERS	1 Darville Crt	BLACKMANS BAY TAS	7052
38	VK7KBA	Arthur	BLACKWELL	"FAIRVIEW" Elderslie Rd	BRIGHTON TAS	7030
37	VK7NRE	Bob	EDWARDS	205 Davey St	HOBART TAS	7000
48	VK7NXA	Stuart	BEAN	9 Sussex St	GLENORCHY TAS	7010
3	VK7VV	Rai	TAYLOR	Lot 2 Daniels Rd	MAGRA TAS	7140
69	VK7ZO	Graham	RANFT	DAL SEGNO Millvale Rd	DROMEDARY TAS	7030
91	VK8CW	Ian	SMITH	P.O. Box 4756	DARWIN	0801

TECHTIVITIES - News of Figure "8" Flex Antennas

[See Lo-Key December 1991 p.23 & the 'Portable and Mobile Antennas' chapter in the ARRL Antenna Book]

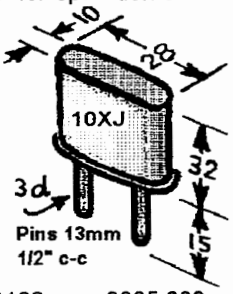
Paul Ireland VK2DMV #95 writes: *"The article on the twin lead antenna noted. Some little time ago I made such an antenna for 40m. Works very well with tuner - signal down on 80m, good on 20. Quick and cheap to get up & quite durable so far."*

cqqc

QRP Kit-Set Centre [continued from p.7]

'EX REX' XTALS ***Price $0.80 each***

Rex Black VK2YA #131 has kindly donated a large quantity of used crystals - see Lo-Key #35 p.24. A list of some of them follows. These are ***very*** useful for experimenting and home-brewing. *Caveat Emptor* - The crystals have not been checked for operation or frequency. As with other 'Specials', don't delay - quantities are limited. For this reason it would help if you give 'reserve' frequencies when ordering, in case your first choice is unavailable.



Nominal [branded] Frequencies in kHz :-

2085.0	2868	3162	3305.000
3463	4108.4	4177	4220.75
4448.25	4654.5	4675.5	4689.5
5498.0	5499	5551.5	5695.5
5910	6010	6043.3	6086.0
6104.4	6121	6148.88	6254.4
6276.7	6348.88	6426.66	6476.6
6487.7	6537.77	6543.3	6576.6
6582	6590	6621.11	6643.3
6687.77	7270		8837
8871			

ooqc

SSB Net

The 'Natter Net'

By Steve Mahony
VK5AIM #184
19 Kentish Rd. Elizabeth Downs SA 5113
Telephone (08) 255 7397 (H)

We will operate the SSB Net to Friday 18 December, then break for Xmas, resuming on 8 January.

The roster system for Net Controllers is working well, with 8 members taking part. 'The more the merrier', so if you wish to have a go, let me know. It would be especially nice to have one or two more from the Eastern states.

Seasons Greetings to All,

Steve VK5AIM

ooqc

Photocopy or cut along this line

Please post this application to:

Kevin Zietz VK5AKZ
41 Tobruk Ave.
ST MARYS SA 5042
Australia

I would like to apply for membership of the CW OPERATORS QRP CLUB.
I have enclosed the annual membership fee of: $A 10 for VK Members
$A 12 for ZL Members
$A 14 for DX Amateurs.

(please print)

(if licenced)
FIRST NAME & CALL SIGN .....

INITIALS & SURNAME .....

ADDRESS .....

.....

.....

I agree to the required details being held on the Club's data base.
I DO AGREE to publishing of my street name and house number.
(If not, write 'NOT' in the space provided.)

SIGNATURE ..... Lo-Key #36 Dec. '92
Your receipt and membership number will be sent with the next issue of Lo-Key.