



# SPRAT

THE JOURNAL OF THE G QRP CLUB

DEVOTED•TO•LOW•POWER•COMMUNICATION

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SPRING 2000



**Dave DeMaw N8HLE and Zack Lau W1VT operate  
W1FB at ARRL Headquarters**

**ILOVA 2B RECEIVER - WIDE RANGE VXO TRANSCEIVERS  
THE SNOWFLAKE - QRP DUMMY LOAD - 160 AM RECEIVER  
INDUCTANCE METER - CORK PIN CHECKER - SEWERPIPE POLE  
CHEAPEST SIDETONE - POT LUCK - TOOL RACK - Z MATCH ATU  
MAKING TIN BOXES - CHEAP IF FILTER - VK WITH 5W  
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# JOURNAL OF THE G QRP CLUB



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**Rev. George Dobbs G3RJV**

## EDITORIAL

### **The Doug DeMaw Memorial Station [Front Cover]**

On the last weekend of February, the newly formed Central Connecticut QRP Club in conjunction with the ARRL launched the Doug DeMaw Memorial Station with the callsign W1FB.

The station used the original Tuna Tin 2 (one of Doug's projects) and the operators included Dave DeMaw, N8HLE, the son of Doug. The first contact was with Jean DeMaw, W1CKK, Doug's widow - a DeMaw on each end of the QSO. The station operated on 40, 30 and 20m with resultant pile-ups. Amongst the lucky recipients of a QSO were George Burt, GM3OXX and Peter Barville, G3XJS.

It seems appropriate that Doug DeMaw also features in this issue of SPRAT. We have the last entry for the W1FB Memorial Prize Trophy for 1999 and a circuit from Doug in the centre pages.

This issue features many of the simpler circuits and ideas that have been building up in my SPRAT folder. Please keep your ideas coming - we enjoy them all. You don't have to be a technical author - a simple sketch and a few words can be turned into a SPRAT article.

72/3

G3RJV

**EDITED BY GEORGE DOBBS G3RJV    ARTWORK BY A.W. (MAC) McNEILL G3FCK**  
**Printed by G QRP Postal Mailing, 4 Hyde Square, Upper Beeding, Sussex BN44 3JE**

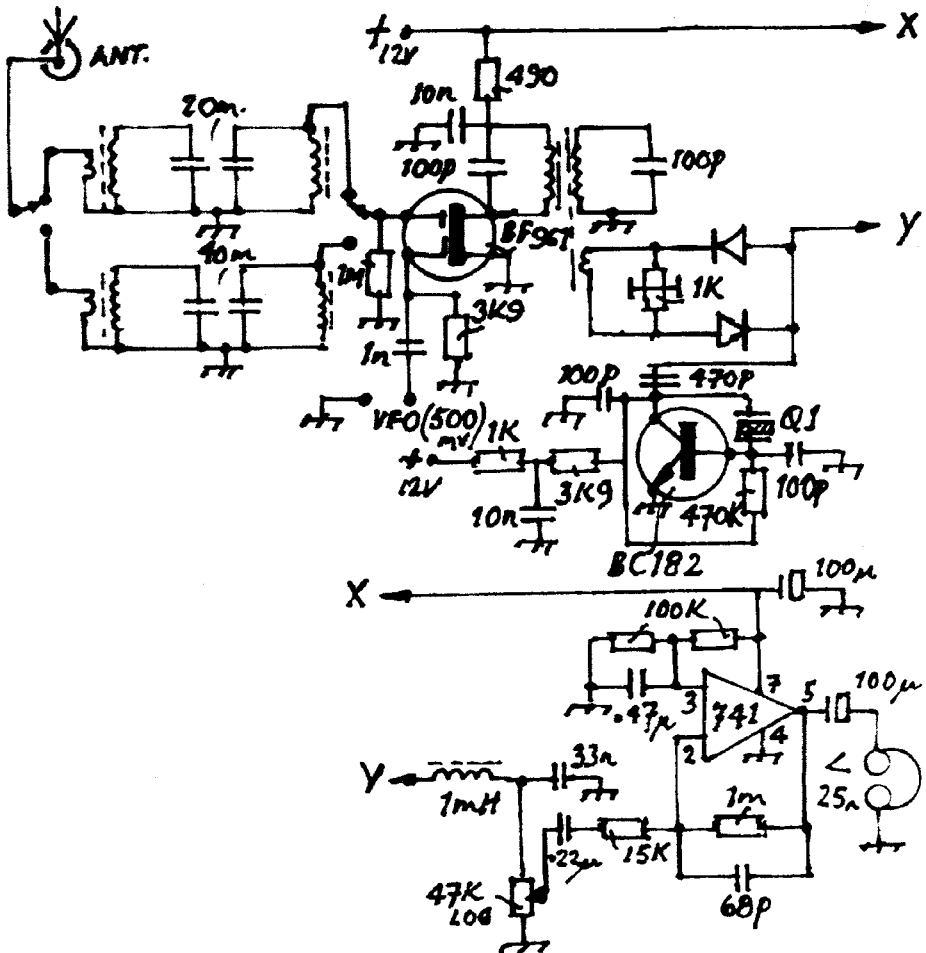
# The ILOVA 2B - Simple Two Band Receiver

Milan Catari 9A9RA, Ilova, V. Nazora 43, KUTINA. 44320. Croatia



## WIFB MEMORIAL PRIZE ENTRY

I like both music and CW - but not both at the same time. Such a hash can often be heard if a simple DC receiver is used for reception because perfect AM suppression can be achieved on one frequency only, or, in a very narrow band. For the WIFB Memorial Award I designed a simple receiver for reception on two amateur bands (7 MHz and 14 MHz and 21 MHz etc). As can be seen from schematic diagram RX consists of two units: DC RX for 3582 kHz (determined by XTL used) and the tuner unit. Instead of XO a simple LC oscillator can be used. For reception on 14 MHz and 7 MHz VFO should cover range from 10418 kHz - 10768 kHz. All coils were wound on 7 mm dia coil former with a slug for HF. In the prototype all coils were unshielded and RX worked very well but I suggest at least a copper screen between band filters.





When all filters are peaked switch on 40m and tune to around 7100 kHz when some of the strongest broadcast stations are on the air. If AM can be heard adjust 1K pre-set potentiometer to avoid AM detection. BFO should produce about 0.8-1V if Si diode types in detector are used. If not so alter collector capacitor (100pF) until correct voltage is reached. If voltage is too high increase capacitor and vice-versa.

**CONCLUSION:** RX is cheap and easy to build. Results are exceptional with a 30m LW + ATU clear reception is possible at any time of the day. The only shortcoming is a (pretty weak) spurious signal around 14316 kHz (3582 x 4). If you can get a few kHz higher XTAL or a few kHz below 3500 kHz this problem will be solved. Instead of a simple bandpass filter appropriate home made XTAL filter can be used to improve selectivity. Sensitivity is really excellent. On 20m with 100 cm long piece of wire, stations from all continents can be received easily.

If high gain antennas are used RX may complain of overload or intermodulation on 40m. If so, a simple 12 dB - 20dB T or Pi attenuator can help. Good luck and please let me know how you get on.

### COMPONENT LIST

AF amplifier - uA 741 or any similar OP amplifier

BFO - BC 182, BC547, BC237 etc

MIX - BF 961

Oscillator - BF 245

Buffer - BF 224, BF 454 etc.

Regulator - 7808

Diodes - 1 N 4148 - 2x

XTL - 3582 kHz - 1x

Coil formers - 7mm dia with slug - 7x

### RESISTORS

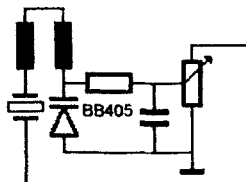
2 x	100k	1 x	1k
2 x	1M	3 x	470
1 x	15k	1 x	120k
1 x	470k		Pre-set pot. 1k
2 x	3.9k		Pot. 47k/log

### CAPACITORS

5 x	10nF	1 x	120pF
3 x	22pF	1 x	33nF
2 x	33pF	1 x	470nF
4 x	100pF		
1 x	68pF		
1 x	220nF		Variable cap. 11pF
1 x	1nF		Trimmer cap. 35pF
1 x	47pF	2 x	Switch 2
2 x	100nF		RF choke 0.5 - 1mH
2 x	100uF		

# QRP Transceivers using Wide Range VXOs

Norbert Litz HB9BWY, Pappelweg 7, SACHSELN, CH-6072. SWITZERLAND



For some years, Norbert, HB9BWY, has been building QRP Transceivers using wide range VXO control.

It is common to "pull" a crystal frequency using capacitance and inductance. If 2 [or 3] inductors [small axial chokes] are physically mounted in parallel, greater shifts can be obtained according to the distance between the chokes.

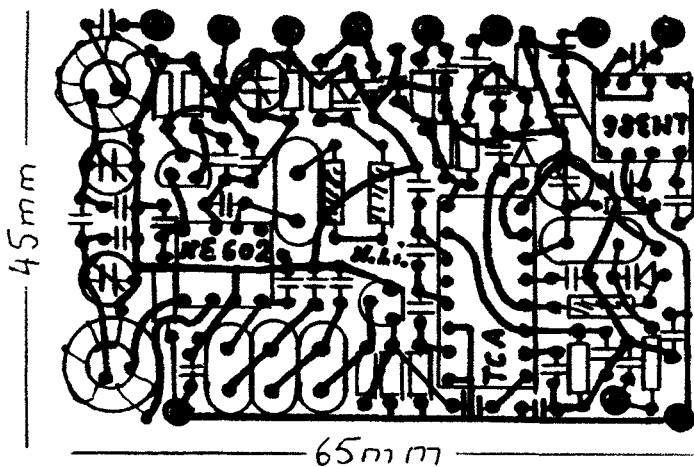
Norbert has used the following values for practical QRP transceivers with VXO tuning and ladder filters. VXO tuning, using parallel mounted chokes, is used for the local oscillator and the BFO. The ladder filter is on the crystal frequency of the BFO.

## Suggested Values for 4 Bands

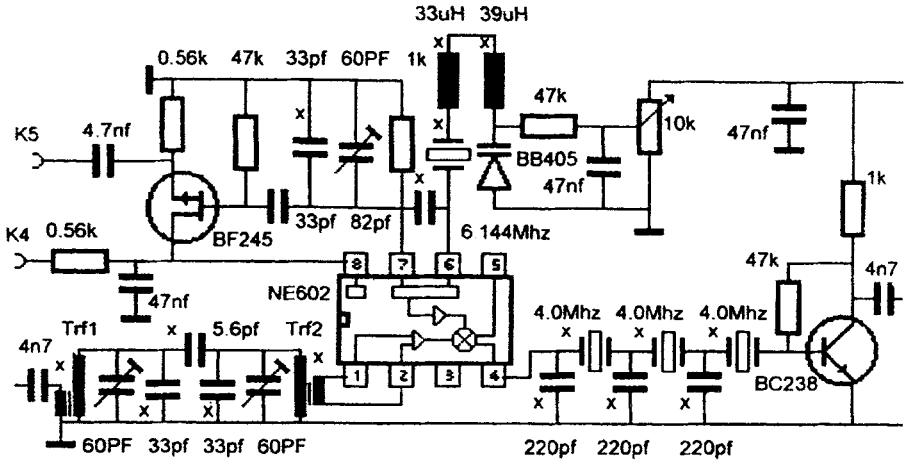
Band	VXO / BFO Freq & shift	Inductances & Xtal Freq	Tuning Range
80m	BFO: 6.40 + 2kHz VXO: 9.00 + 85kHz	39uH + 33uH + 6.400 22uH + 15uH + 10.000	3.500 - 3.585MHz
40m	BFO: 4.915 + 2kHz VXO: 12.00 - 85kHz	47uH + 47uH + 4.915 12uH + 15uH + 12.000	7.00 - 7.085MHz
30m	BFO: 4.00 + 2kHz VXO: 6.10 + 45kHz	47uH + 47uH + 4.000 33uH + 39uH + 6.144	10.10 - 10.14MHz
20m	BFO: 5.00 + 3kHz VXO: 9.00 + 65 kHz	39uH + 39uH + 5.000 22uH + 22uH + 27.195	14.0 - 14.065MHz

Drawing of a PCB Layout suitable for the Receiver

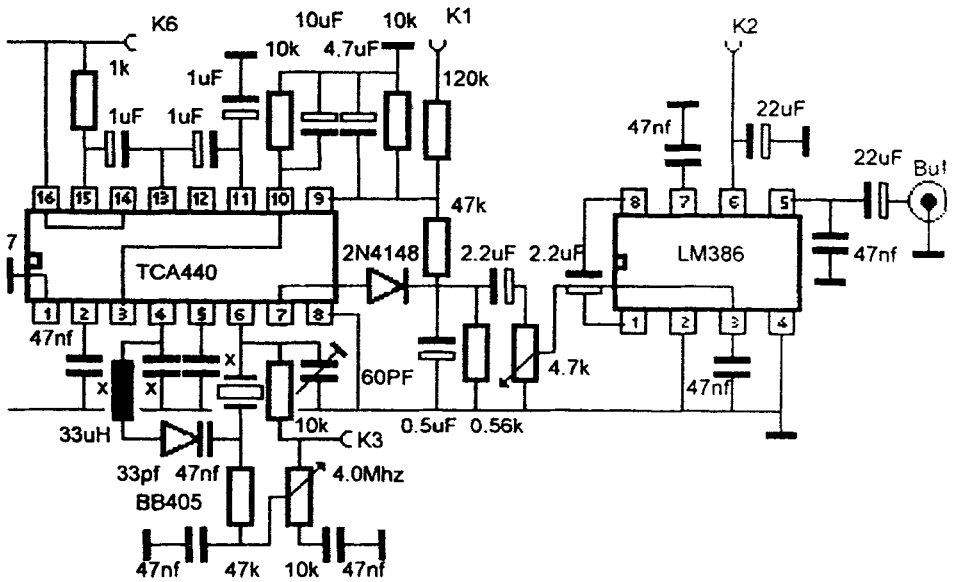
Board  
45mm x 65mm



**RECEIVER from HB9BWY - 30m Variant - For other bands change X-parts**  
 [note the FET [BF245] buffer for transmitter mixing]

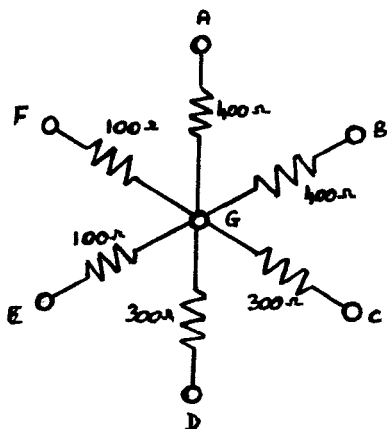


Trf1: T-37-6 mit 7 / 40 Wdg.      K1 = + from TX      K5 = VXO out  
 Trf2: T-37-6 mit 40 / 7 Wdg.      K2,3,4,6 = + Ustab. 8V



## The Snowflake [1 and 2]

Dave Penny G3PEN, 13 Newnham Cl. BRAINTREE. CM7 2PR  
dave@penny73.freemove.co.uk



I recently read a "Hints & Kinks" item (November 1987 QST), authored by N6BZA and W6BDN, showing a method of obtaining a balanced 52, 70 or 200 ohm dummy load with only two resistors. Such a unit can be used to test 4:1 baluns, for instance, or provide standard resistive "mis-matches" for VSWR meter tests, as well as provide a normal dummy load.

I thought some improvements might be possible, to provide more values of resistance, as baluns come in many ratios nowadays. The following "Snowflakes" are the result. These designs may not be original, as the H&K article may have resulted in other designs being published - but I have not seen any. My apologies if I'm covering well-trodden ground.

"Snowflake 1" uses six resistors, one end of each being available on individual sockets or connectors, and the others all joined together, to one other socket. The six resistors are arranged symmetrically around the common point, like wheel spokes. Two resistors are 400 ohms each, two are 300 ohms each, and two are 100 ohms each.

For reference, call the two "open" ends of the 400 ohm resistors A and B, the 300 ohm resistors C and D, and the 100 ohm resistors E and F. The common point is G. By connecting across two sockets, or one socket plus two others joined (paralleled) together, it is possible to obtain the following resistances (each figure is in ohms):

800 A-B, 700 A-D, 600 C-D, 550 A-C//D, 500 A-E, 450 A-E//F, 400 A-G, 350, C-E//F, 300 C-G, 250 E-C//D, 200 E-F, 150 G-C//D, 100 E-G, 75 G-D//E, 50 G-E//F.

Other values are also possible, by paralleling three or more resistors, but those above seemed the most useful. Alternative combinations are possible in many cases, but I suggest that the same set should always be used, to maintain measurement consistency, unless the resistors are perfectly matched. This unit can also be used as an unbalanced load, of course, by connecting one leg as ground.

A small Snowflake can be built with 1W, 2W or 3W 5% metal oxide resistors, which I have found to behave well across the HF bands. I obtained the 400 ohm values by paralleling pairs of "low" values from an 820 ohm batch of 1W rating, although a value of 410 ohms is probably close enough for most purposes. The 300 ohm values came from paralleling a 2W 430 ohm resistor with a 1W 1K ohm resistor (301 ohms nominal). 100 ohm 2W resistors are standard E6 value, but may be worth selecting, to obtain a "spot-on" 50 ohm dummy load. For these resistors, the power levels are definitely QRP, with the 50 ohm load OK for 4W, and the others ranging from 2W to nearly 6W.

Similar units with larger wattage values may easily be built by paralleling greater numbers of higher value resistors, as required. If all the resistors are reduced in value to one-tenth, you will get a range from 5 to 80 ohms, but although some values are useful, not many directly relate to round-figure VSWRs below 50 ohms.



"Snowflake 2" meets this need. Using the same layout as before, A and B are 25 ohms each, C and D are 16.667 ohms each, and E and F are 12.5 ohms each. This provides VSWR values from 1:1 to 12:1 below 50 ohms, plus 1.5:1. These are obtained as follows (each figure is in ohms):

50 A-B, 25 B-G, 16.67 C-G, 12.5 E-G, 10 G-A//D, 8.333 G-C//D, 7.143 G-E//C, 6.25 G-E//F, 5.555 G-A//D//E, 5 G-A//E//F, 4.545 G-C//E//F, 4.166 G-A//B//E//F. 33.33 (1.5:1 vswr) C-D.

While there are various ways of achieving the resistor values quoted for A to F, you will see that all of them can be obtained from various numbers of 100 ohm resistors in parallel.

Normal HF construction practices should be applied, with sufficient ventilation as needed for the power used. The suggested shape keeps the capacity between each resistor or group to a minimum, and fairly similar, but any reasonable layout should suffice in practice.

Why "Snowflake"? Firstly, being six-pointed, with a centre, it looks like one (to me!), and secondly, a small one will melt if you use QRO. Thirdly - I doubt that any two "copies" will ever look exactly the same. Mine don't!

## A QRP Dummy Load

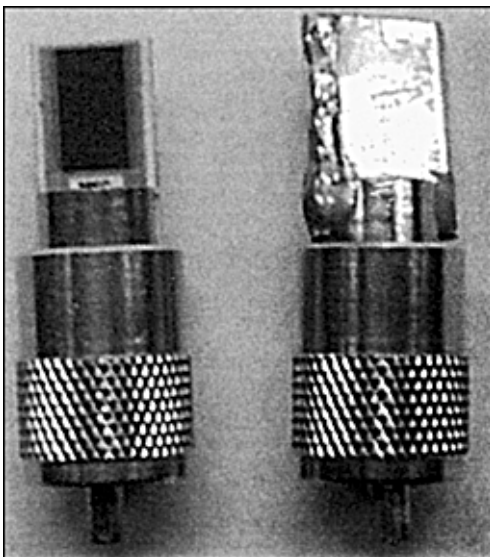
**Gareth Evans G4XAT, 7 Westland Dr. Hayes, Bromley, Kent. BR2 7HE**

At Work we make good use of the Rapid Electronics catalogue. There is a new issue every six months with something interesting in the "new" section. I spotted a Thick Film Power (5W) Resistor. And prompted added a 50Ω and 2 100Ω resistors to our next order. Based on the "light bulb in the back of a PL259" idea, I came up with the idea shown in the photo. The 50Ω device has a VSWR of 1.0:1 on Hf and remains less than 1.1:1 all the way up to 170MHz [the limit of the MFJ antenna analyser). Dissipation can be simply increased by using a clothes peg to hold one [or two] TO220 heatsinks directly to the surface of the resistor.

The second one is the two 100Ω devices back to back but I packed them with heatsink paste and covered them with brass plate culled from an old filter. This allows greater heat dissipation but the VSWR rises over 30MHz, remaining just about useable to 50MHz. (I don't know why).

**The source is Rapid Electronics Tel: 01206 751166.**

**5W Thick Film Power Resistors. 50R: 62-4408 (52p) 100R : 62-4410 (52p)**



## **160m AM Receiver**

**A companion unit to the Cross Town Transmitter**

**George Fare G3OGQ, 1 Old Town Close, Walton, Warrington. WA4 6SZ**  
**Incorporating amendments by Duncan Walters G4DFV**

This superhet receiver is based on the use of the TDA1072 IC, followed by an AF amplifier. The IC contains a gain controlled RF amplifier, mixer, local oscillator, detector and AF amplifier and only needs a few tuned circuits and a filter to make quite a good AM receiver.

The design mainly follows the data sheet so little originality is claimed. The author is grateful to G4DFV who suggested several amendments to the circuit, which improved the selectivity and noise figure of the original design. These involved a band pass filter at the front end and a noise filter before the AF amplifier.

The AF stages, which follow, consist of a TL08s pre-amplifier and an LM380 amplifier, which the keen eyed may notice is almost identical to the modulator in the transmitter.

Constructors may use this circuit for both transmit and receive, switching it by relays or diodes, but it is worth weighting up the cost difference, which is probably not as much as you think, before embarking on the complexity.

Construction is comparatively simple, especially if a PCB is used (a track and components layout can be obtained from the author). Use screened wire to the volume control. All resistors are 1/4W and all capacitors except electrolytics are ceramic.

The varicap diode can be obtained from JAB Electronics. Having completed the board, tuning of the local oscillator can be accomplished by either connecting a frequency counter to TP1 or listening to the local oscillator on a general coverage receiver.

Set the tune control to mid range and adjust T4 for a reading of 2244kHz at TP1. Fit a 100uA meter to the S meter pin and inject a signal into the antenna socket at 1.900 MHz. Tune T3 for a maximum S meter reading, followed by T1 and T2. Reduce the output from the signal generator to as low as possible so that the AGC does not take over.

The tune control should cover the whole of the 160m band. Note that the MUTE pin must be grounded to receive signals. On transmit; a voltage of at least 3.5 V must be fed from the transmitter to ensure full muting.

Performance, considering the simplicity of the circuit, is quite good.

The sensitivity is 1jV for a 10dB (S+N)/N ratio, with an AM signal modulated 85%. The S meter should be calibrated so that S9 corresponds to a 50uV signal.

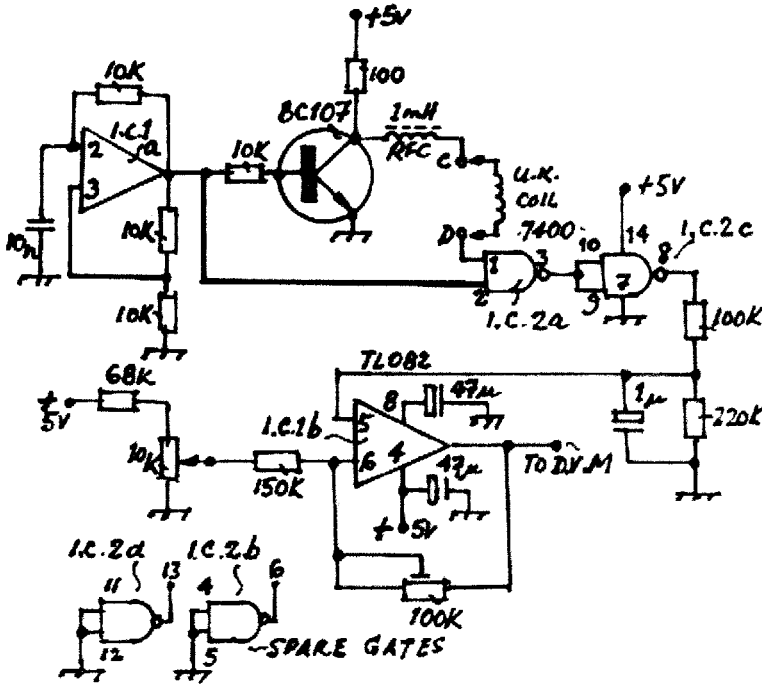


# An Inductance Meter

Gordon Pope G3ASV, 6 Brookland Rise, LONDON. NW11 6DL

The circuit uses a double opamp for IC1, in my case a TL082. The first half, IC1a, is wired as a multivibrator with time constant C1 and R2. The output from this feeds a 2i/p gate IC2a (a 7400 or 74LS00) will do here and also the base of a transistor TR1. The output of this transistor feeds pulses into the unknown inductor via a 1mH choke RFC. The output of the 2i/p gate is fed to a second gate IC2c the output of which feeds the positive i/p of the second half operational amplifier IC1b.P1 should be adjusted in conjunction with Tr1 to set the range of the meter.

The device with the values shown measures inductors in the range 200 uH to 50 mH.

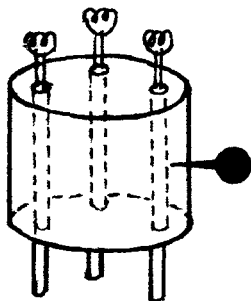


L	DVM	Notes
0	0.001	
920uH	0.019	Ferrite core
1000uH	0.018	Commercial
1.3mH	0.32	
2.5mH	0.061	
5.2mH	0.121	
6.4mH	0,164	
O/C	1.115	Open circuit

## The One Cork Pin-Out Checker

**Dr. Ken Craven, G4LKP, 8 Melander Close, YORK. YO2 5RP**

This can help the home constructor to check that transistors, when viewed from above, are positioned in accordance with their pin-outs, which are customarily depicted from below. It also adds further meaning to the term 'home brew'.



**KEN CRAVEN —  
— G4LKP**

### Method

Cut a 15mm cylindrical section from a wine bottle cork. Drill three 1.5mm holes through the full length of it, corresponding to the transistor pin positions. Mark the entry and exit holes with a black felt tip pen for their easier location. Next, cut separate 5 cm lengths of black, yellow and red hook-up wire, and tie a knot at the end of each wire. Pass the wires through the holes as far as the knots, as per the appropriate pin out, using the NPN convention: Black (Emitter), Yellow (Base) and Red (Collector). Trim protruding wires back to 1 cm. The wires can be re-positioned to suit different pin-outs, and the position of any TAB on the transistor case identified by sticking a coloured map pin into the appropriate side of the cork. (this also has the advantage of stopping the cork from rolling off the bench.)

*A Handy transistor pin out guide can be made if two pages of pin out diagrams are Photostatted and glued to both sides of a piece of board such as the hard back cover of an unwanted book, cut to size and covered with sticky back clear film for protection. It can be hung in a convenient place for easy reference.*

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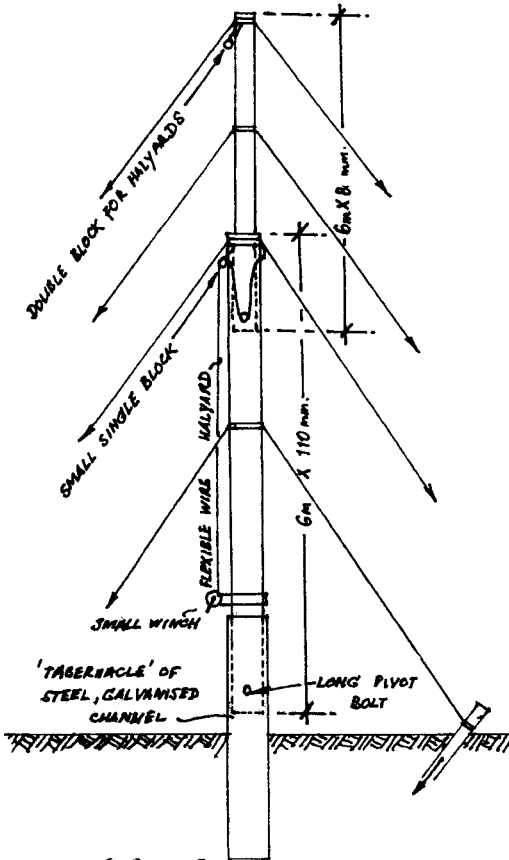
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# The Sewerpipe Pole

John Crawley GM3LBX Cove, Campbeltown Road, TARBERT, PA29 6SX



It has several advantages over other masts I have used.

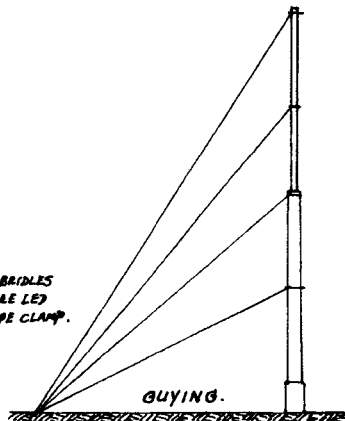
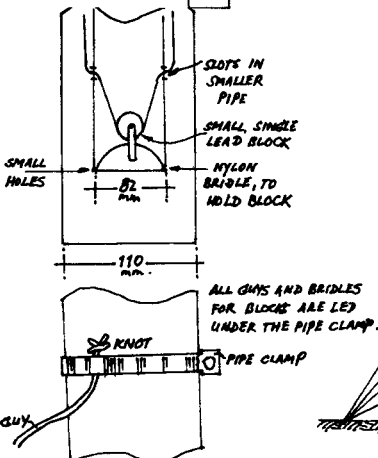
1. It is lighter than most metals
2. It is very robust and has stood up in our terrific winds.
3. It is non-conducting so excellent for such things as Delta Loops etc.
4. One can put it up single-handed.
5. It is reasonably cheap and easily available material.

Marley Extensions make "underground drainage pipes" at 82mm and 110mm. The latter are available in 6m lengths (coded UL406), the 82mm pipe is in 3m lengths (9UP303) and it is easy to weld 2 lengths together with their solvent.

Total cost of pipes £66.48 and VAT, which is good for a 12m mast. The guys are 5mm 'poly' braid as used in trawler nets - very strong.

Materials: 2x3m 82mm drainage pipe UP303, 1x6m drainage pipe UL406. 5mm braided polyprop. Cordage 9as used for fishing nets) sold by weight, nearly 2Kg required.

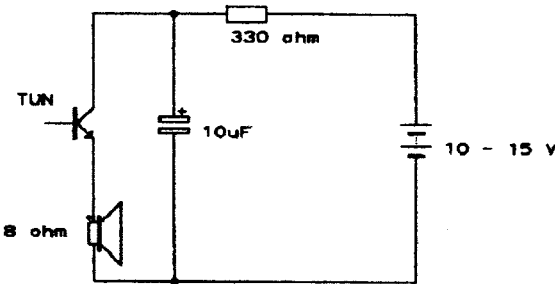
Notes: To join two 3m lengths of 82mm pipe cut 40mm off one piece and reduce it in diameter by sawing a slot about 10mm wide to allow it to be pushed up the pipe end to join pipes. Use the proper Marley cement and work quickly



## The Cheapest Sidetone?

Eric Van Bree PA9EVB, Ch Leickertstraat 17 iii, AMSTERDAM. 1062 BB

I built this circuit as a "ugly" construction in less than 5 minutes. TUN means Transistor Universal NPN. I used a soldered-out BC547-A, but I think any NPN transistor would work. When it does not oscillate you should experiment with the DC voltage, or the resistor. My circuit starts oscillating at 10.5 V and stops at 14.5 V. The frequency rises when the voltage is increased, maybe you could change the resistor by a 1k pot. for tuning the frequency.



Nobody can tell me why this simple circuit does work anyway, even my father an MSc. in analogue electronics and, even worse, a lecturer, says that it looks like a relaxation oscillator and uses the non-linear parameters of the transistor. How about that?



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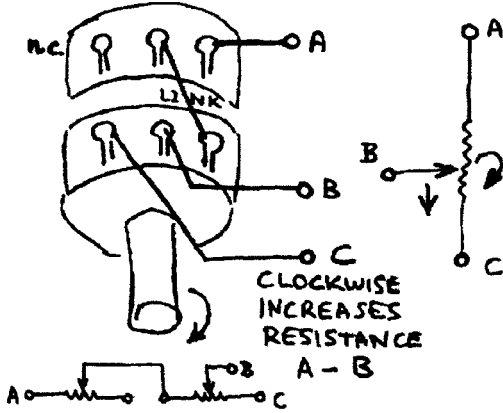
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FOR SALE: FT7-B, GWO, unmodified, Mic, Handbook, £200 ovno. or swap full-spec Walford Taunton. John Teague, G3GTJ. 01963-240319 (Castle Cary, Somerset)

FOR SALE: TenTec ArgosyII, HF Transceiver, Digital readout, 5/50w. plus Yaesu FC700 ATU. Sell together at £395. Tel: Ernie GØGPD. 0161-301-3750.

**Circuits & Short Cuts : Pot Luck [From Lo-Key March 1999]**  
 Don Callow VK5AIL, 5 Joyce St. Glengowie. South Australia. 5044

YOU CAN USE A DUAL GANG 20K  
 IN LIEU OF A SINGLE 40K POT  
 OR 25K → 50K



When setting up some kits I was reminded of Ohms Law.

If you need a pot, but don't have the right value all is well if you have a dual pot of about half the required value.

Just connect them in series as shown. Check out the terminals to know which is which otherwise the result may not be what you expect - in fact quite surprising!

In other situations paralleling may be appropriate.

**CORRECTION: NEW ZEALAND SUBSCRIPTIONS**

The Correct address for Mike Sheffield, ZL1ABS is  
 176 Albany Highway, ALBANY, Auckland, 1331. NEW ZEALAND  
 The subscription amount should be NZ\$20.

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Parallel res. 30pF Load C.

Large Number of Crystals Stocked 31 page list available

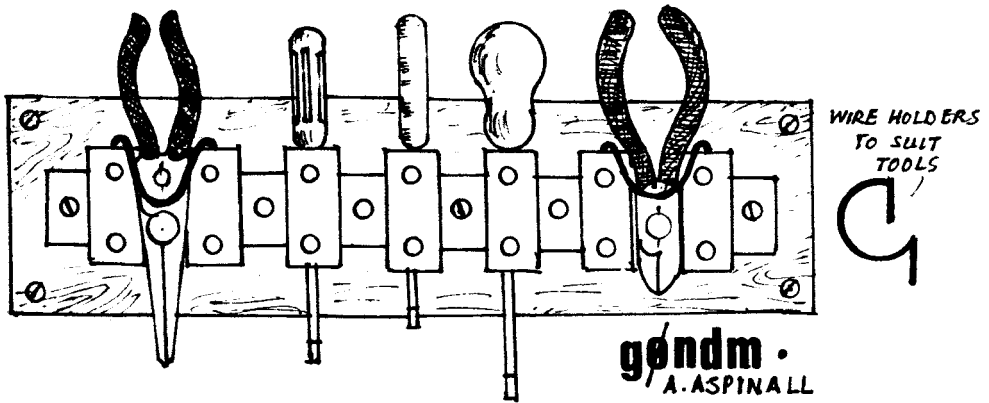
SPXO/TCXO/VCXO from £2.50. X-Tal Circuits & Applications Booklet £5.00

IQ-Electronic Design Tel: 0181-391-0545, Fax: 0181-391-5258



## A Connector Block Tool Rack

A. Aspinnall, GØNDM, 44 Meadow Cres. Woodchurch, CH49 8HY



A 16mm, 30 amp, Connector Block is used as a tool holder for small and medium sized screwdrivers, pliers and wire cutters. The pliers and wire cutters are held by a thick wire loop, bent to shape and inserted in two of the holes in the connector block. The block is screwed to a wood backing.

## HAMCALC version 41 - Free Software

Released 10 Dec 99 with many new upgrades. Over 200 Painless Math and Design Programs for Radio Amateurs and Professionals, used worldwide as a design reference and learning tool since 1993. All programs work in either metric or Imperial/USA units of measure. Contains much information not readily found in current amateur handbooks and literature. Easy to use by non-technical hobbyists.

### How To Order:

HAMCALC is written in GWBASIC and requires a GWBASIC.EXE file in your root directory. For a FREE HAMCALC 3.5" 1.44 Mb MS-DOS/WINDOWS diskette send US\$5.00 (US\$6.00 if you want a GWBASIC diskette included) check or money order (no stamps or IRCs please) to cover cost of materials and airmailed to anywhere in the world, to George Murphy, VE3ERP, 77 McKenzie St. Orillia, ON. L3V 6A6, Canada. (email : ve3erp@encode.com)

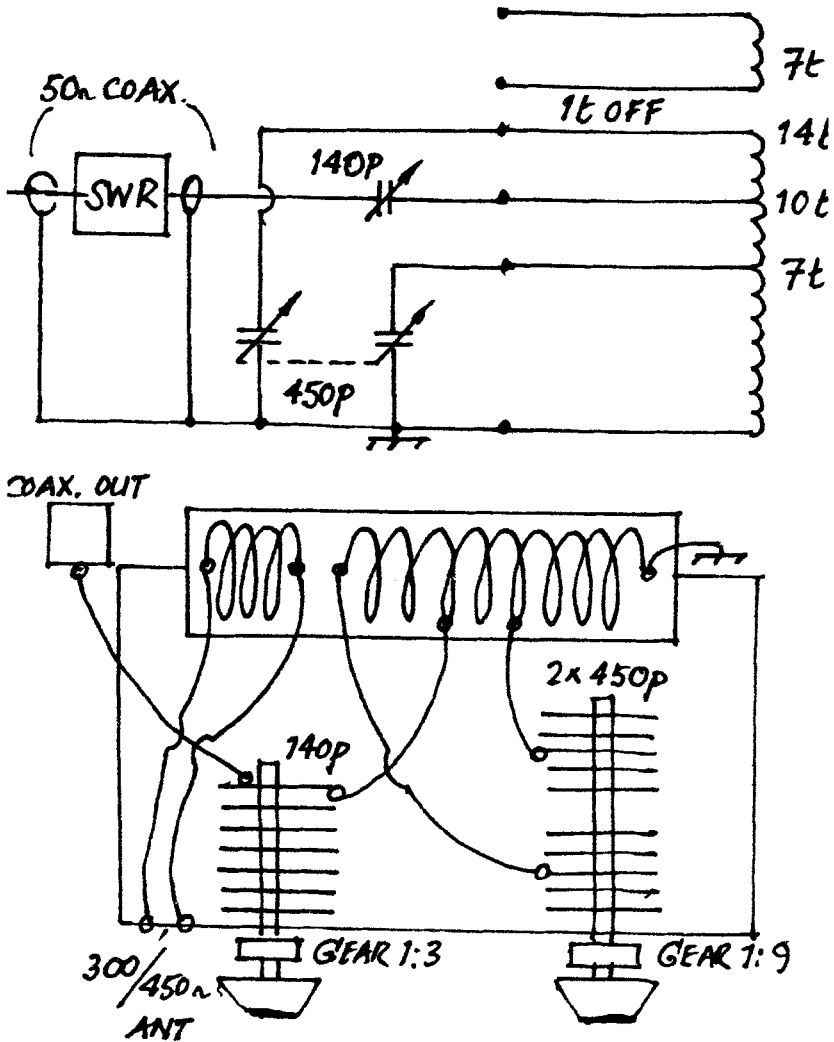
## Silent Key Sale of Dick, G2ACG

TS570D only six months old fitted voice and 270Hz cw filter £750, FT 707 complete line up £500 may split, TS520 reasonable condition and working well £120, Heathkit HM9 SWR/Power meter for HW9 £20, Class D wavemeter with handbook £25, Weltz SP15m SWR power meter, 2.5W, 20W and 200W ranges £35, IC240 2m mobile 10 watts £50 AVO8 Leather carry case immaculate condition £80, HF receiver SMC73 0.55 to 30 MHz but top range not working £20, Eddystone EC10 One working the other part working pair for £75 KW/TenTec 228 ATU £70, T1154 mains power supply units £100.

Please contact Ian, G3ROO 01304 821588.

## A Practical Z-Match ATU

Bear Horn LA4KG, PO Box 5214, Uglå, TRONDHEIM 7002 NORWAY



To build this Z Match - take a piece of plastic, size 145 x 100 mm and drill a row of 26 holes with a 3.5 mm bit, 5.3mm between holes and a similar row 56 mm away.

Form a close spaced coil with 25-26 turns on a automobile lacquer spray bottle 53 mm in diameter, use 2 mm enamelled copper wire. Thread the coil into the holes in the plastic plate, the natural springiness of the coil will keep it in place. Mount the coil, together with a 2-gang variable capacitor and a 1-gang variable capacitor on a small aluminium chassis with a front made of printed circuit board. The 1-gang must be mounted on a piece of plastic to keep it isolated from earth. On the 2-gang I used a 1:9 gear, because the tuning is very sharp. On the 1-gang I use a 1:3 gear. To find the settings on the various

bands I first tune the 2-gang for best signal/noise with the RX in a NARROW position. Then with low power from the TX, tune the SWR meter to full FWD and after that of course a dip in position REF. Now find the setting for the 1-gang where you can tune the 2-gang to the lowest SWR. You should be able to get almost 1:1 on all bands. When you have good settings, make a note of the positions for future reference.

I use the tuner with a double extended Zepp of 55 metre length for bands 80-10, fed with 450 ohms slotted, and a spider quad for 14 and 18 MHz fed with 300 ohms slotted, getting practically SWR 1:1 on all bands. It can be used up to 100 watts out. NOTE : A good earth is essential.

#### References:

Z-Match : Sprat 76/p 17 - SM-QTC 1/95 p 35 - OZ 10/95 p 577

Ext Zepp : QST 12/87 p 25 7 & 2/95 p 75

Spider Quad : QST 1/62 p 35

## **SPRAT ARTICLE REPRINTS & DATA SHEETS**

[See Page 30 of the Member's Handbook]

Trevor, GØTWE is no longer able to handle the reprints and datasheets.

On behalf of the club I would like to extend our sincere thanks to Trevor for all the work he has done for the club over many years.

Tony Fishpool, G4WIF, has kindly agreed to take over from Trevor. The datasheet service is being revised [more news later] and the SPRAT Article Reprint Service is being slightly revised as below:

Reprints will be in A4 format - reprinted from the Funk Amateur SPRAT CD.

From the U.K., each order must include a large self addressed and stamped envelope with sufficient postage affixed. Each article will cost 10 pence, payable in postage stamps or coins (at your own risk!). We regret, that we cannot accept cheques for small sums due to the bank charges.

From outside the UK each order must include a large self-addressed envelope. Payment to be in the form of United States Dollar Bills at the rate of two Dollars per reprint and we will supply the postage. It would be a great help if you would list the required articles in ascending numerical order of the Sprat issues.

Send your request to: Tony Fishpool, 38 James Road, Dartford, Kent, DA1 3NF.

### **Members Adverts in SPRAT**

G3RJV can accept small advertisements from members for inclusive in SPRAT. This is at no cost but depends entirely on available space in the next issue.

## **N.B.T.V.A**

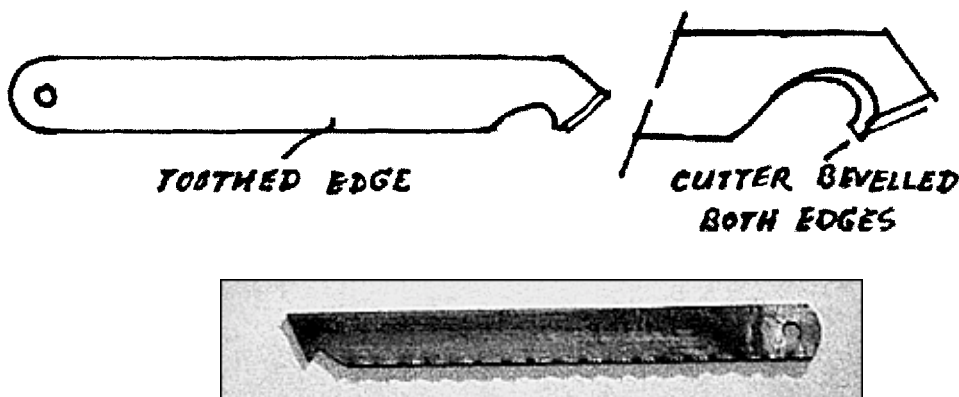
The Narrow Bandwidth TV Association (founded in 1975) is dedicated to low definition and mechanical forms of ATV and introduces radio amateurs to TV at an inexpensive level based on home construction. NBTVA should not be confused with SSTV which produces still pictures at a much higher definition. As TV base bandwidth is only about 7kHz recording of signals on mini cassette is easily achieved. A quarterly 12 page newsletter is produced and an annual exhibition is held in April/May in the East Midlands. If you would like to join, send a crossed cheque / postal order for £4 (or £3 plus a recent SPRAT wrapper) to Dave Gentle, G4RVI, 1 Sunny Hill, Milford, Derbys. DE56 0QR, payable to "NBTVA"

## Making Small Boxes from Tinplate

Ronnie Marshall GM4JJG Hillcrest, Hillside Rd. GOUROCK. PA19 1NP

Tobacco tins and similar containers have served me well as boxes to house smaller items of home-brew equipment, but they never seem to be just the size I want for the job, and they always look like tobacco tins tarttyed up. Here is a way of making small boxes to the precise dimensions you require.

Get a broken hacksaw blade, or break an old blunt blade, and grind it to the shape shown in the drawing [and photograph]



Tin cans will provide you with small sheets of tinplate .... for no cost!

I find the tins in which beer kits are sold [another fine home-brew tradition!] are made of tinplate of just about the right gauge - but the main thing is to find tins, which are not corrugated for strength.

You really need a pair of tin snips to open out the tin into a small sheet, and might manage the job with scissors; but a pair of snip will not break the bank.

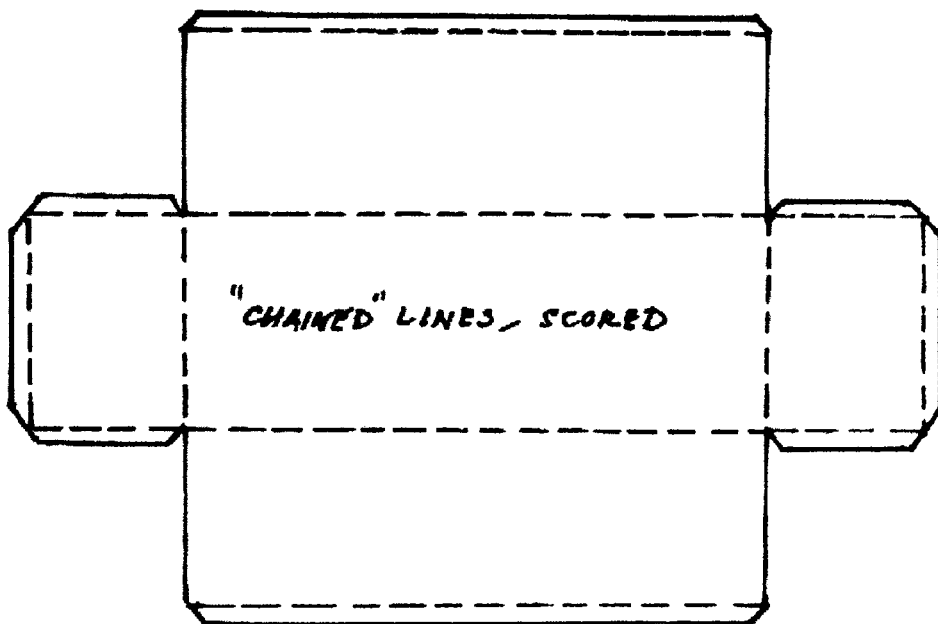
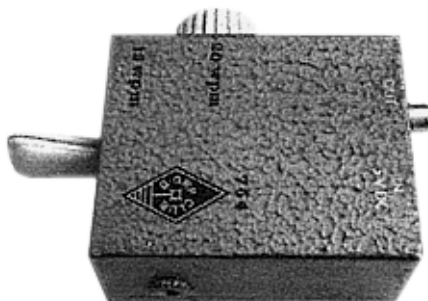
Experiment will show you, that using a ruler as a guide, the tool will score a channel in tinplate quite easily for you. The aim is to score a groove and not to cut through the metal.

You will now find that the tinplate can be easily folded up along the groove, that the bend is neat and can be made strong and permanent by running a fillet of solder along it. Making a wee box is simplicity itself. Pair of steel or hardwood bars clamp together either side of the tinplate to allow the folding.

The drawing shows a typical outline for a small box with tabs which are folded and soldered to make corners. Hammerite paint makes a neat finish to the job.

## THE PATTERN FOR A SMALL TIN BOX

AND AN EXAMPLE [SMALL KEYER]  
BUILD FROM THE METHOD  
DESCRIBED



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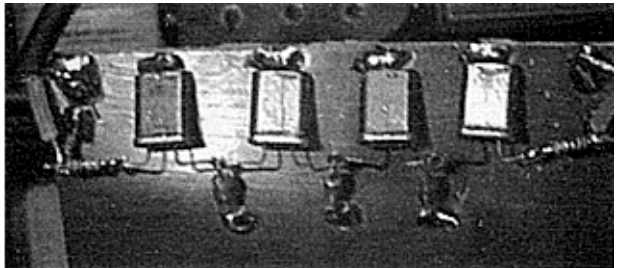
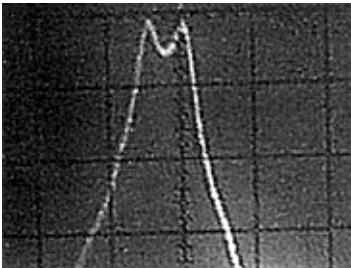
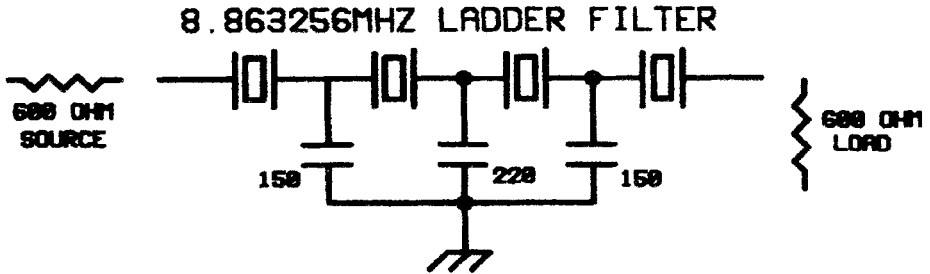
EXCHANGE: Racal RA17L receiver for smaller HF receiver [FRG7 etc]  
GM4KKW. 01349-884655

HELP: Could the person who rang Adrian, G4GDR some months ago offering a HW8 for spares, please ring again - as requirement is still valid.

WANTED: Small Valve TX or transceiver for 160/80/40 CW and AM [or DSB] 5-10 watts. Rev A Heath G4GDR, 227 Windrush, Highworth, SWINDON. SN6 7EB.

**An Inexpensive Filter and IF Amplifier**  
**David Stockton GM4ZNX, 13 Dunvegan Ct. Crossford,**  
**Dunfermline KY12 8YL**  
**With an Application by Doug DeMaw, W1FB**

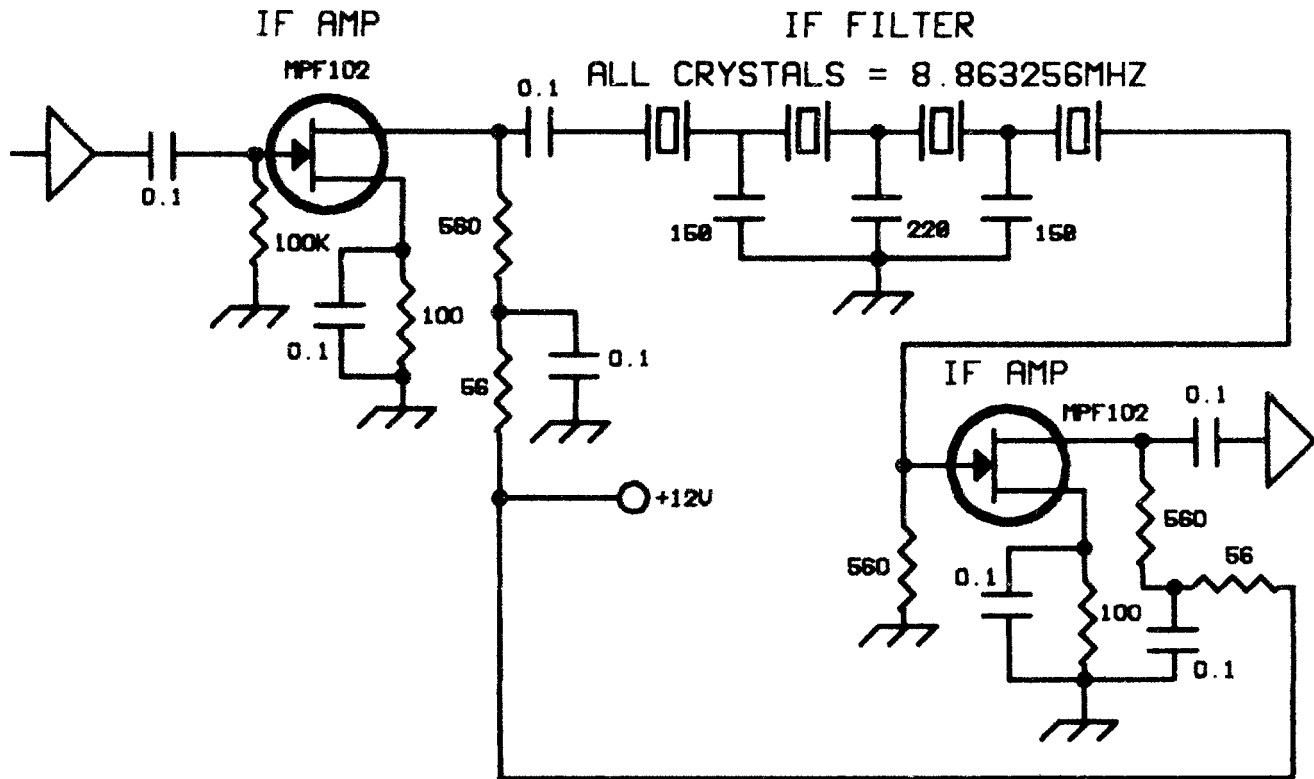
Sometimes it is odd how things "come together". At Christmas gathering at the G3RJV QTH there was a bag of 8.863256MHz crystals [twice PAL]. Spotting them, David GM4ZNX, got out the calculator and designed a ladder filter - 4 pole and about 1.5Khz bandwidth. Below is the circuit with a photograph of the test filter and its response on the spectrum analyser.



Lurking on the G3RJV computer hard drive are several circuits from Doug DeMaw, W1FB, which date back from exchanges of ideas on the use of PCB software. For some months G3RJV and W1FB swapped new symbols and experiments in formatting for the "Boardmaker" software. Amongst these was an idea for a ladder filter terminated at either end with an FET.

A quick hook-up showed that this works very well with the GM4ZNX filter. The circuit can be used between typical NE602 [612] mixer and product detector modules to produce a simple, but useful, receiver.

The 8.863256MHz crystals are available for £6.00 for six crystals [including postage] from **JAB Electronic Components, PO Box 5774. Birmingham. B44 8PJ**



## QRP EVENTS IN 2000

### 16th YEOVIL QRP CONVENTION

Once again the Yeovil Club are putting together the plans for the next Yeovil QRP Convention. The Convention will be held at **The Digby Hall, Hound Street, Sherborne, Dorset** on Sunday **April 16th 2000 beginning at 10am**. With its programme of lectures, component and surplus traders and friendly atmosphere, the Yeovil QRP Convention is a popular event for QRP fans and any radio amateur interested in home built equipment. An annual feature is the **Construction Challenge**.

The Construction Challenge for Yeovil 2000 is devised by last year's winner, G3KLT, and is to construct the most efficient 1 watt DC input power 14060kHz transmitter, complete with low-pass filter. The Yeovil Club will provide a 12 volt power supply, via a DC Ammeter, to enable the constructor to set the input power to 1 watt. The output power will then be measured across a 50 ohm dummy load. A full circuit diagram is required with each entry. Details about the Convention, the Construction Challenge and the Fun Run (a QRP contest run in conjunction with the convention) can be had from: **George Davis G3ICO, Broadview East Lanes Mudford, YEOVIL Somerset BA21 5SP.**

### 4<sup>th</sup> RED ROSE QRP FESTIVAL

Sunday 4<sup>th</sup> June, 2000, 11am to 4pm

Formby Hall, Alders St.[off High St.], Atherton, Manchester

To promote interest in low power operating and home construction  
Trade and Club stands inc. RSGB, G QRP Club, FISTS etc - Hassle Free  
Large Spacious Hall at ground level - Huge Car Park - Disabled Facilities  
Refreshments and Bar - Display of Morse Keys and QRP Rigs  
Low Cost Bring & Buy - Admission still £1 - Some tables at £5 [book early]  
Details: Les Jackson, G4HZJ,  
1 Belvedere Ave, Atherton, Manchester, M46 9LQ. [01942-870634]



### Rochdale QRP Convention 2000

A Date for your Diary

Saturday October 28th

Details to follow.....

### Two Way QRP QSL Labels and Blank G-QRP QSL Cards

**QRP Labels:** Black Lettering on Gold with Club Logo : 200 labels £2. Post inc.

**Blank QSL Cards:** You complete your address and call. Blue lettering on white card, 5.5" x 3.5". 100 cards £4. Post inc. Sample from : M.L. Prickett [Max] G3BSK, 260 Haslucks Green Road, Solihull, West Midlands. B90 2LR.

Cheques: "M.L. Prickett" [The G QRP Club benefits from each order]



## **VK With 5 Watts on 160 metres**

**Ian Keyser G3ROO, Rosemount, Church Whitfield, DOVER, Kent. CT16 3HZ**

This story started on Christmas Eve when the storm broke my Quad up! With Christmas upon us there was no time to do repairs and so I was left with LF bands for the winter sports. I had a terrific time with over 60 QRP stations worked, 40 odd of them being with club members. The big trouble was that 160 metres was not at all good.

I am very fortunate that I have a 60 ft tower and several high trees. I soon realized that the tower and one of the trees would support a Marconi Tee. This was soon up with a 55 ft vertical section and a length of coax laid upon the lawn (grass in our garden, but lawn sounds better!). The natural resonance was found to be at 2.1MHz so with a little inductance and a 1500pf variable to make a L match and we had 1:1 in the shack. That night conditions were excellent and with 100 watts I had worked 22 countries by 2100. Tuning about 1821 I found a weak station calling CQ...VK6HD! I called him with 100watts and he came back giving me 569.

The next few days were spent building a remote ATU and gearbox so I could tune the Tee over the whole band from within the shack. The following weekend I went looking for Mike and found him, this time getting 579 on the first call.

This prompted me to ask for skeds with other 160 QRP stations on the G-QRP list. Several responses were gained, the first QRP/QRP QSO being with Vitas, LY2FE. This started some chat about working VK6HD on 160 on the list, and with my QRO signal reports being 569 and 579 it was obvious that my report should be 549, 449... that region if conditions were good.

To help the chances I dropped a note to Mike by post asking him to listen for QRP calls. Last night, 3<sup>rd</sup> Feb 2000 was the first time I had heard Mike and suddenly there he was calling CQ at 559. My first call was lost beneath an SM station and as he finished I followed with QRP...QRP K. Mike immediately returned with QRZ so I then sent my callsign. He returned with 449 and I gave him 559 QRP 5W. He had trouble getting that but did so in the end!

The transceiver that I was using at the time was a TS570D set at the 5 Watt level, This afterwards I checked into my dummy load using Diawa CN620A power meter at just under 4 watts.

I am now hoping that Mike will reply to my note and that will give me the opportunity of asking him to announce that he is listening for QRP stations... I now want to do it with 1 Watt. That may seem a little optimistic, but not really. Mathematically I will be 229, but my aerial resonance is 2.1 KHz meaning there is a lot of aerial current within the ATU that could help with the radiated power. Also my ground is not at all perfect. My longest earthed radial is 200yds to the west, but I have the facility of putting about 400 yards to the north with multiple earth spikes and half a mile to the south.... I have excellent neighbours!

For those wishing to listen for Mike I seem to hear him on Friday, Saturday and Sunday evenings between 2100 and 2130 between 1821 and 1824KHz.

## ANTENNAS - ANECDOTES - AWARDS

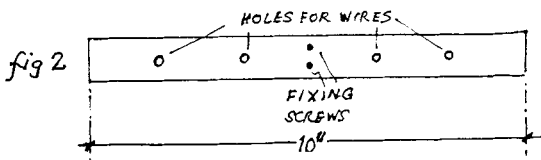
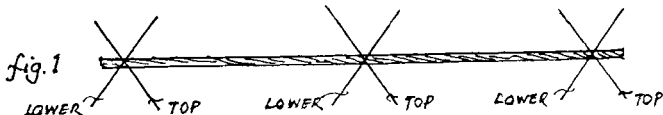
Gus Taylor G8PG 37 Pickerill Road, Greasby, Merseyside, CH49 3ND

MY SINCERE APOLOGIES FOR NOT BEING AT THE ROCHDALE CONVENTION. I was hit by a stomach bug on the evening before and was in no fit state to travel.

A SIMPLIFIED MEANDER ANTENNA ONLY 6 FEET LONG

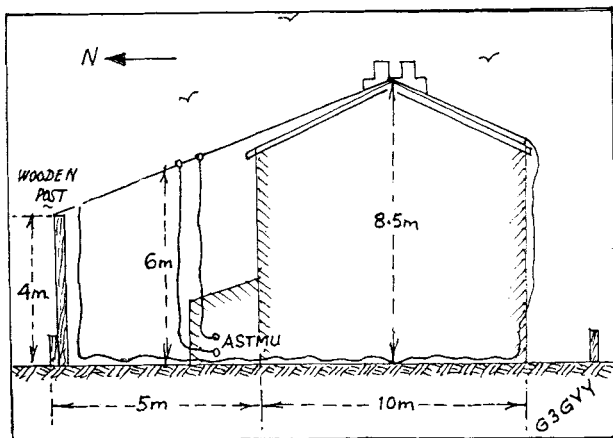
AAA Technical Staff.

A Meander antenna is one in which the wire is formed into a series of U shapes, producing a very short antenna which can be either end fed or co-axial fed via a suitable matching system. Probably the earliest Meander article is one by G2MQ in the January 1939 "T and R Bulletin", but he produced a more detailed and important article on the subject - "Aerials For Confined Spaces" - in the January 1958 issue of the "RSGB Bulletin". Some applications of the principle for loading short antennas written by G8PG appeared in SPRAT No.2 (1f band uses) and SPRAT No.64 (10 foot hf band antenna). Recent professional work at the Souwest Research Institute, San Antonio, TX, is reported by G3VA in "Radcom" for August 1999. Much of this work appears to be based on the 1958 G2QM article. The antenna to be described here is a prototype short Meander (6 feet 6 inches long) which covers 28 to 7 MHz. The mechanical construction is simplified, it can be used either horizontally or vertically, and it is end fed via a simple Z-match coupler. The frame of the antenna is made of wood, the main member being a length of wood 6 feet 6 inches long, and 1 inch square. The pairs of spreaders are each arranged in an X shape one under the other, with one pair being fitted 2 inches from the top of the main member, one pair at its centre, and one pair 2 inches from its lower end; see Fig.1. Each spreader is 10 inches long, 3/4 inch wide and 1/2 deep and has holes drilled in it as shown in Fig. 2. The holes should be just large enough to take the wire used, which should be flexible, multi-strand insulated wire. The antenna is constructed by passing the wire through an outer hole in the top spacer of the upper pair, securing it, and leaving enough tail to allow a lead-in wire to be connected. The wire is then passed through the outer holes in the matching middle and bottom spacers, then back through the inner bottom, middle and top holes in the same spacers. The winding sequence is then repeated again until each spacer carries two wires. About 54 feet of wire will be required. When construction is complete a suitable length of lead-in wire can then be attached to the tail left at the beginning of the winding, and taken to the atu. The whole assembly is very light and easy to rotate into either the horizontal or vertical mode. Much of the test period coincided with very bad summer conditions, but using it either vertically propped against the shack wall or horizontally hung outside the window, 30 countries in 5 continents were worked over a 10 day period, including some useful two-way QRP. Horizontally it gives the predicted flattened dipole pattern and vertically it appears to be omni-directional. It is delightfully light, and the first 7 MHz contact with it was made with G3MCK while G8PG was holding it above his head with his right hand while keying with his left hand! We have no doubt that there is a lot of mileage to be had from experimenting with this type of antenna, particularly for portable, mobile, and cramped location operation. If you do experiment with it, please report your results for the benefit of others



AND PEOPLE TALK ABOUT IMPOSSIBLE LOCATIONS !! THE G3GVY LOOP.

M.G. James, 2 Hurstleigh Terrace, Harrogate, Yorkshire, HG1 4TF



My QTH is in a terrace block, surrounded by houses in all directions except east. My back yard is 5m long, and my only support post 4m high. In spite of this I have an open-wire fed loop with a perimeter length of 47m ! It goes over the roof of the house, down the front, along the floors of the ground floor rooms, across the yard at ground level, up the post, then back to the other leg of the feeder. Actually it works well. In about 11 months of operation I have had

about 550 QSOs with it, all on QRP. This includes 214 on two-way QRP, 78 G QRP C Members and 65 DXCC countries. Best DX so far is ZL4, and WAC has been made. I believe I am getting some additional radiation from the mass of wiring and piping running through the surrounding houses. On the other hand I get plenty of QRM from their TV time bases. The lesson is clear, however. No matter how impossible your location may seem get some wire out and put some QRP rf into it. The results may amaze you !

( This is one of the most unusual difficult location loops we have yet seen, though it does have a relationship to the "half loop" which uses ground as one side. It also raises the point that can the half loop be improved by connecting the two ends together at ground level ? )

## THE CLUB TROPHIES FOR 1999

The Trophy awards for the year 1999 are as follows.

The G2NJ Trophy is awarded to Peter Halpin, PE1HMO, for his outstanding QRP work on the VHF bands from 50 MHz upwards. Peter is the only Club member who has qualified for both our own QRP Master Award and the ARRL DXCC Award while operating entirely on the VHF bands, achievements which both he and our Club can be very proud of.

The Suffolk Trophy is awarded to Jan Verduyn, G0BBL, for his QRP 2001 Design. This design brings into play a number of advanced techniques to enhance the direct conversion receiver, many of which also can be applied to superhet designs. That the receiver is still being improved reflects the very best of QRP Home Brew construction

The Partridge Trophy is awarded to Dave Lunn, G3LSL, for his "Guttersnipe" antenna. With ever-increasing local regulations inhibiting the erection of antennas, a design which allows large antennas to be made literally invisible provides ideas for many of those who live in difficult locations.

### AWARD NEWS

Congratulations to the following on their Awards.

QRP COUNTRIES 220 W7CNL (Great work !). 150 G4JZO, 25 2E0AIS, G0TAK G0UTF.

WORKED G QR? CLUB. 300 G4JZO, 200 DL8MTG, 180 GW3VLU, G0UTF, 150 GW0MY, 140 DL2DWP, 60 G0TAK.

TWO-WAY QRP. 60 W7CNL ( nice !), 40 DL1HTX, G4JZO, 10 G0TAK.

### PROPOSED QRP MASTER CLASP

Our only lady QRP Master, Eva, G0KZO, has made the suggestion that that holders of the QRP Master Award should have a distinctive badge that they can wear at Club and other amateur events. It is proposed that this take the form of a clasp bearing the words "QRP Master" to be worn below the normal Club call sign badge. Those entitled to wear the clasp would have to purchase it from the Club, sales being restricted to those on the QRP Master Roll. The practicality of the scheme is currently being investigated and the result of the investigation should appear in the next SPRAT.

CH49 NOT L49 - CH49 NOT L49 - CH49 NOT L49 - CH49 NOT L49 -

Once again PLEASE NOTE the G8PG post code is now CH49 3ND not L49 3ND. This is because our mail is now sorted in the city of Chester not the city of Liverpool. In future letters sent to the L49 number will be subject to delay, and may even be returned to the sender, so:-

CH49 NOT L49 - CH49 NOT L49 - CH49 NOT L49 - CH49 NOT L49 -

UP, OUT, BUT NEVER DOWN !

Martyn, G4JZO, erected a W9SCH Up-and-outer antenna (see "Club Antenna Handbook") when he moved to a new QTH. He made it from Maplin hook-up wire and used a roach fishing pole as a mast. In the first year it netted him 15 new countries, and 35 US States/Canadian provinces. The roach pole is clamped to a stake to raise the horizontal leg above head height.

## FROM THE CLUB MEMBERSHIP SECRETARY

John Leak. G0BXO. Flat 7. 56 Heath Crescent. HALIFAX. West Yorkshire HX1 2PW  
Tel:- 01422-365025. Email:- g0bxo@BTinternet.com

**Thank you to members for prompt subscription payments.  
Thanks also to those members who sent extra contributions to Club funds.**

Please remember that we do not issue receipts unless we receive an SAE with your payment. Your receipt is the updating of the subscription code on your SPRAT address label. For example, the code "2000" means that your subscription is paid to the END of the year 2000.

Some members have paid by VISA or MasterCard using email. This is OK, but we do not send email acknowledgements. Again, your receipt is the updating of the subscription code. Please remember that there is a time delay of about 4 weeks between the printing of the address labels and the despatch of SPRAT.

Please write to, telephone or email me if you think we have made a mistake.

**PLEASE QUOTE YOUR CLUB NUMBER AND CALLSIGN.**

### CHANGE OF ADDRESS

Please remember to tell us if you change your address. Each quarter, several copies of SPRAT are returned to me by the Royal Mail as undeliverable because the member has moved and has not arranged for mail to be forwarded. Please remember that changes take time to work through the system.

### STANDING ORDER PAYMENTS

IF YOU ARE A U.K. MEMBER AND YOU DO NOT ALREADY PAY YOUR SUBSCRIPTION BY STANDING ORDER, PLEASE CONSIDER DOING SO IN THE FUTURE. THIS METHOD OF PAYMENT IS EASIEST FOR CLUB OFFICIALS TO PROCESS AND IS ALSO THE CHEAPEST FOR THE CLUB.

**A standing order mandate form appears in the V**

## Radio-controlled Clocks

These clocks feature 24hr readout, offset to GMT with continuous seconds and date display. Dual alarm with snooze facility.

Ideal for the shack or for Field day.

£14.95 each + £1 p&p any quantity.

Cheques payable to Martin Peters,  
11 Filbert drive, Reading. RG31 5DZ

Check into

<http://freespace.virgin.net/martin.peters1>  
or SSAE for more details.

Email - [radio.clocks@virgin.net](mailto:radio.clocks@virgin.net)

(G1555/G0RP 1176)



## **COMMUNICATIONS AND CONTESTS**

**Peter Barville G3XJS, 40 Watchet Lane, Holmer Green,  
High Wycombe, Bucks HP15 6UG.  
E-mail: g3xjs@qsl.net Packet: g3xjs@gb7avm**

In an effort to avoid confusion over my email address, and in order to make any future change of service provider as 'transparent' as possible, please use "g3xjs@qsl.net". I am having problems accessing my packet radio BBS, and so cannot receive packet messages at the moment. Snail mail still works!

### **WINTER SPORTS**

After some really promising HF conditions during the Autumn, things took a bit of a dive just in time for WS. Isn't it always the way? From a personal point of view, the Millennium celebrations ensured I had to spend much of the period at work, and not in the shack. Oh well, can't win them all!

It may have been as a result of conditions being less than perfect, but some thought activity was a little less than normal, but there's absolutely no doubt that much QRP FUN was had by all. I am grateful to the following members for sending their logs, whether large, or not so large: G0KRT, G0NTR, G0OTE, G0TYM, G0WAL, G3ICO, G3JNB, G3LHJ, G3MCK, G3MJX, G3ROO, G8PG, GM3LBX, GM3OXX, GM4XQJ, GW0VSW, M/DJ0PJ, HB9CJR, I7CCF, IK2CGH, K2JT, KF8EE, LY2FE, OE6EIF, OE6GWG, OK1DMZ, OK1DZD, OK2BMA, PA3LBI, PA9RZ, W3TS and W4/G0FSP. Apologies if I have omitted anybody - please let me know and I will rectify the error in the next issue.

Although I had suggested greater use of the WARC bands, these still seem strangely ignored by many. 30m can be noisy at times, but 17m and 12m offer excellent propagation with comparatively little competition from QRO stations and big beams.

There were some impressive results amongst the logs submitted. I7CCF stayed on 20m (with 5 watts) and worked HS0ZBS and ZL4SEA (consecutive 2-way QRP qso's) as well as G3RJV (!). LY2FE used 100mW throughout the event with amazingly good results. PA9RZ did his best to stir up some QRP activity on all of the WARC bands, sadly without much success, but still found the time for plenty of contacts on the other bands. G0OTE had plenty of fun on 80m and 40m, using a homebrew line-up consisting of his Taunton Tcvr, Stockton power meter and Rocky antenna matching unit.

But the outstanding log was from George, GM3OXX. He is renowned for his achievements on the bands, always using homebrew equipment, and one watt maximum output to wire antennas. WS was no different, and George has provided a wonderful demonstration of what can be achieved with simple homebrew QRP equipment. For nearly all of his 285 qso's, covering every HF band except 12m, he used a homemade xtal controlled rig with no qsk (ie manual transmit/receive change-over), having to turn down the receiver gain in order to avoid blowing off his ears when transmitting! Many congratulations for a superb effort George - a worthy winner of the G4DQP Trophy this year.

Vitas, LY2FE, has some large antennas at his disposal, but the results he achieved during WS with 100mW (QRPP) set a wonderful example of low power operating, particularly to the 'kilowatt crowd'. He even made his presence felt on 160m - not always easy with QRP. He is the deserving winner of the 'Runners Up' certificate.

### **CHELMSLEY TROPHY**

Only 4 entries were received this year (G0TYM, GW0VSW, RW3AI and ZL2BIL), but the clear winner was Carl, GW0VSW. He had a total of 788 qso's throughout the year (209 2-way QRP), working 97 DXCC countries (ssb 56, cw 89). He also had a total of 133 2m FM contacts. Operating as SV8/GW0VSW, he had 102 qso's (22 2-way QRP) with 28 DXCC countries. Congratulations to you Carl - keep up the good work.

Runner up (and winner of 'Runners Up' certificate) was Tim, G0TYM, using his Argonaut II running 4 or 5 watts to a 70ft end fed wire in the roof space, fed against counterpoises (Tim says, "zero gain on this antenna!"). He worked into VK and ZL for the first time, including a contact with ZL9CI, and was awarded DXCC using QRP during the year. Quite a year Tim!

The Club is also awarding a 'Runners Up' certificate to Bill, ZL2BIL. To be fair, others may have had more contacts, but (as Bill says) given the remoteness of New Zealand, any QRP contact is rare! His nearest neighbour with any QRPers is Australia, and that is 2200km by the shortest route, coast to coast - BUT the ZL's don't regard VK as Dx anyway. From his old home in the UK, a 2200km radius encompasses around 30 DXCC countries, or more! For the record, Bill used an HW7 (1.8 watts) and an MFJ9020 (4 watts) to his 20m dipole at 20ft, making many contacts into Europe, USA, Asia and VK - well done Bill.

### **16th YEOVIL QRP CONVENTION**

I'm hoping SPRAT will be with you in time to remind you that this year's Convention will be held at the Digby Hall, Sherborne, on Sunday 16th April at 10am. Be there, or miss out!

### **HF INTERNATIONAL "SPRING SPRINT" LOW POWER CONTEST**

I have been sent the results of the last year's contest, which is organised by the Slovak Amateur Radio Association (SARA) on Easter Sunday (1400z - 2000z) each year. Full details are available on receipt of an ssae, but the clear winner of the 5 watt category (category 'C') was Alex, G4FDC. If you would like to participate this year (24th April), category 'A' is for power levels up to 1 watt. Exchange RST, IARU locator and power category (eg 579 JN98 C).

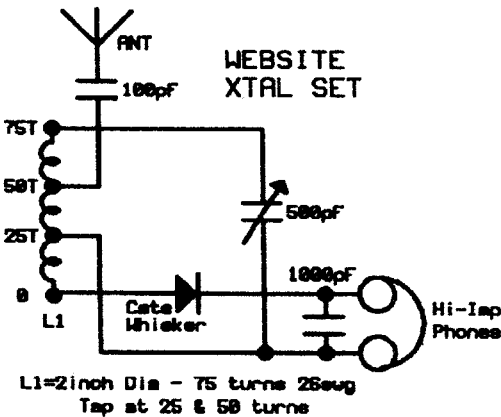
I've said it before, I know, but I'll say it again - I'm **sure** we're in for some good HF conditions in the coming months, so please don't miss out. I know some of you are building high Y2K Contest scores, but there's plenty of time for everybody to have a fair crack of the whip. Most importantly of all, of course, have plenty of FUN. The deadline for SPRAT 103 is the beginning of May.

72 de QRPeter

**NOVICE NEWS     Steve Ortmayer G4RAW**  
**14 The Crescent, Hipperholme, Halifax. HX3 8NQ. Tel: 01422-203062**

PW QRP Contest: Derek G0EXY has written to suggest that novice members may be interested in the PW QRP contest on 2m. Derek says it is very friendly and leisurely so Novice ops need not be put off and should enjoy it. 18 June is the date but check in PW.

Tom 2E0AUK has written to ask the best time and band for CW QRP contacts. I made my first QSO on 3560kHz and this must be the frequency where most QRP activity takes place. Perhaps members would like to contact Tom for sked.



**ONLINE**

I have recently got on line and visited the web site of the Ilford Club, G3XRT. They gave details of a 1920's crystal set. So I switched off the 2k technology and made the crystal set. It works very well and has sharp tuning for a crystal set. I used a galena crystal and cats whisker made from a bristle from a brass brush used for cleaning suede shoes!!

**NOVICE SW RECEIVER**

Lake Electronics have now a kit to make a simple two transistor receiver for the short wave bands. The kit costs £8.00 plus £1.00 p&p. The receiver works well and is a good project for the Novice course. It will introduce the builder to the world of DX BC communications.

Bye bye US Novices. You may have read that in the USA there is a proposal to have just three classes of licence and not to have a Novice class. There will be a 5 wpm Morse test. I would hope the UK could introduce a progressive system with some credit given for the Novice NRAE against the RAE. It always seems a shame that when a Novice wants to go on to the RAE the novice course does not give a credit.

Please let me have your Novice news and any comments on the new band allocation for Novice ops

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-----  
**WANTED:** Two HW7 output transistors MPS UO5 or possible details of equivalents.  
 Les G4EPW 01594 842156.



## Construction Advice for Members

Ian Keyser G3ROO, Rosemount, Church Whitfield, DOVER, Kent. CT16 3HZ

This is a reminder of my job within the Club.

I am here to help you with construction problems and possible solutions.

A sort of 'kicking post' that, when you are stuck, you can bounce your problem off me.

If I cannot help I have several other club members who I can pass the problem onto so there is an excellent chance that we can help.

If you are a member with a skill in some aspect of electronics or mechanical engineering and would like to help on occasion please drop me a line.

The more assistance we have the greater the range of help.

If you write to me please include a circuit diagram if it is not a Sprat item.

I take several magazines but not all of them!

Also please write your question and leave sufficient room for me to reply, this means that I can respond while eating my cornflakes and you will get it back by return.

If you have email my address is [g3roo@talk21.com](mailto:g3roo@talk21.com) and please use the word CONSTRUCTION in the subject line

Finally please include and SAE.... We don't get paid for our efforts!!

72 and happy building

Ian, 'Roo

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Or enquiries can be made to: "Celticon" Marino Institute of Education, Griffith Avenue, Dublin 9. Tel: +353 (0) 1 8335111. Fax: +353 (0) 1 8369264. email: [dleader@mie.ie](mailto:dleader@mie.ie)

## VHF MANAGER'S REPORT

John Beech G8SEQ, 124 Belgrave Road Wyken Coventry CV2 5BH

Tel: 024 76 617367;

Fax: 024 76 611654; E-mail: john8seq@discover.co.uk; Packet: G8SEQ@GB7COV

This article for SPRAT nearly never happened. After I designed the unit, I went to order some more PA transistors, a device I have been using for a number of years now, only to be told that the devices were obsolete. ALL the alternatives such as 2N3866, MRF474 etc have also been declared obsolete by the manufacturers. However, I managed to secure enough of my original choice, 2N3553 to supply the kits which use them for the next 2-3 years. Whether the 2SC \*\*\*\* vhf transistors (which are not pin-compatible) become obsolete in that time, remains to be seen!

It seems, as constructors, we need to start hoarding all wire-ended devices or learn to use the surface mount devices which have replaced them. Having advertized surface mount kits for the past eight years or so and only sold about three or four, I know that the average amateur isn't interested in constructing anything in SMD.

It seems there is an upsurge of interest in the 4m band, so here is a two-part project designed to increase activity on the band.

The first part is a beacon Tx, which could be used as a phone or CW Tx in its own right and the second is a memory keyer. The latter is a cheap and cheerful device, which does an excellent job and is available on the high street. It requires a small additional circuit, built on veroboard for automatic operation.

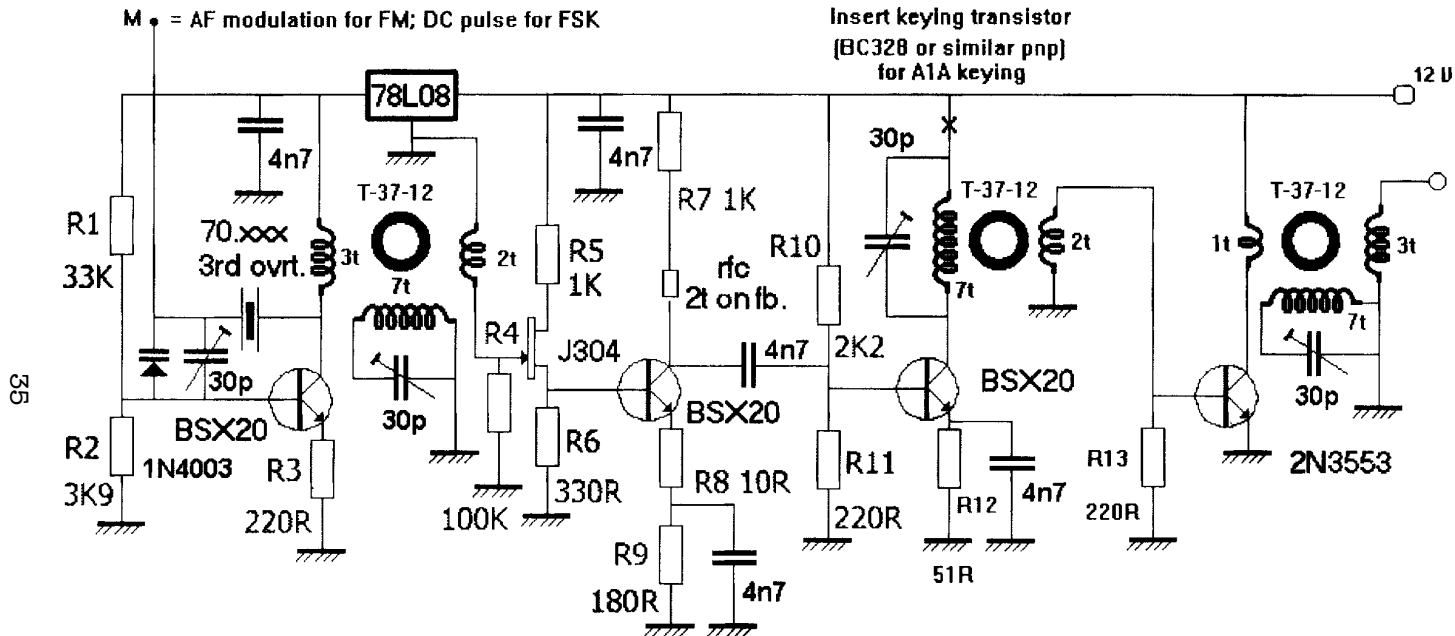
Good Dx & 73 de John G8SEQ

### **TEXT FOR AUTOMATIC KEYING CIRCUIT**

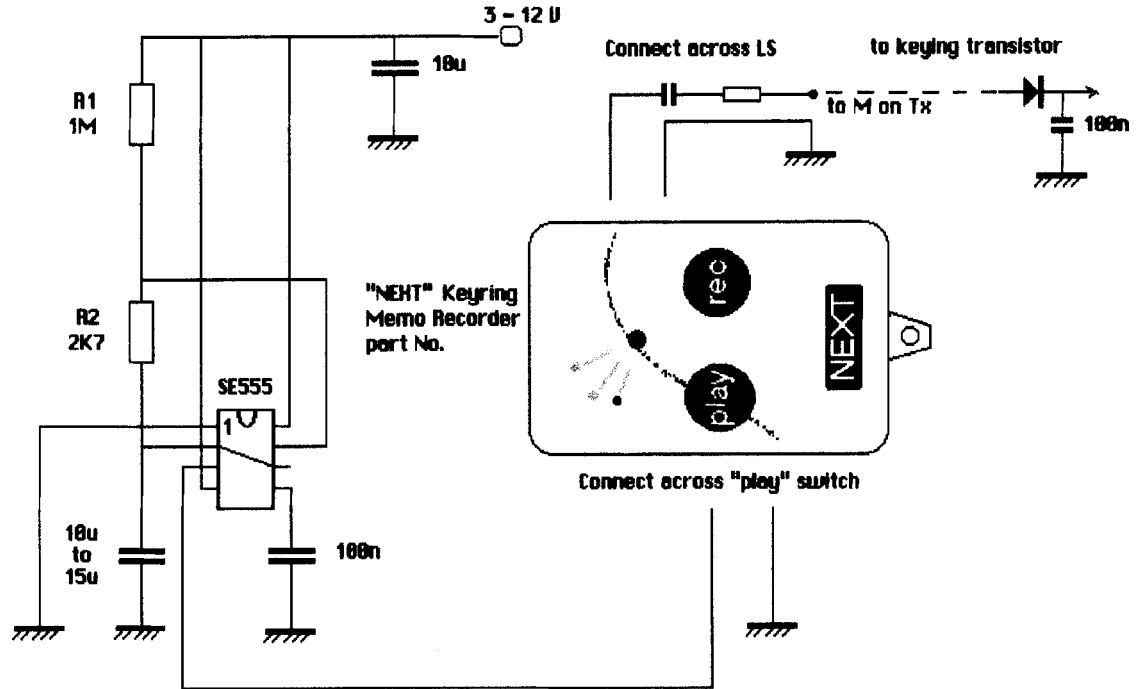
*The Cmos 555 timer circuit supplies a negative going pulse approx every 6.6 sec. \*This starts the memo playback, which supplies modulating audio to the TX [voice is recorded by press and holding down 'rec'; about 6 secs can be recorded, long enough to send a beacon callsign and locator phonetically or a CQ message] The unit consists of a noise cancelling microphone, digital memory and miniature loudspeaker, so transmitted audio can be monitored. If CW tones are recorded, then AFSK is generated if the 'M' connection is used or using the diode-capacitor integrator and keying transistor, AIA key can be sent.*

*\*If a larger value capacitor is used for C2, then a gap of about 3 secs is generated which can be used for listening when used as an AUTO CQ machine. The 'NEHT' module is small enough [65x48x15mm] to be used in its case as a replacement for a desk mike. In this application it is advisable to include a flip-flop in the PTT ircuit so that this unit powers down when the manual PTT is pressed. Also the 555 is required to drive a latch to hold the PTT to ground for the duration of the CQ call*

# 70 Mhz Beacon Tx



# Automatic Keying Circuit for Beacon Tx



# MEMBERS' NEWS



## by Chris Page G4BUE

Highcroft Farmhouse, Gay Street,  
Pulborough, West Sussex RH20 2HJ.

Tel: 01798 815711 Fax: 01798 813054

E-mail: g4bue@infinet.co.uk

Packet: GB7DXS on UK DX PacketCluster

**DL9HCU** has been travelling through the Pacific Ocean over the winter months and has been QRV on 15 and 20 metres QRP CW. Udo is now (end February) QRV as **ZK3HC** from Nukunonu, Tokelaus and the next stops will be back to Samoa as **5W1VE** and in the South Cook Islands as **ZK1HCU**. He has also been QRV as **T2ØHC**, **T3ØHC** and **C21HC** and is often QRV after 0400z near 21021 or 14021kHz. QSL via his home call **DL9HCU**. **GM4XQJ** says he had “a great time operating **EA8/GM4XQJ** from the Island of Fuertaventura”. Brian used his **MFJ9020** and dipole for 20m. His first CQ was answered by **GM3OXX** and they had a better path than from Brian’s home QTH. Brian also worked “lots of QRP ARCI members as conditions were really good into the USA and South America from 2100z.

**DH3FAA** used the corner of a French newspaper as a log when he was QRV on holiday in St Tropez, France in October 1998 with a Universal transmitter (oscillator 2N2219A and PA 2SC1678) and “a dipole-shaped piece of wire tossed in a tree”. A direct QSL request from **GØUAP** prompted Klaus “to react, as the log has vanished somewhere!”. He says, “Please take this as an apology for all members who might contact me”. **GØCJM** is “on less than one watt out

and have done for over ten years” mainly on 80, 40, 20 and 10m. Reb is also known as **2G6FB**, which he applied for when UK CB operators were recently invited to apply for call signs.

**GM3MXN** is still being “QRMed off 3560kHz” and “makes me want to give up this band”. Tom suggests another QRP calling frequency to avoid the ‘fish fone’, which he admits will be difficult as he hears it from 3508 right up to 3579kHz. He says, “one evening I heard 11 QRGs occupied by fish fone, are they legal? I have heard that they are not, and when out on water they are using amateur equipment! Can any member confirm this, and are there enough members interested in a change of frequency?” Please let Tom have your views (<gm3mxn@currantbun.com>).

**G4HOM** visited Slovakia and the Czech Republic over Christmas and the New Year and took his modified Malta 40 with him. Fred has modified it for full QSK and it has a built-in keyer. He stayed with **OK2BMA**, **OK1CZ** and **OK1DZD** and they operated the Winter Sports from snow covered -5°C mountains! He was also QRV from central Moravia with **OK2MJ** and from Slovakia at the **OM3KFV** club where they are hoping to promote another QRP convention this year. Fred offers to e-mail the details of his Malta modifications to anyone interested (<g4hom@hotmail.com>). **G3KDP** was QRV from Hazlewood Farm in Okehampton, Devon as **G3KDP/P** during three 7MHz CW 3W QRP Contests with his homebrew CW/SSB transceiver (see photograph below). From his home QTH, Tony has used it on 15m and made QSOs with A5, PJ, 3V, CN, EA9 and HZ.



**GØSQF** was “very interested to read about **G1HDQ**’s 6m QRP activity all the more so, as there seem to be few if any published QRP circuits for this band. AM and SSB (DSB) are not in my view, the only possibilities. My own efforts have been directed into homebrew FM, the aim being to build a simple three channel hand-held transceiver with an output of around 500mW to one watt. Construction is at an advanced stage but the PA needs further work. Only by using a Philips BLT50 have I managed to get anything like the desired output. With the usual transistors such as 2N4427, 2N3866 etc, the output is around 250mW, irrespective of the drive”.

Joe continues, “Come to think of it, there seems to be very little in the way of homebrew FM designs in the amateur publications. Undoubtedly, a deviation meter is essential for setting up the transmitter properly. However, this does not mean buying a piece of kit costing thousands of pounds. Very simple circuitry can suffice. Alternatively, as in my case, I built a pair of rigs and calibrated the discriminator on one receiver using an audio generator and a voltmeter. The thus calibrated discriminator is then used to set the deviation on the other transmitter and vice versa! The receiver, incidentally, uses a 25kHz IF”.

**GM3OXX** is enjoying his new QTH at Clunie Lodge (below) where he has a ground floor flat, and says “it’s a ham paradise, no neighbours and a mile and a half to



**The new GM3OXX shack**

the nearest village. The garden is an acre in size and in the shape of a triangle, with the longest side 365 feet”. George has put up a doublet for 40m which “works like magic” and he has added eight new ones to his all-time DXCC. **G3JNB** also has a new QTH. Victor has moved from Norwich and a 285 feet antenna to a new home in Campton, Bedfordshire and has joined the excellent club there. His first QSO in the Winter Sports, using a very low long-wire and central heating as a counterpoise, was with **G3RJV**. Victor should have an R6000 and a wire loop for 40m up by now.

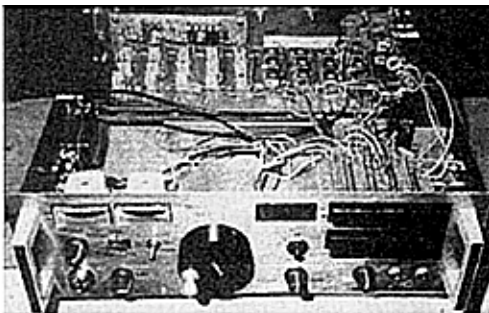
**GØAYD** has been given an incomplete Omega transceiver (G3WPO/G4JNT design) and wonders if anyone can help him with information to help him complete it. Dave can be reached at 3 Townsend, Wylde, Warminster, Wilts BA12 0RZ, tel: 01985 248301, e-mail: <g0ayd@qsl.net>. **GØWFH** will be QRV 12/22 August from

Jersey as **GH4BJC/P**, the ISWL club call, on SSB only. Chris will be using a K2 and SGC2020 on HF and a Ten-Tec transverter on 6m. Look for him on 28450, 24930, 21280, 18130 and 14280kHz during the day and on 3780, 7045 and 7090kHz after 2200z.

New member **G3GTJ** is a military radio enthusiast and would welcome correspondence from fel-



low users of the UK PRC316-A.16 4 watt CW/AM transmitter on 40 and 80m used by the British Army in the 1970s and 1980s. Contact John at Perrotts, Lydford-on-Fosse, Somerton, Somerset TA11 7HA, tel: 01963 240319. **G3LRO** is QRV on 40m with a Lake kit and John was pleased to QSO **YO6BMC** recently with his 2 watts. **US7IJW** uses an ex-military superhet valve receiver which weighs 96kg! Victor was involved with the **UR7IYU** station in 1998 before it closed in 1999, where he used QRP on 160m (5w), 40, 20 and 15m (3w) and 10m (800mW) with delta loop long-wire antennas.



During the winter holiday **DF2OK** finished building his NorCal-20 kit. Mike says, "It was fun to build this kit because of the



**Victor, US7IJW, and his wife Alëna (centre) with the UR7IYU team in the autumn of 1999.**

**DL2RM** has raised his Windom antenna another 13 feet, it is triangular in shape and fed with 75 ohm coax and a home-brew RF choke top prevent RF on the outer conductor. The balun is 1:4 and can handle up to 2kW PEP but Rudi says he has never tested this! Using an ATU in a T configuration, he says, "the antenna runs excellent from 80 to 10m including 15m and the WARC bands" as QSOs with CW and SSB with FK, A5, (g, VQ9, A4, LU, PY, VU and AP prove. Rudi will be QRV 10/23 June from Tuscany, Italy as **IK5/DL2RM** with his Standard SEG15 from the former GDR Army. **IK2NBU** sends a picture of his Moon 9 HF QRP transceiver (see above), a double conversion CW/SSB 1-10w rig with a 5MHz VFO, AGC and full CW audio filter. Arnaldo does not say who he has QSO'd with it though.

fine manual. The first QSO was with **VK6WT** in Perth. David used 100 watts and was 559 here, I had five watts and got 549 from him! We both used beams. A good start for this rig, wasn't it?". **PA9RZ** says, "Winter has treated me to less DX than Autumn but I liked the QSO with Dave, **FY/DJØPJ**. We were both QRP, both a humble antenna and still the kind of QSO in which my question whether he launched Ariane was answered by a confirmation that he worked on the Ariane project. Not a rag chew

of course but a friendly ham to ham contact rather than 599". Robert was QRV in the



**Leighton, GWØLBI, editor of The Mighty Milliwatt, featured on page 39 of SPRAT 101.**

PACC Contest and his first CQ on 10m was answered by **VP2EC**.

That clears the files once more. Please let me know how your Spring goes, especially with higher sunspots coming, by 20 May.

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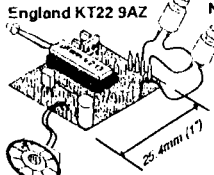
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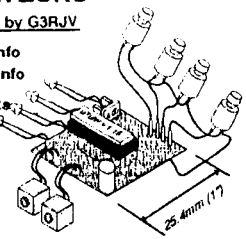
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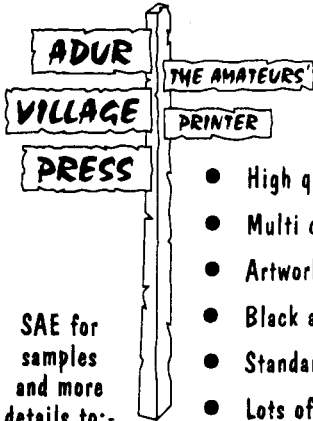
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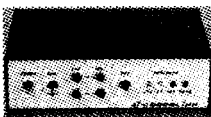


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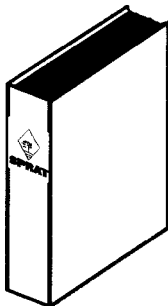
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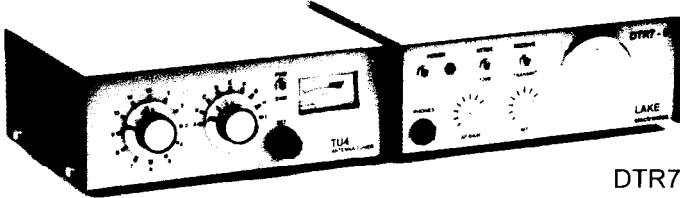
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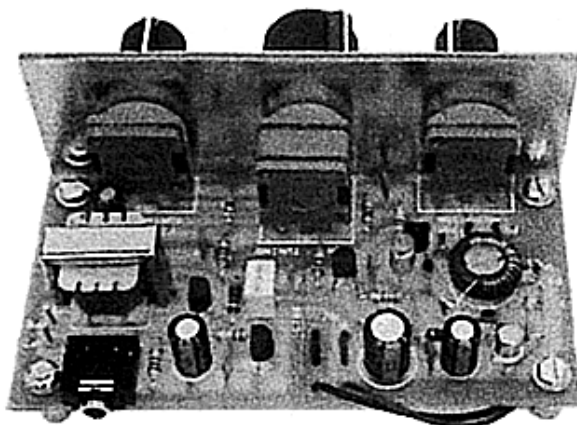
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