LO-KEY

THE JOURNAL OF THE CW OPERATORS QRP CLUB

ISSUE No. 19 SEPT. '88

"WE DO MORE WITH LESS"

PROMOTING IN AUSTRALIA, THE CW MODE OF TRANSMISSION, ON HOME BREWED EQUIPMENT, USING LOW POWER OUTPUT (maximum 5 watts output), IN THE AMATEUR SERVICE.

EDITOR...Len O'Donnell VK5ZF, 33 Lucas St., Richmond, S.A. 5033, Australia.

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CLUB INFORMATION PAGE

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CLUB EXECUTIVE COMMITTEE AND THEIR FUNCTIONS

TREASURER....Kevin Zietz VK5AKZ (43), 41 Tobruk Ave., St. Marys, S.A. 5042, Australia. Please send ALL payments such as annual subscriptions, Kit-set purchases, or any other Club charges, direct to Kevin. ALL changes of Members addresses also go direct to Kevin.

SECRETARY....Rai Taylor VK7VV (3), 25 Twelfth Ave., West Moonah, Tasmania 7009, Australia. Please send all mail concerning general Club business, such as suggestions, complaints, etc. direct to Rai.

OTHER CLUB ADMINISTRATORS AND THEIR FUNCTIONS

IN CHARGE OF KIT-SET ACTIVITY....Don Callow VK5AIL (75), 5 Joyce St., Glengowrie, S.A. 5044, Australia. ALL orders for Kit-sets, enquiries Technical or otherwise, send directly to Don, BUT ALL payments for Kit-sets go direct to the Treasurer Kevin VK5AKZ (43).

KIT-SET ACTIVITY HELPERS....Max VK5OS (2).

STATE CO-ORDINATORS....VK3....Lindsay LaPouple VK3DXH, 1/31 Nelson St., Balaclava, Victoria 3183.

VK7....Rai Taylor VK7VV, 25 Twelfth Ave., West Moonah, Tasmania 7009.

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CLUB ACTIVITIES

INFORMATION NET....is controlled by Max VK5OS (2). QRO SSB is used, and the net operates each Friday night at 1030Z on 3620 khz. VK5OS is the call-sign that is used by the controller. All members are invited to join in.

CW ACTIVITY....Wednesday evenings 0930Z on 3535khz. Controller Brian VK2BVH (22).

Friday evenings at 0800Z on 3530khz, ZL QRP activity.

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GENERAL INFORMATION

QRP FREQUENCIES....1815khz....3530khz....7030khz....10106khz....14060khz....21060khz....28060khz.

MEMBERSHIP FEES....Due each January, Australia $10, New Zealand $A12.. ..DX $A14.

LO-KEY....Published quarterly, March, June, Sept., Dec.

QRP information, circuits and articles, are always welcome.

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HE'S TAKING HIS MORSE EXAM SOON : WE'RE GETTING HIM USED TO QRM.

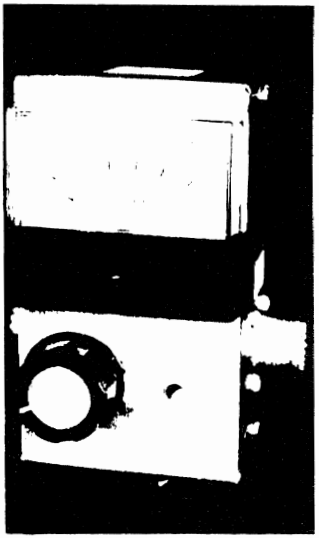
QRP PROJECT .....by Drew VK3XU (49)

A SENSITIVE SWR METER

Having completed your Club Communicator, and your Power Supply unit to run it on, along with your Antenna Tuning unit, to match your antenna to the "Communicator", of course you are going to need a Standing Wave Ratio meter, to show you when you have achieved a suitable match of antenna to transmitter. With this thought in mind, I had a search through my files on SWR's, and as you can not get better than the best, I have selected Drew's QRP SWR meter. The circuit and mechanical layout are straight forward, and the whole project will not present members with too many problems. To round off the article, I have added an idea or two, after Drew's technical description, that may give a few of our Homebrewers and Experimenters, a different approach to the project. Added to this, are details of a short kit-set from the Kit-set activity Center run by Don VK5AIL. All this adds up to a very interesting project for this issue of Lo-Key, but more about that a little later on. Meanwhile here is Drew....

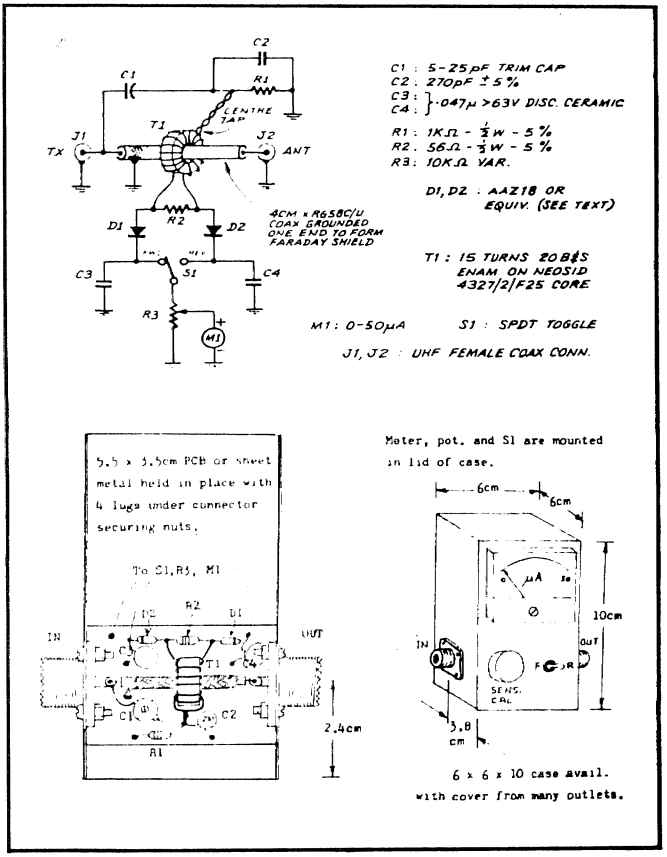
Len VK5ZF (1)

A low SWR is very important, particularly to the QRP operator, as high efficiency is one of our goals. Some transceivers have circuitry to reduce the output, when a poorly matched load is used. SWR indicators normally available are quite insensitive at low frequencies, particularly 1.8mhz, and generally require in the order of 10 watts, for full scale reading in the forward direction. The meter to be described requires only 1 watt on all HF bands for full scale forward indication. The final circuit was derived after investigating several similar arrangements from various publications. Locally available components are used.



THEORY....

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 out side 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 load which departs from 50 ohms resistive will cause less cancellation of the voltage in the other half, and so an indication may be given as to the degree of mismatch. The remainder of the circuit is self explanatory.

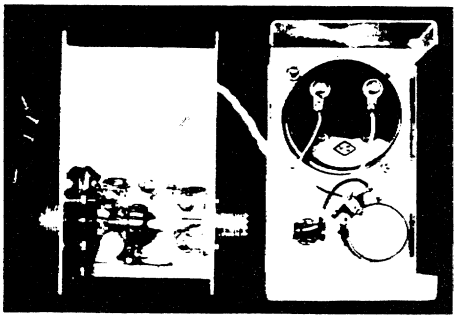


CONSTRUCTION....

The diagram and photograph show a suggested method of construction. The coax (jacket removed) fits snugly through T1 as shown. Care must be taken to ensure that the enamel on the secondary is not scratched by the coax braid. The components are self supporting, and may be accommodated upon a suitable piece of sheet metal or PCB. AAZ18 diodes were found to yield the best sensitivity. Alternatively, OA91 or OA95 diodes may be used at slightly less sensitivity.

ADJUSTMENT....

C1 is adjusted so that little or no reverse reading is obtained when the out connector is terminated with a purely resistive load. A satisfactory load may consist of 2 100 ohm 1 watt Philips cracked carbon resistors in parallel, and soldered to a suitable connector. Apply about 1 watt of carrier on the highest HF frequency to be used, and adjust C1 for a null as indicated on M1 with S1 in the Rev



position. If the meter is to be calibrated, calculate the degree of mismatch for various terminations. e.g. 33 ohms or 75 ohms represents an SWR of 1.5, 25 ohms or 100 ohms is 2, 18 ohms or 150 ohms is 3, and so on. The sensitivity calibrate pot must be adjusted so that a forward reading of full-scale (50 microamps) is obtained before checking the reverse reading. The sensitivity is quite constant from 1.8 to 30 mhz, so the instrument may also be employed as an in-line watt-meter, after appropriate calibration....

SOME FURTHER NOTES ....from Len VK5ZF (1)

This design for a QRP SWR has been around for a number of years now, so believe me when I say that it will work and work well for you, because hundreds have now been built.

In such a project as this there is plenty of room for the experimenters to try out their own little pet ideas for instance....

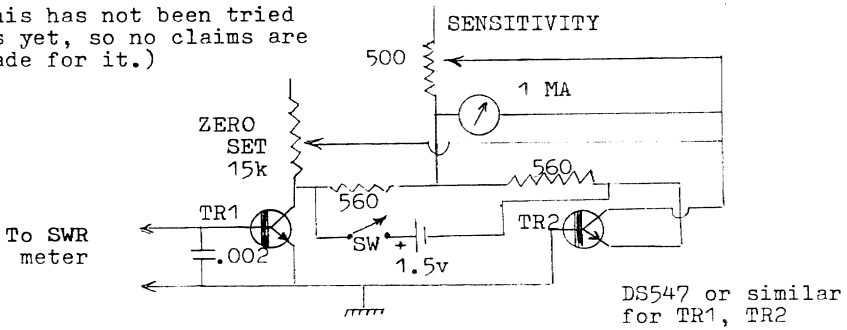
If you are not too crazy on fabricating a suitable box to house the project or do not particularly care for the types available from the electronic retailers, how about using the box housing that old not so sensitive CB SWR meter sitting on the shelf. This design would lend itself readily to be built into such a readily available box.

Another change I have made to my version of this versatile and handy piece of equipment is to use the RCA type of plug and socket. My reason is two-fold in as much as RCA types are cheaper than the specified type. Also the RCA types are smaller and neater for small QRP type gear, and I have now standardised all my QRP gear with this type of connector.

50 microamp meters are not cheap, and while I have used such a meter for my SWR project, it is possible to use cheaper 1 ma or 500 microamp movements, by using suitable meter amplifiers. Here is a typical meter amplier circuit that will enable you to experiment with that 1 ma movement you may have on hand.

Experimental meter amp. circuit

(This has not been tried as yet, so no claims are made for it.)



QRP PROJECT Cont.

Another area of experimentation can lie in the number of turns used on the toroid T1. While 15 turns are specified, and work very well with the circuit as given. If the finished unit lacks sensitivity, an increase in turns could be tried. Remember to try other diode types if you can not get AAZ18 type.
Finally here is some good news about a short Kit-set that has been made available for this project.
Here is the information from Don VK5AIL (75), who is in charge of Kit-set activities....

SENSITIVE SWR METER KIT-SET, WITH QRP DUMMY LOAD

To assist members who are setting up stations for QRP operation we are now offering a short-form kit for building the SENSITIVE SWR METER featured in this issue. It can also be calibrated to give QRP power readings. Included are parts for a very compact 5W dummy load. And of course all the directions you would need.

This meter is particularly sensitive, unlike many meters designed for higher power, which hardly move the needle when QRP powers are used. It can be left in-line and monitored during QSO's. The meter is also suitable for QRO operation as it has a sensitivity control.

This is a good first project for a beginner.

THE PRICE is $A 24.00 (including postage within Australia). The only major items not supplied are the 50uA meter and the case. Ordering procedure is as for the Club Communicator.

Don has also advised me that he has a few 500microamp movement edge type meters, available to members at $6 postage included in -side Australia. These meters are good quality, and very useful for many homebrewing projects. Be early they are not going to last.
In the next issue of Lo-Key (if I am still doing the Editors job) I hope to run an article on Drew VK3XU's DC86 Direct Coupled 3.5 mhz Receiver, as a companion to the Club Communicator transmitter and so complete the series on a 3.5mhz CW Homerewed QRP station.
Cheers for now.....

CLUB COMMUNICATOR KIT-SET PRICES

See Lo-Key No. 18 June 1988 for details. The prices will be unchanged until 1 January 1989. Standard prices (including postage within Australia) for this 80m band CW QRP transmitter are:

$A 77 Full Kit-Set $A 18 VFO $A 13 BDT $A 31 PA $A 16 QSK

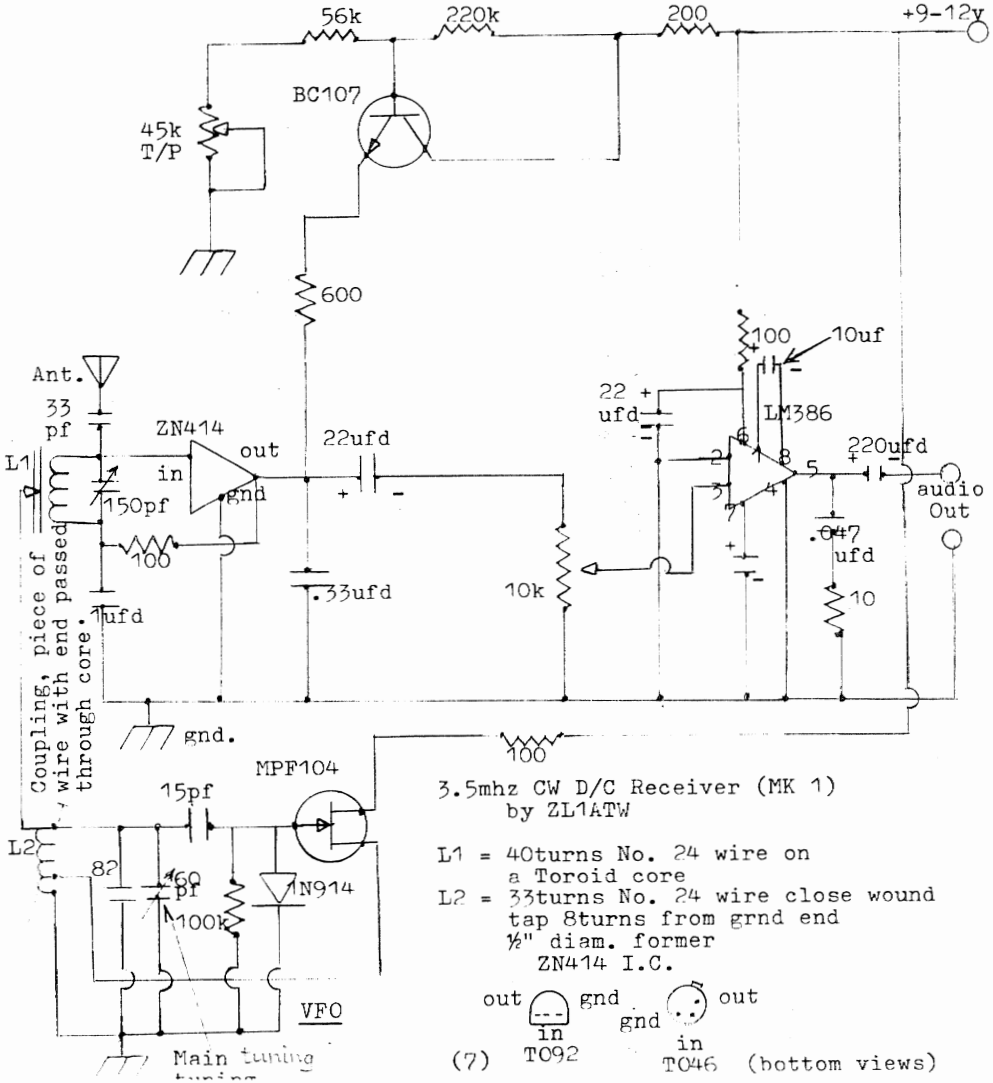
The strengths of this kit are its simplicity and the good quality of the product - including a manual which many people have commented on favourably. The rig works well too !!

for the

EXPERIMENTER

by....Len VK5ZF (1)

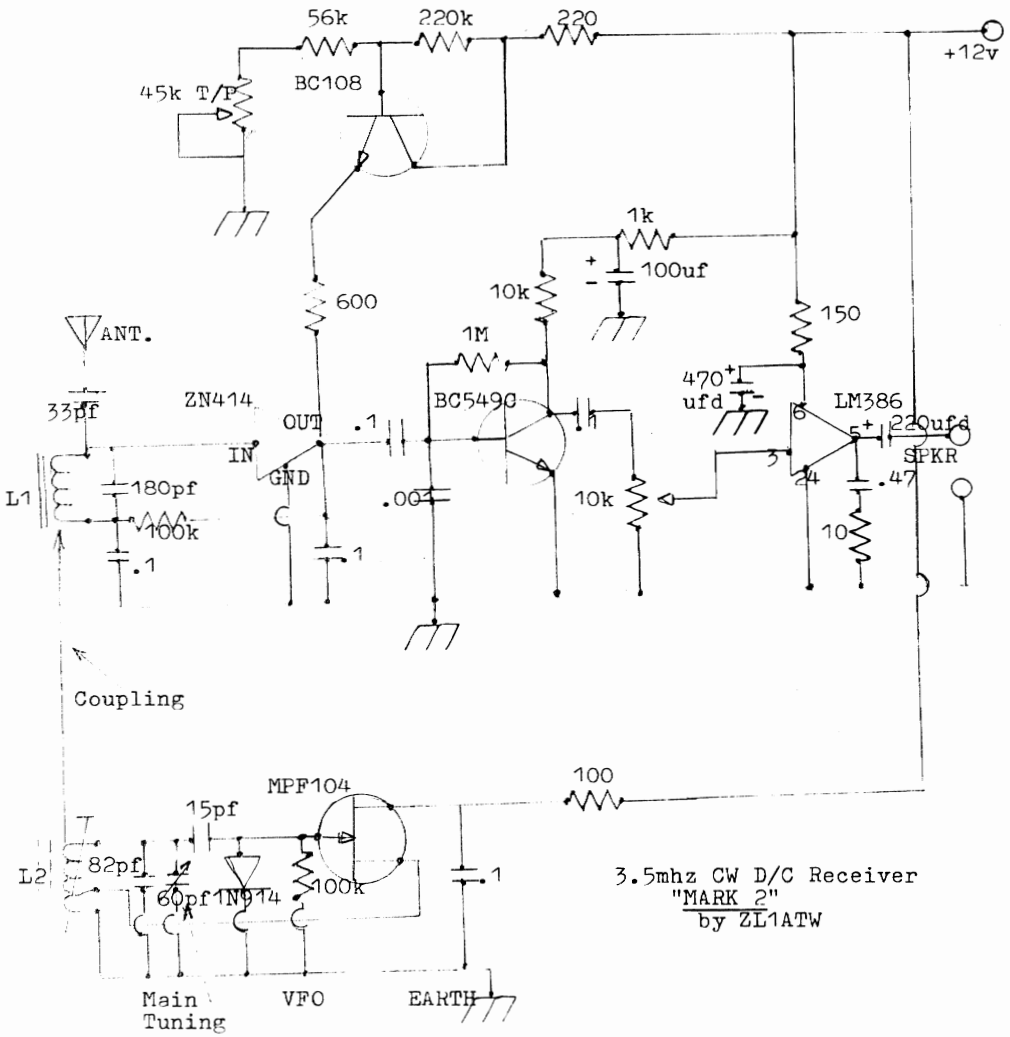
In this issue of Lo-Key I am introducing a new segment called "For the Experimenter". It is a technical ideas section, in which I will edit and publish details of experiments and ideas for homebrewed gear. This is your own section and the details and circuits, must come from you for me to be able to print them in Lo-Key. The success or otherwise of these pages, will depend on you the reader, sending in those latest details of ideas, experiments, and tips on what you have cooking in the "Homebrew Pot". So let me hear from you. To "kick-off" the "For the Experimenter" pages, here are a couple of circuits on a receiver idea from Matt ZL1ATW (34)....



3.5mhz CW D/C Receiver (MK 1)
by ZL1ATW

L1 = 40turns No. 24 wire on a Toroid core
L2 = 33turns No. 24 wire close wound tap 8turns from grnd end
½" diam. former
ZN414 I.C.

(7) TO92 TO46 (bottom views)



NOTES....by Matt ZL1ATW (34)

Years ago I made up a Broadcast receiver with a ZN414 I.C. and later changed it to a tuner for my son's Hi-Fi amplifier, which had no tuner in it. He has long since graduated to one of those black boxes they call "Stereo", and the I.C. was left to collect dust.

I got to thinking, would it resolve CW if the necessary changes were made. I changed the loop antenna coil and 356 pf tuning condenser for a coil wound on a Toroid, which looks like a T68-2 filled with no. 24 wire. Discarded the tuning cap and added a 180pf fixed capacitor. Added an audio amplifier, BC549C, LM386; but it works quite well with only the LM386.

Hooked up an external VFO to see what happened and after some juggling with the amount of antenna coupling, away it went.

I have since rebuilt it on a piece of Vero board, and fitted front and back panels.

FOR THE EXPERIMENTER Cont.
Believe me this set-up really works. Why go to the trouble of winding a balanced mixer transformer, and adding diodes, or lashing out for a SBL-1 balanced mixer, when you can hook up this three terminal device.
You will find that some ZN414s are better than others, so it pays to have more than one on hand.
I have not tried it on any other band but 3.5mhz, so I can not say how it would perform if at all. I read somewhere that the ZN414 is good up to 3mhz only.
Now about the coupling question. I found about 33pf maximum needed for the antenna, any more, and you have Broadcast break-through. The coupling between VFO and L1 is also very light. I found that a piece of wire, one end attached to the source of the MPF104, and the other end passed through the core of L1 toroid is about right. Any more, and you finish up with a lot of noise and poor signal.
I started with a 150pf variable cap. across L1 on the first version, but replaced it with a 180pf fixed cap. which was on hand; performance is as good without the variable. By manipulating the station ATU the signal can be peaked, and the ATU also helps reduce QRM from strong local SSB signals, which are a problem with direct conversion receivers.
The MPF104 in the VFO works well, and is cheaper than the MPF102.
Another feature of this receiver, switch off the VFO, tighten the coupling to L1 and you have an AM receiver, and you will very likely hear your local AM Broadcast station.
While tinkering with this receiver, I needed a board to mount an external extra audio stage for trial. I used a piece of clean wood and some drawing pins from the XYL's writing desk. Push the pins half way into the wood and solder your components to them: don't push them in too far, otherwise you could loose too much heat from your light soldering iron.
Adjust t/p 45k for 1.3 volts on output of ZN414, before soldering in the I.C.
The components between pins 1 and 8 of the LM386 are not necessary, also pin 7 can be left floating.

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EDITORS NOTE....I think you will agree with me that Matt has given us a handy little receiver circuit to experiment with, and I am going to give it a go.
In my version MARK 3 hi, I am going to try a variable capacitor in the antenna lead to be able to adjust the antenna coupling for various antennas, I may wish to use.
My second modification will be to control the amount of coupling by mechanical means. This should give me control over the receivers signal to noise ratio. (I refer to the coupling between the VFO and L1).
I will not use a toroidal type coil for L1, but use a ½" slug tuned former, to be able to set up some variable coupling.
My third modification will be to arrange the number of turns on L1, to have it cover 1.8mhz as well as 3.5mhz. The VFO coil L2 will also have its turns adjusted and tap modified to suit 1.8mhz as well as 3.5mhz coverage. This will give me an extra band.
My fourth and final modification (for now), will be to run it into a good audio filter and check its selectivity.
Like I said earlier not a bad sort of circuit to get stuck into for some real experimenting. Interesting , can I tempt you to have a go.

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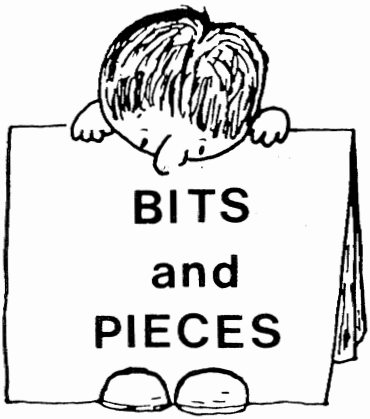
This section could become a very popular one if we all share our pet projects and circuits. Be like Matt and send in those circuits and ideas to the Editor of Lo-Key. If some of our experimenters do try this circuit, then let all your mates know about it through Lo-Key.

....by....Len VK5ZF (1)



Here it is September again, with Spring just around the corner, which makes it about the best season of the year. There is heaps to talk to you about, so let's get started on the latest Club gossip and doings.....

NEW MEMBERS....There is no better way to start "Bits and Pieces" for this issue, than to tell you that we have 13 new members for the Quarter. That is great, and if I do say so myself, it was a very good effort. so it is with much pleasure that I say WELCOME to the following new members....

(130)VK4EV Ron....(129) NR1A Doug....
(131) VK2YA Rex....(132) PA3ELD Jan..
..(133) VK2FEI Greville....(134) VK3CQK Ralph....(135) VK3NCW Ken....(136) N1DWA Cliff....(137) N4PC Paul....
(138) VK3CFI Maggie....(139) VK5GI Norm....(140) VK2VJD John....
(141) VK3EHH Harold....(142) VK2WAS Bill....

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CLUB COPIER....A vote of thanks should be extended to Kevin VK5AKZ, for his tireless efforts in finally getting the copier into good working order. The copier now resides at Kevin's QTH. If you have any circuits or articles that you would like copied, please contact our Treasurer, and he will give you the necessary details.

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LOG SHEETS AND SCOREBOARD SHEETS.... Since the copier is now back in service I have managed to obtain a supply of double sided scoreboard and log sheets. These can be obtained from myself, at a cost of 37c postage, (39c from the 1st. of Oct. A total of 8 sheets can be sent in the one envelope. It is recommended that these sheets, or a copy of the same be used for all club contests and awards.

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A PETITION FOR SPARE PARTS FOR AMATEURS....Here is a suggestion from myself to ALL members of the CW Operators QRP Club. In the past 5 years that I have been connected with running this Club of ours, the question I have been asked more than any other is, WHERE CAN I BUY PARTS TO BUILD MY PROJECTS ?. In my opinion that is a fair and legitimate question to ask, when you are confronted with an excellent article, on a super-hot little CW QRP rig that you would love to build. So you write out a list of parts that you will require, and off you go to your FRIENDLY ELECTRONIC RETAILER, and ask him for tuning condensers, dials, meters, transistors, valves etc., and a host of other necessary bits and pieces. Then you are told, sorry we do not stock those parts any longer.

At this point the usual Amateur reaction, is to throw up his arms and say, that there is nothing that can be done about it, just accept the situation, and put the super-duper hot CW QRP TX circuit back in the too hard bin, or the impossible bin, so to speak. Hold it!. Hold it!. Who says we can not do anything about the situation. If we have not tried, then we do not know if we can change the spare parts position.

Of course it is very obvious that the Electronic retailers have opted to push the sales of State of the Art commercially made Amateur radio transceivers and associated gear, at some very hefty price tags. Retailers are in the business of making money, that is a basic fact of commercial enterprise. Of course it is much easier for them to make a quick easy and substantial profit, from selling you the

BITS AND PIECES (Cont.)
complete commercial package. It is going to take much longer to make a similar profit, from the sale of spare parts. Now let me say right here, that I am in no way opposed to those Amateurs who prefer to purchase commercial gear rather than build their own equipment. That is great, and I am happy for them. But !, what about us the Amateurs who get tremendous pleasure and satisfaction, from homebrewing their own gear. We have now been overlooked by the parts suppliers, because there is less profit and more work in seling us the parts we need, and of course if we can not get the parts then we are also in the running to be sold the commercial piece of gear.

Now what can we do, quite a bit if we go about it the right way. Firstly we are a club, a group of people, who have three basic aims in belonging to the CW Operators QRP Club, the first is that we are all CW Operators, the second is that we are Homebrewers of our own equipment where possible, and third we are also QRPers. So here we have a group of some 100 or more VK Amateurs who would like to build their own amateur gear, and be able to purchase the necessary parts when they are required. To make the parts suppliers take notice of us homebrewers, we have to show them that we are united, and acting as a group, and that we are prepared to create a steady demand for the parts that we require. May I suggest that one way to go about this is for each and every member of the CW Operators QRP Club to sit down and write me a short note stating that you are a homebrewer and build your own gear, and that you would like to see a more adequate supply of spare parts back on the shelf. From these letters which I will keep to back up our claims, I can organise a petition to present to retailers to show them how united we are in our request. This petition can be presented to the retailers quite regularly, say once a month, till somebody starts to take notice of our requests.

Yes I do know that I have asked you ALL to sit down and write me a short letter and I realise that it is going to take up a little of your time, but just think of the amount of time I am continually using up on your behalf to present this column for you to read in each issue of Lo-Key. Then of course there is all the other letters I write in the day to day running of the Club. The point I am making to you, is that I am not asking you to do anything that I am not doing myself. Some members may think that as they do not build or homebrew any amateur gear, but just buy what they require, it would not be necessary to support this petition. Other members may feel that they have all the spare parts they need for their future projects, this would be a selfish attitude to adopt. I rather hope ALL our members will support each other on this issue.

IT IS TIME TO STAND UP AND BE COUNTED ON THIS MATTER, and I am rather hoping for 100% response from our members. If I can get this kind of response from you the members of this Club, then I am quite prepared to take this issue up nationally, and write an open letter to the Amateurs of Australia through the WIA Amateur Radio magazine. I strongly believe that with that sort of support, Amateurs in Australia could shortly enjoy a wider range of spare parts back on the retailers shelves again. Probably some of our members are actually wondering why I am raising such issues, when I have resigned from being President of the Club. Quite frankly I believe this is the most important issue that I have raised, since the CW Operators QRP Club was founded, nearly 5 years ago. Apart from anything thing else I feel it needs to be raised now, because I am not sure that anybody else will raise it in the future. At least I know that I have now tried to do something about the parts situation, CAN I COUNT ON YOUR SUPPORT. Well now, what is next....

BITS AND PIECES Cont.
Here is a letter from a very happy member of the Club, and as I have not received many like it, I thought that it would be great to share it with you.

Dear Len,

Bouquets to all concerned with the design and implementation of the Club Communicator Kit. It was great to build, and wonderful to get on the air. Small problems encountered were entirely due to my excessive rush to get it up and running. Hi Hi. I am now in the process of getting various bits and pieces together (cheaply), for a combined ATU and SWR meter for the rig. Further down the QRP track I hope to get a rig up on 20 meters.

It's great to be a member of the Club, and I have proved that when I do "More with Less", personal satisfaction is achieved. Good luck to all.

Stan VK4BSD (44)

You have made my day. Thank you Stan.....Len.

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John VK2VJD (140) popped a note in the post to me, in which he asked me to convey the following information to the members.....

BLUE MOUNTAINS REPEATER VK2RBM REACTIVATED

After being down for some time the 2 meter Repeater VK2RBM has been re-located at Mt. Druitt near Penrith and provides good coverage for the Blue Mountains and the Western Highway approaches to Sydney. It operates on its old allotted receiving frequency of 147.050mhz., and full details as to its location are to be found in the 1988 Call Book.

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CLUB QSL CARDS.... Rai VK7VV (3) has asked me to pass on to the members the following new rates for QSL Cards.....

250	(Minimum Quantity).....$32....	+ $4 postage
500	.....$54....	+ $6 "
750	.....$78....	+ $8 "
1000	.....$100...	+ $10 "

Please contact Rai direct if you require any further details.

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CLUB BUSINESS....Election Results....
From the Returns Officer Kevin VK5AKZ (43), here are the results of the Election for the following Club positions.....

1....Club President.....No Nominations

2....Editor (Lo-Key).....No Nominations

3....Public Relations.....Ian VK3DID

4....Awards and Contests.....No Nominations

Congradulations to Ian, you have been appointed to the Public Relations position unapposed, as there were no other applicants for the position. I would like to thank Ian for his offer to help run the Club. There will be a letter on its way very shortly, with information for you.

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BITS AND PIECES Cont.
Here is a list of 28mhz beacons that I thought you may like to see. DX conditions are on the up, so use this list to check if the band is open, and start working some QRP DX on this band.....

10 Meter Beacons

by Joe Gumino K2OLG
303 Old Stage Rd., Spotswood, NJ 08884

FREQ.	CALL	OP	LOCATION	NOTES
28.050	PY2GOB		Sao Paulo, Brazil	15W Vert.
28.175	VE3TEN	C	Ottawa, Canada	10W GP
29.195	IY4M		Bologna, Italy	20W 5/8 GP
28.200	GB3SX	C	Crowborough, England	8W Dipole
28.200	KF4MS	C	St. Petersburg, FL	75W GP
28.201	LU8ED		Argentina	5W
28.2025	ZS5VHF		Natal, RSA	5W GP at 1800 ft. ASL
28.205	DL0IGI	C	W. Germany	100W Vert Dipole
28.2075	W8FKL	C	Venice, FL	10W Vert.
28.208	WA1IOB	C	Malboro, MA	75W Vert.
28.210	3B8MS	C	Mauritius	GP Ant.
28.210	K4KMZ	I	Elizabethtown, KY	20W Vert.
28.212	EA6ROM		Palmade Mallorca	4W, 5 EL NNE
28.2125	ZD9GI	C	Gough Is.	GP
28.215	GB3RAL	C	Slough, Berkshire	20W, GP
28.215	LU4XI		Cape Horn	
28.2175	WB9MVY	C	Oklahoma City, OK	4W, GP
28.220	5B4CY	C	Cyprus	26W, GP
28.222	W9UXO	C	Chicago, IL	10W, GP
28.2225	HG2BHA	C	Tapolca, Hungary	10W, GP
28.2275	EA6AU	C	Mallorca, Balearic Is.	10W, 5/8 GP
28.230	ZL2MHF	C	Mt. Climie, NZ	50W, Vert Dipole
28.232	W7JPI/AZ	C	Sonoita, AZ	5W, 3EL YAGI-NE
28.2325	KD4EC	C	Jupiter, FL	7W, GP
28.235	VP9BA	C	Hamilton, Bermuda	10W, GP
28.2375	LA5TEN	C	Oslo, Norway	0W, 5/8 GP
28.240	OA4CK	C	Lima, Peru	10W
28.2405	5Z4ERR		Kenya	
28.2425	ZS1CTB	C	Capetown, RSA	20W, 1/4 Vert
28.245	EA3JA		Barcelona	
28.245	A92C		Bahrain	NW/SE Dipole
28.2475	EA2HB	I	Spain	6W, GP
28.248	K1BZ	C	Belfast, ME	5W, Vert Dipole
28.250	4N3ZHK		Yugoslavia	
28.250	Z21ANB	C	Bulawayo, Zimbabwe	15W, GP
28.252	WB4JHS	I	Durham, NC	7W, Vert
28.255	LU1UG		Gral Pico, Argentina	5W, GP
28.2575	DK0TE	C	Arbeitsgen, W. Germany	40W, GP
28.260	VK5WI	C	Adelaide, SA, Australia	10W, GP
28.262	VK2RSY	C	Sydney, NSW, Australia	25W, GP
28.264	VK6RWA	C	Perth, WA, Australia	
28.266	VK6RTW	C	Albany, WA, Australia	
28.2685	W9KFO	I	Eaton, Indiana	3/4W, Vert.
28.270	ZS6PW	C	Pretoria, RSA	10W, 3EL Yagi on G-land
28.270	VK4RTL	C	Townsville, QLD, Australia	
28.2725	9L1FTN	I	Freetown, Sierra Leone	10W, Vert Dipole
28.275	AL7GQ	C	Jackson, MS	5W/1W Broadside Loop
28.2775	DF0AAB	C	Kiel, W. Germany	10W, GP
28.280	YV5AYV		Caracas, Venezuela	10W, Rotary Beam
28.280	LU8EB		Argentina	5W
28.282	VE1MUF	C	Fredrickton, NB	500mW, Dipole
28.284	VP8ADE	C	Adelaide Is.	8W, V Beam
			NR Antarctica	to G-Land
28.286	KA1YE		NR Rochester, NY	2W, Vert Dipole
28.287	W8OMV		NR Ashville, NC	5W, GP
28.287	H44SI	C	Solomon Is.	15W
28.288	W2NZH	I	Moorestown, NJ	3W, GP
28.290	VS6TEN	C	Hong Kong	10W, Vert.
28.2925	LU2FFV		San Jorge, Argentina	5W, GP
28.295	WB8UPN	I	Cincinnati, OH	10W, Ringo
28.296	W3VD	C	Laurel, MD	1.5W, Vert Dipole
28.297	WA4DJS	I	Ft. Lauderdale, FL	10W, 250 ft longwire
28.299	PY2AMI	C	San Paulo, Brazil	10W, Vert Dipole
28.300	ZS1LA	C	Stillbay, RSA	20W, 3EL Yagi NW
28.315	ZS6DN	C	Irene, South Africa	100W, Vert
28.888	W6IRT		California, USA	5W, GP Code Practice
28.992	DF0ANN			20mW, 1EL Delta Log

C= Continuous Duty I=Intermittent Duty

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HOMEBREWERS TECHNICAL FREQUENCY

The CW Operators QRP Club is promoting to ALL our members, the idea of having a common experimental frequency for all Homebrewers. This would enable members to be able to test out their latest transmitter, knowing that there is a good chance of another member hearing your test call, when you are looking for a report. May I suggest that the frequency of 35 khz be adopted as the Club's experimental and test frequency. The reason I have suggested this frequency, is because crystals of this frequency are readily available from several electronic retailers, and are advertised in their catalogues at prices ranging between $2 and $4. This price is of course very much cheaper than the usual $14 plus for crystals of your own choice. With the idea of making this a well monitored frequency by all VK club members, I ask all homebrewers to try to obtain a cheap crystal on this frequency, to use when testing out your new homebrewed rigs. I would also ask ALL of our members to let their receivers run on this frequency, when they are working on a project, in the vicinity of their receivers. Yes I know that this particular frequency, is a little higher than the recognised upper limit of the CW section of the 3.5mhz band, but provided you listen first, there is nothing wrong in using the CW mode on that frequency, and particularly if you are using a crystal controlled rig. After all CW is a legal mode of transmission anywhere in the 3.5mhz band, added to this we are using this frequency for a very good purpose. Also a word to those

BITS AND PIECES Cont.
of our members, who have VFO controlled rigs. We need your support to monitor the frequency, so please put your receiver on this chanel, and let it run, while you are within hearing distance. Here is another chance when you the member can help another member, by answering a test call on 3579 khz. It is just another way of sharing our hobby with others, by being available to help with a report if your mate needs one. LET US DO IT NOW. If you would care to advise me of the fact that you have a crystal on this frequency, or that you are prepared to check this frequency regularly, I will make out a list of participating members, and see that it is published in Lo-Key regularly. I will also get our Public Relations officer, to advise other Amateur operators through AR and ARA of the Club's Homebrewing Test frequency. It could be a help to other homebrewers outside our club, from which we could get some good publicity.

****

TRAVELLING CIRCUIT BOOK.... Unfortunately another Club service I was trying to provide to our members has to be run down with my other commitments. Amongst our members do we have one member, who may like to take on this service to our members. This is not an official Club position. The TCB is not a Club project, but it was a private idea of mine, that I thought up to improve the quality of membership. If there is a member amongst us who would like to set up a similar service, I will br more than happy to supply any details that may be required.

****

ADELAIDE WORKSHOP PROJECT IDEA.... To tidy up the loose ends on this proposal.... Adelaidian members will recall that in a previous issue of Lo-Key, I put forward the idea of a Practical Workshop for homebrewers. I did ring a number of the VK5 gang in Adelaide, to get their reactions to the proposal. The results I obtained showed me, that I was the only one, that really had any enthusiasm for the workshop idea. Any way I still believe this sort of practical get together, is what this club needs. Of course I have had to shelve the idea.....

****

A VISITOR FROM VK3....One of the most pleasant things to happen this quarter was a flying visit from Lindsay VK3DXH (47), our VK3 State Co-ordinator. It would appear that our Lindsay was on a whirlwind coach tour around the outback of Australia. He blew into Adelaide in the late afternoon of the 5th Sept., and departed again at 7am the next morning. He was eventually tracked down at a local Hotel/Motel in Adelaide, and Max VK5OS (2) quickly organised a visit to the Motel by Don VK5AIL (75), Len VK5ZF (1) and himself. A very friendly "eye-ball" for a couple of hours ensured, talking about the various aspects of our hobby. It really was great to meet Lindsay, and when we next hear him up on air, the resulting QSO will be that much better for having met him in person....

****

DIAL SCALES.... If any of our homebrewers are looking for copies of suitable dial scales, for receivers, ATUs, GDOs or Frequency meters etc. contact Kevin VK5AKZ (43). He will give you further details. If you cover these scales with a piece of clear plastic, cut and drilled to the same size as the dial scales, and back the scale with a thin piece of metal, you can end up with a smart looking tuning scale that can enhance that project you are about to build.

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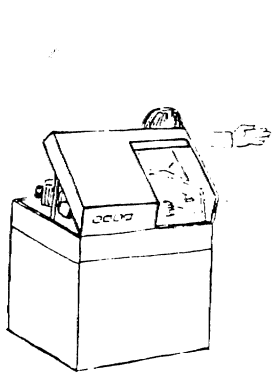
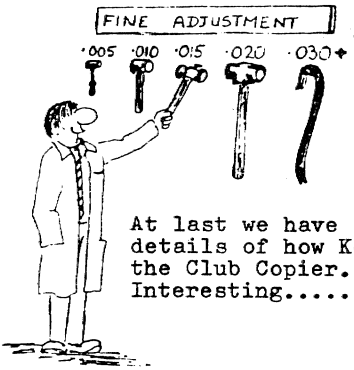




At last we have the full details of how Kevin tamed the Club Copier. Interesting.....

****

KITSET PRICE LIST FROM TRUSCOTTS (Melbourne)....I have included a price list of kitsets of some of Drew Diamonnd's projects, for your interest. Truscotts also stock some Howe's kitsets, including QRP TX, VFO, and matching receiver.

KITS FOR AMATEUR USE *All have appeared in "AR" and are by Drew Diamond.*

PRICE LIST

Cat Number		*Description*	*Price*
K1801		*80metre QRP Transmitter Ref "AR" April 86*	*$28.00*
C1801	-	*Case to suit above*	*$5.50*
X1801	-	*Xtal 3.580Mhz for K1801*	*$3.50*
K1802	-	*DC86 Direct Conversion RX for 80metres.*	*$95.00*
C1802	-	*Case for above*	*$9.95*
K1803	-	*X7AL Calibrator*	*$30.00*
C1803	-	*Case for above RRW Z532*	*$3.50*
K1804	-	*X7AL Checker "AR" Feb'88 inc Superatronic pp4a Case*	*$23.00*

HOMEBREWER'S

CORNER

....by Len VK5ZF (1)

Hi to all our homebrewers, it is great to be with you again. As you will recall in the homebrewer's section, in the last issue of Lo-Key, we started off our series on test equipment for homebrewing with an article on a wavemeter. At the conclusion of the article, I did mention that the basic wavemeter could be up-graded in several ways. So before we get started on the next piece of test equipment, let me tell you how to upgrade the basic wavemeter.

The first method of upgrading that simple wavemeter, is to include a visual indicator, to show when the wavemeter is tuned to the frequency under test. In Fig. 1 the amended circuit is shown.

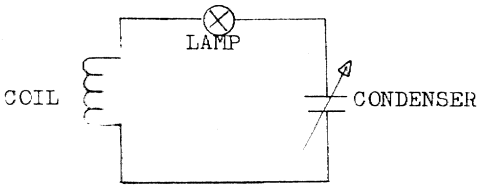


Fig. 1

For the lamp a low current type 6.3volt would be ideal. Take the trouble to instal a lamp holder to suit the type of lamp used, because it is quite easy to blow a globe if you overcouple the wavemeter to the circuit under test. as can be seen from the circuit of Fig 1 the lamp is in series with the coil and the condenser. With the lamp in the circuit, it is now possible to see the lamp start to glow as the wavemeter tuning is brought to the frequency of the circuit under test. Naturally the lamp is going to burn brightest when the wavemeter is tuned exactly to the frequency of the circuit under test.

In fig. 2 I have shown a further two ways of modifying or up-grading the basic wavemeter. The first idea is to replace the plug in coils with a single coil, which has been tapped. Coil details were given in the previous article. Try to arrange your taps for each band with your condenser about half way meshed. The swich can be a miniature rotary four position type, mounted in any spot that is near the coil. The second idea is to use a coupling coil to get into awkward places. The coupling coils comprise 2 turns of insulated single strand hook-up wire. For the coil end the coupling coil needs to be a slide fit over the coil diameter, so the coupling coil can be adjusted for the band in use. The cable connecting the coup-ling coils can be up to 5 feet in length for frequencies up to about

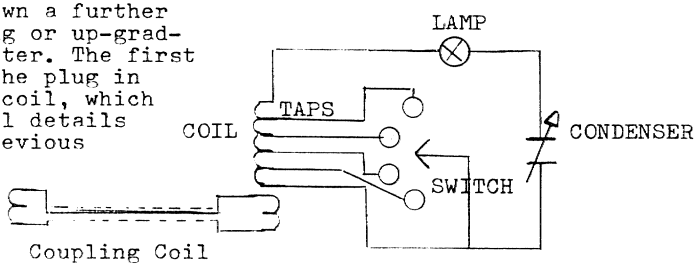


Fig. 2

30mhz. In Fig. 3 the idea of a sensitive indicating wavemeter is taken a step further by adding a coupling coil for a rectifier diode and a micro-amp meter as the indicator. here is the circuit diagram....

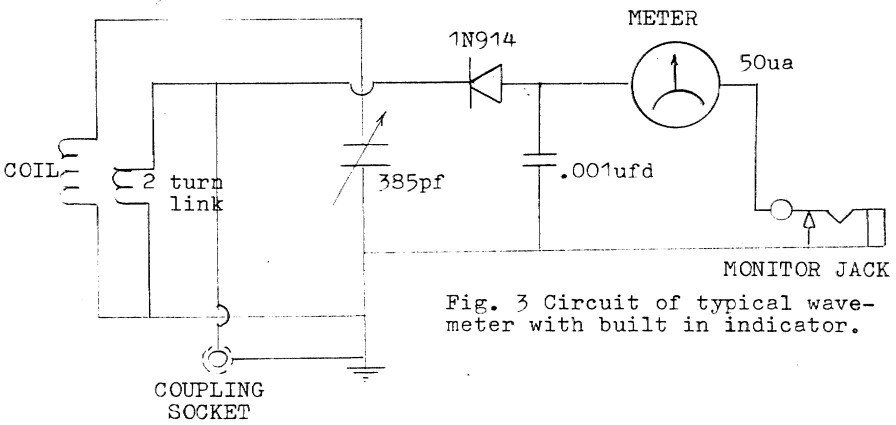


Fig. 3 Circuit of typical wavemeter with built in indicator.

The circuit responds to the frequency to which it is resonated; a small amount of energy is coupled to the 2 turn link and rectified by the diode, then indicated on the meter. By plugging into the monitor jack, a pair of high impedance head-phones (2000 ohms or more), the unit can be used as a monitor for modulated signals. The basic absorption wavemeter requires fairly close coupling, and remember that we are QRPers with only 5 watts to the antenna, however by adding a rectifier and d.c. microammeter, the sensitivity of the unit can be increased to a point where very loose coupling will suffice for a good reading. There are many other variations of the above circuit, but I believe that I have shown you enough to try a little experimenting of your own. Give it a try.

****

A TIP FOR HOMEBREWERS.... Over the past few months my wife has been buying cake from the local super-markets, packaged on that light foam type of plastic. They seem to come in all sizes and I have found them very handy indeed for holding a group of parts for a particular project. We used to toss them out in the rubbish bin, not any more.

****

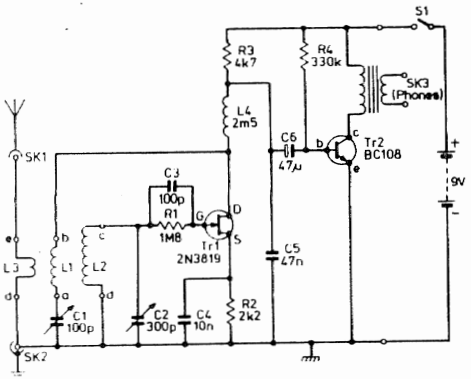
Another tip I would like to pass on to you, are the very handy Experimenter's IC Perfboards, Part no. 276-150, retailing at $1.99. They are 72mm X 47mm in size and contain 417 holes. There are two bus strips running down the center, and a PC pattern is printed on the component side. To me they seem to be the answer to many one of projects, without going to all that messy trouble of fabricating your own PCB's. Look out soldering iron here I come. I guess you reckon I have forgotten to tell you where I got mine from. That is not so, I only almost forgot to tell you. They are a Tandy Radio Shack line, and they are listed on page 103 of your 1988 Tandy catalogue.

****

SWL NOTES

.....by Len VK5ZF (1)

From this issue, I am introducing a section especially directed toward our SWL members, and I trust that the Club management committee will carry on the idea in future issues of Lo-Key.
I believe that our Club can help many SWLs to enjoy their hobby of Short Wave Listening, by providing technical notes and cicuits and "How to Build it" homebrewers articles. It may also be possible for the Club to make a basic receiver kit of parts available to our SWLs. The Club could also assist SWLs, who may like to take the next step into Amateur radio. I would like to see the Club set up a practical training scheme, in conjunction with the novice training classes. The Club could work out such a program, with the help of Rex VK2YA (131), who is connected with the Novice training program.
SWLS could help the management committee by giving them a bit of feed-back in the form of letters, letting the committee know what type of SWL material you would like to see in Lo-Key.
By way of interest I have included a basic 2 transistor regenerative short wave receiver. This type of receiver can be made to operate very well with a little care and attention to detail. With this page of introduction I am laying the ground work for the club management to get together with our SWLs and map out a suitable practical training scheme of mutual help to the SWLs and the Club. I am hoping there are a few far sighted people in the club, that can see the enormous potential in such an idea. It's over to you.....



Coil Winding Details

	Number of turns		
	L1	L2	L3
3·5 to 11 MHz	9	36	6
9 to 30 MHz	4	10	3

All coils close-wound with 26 s.w.g. enamelled wire on 16 mm diameter plastic former.

★ components

Resistors

¼W 10%

2·2kΩ	1	R2
4·7kΩ	1	R3
330kΩ	1	R4
1·8MΩ	1	R1

Capacitors

Ceramic plate

100pF	1	C3
10nF	1	C4
47nF	1	C5

Electrolytic, axial lead

47µF 10V	1	C6
220µF 10V	1	To be fitted between A2 and K2 on Veroboard if needed + to A2

Variable, see text

100pF	1	C1
300pF	1	C2

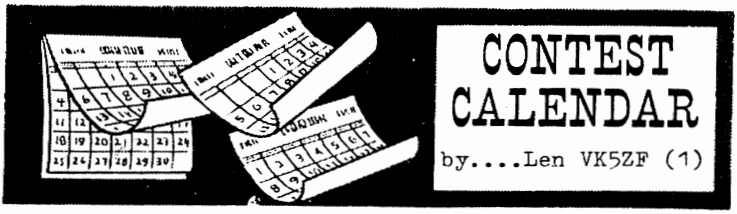
Semiconductors

Transistors

BC108	1	Tr2
2N3819	1	Tr1

Miscellaneous

2·5mH choke (Repanco CH1); Transistor output transformer (see text); 4mm sockets (2); 0·15in. Veroboard 95 x 64mm; ¼in. moulded jack socket; Toggle switch; Knobs (2); 9V battery and connector; 26 s.w.g. enamelled copper wire; Cooking foil; Wood, screws etc.



CONTEST CALENDAR

by....Len VK5ZF (1)

OCT. 8/9....VK/ZL OCEANIA DX CW CONTEST
OCT. 18....CLUB SCRAMBLE
OCT. 21....RSGB 21mhz CW CONTEST
NOV. 12/13..OK DX CW CONTEST
NOV. 22....CLUB SCRAMBLE
NOV. 26/27..CQ WW DX CW CONTEST

****

RESULTS CLUB QRP CW RD CONTEST.

1st PLACE VK7FN/QRP.....64 contacts.....128points
2nd PLACE VK3DID/QRP.....35 contacts..... 70points
3rd PLACE VK7VV/QRP.....32 contacts..... 64points

Club certificates will be awarded to the above three members, and I offer my congradulations on the quality of their logs. It shows that it is not particularly hard to make good QRP contacts in a QRO Contest. Well done genlemen, and thank you for your club spirit, and the chance to show the QRP flag in a practical way. Your logs have been forwarded to the WIA contest manager, with a request for a QRP segment in the CW section of the next RD contest. Total logs received for this contest 3.

****

THE ALL ASIAN DX CW CONTEST

Do you recall that I suggested in the last issue of Lo-Key that we would use this contest to stage our own Club DX CW contest.

RESULTS

NIL.....no logs received.....

****

VK/ZL OCEANIA DX CW CONTEST

On the response to the AA contest above, I am not about to suggest that we run a club DX contest on this one. May I just point out to you that band conditions are good at present, and it may give some of you a chance to push up your tally of DX countries. Speaking for myself that is just about what I aim to do.

****

SCRAMBLE NEWS

by....Len VK5ZF (1)

RESULTS OF CLUB SCRAMBLE HELD 19/7/88

CONGRADULATIONS TO.....

1st Place.....Rai.....VK7VV.....24points

2nd Place.....Neil.....VK7FN.....20points

3rd Place.....Reg.....VK3BPG.....17points

Certificates will be awarded to the above three entries. Well done. From remarks made when submitting logs, contestants made two points. Firstly a wish for more members to participate, and secondly that we revert to a two hour time limit for each scramble. It would seem that one hour is a little short, as you no sooner get into the swing of things, than it is time to finish.
How would members like a scramble or two on 7 or 14mhz. There would probably be more QRO and DX CW activity on these bands, and the Club should promote activities on other bands than 3.5mhz. I ask members to give it some thought and let me know your reactions to the idea.

CALLSIGN	NO. OF CONTACTS	WORKED QRO STNS	WORKED 2XQRP STNS.	WORKED CLUB STN.	WORKED MYSTERY STN.	TOTAL POINTS	POWER
VK5OS/QRP	4		4			16	5watts
VK7FN/QRP	5		5			20	5watts
VK3BPG/QRP	5	1	4			17	3watts
VK3EHH/QRP	3		3			12	5watts
VK5AIL/QRP	3		3			12	4watts
VK7VV/QRP	6		6			24	3watts

RESULTS OF CLUB SCRAMBLE HELD ON 25/8/88

CONGRADULATIONS TO....

1st Place.....Rai.....VK7VV....6contacts...24points

As there was only the one log submitted, there is not much I can say about this scramble

THE NEXT CLUB SCRAMBLES WILL BE HELD ON 18/10/88 AND 22/11/88 on 3.5mhz band. Scrambles will be for a TWO HOUR period, commencing at 1030Z and finishing at 1230Z. Same scoring and rules, but the Club station and Mystery station will be operating.
THESE SCRAMBLES ARE FUN PLEASE COME UP ON FREQUENCY AND JOIN IN.

DX CLUB SCOREBOARD

FROM...1st. AUG. '88 TO 31st. JULY '89

QUARTER PROGRESS SCORES

From... Award and Contest Manager Len VK5ZF

Callsign	1.8 Mhz	3.5 Mhz	7 Mhz	10.1 Mhz	14 Mhz	18 Mhz	21 Mhz	24 Mhz	28 Mhz	Total Points
VK7VV					424					424

So far Rai's is the only log received for the DX Scoreboard, and he is sure away to a good start on 14mhz, his favourite band. From a period of 7/8/88 to 22/8/88, he has worked 16 countries 34 prefixes and 46 DX stations. His log makes interesting reading. So for this quarter Rai is the 14mhz leader, and the overall leader. I think it is time for the rest of us to give him a little bit of competition.
Rai tells me that 14mhz is wide open on many days, and says he is only using a dipole as his antenna. So come on and join in, while band conditions are so good.

****

HOMEBREW YOUR GEAR, DONT BUY IT, THEN USE IT

CLUB COMMUNICATOR CORNER

By Don Callow VK5AIL (75)

CURRENT MONITORING

It is useful to be able to monitor total current into a rig at all times during testing. You may be using your multimeter to check circuit voltages, so can't leave it in the power supply lead.

The maximum current drawn by the Club Communicator is under 800mA (Key Down), so if you have a 0 - 1A meter or own a couple of multimeters there is no problem. However, as Bill VK4MUQ (113) mentions, 1A ammeters are sometimes hard to come by. Bill's method of using a 0.1mA (100uA) meter is worth reading about, as it may be new to you. Other sensitive ammeters, e.g. 50uA or 200uA, can be used in the same way.

The idea is to use a shunt of resistance wire to pass most of the current. If the meter's full scale deflection (f.s.d.) is 0.1mA, then for 1A current you need to pass 999.9mA through the shunt.

Take a piece of resistance wire (how long ?) and put it all in parallel by connecting across the meter terminals. One terminal should be set up so you can easily vary the effective length of the shunt wire by sliding it through.

Connect your multimeter (set on a range to cover 1A) and the ammeter in series with the rig's positive power lead. Turn on the power and then the rig. The Club Communicator will draw about 100mA Key Up. If the ammeter needle flies across to the needle stop at f.s.d. turn the power off QUICKLY.

Unless you know the resistance of the meter, you must guess how much to put in the shunt circuit to start with. Better to use too much than too little. DO NOT use an ohmmeter across meter terminals because it may damage the meter mechanism.

Adjust the length of resistance wire until you get a small needle deflection corresponding to the reading you want for about 100mA of actual current. If you fluked it, you will read about 0.01mA (10uA) on a 0.1mA ammeter.

Now try it with Key Down and see if the meter reading corresponds to the multimeter reading. If it reads too high, remove some shunt resistance. If it's too low it means you need more shunt resistance in order to put more of the current through the meter.

Repeat this process until you get the right reading, matching the multimeter reading, on Key Down.

The initial hurdle with this method is that you have to get hold of suitable resistance wire. Bill uses element wire from a jug and you could try wire from an old electric blanket (now that winter is over !). Dick Smith Electronics Cat. W-3200 is of fairly low resistance at 6.3 ohms/m wire. Higher resistance wire is also useful.

Any suggestions for more sources of resistance wire ?

A letter to.....

MEMBERS OF THE CW OPERATORS QRP CLUB

.....from Len VK5ZF (1)

The time has arrived for me to step down from running this club, as I have resigned my administrative positions several months ago, and this will be my final effort as the Editor of Lo-Key.

My work load of club affairs has grown to such an extent, that I can no longer handle it, and I have had enough. The club has administration problems and has had these, since the club was first founded some 5 years ago. The first problem with the Club Executive Committee, who run the affairs of the CW Operators QRP Club, is that it consists of only 3 members. Kevin our Treasurer, Rai our Secretary, and Len our President. Kevin takes care of our financial needs and club membership records with his computer, and that is very helpful indeed, but only has very limited time available to put into club affairs. He is a very busy man with other matters of a non amateur variety, and that is AS IT SHOULD BE. While Kevin and myself reside in Adelaide, Rai lives in Hobart, and apart from any other considerations, the distance factor alone makes Rai an ineffectual member of the committee. Apart from his secretarial duties, Rai has also been Editor of Lo-Key, and State Co-ordinator all at the same time. He also reached the stage of enough, and needed to off load the job of Editor. In my case I was doing the jobs of President, Editor, Public Relations Rep. and Awards and Contest manager, and I have now resigned. So it would seem that to improve the lot of the next lot of committee members we need to have them all living in the same town, and increase the number of committee members to a level of 7 if possible. The very MINIMUM MUST BE 5. It is of course the old story of a few willing workers carrying too much of a load, and I know that it happens in other clubs beside our own. It really gets down to whether the members are prepared to shoulder some of the work load, or let the few struggle on. These problems must be resolved now before a new management committee is formed, or the club is going to have the same problems all over again. As the club is basically based in Adelaide for administration purposes at present, I suggest that the VK5 members living in Adelaide form a committee of 7 or 5 as the case may be and run the affairs of the club under an Organiser. This to be done for a period of 2 years, before handing over to a similar group in another capitol city in another state. The present system has never worked in the past, it is not working at present, and it is not going to work in the future. You the members need to decide if you really want this club of ours, and if the answer is yes then do something about it. To show that I am prepared to put my effort where my mouth is, I would be prepared to serve on a committee of 7 in Adelaide for a period of 2 years, if my services are required.

I do not wish to make this letter to you any longer, and I make no apology for bringing this matter to the attention of the members of the club. I believe you needed to know the facts, and I have told you about them as I see them. Perhaps some of you have not agreed with my suggestion of a solution. Then write to the Committee, and tell them what they should do in your opinion. I am sure that the committee will be very glad to receive any constructive suggestions.

As for me, it is out with the soldering iron, and into all the projects that I have lined up. Would you believe that I have not heated my soldering iron up for about 3 years. God Bless.

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NON MEMBERS PAGE

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If you are a non member, then this page is for you. This copy of our Club Journal has been sent to you, with the hope that you may get some idea of the activities of the CW Operators QRP Club, by reading it. We are saying to Amateurs, that you can enjoy your hobby just as well, and in fact better, and it is not necessary to spend thousands of dollars to do it. In each issue of Lo-Key, we try to include as many technical articles as possible, on all types of QRP equipment, and encourage our members to fabricate their own gear.

The reason why we promote the use of the CW mode, is to show support for a skill that has been part of Amateur Radio from its inception, and we are proud of it. Our Club is possibly the only Radio Club in Australia, that actively supports CW exclusively, and we will continue to do so, while it is a legal mode of transmission, in the Amateur Service.

Using Low Power and Homebrewing our own equipment gives QRPers a tremendous feeling of achievement and satisfaction. In fact we feel that we have a purpose in holding an Amateur Licence. Would you like to help us, to put the AMATEUR back into Amateur Radio. Would you like to become enthusiastic about your hobby again, then fill in the application form, and mail it to the address shown on the form. Quit pressing buttons, and start using some of the Amateur skills that you have acquired. ...-.-

Cut along this line

CW OPERATORS QRP CLUB

I would like to apply for Membership to the CW Operators QRP Club, as I am interested in the use of the CW Mode of Communication, on Homebrewed Equipment, using Low Power, in the Amateur Service. With this application I enclose $A10 for VK Amateurs, $A12 for ZL Amateurs, $A for DX Amateurs, which is the annual Membership fee.

Call Sign.....

Name (please print).....

Address.....

Please post this application to -

Len O'Donnell VK5ZF, 33 Lucas St., Richmond, S.A. 5033, Australia.