



SPRAT

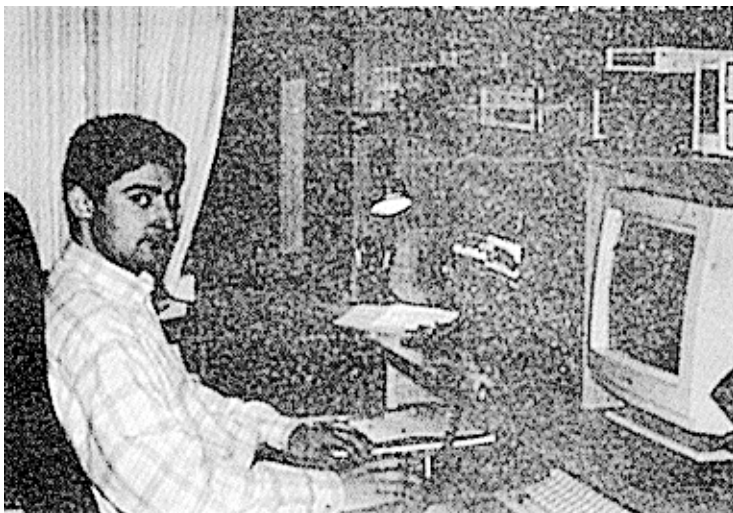
THE JOURNAL OF THE G-QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

ISSUE NR. 90

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SPRING 1997



ACTIVE 73kHz LOOP - THE GQ2000 TRANSCEIVER - POWER OUTPUT UNIT
VLF TRANSMITTER/RECEIVER - SIDETONE - AUDIO AGC - G4HMC RECEIVER
VHF WAVEMETER - THE ÅLVA - BALANCED MIXER- SIMPLE KEYS
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JOURNAL OF THE G QRP CLUB



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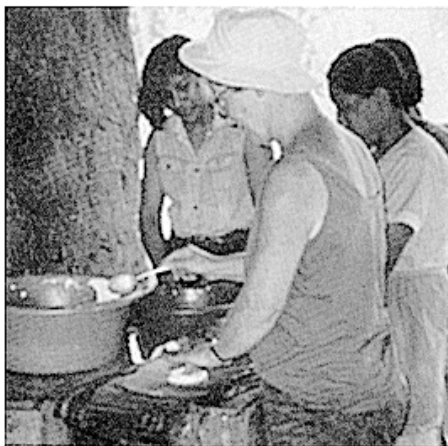
Rev. George Dobbs G3RJV

EDITORIAL :

THANK YOU

Jo-Anna has now returned from her field trip to El Salvador having been instrumental in the setting up of several new projects for the people in the village of El Tular. She wishes me to extend her sincere thanks to members of the club who have sent financial and moral support for the work. The solar panels, bought with support from QRPers at the FDI event in Dayton have been installed. Special thanks go to Ed Manual, N5EM, for storing and packing the panels in Texas prior to the visit and to Glen Reid, K5HGB and Gail, for taking such good care of Jo-Anna and myself during the return journey home.

The photograph shows Jo-Anna with some of the villagers of El Tular.



Can I remind members that the annual subscription is now due (over due!). Please refer to the last issue of SPRAT for how to pay. Elsewhere in this issue is a reminder to members who pay by standing order. This is the **best** way for UK members to pay - it save us a lot in bank charges. But, a significant number of members who pay by standing order have not changed their standing order from £5 to £6 when the rate increased. Please check your standing order.

G3RJV

**EDITED BY GEORGE DOBBS G3RJV ARTWORK BY A.W. (MAC) McNEILL G3FCK
PRINTED BY SHOREHAM COPY, 3 JOHN STREET, SHOREHAM-BY-SEA. SUSSEX**

An Active Loop Antenna for 73kHz

Bert Kruyswijk, PA3FSC, Raedeckerplantsoen 19, 3431BX Nieuwegein. The Netherlands

With a loop it is possible to build an antenna with small dimensions and good performance for reception of LF on VLF. I made a loop from a cable [12 wires plus shield] with a length of 5.5m. To form the loop the 12 wires inside the cable are connected in series. The shielding is not connected. Parallel to the loop is a capacitor to resonate the loop at 73kHz. The loop has a Q of 13. To pick up the signal from the loop I use a BF245C as a follower. Because the output impedance of the FET is not low enough a second follower is used to feedback the signal to a tap on the loop. The tap is one turn from the ground. The overall-amplification is adjustable with the potentiometer of 1k and the adjustable resistor of 100 Ohm. They control the bandwidth. The smallest bandwidth is reached just before the point of oscillation.

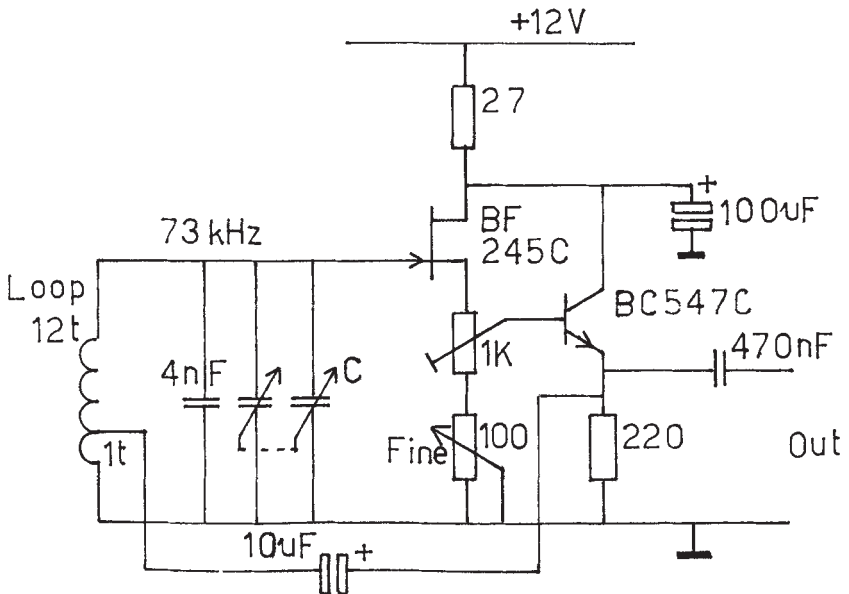
Building of the antenna is not critical. I used parts from my (junk) box. To adjust the frequency I use an audio generator connected to a counter. At first you have to connect a short piece of wire as a antenna to the audio generator. When the loop is tuned remove the wire. I could receive the signal of the audio generator even when it was placed in the next room. I use the loop antenna with a Racal-receiver via a simple converter without selectivity using a SO42P. I was surprised by the large number of stations and the strong signals I came across from 100kHz down to 10kHz.

The capacitor consists of a variable capacitor from a old MW-receiver and a few capacitors in parallel to arrive at a frequency of 73kHz. With the two sections of the variable capacitor in parallel the entire band can be covered.

When the loop is tuned for the right frequency range reduce the 100 Ohm adjustable resistor to zero and increase the potentiometer setting until oscillation occurs. By increasing the 100 Ohm resistor you can adjust the bandwidth of the loop.

Good luck with building and enjoy listening on this loop.

And let's hope the LF-band will become accessible also in the Netherlands in the near future.



The GQ2000 Multiband CW Transceiver

SHELDON HANDS, GW8ELR, TEGRYN, LLANFYRNACH, DYFED. SA35 0BL

The GQ40,20 and the new 30 Mtr CW transceiver has been a tremendous club success, with kit issues now approaching the 300 mark. In response to a great number of requests the design has now been updated and made into a multiband CW transceiver.

The circuit is similar to the original but the opportunity has been taken to improve some aspects of the design. The main change is to an IF of 9 MHz using the new club 500Hz xtal filters. This also enables us to use the companion club mixer xtals for the new LO injection system.

The receiver has a very high performance, again the front end mixer uses the SBL1/HPF505 diode ring. GM4DMA has tested the mixer board on a very large Rhombic!!!! and found no overload problems. However if you need assured very high performance the mixer IC may be upgraded to an SRA1-H or similar.

The transceiver is modular, as this allows greater flexibility in the design with a number of configuration options. The modules perform the following functions:-

- 1) IF Strip. filter, IF amp, product detector, audio pre-amp, 7 ele LPF, audio PA, BFO and CW CIO, QSK timer.
- 2) Mixer. Bi-lateral amplifier, mixer, LO injection PA, band-switched filters and TX pre-driver/power control.
- 3) PA. driver, push pull PA, relay switched LPF, Switched rx pre-amp, diode Ant change over.
- 4) VFO vfo and buffer
- 5) PLL G3ROO/GM4ZMN LO synth

The Mixer and PLL boards have 5 filter/VCO combinations for 5 bands. A piggy back board with 5 more filter/vco placements is used in a full system. By adopting this configuration, then without module 5, you can build a duo-bander for 3.5/14 or with a bandswitched VFO like the G3YCC a tri-bander for say 3.5/7/14. The 5 band onboard limit also allows for a compact board when used in smaller systems.

Module 3 uses the same push/pull 5 watt FET PA as the GQ monobander. It can be changed for a higher power version using either the Cirkit or Hands HF linears and cascade LPF sets. The pre-driver on the mixer board will push both amps to around 20 watts +.

There is also an option on module 4, the L/C vfo may be changed to the club G4OPE DDS vfo, bearing in mind the cost of a frequency display, VFO, slow motion dial and Jackson variable the DDS is very cost effective. As the circuits and description take up a lot of space the design will be spread over a number of issues. This quarter will feature the heart of the transceiver the IF strip.

IF Strip

The Intermediate frequency is at 9 MHz and uses a commercial 50 ohm ladder filter of 6 poles and 500hz bandwidth. A single MC1350p is used as an IF amplifier followed by a NE602 or 612 as a product detector. Audio from the detector is pre-amplified by a LM351 op-amp, this makes up the insertion loss of the following 7 ele passive audio filter. This has a with a top cut of 1kHz and removes all traces of audio hiss. The audio pa is a TDA2003, although a 20watt device it is considerably under run in this application and gives genuine hi-fi quality. The module also contains the QSK timing circuit and a keyed CIO for the TX section. The CIO is followed by 5 element LPF to remove any harmonic content.

Looking at the circuit in more detail, the receive system IF input at FL1 filter frequency is routed via C1 to the filter. R1 and R2 provide a resistive termination equal to impedance of the filter. The filter output is matched to IC1 a MC1350P IF amplifier by a simple broad band transformer T1.

The gain of the IF strip is varied by the control voltage on pin 5 of IC1. This comes either from a potentiometer as an IF GAIN control or could be attached to an AGC system. Output from the IF amplifier is capacitively coupled to IC3 an NE602/612 which is used as a product detector. C10 couples the BFO injection voltage from the oscillator TR2. Detected audio from IC4 is coupled by C12 to the audio pre-amp IC4, with C11 providing a path to ground for any RF products in the output. The pre-amp feeds a passive 7th order elliptical low pass filter C19/L1-L3/C24.

The filter output is coupled via an audio mute switch TR1 to the AF GAIN control. The mute is activated when the AF MUTE pin is grounded. The mute system is ideal for people who prefer to take their side tone from a keyer. RV1 the AF GAIN controls the audio drive to IC6 the audio amplifier. For stability an output snubber C35/R22 is fitted. The LS OUT pin suits most 3-8 ohm speakers.

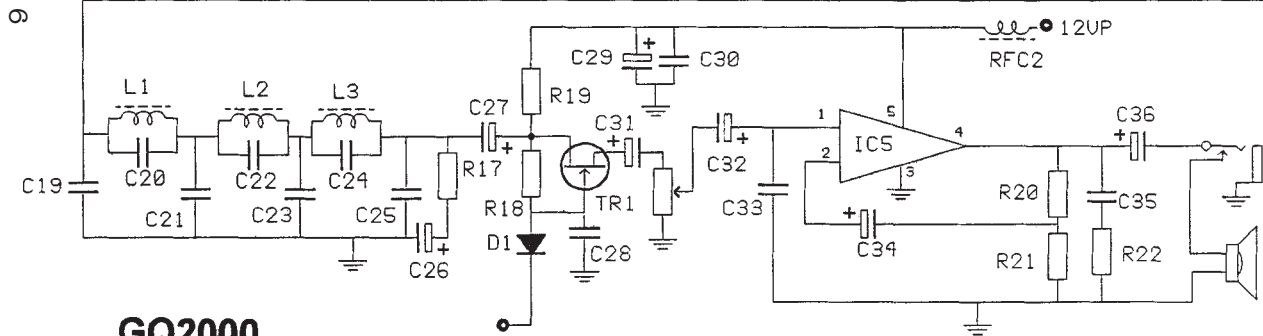
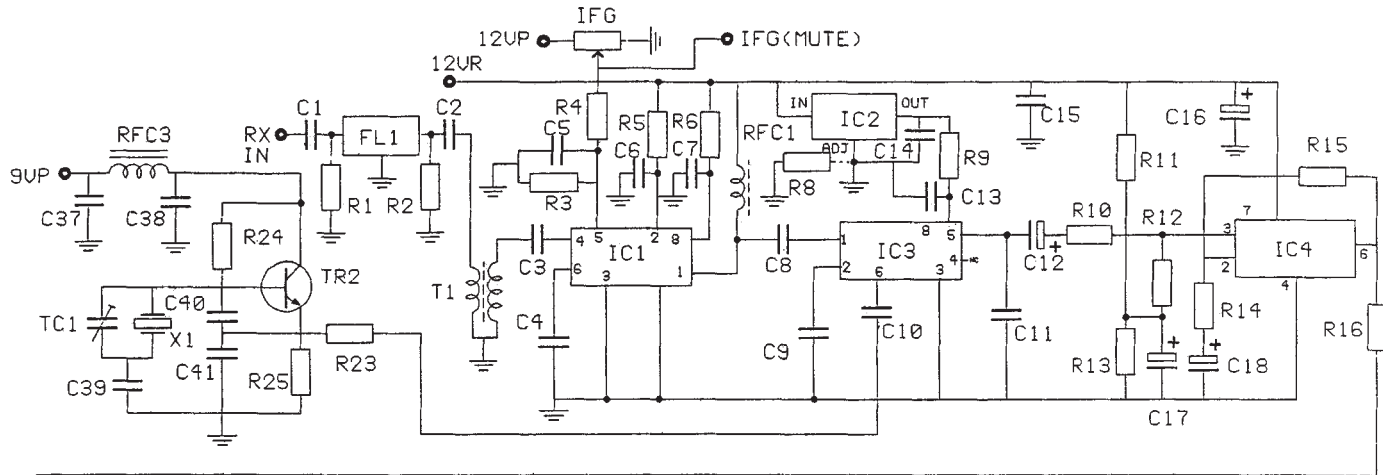
TR2 a 2N2222 is the BFO oscillator. TC1 adjusts the output frequency. A 3 terminal regulator IC7 provides a stabilised voltage source for the BFO. TR3 a 2N2222 acts as a keyed CW xtal oscillator, TC2 allows trimming of the frequency to allow zero beat on TX. VR1 sets the drive level to the LPF L4/5 C55-57. The LPF is designed to reduce the 9MHz 2nd harmonic. Again a 3 terminal regulator IC7 provides a stabilised voltage source for the CIO.

The 12vt and 12vr power supply lines are switched by pnp power transistors controlled from a time and delay circuit. The timing switch IC9 is a quad nand smitt trigger package, gate timing is adjusted with small ceramic capacitors C43-45. Timing is initiated by TR4 keyer which keys the delay generator TR5. TR5 will hold on dependant on the charge across C68, the charge is adjustable via RV3 which is panel mounted. The next issue will look at the Mixer and the AMP/LPF.

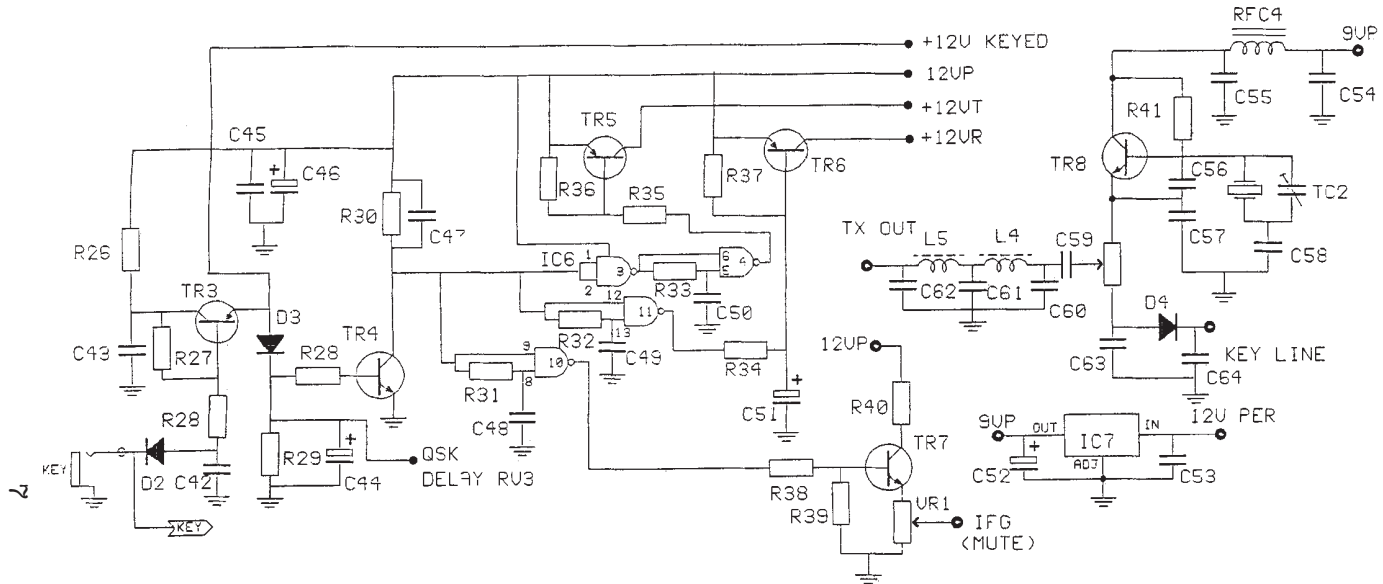
Parts List GQ2000IF

R1,2 51R	C1,2,3,5,9,10,11,13,15,30,4	C26 22uF
R3,10,11,13,27,28,30,36,37,39 10K	2,55,64 10N	C27,31,32 2.2 uF
R4 1K8	C4,6,7,14,28,35,37,38,43,4	C29,52 10uF
R5,6,9,26 100R	5,47,48,49,50,53,54,63	C33 180P
R12,14,15,19,29,31,32,33 100K	100N	C36 470uF
R16,17,25 470R	C8,59 100P	C44 4.7 uF
R18 1M	C12,18 1uF	C39,58 27P
R20,40 220R	C16,17,34,46 100uF	C40,41,56,57 150P
R21 5R6	C19,25 0.39uF	C60,62 18P
R22 1R8	C20 0.022 uF	C61 47P
R23,38 1K	C21 0.68 uF	TC1,2 3-30P TRIMMER
R24,41 220K	C22 0.1 uF	
R28 47K	C23 0.56 uF	
R34,35 4K7	C24 0.068 uF	
R7 NOT USED		
RV1,2,3 10K LOG		
RFC1 9MHZ SELF RESONANT CHOKE (TOKO 283AS-220J)	IC1 MC1350P	TR1 2N3819
RFC2 15UH TOKO 8RBSH	IC2 78L06	TR2,8 2N2222A
RFC3,4 1000UH TOKO 283AS102J	IC3 NE602/NE612	TR3 2N3906
L1,2,3 100MH TOKO 10RBH	IC4 TL071	TR4,7 2N3904
L4,5 10UH TOKO 283AS-100J	IC5 TDA2003	TR5,6 BD140
T1 K37X830	IC6 4093	
	IC7 78L09	D12,3,4 1N4148

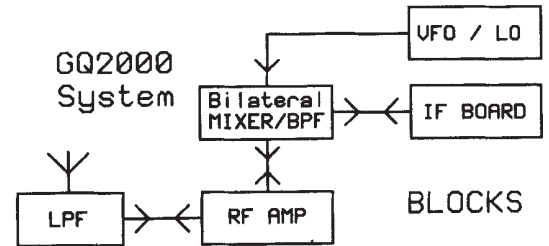
FULL AND MODULE KITS WILL BE AVAILABLE SHORTLY : RING 01239 - 698427



**GQ2000
IF SECTION**



**QQ2000
QSK SWITCH
and C.I.O.**



A Versatile Peak Output Power Unit

A.W. Neill, G3FCK, 40 Turnpike Rd. NEWBURY. Berkshire. RG14 2NF

Occasionally, these may exist as a requirement to measure the output of medium-power gear. This unit can handle outputs of up to 25 watts, and provides a few other functions which may be of use in the shack.

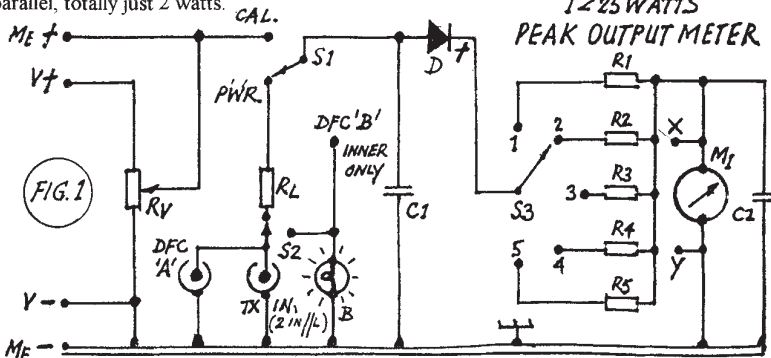
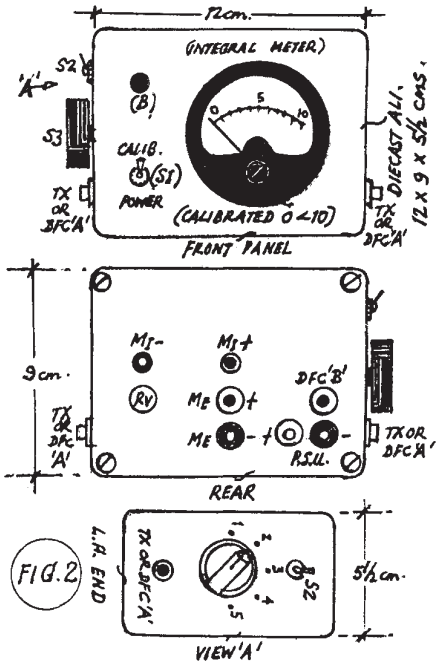
Although calculations have been made in respect of the various values of resistance employed, the use of standard resistors, rather than close-tolerance types, necessitates a more empirical approach. (and a digital ohm-meter! The unit will cater for 5 power ranges; nominally 1, 10, 15, 20 and 25 watts.

Additionally, there is provision for visual indication of power supplied, via a small 12v. Bulb, the use of which should be limited to approx. 5W out. These are also a couple of DFC inputs, depending on the sensitivity, or otherwise, of the counter. An additional two sockets allow for the connection of an external source requiring the sensitivity of the integral meter; e.g. FSM, etc. Calibration voltages are computed as per usual, i.e. $V = 100w$.

Meter resistor values (1 to 5) will depend upon the meter FSD, and are calculated accordingly, i.e., $R_m = V/m$ (amps).

As an example, if the meter has an FSD of 100 uA, and the output range required is 10 watts, the calibrator voltage required will be $V = \sqrt{1-w} = \sqrt{1000} = 31.62V$. The required meter resistor will be $R_m = v/Im = 31.62$ divided by .00001 = 316,200 ohms.

Selected standard resistors should be checked by a digital ohm-meter, as their real values are occasionally "way out"! Strictly speaking, the load resistor, R_L , should be composed of paralleled resistors, carbon, 5w each; however checks are so brief that the prototype in use employs only $2 \times 220 + 2 \times 150$ (each 1/2 w), in parallel, totally just 2 watts.



- M_E = EXTERNAL V/METER
- V = VARIABLE P.S.U.
- R_V = 100K LIN. POT.
- $R_1, 2, 3, 4, 5$ = BY CALCULATION, DEPENDING ON INTEGRAL METER F.S.D.
- B = 12 VOLT BULB -
- X, Y = METER SOCKETS, TO ALLOW USE OF INTEGRAL METER WITH OTHER SOURCE.
- S_1 = S.P.D.T TOGGLE
- S_2 = S.P.D.T TOGGLE
- S_3 = S.P. 5W ROTARY
- $C_1, 2$ = 10n CERAMIC
- D = 1N34A, ETC.
- M_1 = INTEGRAL METER

73 KHz VERY LOW FREQUENCY TRANSMITTER - RECEIVER

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

CIRCUIT DESCRIPTION

The receiver section is on a separate board from the transmitter and can be used on its own. It is of a TRF design, using an active filter/pre-amp based on the high slew rate 741 S op-amp. This feeds into a double balanced mixer (product detector), consisting of two transformers, trifilar wound, and four diodes. As this is a commutating type of mixer it is quite acceptable, indeed preferable to drive this with a square wave. It is thus possible to use a number of IC's for the local oscillator. A 555 timer or a 567 PLL would suffice, but it was decided to use another 741 S as a relaxation/slicer oscillator as this has a lower component count and uses the same IC as the rest of the circuit. Further, in the transmit section, there is a duplicate local oscillator, which can be easily re-configured to act as a microphone amplifier, should you wish to transmit LSB. The remainder of the receiver section consists of a low pass audio filter, followed by a low noise pre-amp. and a band pass filter designed around another 741 S op-amp. The filter has a peak response of around 800 Hz and a band width of about 200 Hz. The output impedance is about 2 KHz. However, if a mismatched load of about 30 ohms is used, then this negates some of the filtering action, allowing SSB to be copied.

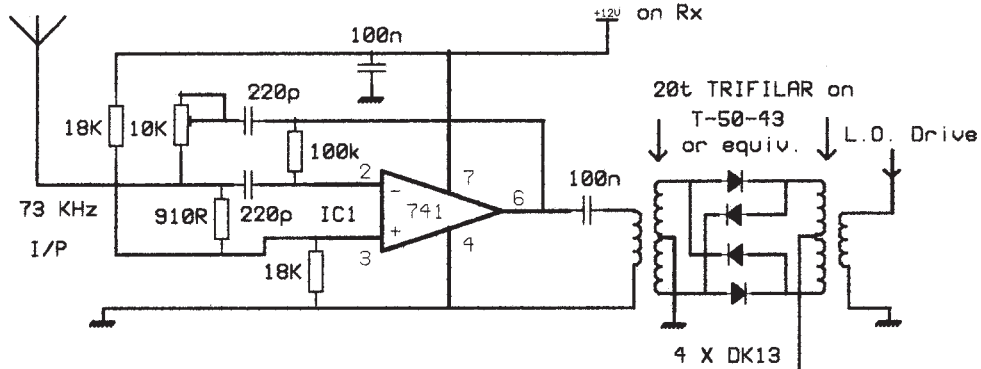
The transmitter section is very similar to the receiver at first glance, again consisting of three 741 S IC's and a double balanced diode mixer (ring modulator). This is unbalanced by feeding DC into the audio input to send CW or if an AF signal is present then DSB results. The following stage is a unity gain low pass filter with a cut-off frequency of 73 KHz, which therefore produces an LSB signal at its output. (The actual response is in fact peaky at 70 KHz, due to its relatively high Q) The output of this stage is about 1 V peak to peak and is used to drive a Power Amplifier. (To be described in the next issue of "SPRAT") The power amplifier consists of a separate board with two channels each of 20-25 Watts o/p. The o/p's can be combined using a ferrite pot transformer or used to supply two antennas in a phased array. It is envisaged that the receiver and transmitter would use separate antennas, as a suitable Rx antenna would be a frame ant. or ferrite rod, as these tend to reject electrical noise, while the transmit antenna would need to be of a more efficient design. High Q loops will work for transmitters and have been used for through ground transmissions. I am currently developing a "top 'n' bottom" end fed short vertical, which will use a six-inch diameter thin walled aluminium tube (gas flue) or a larger diameter "skeleton" tube of copper wires as the radiating element.

If the transmitter is used with the receiver as a transceiver, then the local oscillator on the Rx board is used to drive the Tx, thus allowing the Tx LO to be configured as a mic. amplifier. No Tx-Rx switching or keying has been included and neither has a side tone oscillator. However, each board has a grid of pads on which such circuits may be constructed and some circuit suggestions are included.

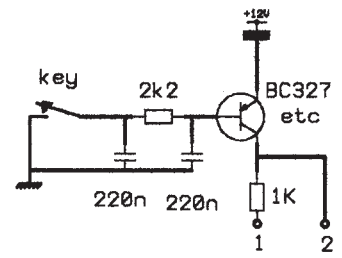
Since this article was first written, it has been found that RS no longer list the 741 S. However, there is an alternative device, the CA3140 which is pin-compatible. LF351's will probably also work. DO NOT USE "ORDINARY" 741'S, they will only work in the last stage of the Rx circuit, where the signal is down to 800 Hz. They are also very noisy.

Kits for these designs, including the Power Amplifier are available from SEQUENCE ELECTRONICS -- see advert elsewhere.

FOR SALE: Yasue FT-890 HF TCVR, fitted internal ATU, FY-101 SSB Filter, YF-100 CW Filter, Front panel power control take CW power down to less than 2 watts. Boxed, with manual and in mint condition £850 Peter, G3XJS, QTHR. Tel: 0973 - 260022

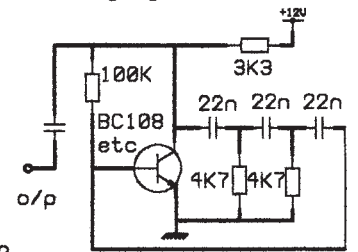


73 KHz Rx

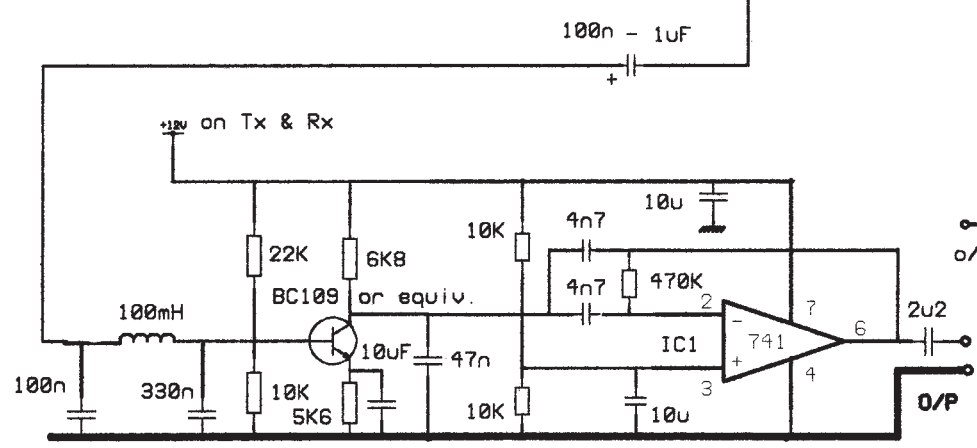


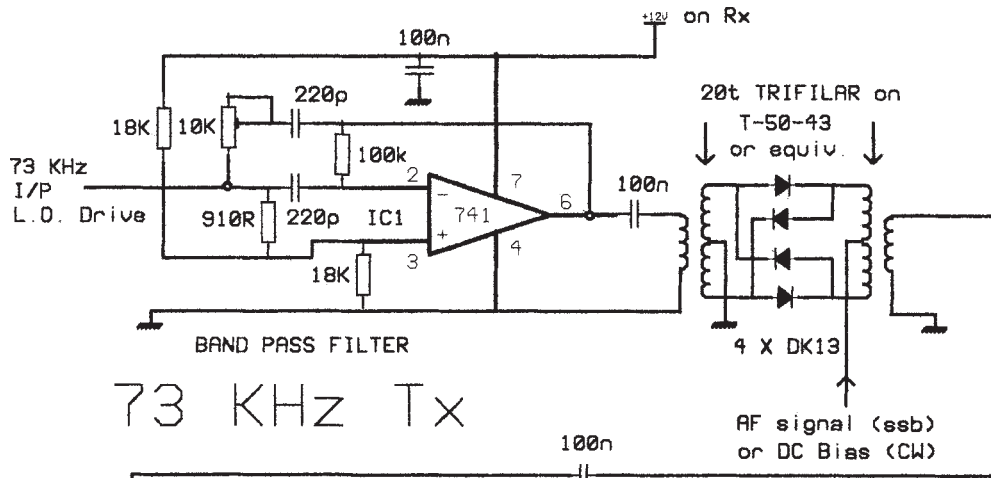
1 DC bias to unbalance mix
2 To Tx circuits 200 mA ma

From collector of Q2
keying transistor

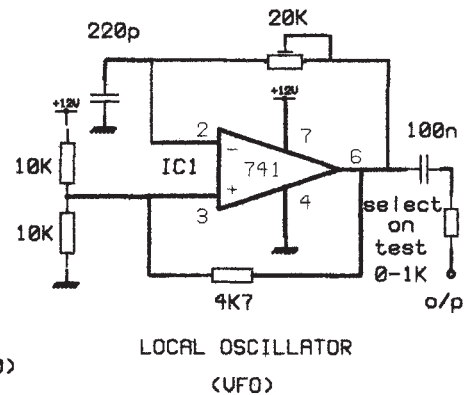
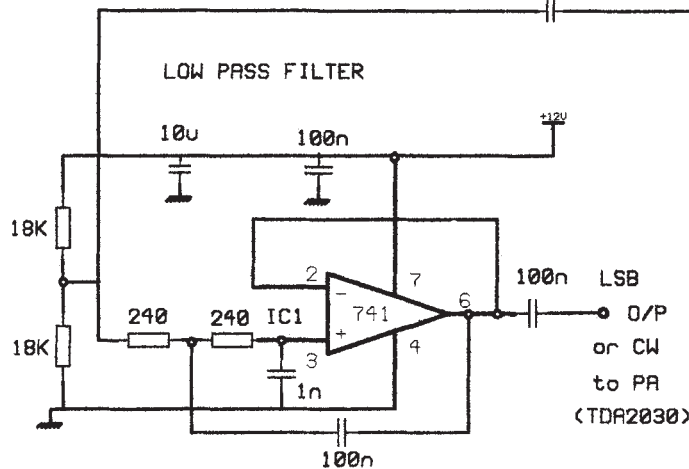


Side-tone osc. - 800





73 KHz Tx

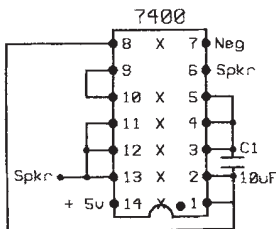


RECEIVER:		TRANSMITTER:	
Resistors:	Semiconductors:	Resistors:	Semiconductors:
1 X 910R	1 x BC109	4 X 470R	3 X 741 S
1 X 4K7	3 X 741 S	1 X 910R	4 X DK13
1 X 5K6	4 X DK13	1 X 4K7	
1 X 6K8		2 X 10K	
5 X 10K	Miscellaneous:	4 X 18K	Miscellaneous:
2 X 18K	2 x T-50-43 Toroid	1 X 100K	1 x T-50-43 Toroid
1 X 22K	1x20K tuning pot with smd		1 x 20K tuning pot (optional)
1 X 100K	1 x 10K preset	Capacitors:	1 X 100K preset
1 X 470K	L1 100mH inductor	3 x 220p	
Capacitors:		1 x 1n	
3 x 220p		7 x 100n	
2 x 4n7		1 x 10u	
1 x 47n			
5 x 100n			
1 x 330n			
2 x 10u			

NB. If the two boards are coupled as a transceiver, only one tuning pot. is required. The L.O. stage is then re-configured as a mic. amp. This only requires the addition of one resistor (between 10K & 470K to set gain) and the omission of a resistor & capacitor. RIT or offset can be provided by switching in a 1K pot. or a fixed value resistor in the main tuning circuit. This technique can also be used to FSK the Tx, when operating as a beacon. The leads to the tuning pot should be kept short (under 15 cm and twisted together), as they will have RF flowing in them.

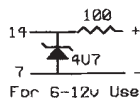
Lemon Juice Sidetone

G4GLJ & Les Jackson, G4HZJ, 1 Belvedere Ave. Atherton. Manchester. M29 9LQ



Top View X=Track Break

Lemon Juice Sidetone
G4GLJ/G4HZJ



For 6-12v Use

From the Red Rose Amateur Radio Club Newsletter

Is this the simplest Audio Frequency Oscillator? In a Veroboard layout : cut the tracks at "X". The chip is the common 7440. It is ideal for morse practice or as a sidetone. C1 controls the tone. The additional circuit is to run the oscillator from a 6 to 12v supply. Fresh from the G4 "Good Lemon Juice" factory!

The MINI CRYSTAL CHECKER [SPRAT 89]

Please note that the output from the oscillator should be taken from the emitter not the collector.

21st EAST SUFFOLK WIRELESS REVIVAL, IPSWICH, Stoke High School, SSE of main rail station, map ref. TM164435. Radio and Computer Rally. Open 10am [9.30 disabled] until 4pm. Talk-in S22. Details: Dave Johnson, G7SMX, 01394-285600. Johnsod6@boat.bt.com

ADDRESS FOR CLUB ZL REPRESENTATIVE

Please note that the correct postal address for ZL1ABS is : Mike Sheffield, 176, Albany Highway, Albany, AUKLAND 1331. New Zealand

An Alternative Audio AGC

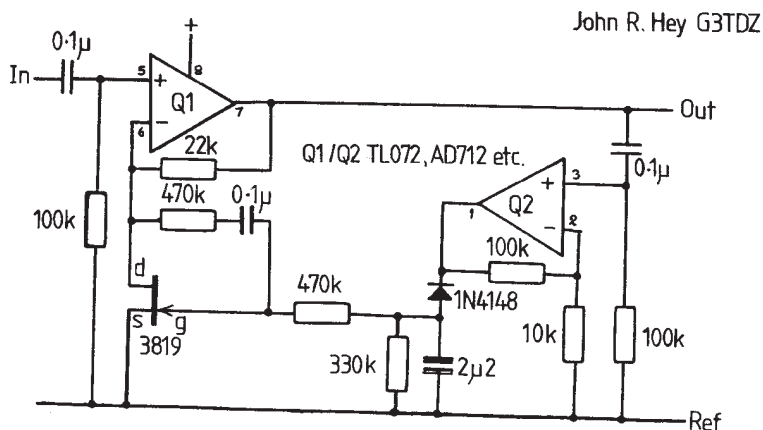
John R. Hey, G3TDZ, 8 Armley Grange Crescent, LEEDS. LS12 3QL

With the demise of the Plessey 6XXX series, so beloved of amateur constructors, something had to be done to replace the 6270. This simple circuit works well : anything above 5 mV to many volts comes out at a level 2000mV.

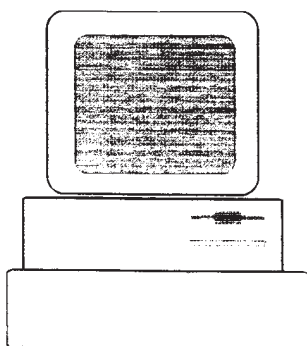
The two 470k and the 0.1u forming a feedback around the FET prevent audio distortion. The line marked "Ref" would be system earth in a twin supply; in a single supply, a local mid rail reference would be generated.

A number of different FETs were tried, the only difference in performance was a small difference in gain,; the good old 3819 worked excellently.

The circuit will be used in a future receiver.



SOME QRP WEB SITES TO TRY



The New G3YCC QRP Sites :

www.gqrclub.demon.co.uk

www.geocities.com/CapeCanaveral/5179

Dan's Small Parts (Bargain Components and Kits)

www.fix.net/dans.html

JA9MAT QRP Site

www.nsknet.or.jp/~ja9mat/Index.htm

Bob (KI7MN) Chandler's Web Site with QRP info

www.dancris.com/~ki7mn

The Kanga Homepages:

www.kanga.demon.co.uk

The 'VYPIN ISLAND QRP CLUB' now has a call sign VU3 YPN. VU3YPN will be on air all week days IST 1000 hrs on cw. Email queries via : Ram@alpha.nic.in

A Design for a High Performance Receiver

David Oliver, G4HMC, Lilford Cottage, 24 Sixty Acres Rd. Prestwood. HP16 0PE

Introduction.

I spent a few enjoyable sessions in the 95/96 Winter Sports using a simple superhet RX (Solid State Design pp104-105) and 1w TX the latter using a Birkitts BFY51 PA and having given sterling service in every Winter Sports since 1984.

Although the receiver gives very satisfactory performance, it does suffer a few shortcomings, in particular the use of audio derived agc which is not best suited for cw work.

I therefore decided to try my hand at building a 'high performance' design, the objective being to provide improved sensitivity signal to noise agc characteristic and facility for both CW and SSB. The article that follows describes the main features of the receiver and includes circuitry and sketch patterns for the main pcbs which should allow reproduction.

No sophisticated test gear was used or is necessary a multimeter and 10MHz scope should suffice.

Design Concept

The receiver concept is based on that section of the Contest Grade Station, again, as described in Solid State Design pages 226-229. There are however a number of departures from the original circuitry. Firstly to simplify it without compromising performance and secondly to take account of component availability in the UK.

Design Details.

Front end filtering uses three pole band pass types in lieu of four pole. Details of three pole filters are set out in table 3 appendix 2 of solid State Design.

A Plessey SL6440 active mixer in a high performance circuit and giving about 10dB gain, replaces the original front end diode ring mixer and post RF amplifier.

The VFO differs from the original design which employed separate MC1468 oscillators on 5.0 and 16.0 MHz, and uses a well proven Colpitts circuit with feedback components optimised to provide sufficient output over the desired range. Band changing employs a method used by G3TXQ and is achieved by means of a reed relay which switches an additional inductor in parallel with the main vfo coil thus providing injection at 5.0 to 5.5 and 7.0 to 7.2 MHz. Coverage of 160, 80 and 20 metres is thus achieved. The MC1590 ICs originally used in the IF amplifiers are no longer available and MC1350 types are therefore used with associated component changes.

The Clubs SSB filters are used together with an audio CW/SSB filter thus fulfilling the need for CW/SSB reception. The prospective builder could substitute CW crystal filters now available from the Club or use both if available. Suitable modifications would then be needed to the pcb.

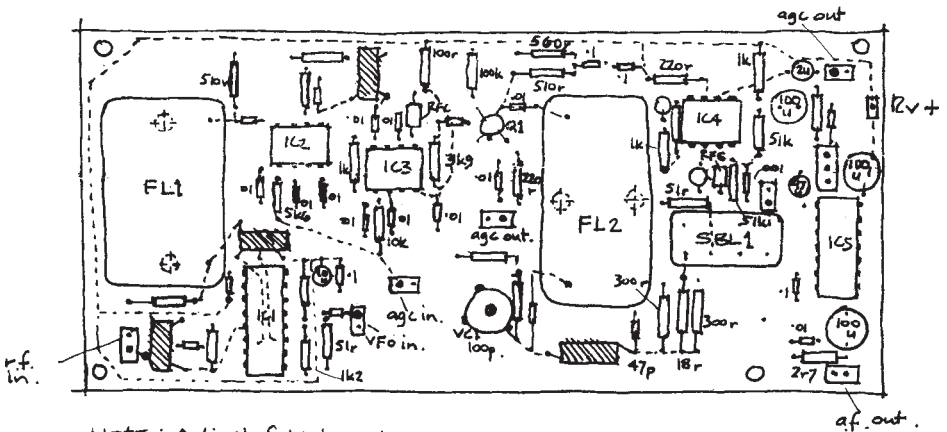
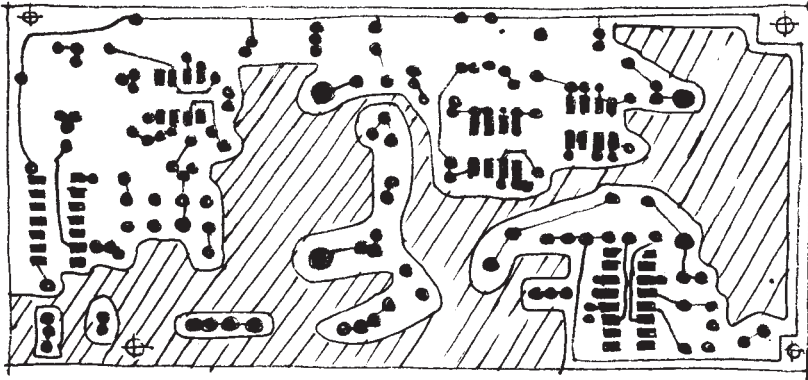
The original text warns the reader off the age circuitry referring to two FETs both with obscure type number being not commonly available. Having bought a later edition of the book to replace my worn out copy, I noticed that these FET type numbers had been changed although the warning in the text remained. As supplies of the new type FETs were identified, I decided to try the original age design. With substitution of an op amp for the original discrete transistors to increase gain in the audio-loop, the circuit works well.

The original product detector, like the front end mixer employed a diode ring mixer constructed from discrete components. The audio section also used discrete transistors in the output stage. The product detector and audio stages have therefore been much simplified employing an SABLE diode ring package, low noise IC preamp. And IC audio power amp. In a circuit borrowed almost in its entirety from the Band Imaging Receiver (ARRL Handbook).

High Performance Receiver. David Oliver, G4HMC

Main Board Layout

Full size drawings of the Circuit and PCB Layouts are available from G3RJV for a self-addressed, Stamped Envelope marked "G4HMC Receiver"



NOTE: Adjust foil to suit filters. In this case
FL1 = SHWA.
FL2 = YTK.
Both obtained from dub.

FIG.1.

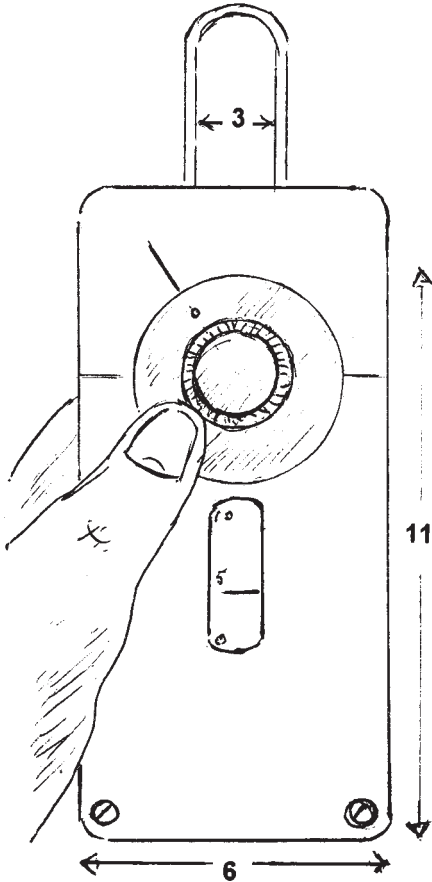
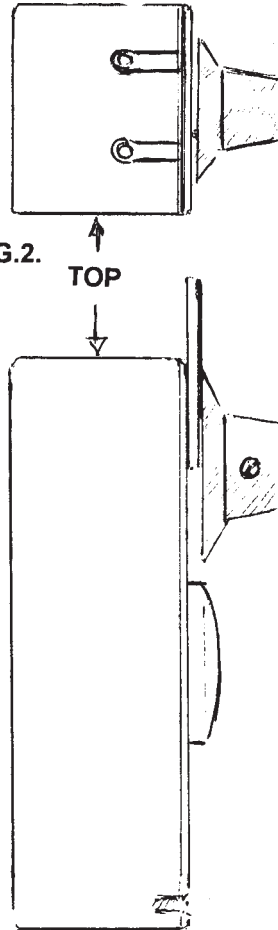


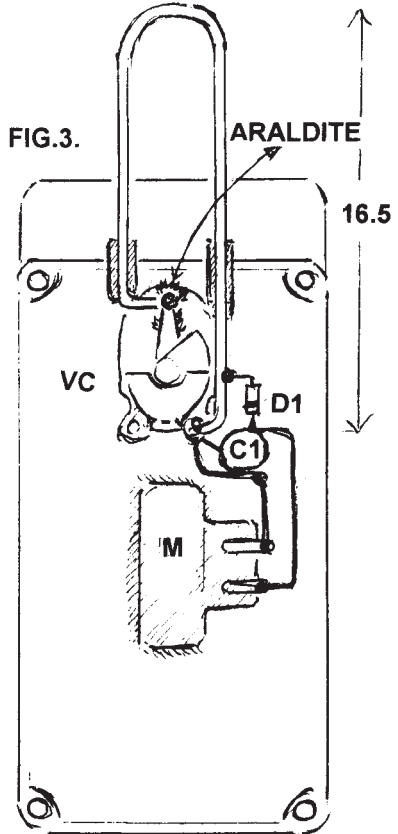
FIG.2.



CASE SIZE 11 X 6 X 3

VHF ABSORPTION WAVEMETER

FIG.3.



NOT TO SCALE

ALL MEASUREMENTS IN CM

A VHF Absorption Wavemeter

Harry Froggatt G3SOX, 24 Warwick Drive, RAMSGATE, Kent. CT11 0JU.

I hold no brief for the originality of the circuitry. The wavemeter fulfils the DTI minimum requirement for frequency measurement. And if calibrated carefully will be accurate enough for most purposes. The coverage of my wavemeter is 120 to 240 MHz approx.

The circuitry is built into the lid of the die cast box, and the frequency range controlled by the LC ratio. The range of interest may therefore be arranged by change of capacity value of coil shape or size. My meter shows the 2 metre band at about 60°.

The unit is self supporting or may be held in one hand. The case is an 11 x 6 x 3cm die cast box, Fig. 1,2,3. Its size is dependant upon the depth of the meter, in this case the meter, an ex - dip meter is 2 cm deep by 2 cm wide. 1 mA FSD. When drilling the die cast lid, which should be clamped firmly. Mark centre pop and drill three or four smaller holes first, and finish the slot using a router, rotary file or round and half round files. Fit meter and secure with a suitable adhesive/epoxy resin.

VC is a small 50pF capacitor - cut down and left with one or two fixed or moving vanes. The shaft is 6.4 mm dia and takes a small instrument knob 4 cm wide x 2 cm deep. A narrow slot is cut into the near face of the knob, and a small piece of 20 - 24 swg wire is secured to the grooved knob using araldite, to cut out the dial pointer.

The dial is a 6 mm x 4 mm piece of 2 mm Plastic Sheet, covered with white card. Some trimmers are secured with two small setscrews, if the covers, will have to be counter sunk after drilling, and suitable c/s set screws fitted. Other trimmer capacitors have a single nut fixing, in which case the plastic dial will need to be slotted to fit the capacitor spindle and secured by the nut. Some capacitors may require the earth tag to be securely fixed to the ceramic body to prevent slight movement of the tuned circuit during use. Use ARALDITE or some other suitable medium.

Slip the pieces of sleeving on to the coil, after shaping solder D1 to the 320 +/- capacitor and to the coil, Fig.3 about 2 cm from the end.

A small piece of hook up wire is soldered to the end of the coil, disc capacitor and meter. The junction of D1 and disc capacitor is soldered to the other side of the meter. D1 is a LN4148, any small signal diode should work okay. Slots are filed in the top of the case to facilitate removal of the lid and change of coils.

Calibration is "off air", using a friends 2 metre TX, or by dip meter signal generator.

A two turn coil, and a capacitor with 2 fixed & 2 moving vanes will enable operation into the lower VHF region. 6 metres - 10 metres. The dial will not be exactly linear.

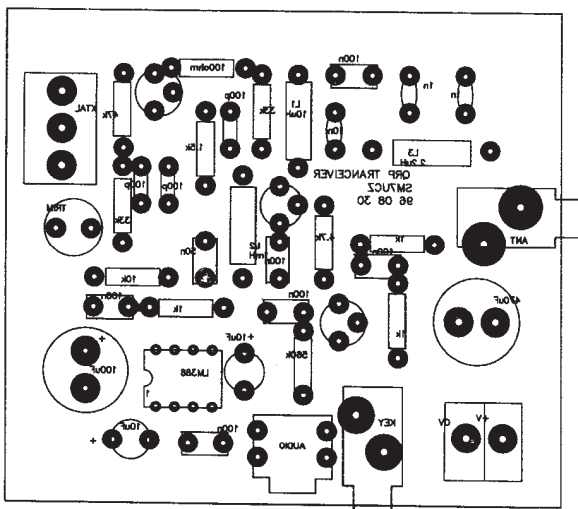
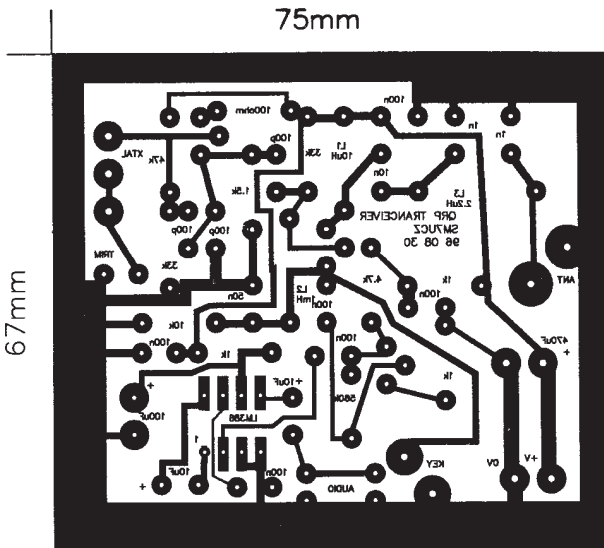
All the bits plus case were found in my "junk box."

The ÄLVA - A Swedish Pixie

Johnny Apell, SM7UCZ, Ekedalsvagen 11, S 373 00 JAMJO, Sweden

A Swedish version of the popular Pixie Transceiver complete with printed circuit layout. PCB mounted connectors are used throughout : phono for antenna and key, 3.5mm jack for audio out, PCB angled terminal blocks - 2 way for power, 3 way for crystal.

[G3RJV] Johnny gave me a prototype - a very nice layout and it works.



An Improved LF Balanced Mixer

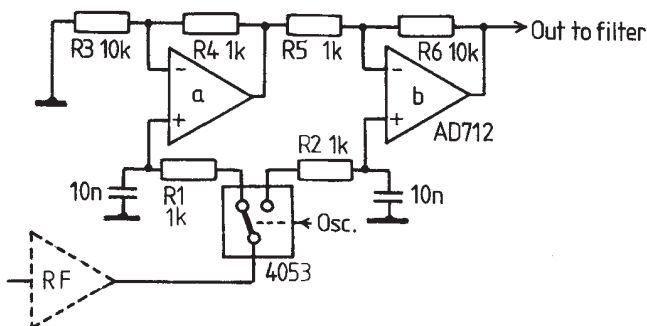
John R. Hey, G3TDZ, 8 Armley Grange Crescent, LEEDS. LS12 3QL

Using a C-MOS multiplexer as a mixer is not new. Its output is usually fed into an op-amp wired as a differential amplifier. Unfortunately the two inputs do not quite have equal gain without trimming and the resistance seen by the mixer are very unbalanced, usually 2:1.

A better plan for perfect balancing without the necessity of trimming is to use a twin op-amp in a simple instrument amp configuration. Well known to electronics, I have never seen it used in a radio design.

R1 and R2 with the two capacitors form with the electronic switch sample and hold circuits. The gain in the non-inverting input is $1 + R6/R5$ or 11. The gain into the inverting input is only 10. However the gain of the A section is 1.1, and $10 \times 1.1 = 11$, so you get a perfect gain balance with equal input resistances.

A remarkably pure output simplifies filter design. A signal of volts is needed to cause non-linearity. More will surely be seen of this circuit.



Good Results with a SPRAT Circuit : THE HF9 RECEIVER

Harry Popov LZ1BB G QRP C #4210 email: popov@sof.omega.bg

I made the HF9 TRF receiver from SPRAT-82. The results are amazing. I am listening with it since the beginning of the month. Here is a short list of the HRD stations on 80 and 40 meters with a 20 m long wire as an antennae:

3.5MHz

CW - 9G5BQ OY1G + JA and USA

SSB - KE1Y A61AJ VY2ROB K2WS OD5NJ FM5DP 9K2MU ZS6EZ 7X5JF

7 MHz

CW - CP6/VE7CPN CM8TW CO3BN CO8EI ZL1AL PJ9JT VK0IR 6Y4A CM8JY
5B4/DLSZAB HJ6PPN XE1ZW VU2AVI ZA1AM E21EJC 9G5BQ XV7SW XX9TR
VP5/WJ2O 9K2RA AL7A + many W, JA and W6/7 through the long path!
SSB - SV5AZP VA2AM 5A1A VP2EY A61AN ZL7ZB ZS6P PY6KR LU8VCC
XQ8ABF PY7SB 9Y4VU 3V8BB P49V PZ1EL VP9BO ZL1BMW HP1XVH

Not bad for a 4 transistors and no AF filter at all. Later I modified the HF9. I exchanged the AF part with LM386. The results were the same but I have a loudspeaker now. With later mod the power consumption was 5 mA with a 200 oms head phones and comfortable sound. It is rising up with loudspeaker or very loud signals. I am interesting whether there are other folks using this marvelous receiver? Congratulations to the author, Rev. Keith Ranger, G0KJK,

A SIMPLE KEYSER

Mike Sumner G3PVB, 20 Woodlands Way, Southwater, W Sussex, RH13 7HZ

A single touch of the paddle on dot or dash causes a self completing element and space. The keyer uses only 12 components. I strongly recommend the BRY39 programmable UJ from Maplin, as some of the NPN/PNP transistor equivalent connections I tried were a bit fickle.

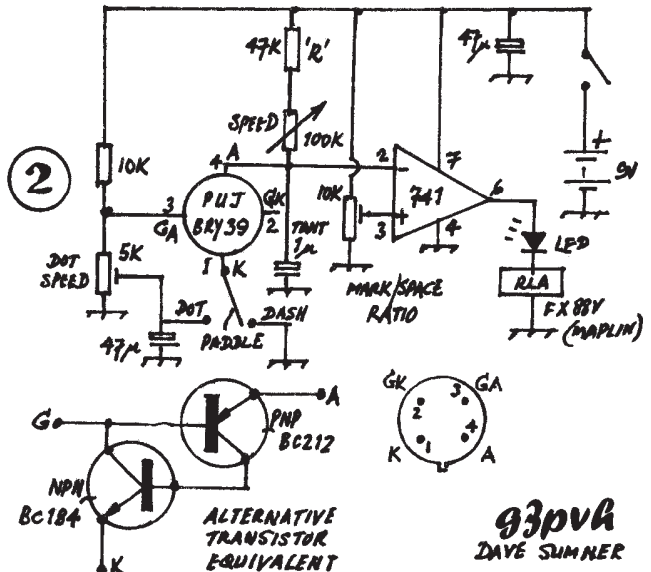
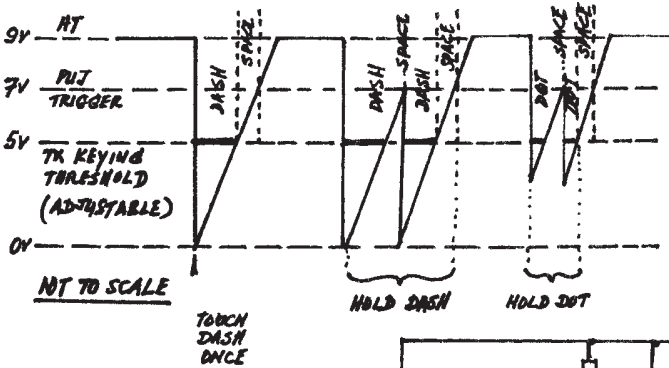
The controls provide complete adjustment to obtain your own Morse sound. When the speed is changed the other parameters remain correct.

The relay is one of the I.C. packaged types and works very well. The 741 has more than enough power to drive it. The LED is purely as a 2V dropper to ensure the relay releases reliably.

When the keyboard is in neutral the capacitor "c" changes to +9V.

When the keyboard moves to "dash", even for a moment, "c" is discharged. The TX is keyed when "c" is discharged to below about +5V, so this action keys the TX.

"c" now charges and when it reaches 5V the TX unkeys. If the key is in neutral that is the end of the dash. If it is still held, when the voltage on "c" reaches 7V the PUJ fires and discharges it again starting a new dash. If the paddle moves to "dot", the PUJ threshold is raised so that the action of keying only discharges "c" about half way.

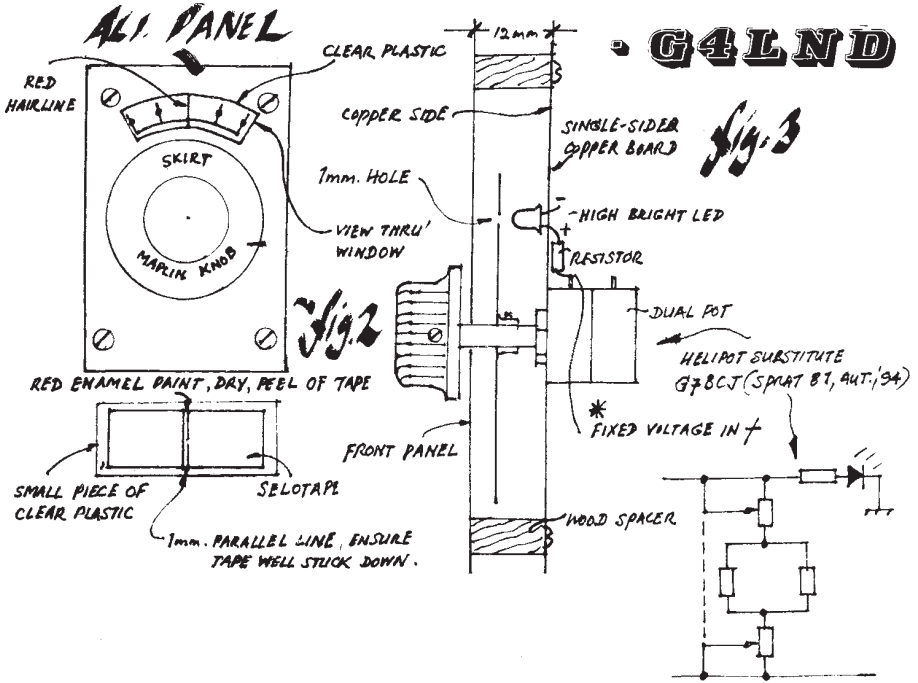
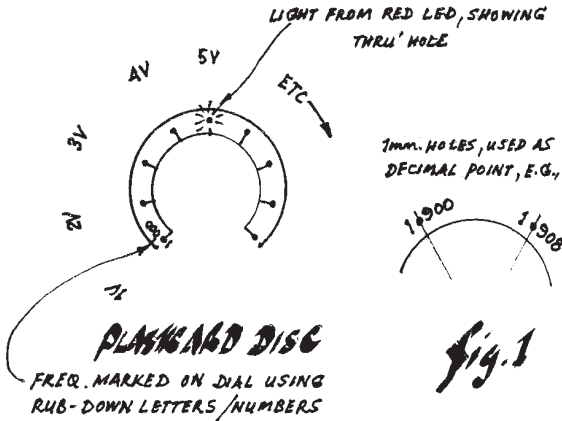


A Varicap Tuning Dial

Jim Hill, G4LND, 6 Ash Coppice, LEA. Preston. Lancs.

I played around with various types of dial readout and came up with the idea of a cheap type of LED marker. It is based on a plastic dial mounted on the shaft of the tuning pot. This is received through an aperture cut into the front panel. This tuning arrangement uses voltage against freq. i.e. connect a volt meter at the point supplying the varicap. Starting at 1 volt not the freq. On a nearby receiver or counter, make a note of this reading and make a small mark on the dial by using a pencil. Move the pot to 2 volts. Note the frequency and mark the dial at this point. Carry on until full rotation.

Remove the dial and drill 1mm holes at the marks, if an LED is placed centrally behind the disc so that it can be seen when the hole transverses the LED. This will indicate the frequency. The hole can be used as the decimal point if the legend is put either side of the hole i.e. 1 0 900 (1.900). In practice the dial looks very effective. The circuit for the tuning pot is the one submitted by G7BCJ (SPRAT No.81 Autumn '94)+



How To Lose Your Memory

Reg Moores G3GZT, 117 Horton Rd. BRIGHTON. BN1 7EG

No, not ours, but the dreaded Nicad one, which causes many problems to all that use them in H/H, Cam corders Radio Control and other pieces of equipment etc..

In the past, I have designed various units for re-cycling these batteries, not simple, as with different voltage packs, discharge currents required and sometimes auto re-charge switch "on" control can lead to complications.

I have a simple answer, use silicon diodes in series, which can be tapped off, either using a selection switch, or even croc clips to make the selection, to limit the discharged voltage, together with a discharging load.

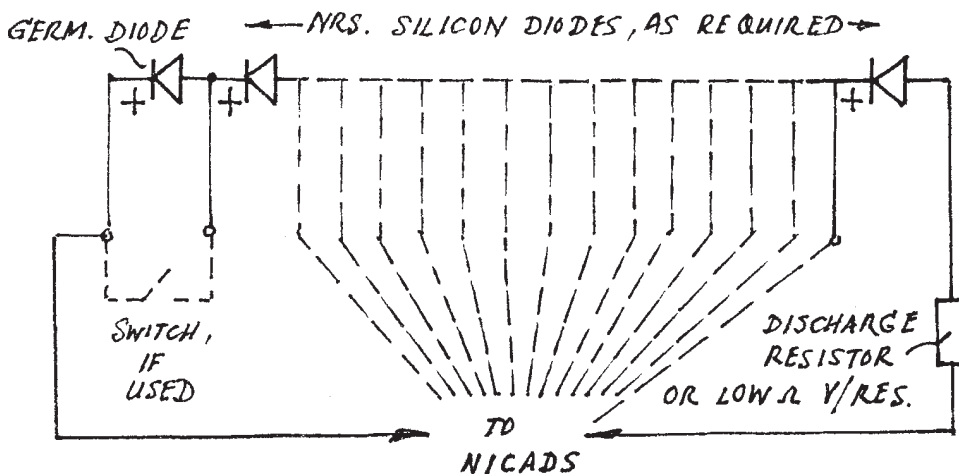
As the voltage difference between a fully charged and discharged battery, is only on the order of a volt or so, small wattage resistors can be used, with say a LED or lamp circuit connected across, showing the discharging operation.

I have also included, at the beginning of the diode chain, a germanium diode, which allows an extra control of the final discharged battery volts.

Diodes are very cheap to buy, so very little cost is involved, 1 - 10 amp ones are common, the germanium one of course should be of a suitable current rating, - stud types, or even old power transistor can be employed!

Mathematics are simple, - each silicon gives a drop down to 6v, - 20, 12.v. etc. Using the germanium in conjunction with the diode chain, enables discharge voltages to be set to every 300m.v!

To use, one uses the unit to discharge to the recommended voltage and then fully re-charge. Several such operations may be required to clear this "memory" from the battery! A simple circuit "set up" is shown below!



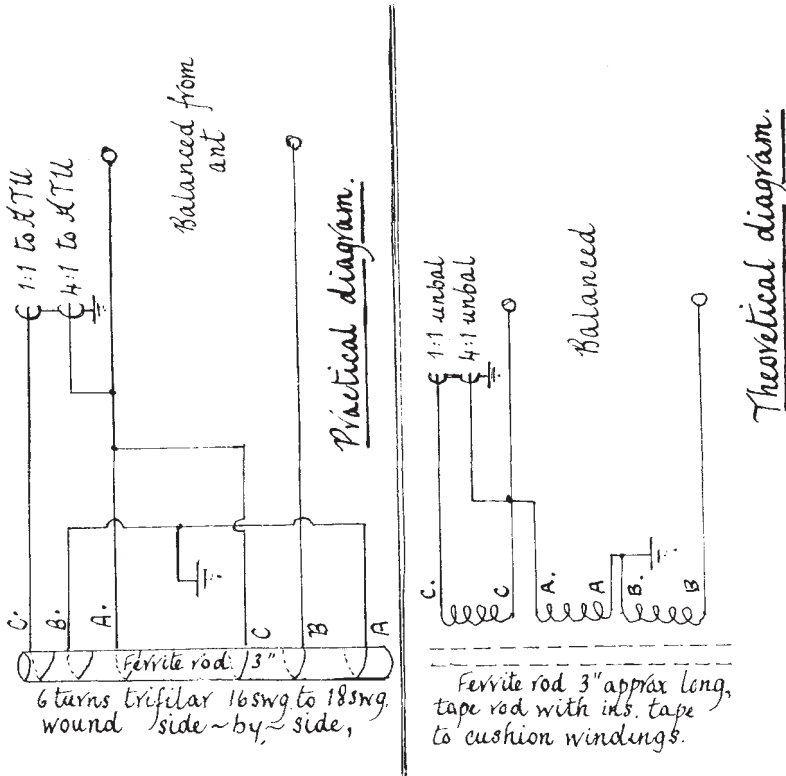
ANTENNAS - ANECDOTES - AWARDS

Gus Taylor G8PG 37 Pickerill Road, Greasby, Merseyside, L49 3ND

A 1:1 OR 4:1 FERRITE ROD BALUN

F.G. Stewart Sims, G3WQW, 71, Lambley Lane, Burton Joyce, NG15 5BL.

The diagrams below are fairly self-explanatory, but note that windings A,B, and C are wound side-by-side.

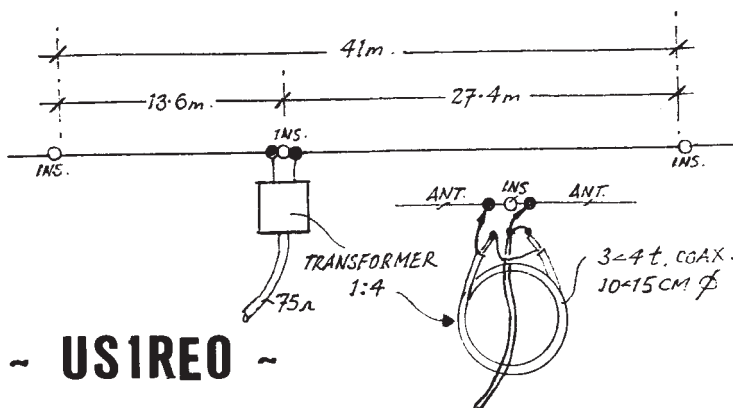


THE NIZHYN SPECIAL CO-AX FED WINDOM

Peter Gritsay, US1RE0, 15-B Moskovska St, Apt 58, Nizhyn, Chernigiv Region, 251200, Ukraine,

Peter reports that this one is very good indeed on 7 and 14 MHz, and satisfactory on 3.5 and 28 MHz (He does not seem to have equipment for the WARC bands). Note this has another balun not requiring a toroid as in the W3WQW design above. In many

countries toroid formers are completely unobtainable, so baluns such as the ones shown are the only home brew possibilities.



~ US1REO ~

UNE ANTENNE VERTICALE BOBINEE (14 Mz) to the ON5UP design (SPRAT 88) has been built by George, G4AWT. He used 33ft 2 in of wire for the radiator, and three radials of the same length. The top section proved unnecessary, zero swr being obtained without it. A couple of watts have produced great results on cw.

LUCKY BIG LOOP MAN KEN, G4SGF has one approximately 14x30 metres in size. It is fed in the centre of one of the short legs via open-wire line and a HB Z-match atu incorporating a 1:1 balun. SWR of zero is obtained on all bands 1.8 - 29 MHz, and on occasions it beats the pack when chasing rare ones with QRP SSB. If you have the real estate try it !

AFTER READING ABOUT THE ISOTRON ANTENNA in SPRAT 88 Terry, GoVTW bought the 7 MHz version from Seifreid, DK9FN (he comments on the speed of the response to his query and the eventual delivery). With the antenna at 25 feet and using 2W of ssb Terry has had excellent results, and considers the ISOTRON equal to his full size 40m wire dipole. He recommends it to anyone with limited space. Prices range from through 459 Dm for the 1.8 MHz model, 269 Dm for the 7 MHz model to 198 Dm for the 28 MHz model.

STEWART, G3WQW, HAS PRODUCED A VERSION OF THE G8PG HELICAL ANTENNA (SPTRAT 68 or Club Antenna handbook) and has been working the world on it with ssb. He has described it in the Nottingham ARC newsletter where it has caused much interest. Another good restricted space antenna.

SPECIAL CONGRATULATION TO ANGEL,LZ1SM on working 500 Members when using milliwatts. A great effort from a station so far from the UK. Also congrats to all LZs on the celebration of 70 years of amateur radio in Bulgaria.

CONGRATULATIONS TO THE OK AND EA QRP CLUBS. Both have now passed the 300 members mark. Well done - keep it up !

OUR PRESTIGE AWARDS FOR THE YEAR ARE MADE AS FOLLOWS.

THE G2NJ TROPHY to Al, KBlFK, for his outstanding international QRP work, particularly on the trans-Atlantic path, and his many acts of kindness to QRPers.

THE SUFFOLK TROPHY to Mick, G4OPE for his unique article " A Direct Digital Synthesiser" so well presented in SPRAT no. 89

THE PARTRIDGE TROPHY to Andre, ON5UP for his excellently engineered "La Antenne Verticale Bobinee (7 MHz) in SPRAT no. 88.

Very sincere congratulations to them all .

=====

HIS MANY FRIENDS WORLDWIDE WILL BE DEEPLY SHOCKED TO HEAR OF THE SUDDEN DEATH OF ALICE,XYL OF GM3OXX. We are all thinking of you George, and send deepest sympathy.

=====

AWARD NEWS

QRP MASTER. The Worshipful Company welcomes new masters G3DGT, DL1JGA, and WB3JJK into membership. Well done !

QRP COUNTRIES. 125 IK5SRD (nice work), 75, DL1JGA, WB3JJK,G3DOT; 25 GokCA,DF5WA.

WORKED G QRP CLUB. 960 G3JXS (nearly the millennium !),860 G2DAN. 760 GoIFK; 540 G3INZ;380 GM4OSS;200 G3YLL;150 GokZO; 160 G4EIB;140 GoSWU; 80 GoVQJ;60 G4IKR,GOBXO,WB3JJK; GodJA; 40 GoUTF,GM4BAE; 20 GwomYY,2EoAMW (FB OM) .

TWO-WAY QRP AWARD. 90 G3XJS (Soon the 1st Centurian ?); 40 IK5SRD; 30 SM5CCT; 20 G4IKR,G3DOT, G4GJY,G3BMO,G3JMZ,WB3JJK, GodJA; 10 GI4SRO,GWovWM,G4ERA,GoSTR,G3PBQ,DJ9HP.

LUTZ,DJ2HRP,NOW HAS A POTENT MULTI-BAND VERTICAL FOLLOWING A SUGGESTION FROM AAA. He started with a 7MHz, co-axial fed HB9OP vertical. The radiator consists of 10.2 m of wire wound around a 9m fishing pole attached to a wooden stake which is in turn secured to the top of a birch tree. Three, 10.2m radials are employed, sloping from the base of the radiator at 45° and spaced by 120 degrees. The original version used RG58 co-axial feed. At the suggestion of AAA this was replaced by tuned feeder, so allowing multi-band operation. Tuned to 3.5 MHz with a suitable atu 5 watts pep of ssb produced an S8 report and solid QSO from VE2HQ with solid 100% copy.This was followed by another ssb QSO with VY2ROB. On 7 Mhz the pick of the bunch was a cw QSO with ZL3GQ on the long path to give lutz his first ever N.Z. contact. This is another excellent example of how a suitable atu and open wire feed system allow one to break away from being tied to a single, co-ax fed band, and to fully exploit the multi-band potential of most antennas . It also shows that it helps to make use of existing supports -trees do not need planning permission ! Anybody got ideas for an inflatable artificial tree to beat the planners ?? (or even better, a long, narrow, copper covered tube that one can blow up to make a self-supporting vertical antenna . The person who invents that one is guaranteed honorary membership of G QRP C !)

FROM THE MEMBERSHIP SECRETARY

John Leak, G0BXO, Flat 7, 56 Heath Crescent. Halifax. HX1 2PW.

Telephone : 01422 - 365025

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. Your receipt is the updating of the subscription code on your SPRAT address label. For example, the code '97' means that your subscription is paid until the END of 1997.

Please remember also that there is a time delay of 4 - 5 weeks between the printing of the address labels for SPRAT and the despatch of SPRAT.

Please write or telephone if you think we have made a mistake

BUT PLEASE QUOTE YOUR CLUB NUMBER AND CALL SIGN.

Change of Address

Please remember to tell us if you change your address. Each quarter a number of 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 changes take time to work through the system.

Standing Order Payments

Over 100 members have STILL not changed their standing orders to take account of the new subscription rate of £6 introduced in 1995. If you are one of them, please send me an extra £1 if you wish to continue in membership and please amend your standing order for 1998.

MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS

FOR SALE: HANDS GQ40 7MHz Transceiver, built [see SPRAT 83] Performs well. £120 inc. Carriage. Tony, G3KCJ, 01-582-454778 - after 6pm.

FOR SALE: SONY 2001D Receiver, boxed with manual and PSU. Very good condition. £150 ono. Contact Charles 01203-738171 eve. 01203-604040 ext. 114 day.

FOR SALE: MIZUHO 20m Handheld SSB/CW 2w Transceiver with 4 crystals, speaker mic. £200 Frank G3YCC - QTHR

20 ISLANDS WITH GROUNDPLANE on Fibre Glass PCB. 100x40mm. £4.75 ea. Inc postage and packing. Gary Fisher, G0WTL, 6 Totterhoe Road. Dunstable. Beds. LU6 2AG.

FOR SALE: Howes VOGAD Mike module built with instructions £8.50 ONO. Motorola MT707 PMR single channel handheld. Could convert to 70 cm and possibly add a channel. £20 ONO Weller 40 watt mains soldering iron £12.50 ONO. 100K 0.5 Watt resistors 5p for 20, 100 for just 20p, greater discount for even more. 30 A ammeter 50p, 500 uA meter, 50p Call David on 0181-317-2223 eves and weekends or write 4 Jashoda House Connaught Mews Woolwich SE18 6SU.

WANTED: EDDYSTONE ENTHUSIAST to give a home to my S759 RX. Looks nice, could work better - leaky Cs? Needs enthusiast. Also Collaro reel to reel tape deck. Buyer [nominal sum] collects. N. Yorks. David, G0UTF, 01347-838891.

WANTED: DRAKE 2B RX + speaker & Q Mult. G3PBQ. QTHR. 0121-373-2282

WANTED: Circuits/Data for any xtal modules. G3FCK, A.W. McNeill, 40 Turnpike Road NEWBURY. Berks. RG14 2NF

COMMUNICATIONS AND CONTESTS

Peter Barville G3XJS, 40 Watchet Lane, Holmer Green,
High Wycombe, Bucks, HP15 6UG.

E-mail: "peter@barville.demon.co.uk" Packet: "g3xjs@gb7avm"

IMPORTANT : Change in G QRP Club Communications Manager

Gerald, G3MCK, has unfortunately had to give up his position of Communications Manager for the Club, and I know I speak for every member when I say how much we have appreciated his dedicated hard work on behalf of the G-QRP Club. Between us we are endeavouring to provide a 'seamless join', and so Gerald will still be handling the 1997 Somerset Contest entries, but otherwise we ask that all future correspondence (including other contest logs) be sent to me.

Gerald writes: The column this month is a joint effort between us. I would like to thank everyone for their support, and know you will give the same to Peter.

CHELMSLEY TROPHY

The revised rules worked well. We received the biggest number of entries ever (581), and the winner is Derrick G3LHJ. Commendations to Eva G0KZO, who was out of action for most of the year with a badly broken wrist (her OM John told me). It just goes to show that you can't keep a good QRPer down!

CALL	TOTAL QSO's	QRP/QRP	QRP/QRO	DXCC
G3LHJ	1262	257	1005	107
DJ0GD	1076	284	792	113
G0WAL	793	272	521	50
G0TYM	636	120	516	65
DL1HTX	624	84	540	56
G0BXO	589	58	531	62
G3PBQ	501	233	268	39
PA0RBO	441	268	173	36
DL2LBC	431	48	383	33
G3GVY	413	151	262	31
DJ9HP	269	41	228	31
G3GMS	244	99	145	21
G0KZO	228	83	145	53
G3JHC	226	136	90	29
G0DJA	223	49	174	40
G0IQF	147	6	141	40
W4LJD	10	0	10	? (ssb only)

1996 WINTER SPORTS

Another large entry, and a well supported event. We were very pleased to receive so many logs from our overseas friends. Thank you for all your letters, many of which included photographs which were most interesting. Please excuse me for not replying individually. For the first time we received entries that included VHF QRP QSO's. There is nothing in the rules to prevent this, and Albert G3ZHE said, "I made a WS resolution to use QRP for the whole period", and you can't improve on that for following the spirit of WS. Next year we may decide to run two Winter Sports, one for hf and the other for VHF/UHF.

From my sporadic listening (and operating) sessions I know that there were many more people on for the odd QSO than sent in logs, and that everyone seemed to have a good time. Comments from the logs clearly show the pleasure that that was derived from meeting old friends, and many referred with gratitude to the stalwarts who always support the event. There are too many to name, but we all know who they are.

As is our custom, **certificates** are being sent to those whom we feel gave a little something extra to the event:

DL8MTG the highest score

G3ZHE the leading UK station (even without his VHF QSO's!)

W1VT the leading North American station. Zack is a staff member of the ARRL, and is well known for his contribution to the microwave part of our hobby, but sure knows his versatility on hf QRP cw.

HP1AC the leading South American station. We hope that when conditions improve he may appear in more European logs.

SP6GB consistent use of very low power. All his QSO's were made with just 600mW.

LYR-794 the only SWL entry received. All SWL's please note that we are always pleased to receive logs for any of the events.

W2JEK Finally, as this is a FUN event, for using more rigs (8) than anybody else, and for using the most number of bands (also 8)

As a number of people used different power levels in WS I have chosen the one which best represents their power. Some people thought that WS started on Christmas Eve! Their scores have been adjusted, but not penalised (this is a FUN event) as we assumed that it was a genuine error. One person suggested that we should not include News Day, as other contests take place on that day. Others also commented on the number of contests that were taking place at the same time as WS. Well we don't own the frequencies, nor do we have a claim to having unique rights at that time of year. I welcome the extra activity, much of it QRP, and hope that many of our members helped to contribute to the success of the events organised by other clubs, as well as our own.

CALL	TOTAL	160	80	40	30	20	17	15	10	VHF	PWR
DL8MTG	156		126	29		1					5
G3ZHE	135		80	1		21				33	
W1VT	113			5		108					4
G3XUO	112		93	2	3	14					5
DJ0GD	109		56	32		21					3
KB1FK	100					100					4
LY3BA	93		4	6		83					2.5
G8PG	88		53	14		21					3
G3LHJ	82		31	4		47					1-5
G3BPM	78		76	2							3
UT3WW	76		44	6		26					
I1CCF	73					73					
OK1DZD	71		16	35	1	19					0.98
DL7GK	71		56	7	1	7					5
DL2LBC	69		38	31							4
SP9NLI	68		18	23	2	25					4
GU4YBW	66		41	22		3					4
G3GVY	61		47	2		12					2
G3KKQ	61		35	13	1	12					1-5
G3JSR	57		13	42					2		5
OK2BMA	56		30	1		25					3
G3BSK	54		52	1		1					3
CT1/G3KJX	54		1	6	3	44					
G3XJS	53		22	4	6	21					3
PA3BHK	53		27	13	6	2	1		4		1
DL2AY1	47		30	17							5
W3TS	44					44					5
GM3XQJ	39		10	1	3	25					3
G4ICP	38		37						1		2

CALL	TOTAL	160	80	40	30	20	17	15	10	VHF	PWR
G0WAL	37		25	3		2	2			10	5
G3MWF	34			16		18					5
GW3SB	34		14	8	1	11					5
GI4CBG	33										4
G4VQJ	33		30			3					5
EA3ADV	33			11		22					2
ON6WJ	32		28	1		3					5
DK5RY	32		18	7		7					3
G0UTF	30		30								3
SP6GB	29		29								0.6
GI4PCY	29	4	17	3	2	3					
G3JNB	29		19	1		9					1-5
GM4BKV	27		13	11		3					
PA0RBO	26		20	2		4					2
G0KRT	24		12	10		2					4
LYR-794	23		2	3		18					
SWL											
GM3KPD	22		14	4		4					3
GI4SRQ	22		19	1		2					5
G3ICO	20		20								2
W4/G0FSP	19					19					5
G0TYM	18			4	2	12					4
K2JT	18		2	4	6	3	2	1			5
G0KZO	18		18								3
DL2BQD	17				17						2
G0DJA	16		6		10						3
W2JEK	15	2	1	6	1	1	2	1	1		1-4
ON4AVG	12		1		9		2				5
HP1AC	7				7						5
F6GGO	6		5	1							2
TOTAL	2872	6	1379	415	65	917	9	2	6	40	

Comments were passed about members using low-ish power levels, but more than 5 watts. Come on chaps, it is not hard to get down to the accepted QRP levels. By so doing you enable QSO's with you to count towards our awards.

It is always difficult to pick out high-lights from the logs - the list is too rich! However OK1DZD, running 980mW, made several QSO's with the USA on 20m. Well done Zdenek. It takes 2 to tango, so congratulations to KB1FK, W1HT, W1VT, W3TS, W8AC and AA2WG who made this possible.

The tables of prefixes appearing in the logs are edited to show the geographical areas appearing, rather than the exact prefix (ie W1 not K1).

Prefixes appearing in **European** logs: 5N3, 7Z5, 9A, CT, CT4, DL, EA, EA6, EA8, EI, ES, EW, F, G, GB, GD, GI, GM, GW, GU, HA, HB9, HB0, I, IS0, LA, LY, LZ, OF, OK, OM, ON, OZ, PA, PJ7, PT7, S5, SM, SP, UA1, UA9, UK8, VE1, VE2, W1, W3, W4, YO, YU, RV4.

Prefixes appearing in **American** logs: 9A, CT, CT4, DL, EA, EA6, EI, F, G, GI, GM, HA, HB9, I, KP3, KP4, LY, OK, ON, OZ, PA, S5, SM, SP, UA3, US, V51, VE2, VE7, VO1, W1, W2, W3, W4, W5, W6, W7, W8, W9, XE.

I hope I have not missed anything, or anyone, but it is always possible due to the richness of the logs. If I have, then please accept my apologies, and don't let it deter you from sending in a log (to Peter) next year.

Peter writes:

ADDITIONS TO THE 1997 QRP CALENDAR

Europe for QRP, 27-28 September. Rules to appear in the Summer Sprat, but similar to previous years.

9A QRP CW Championship, 1800z 13 December -0559z 14 December. 3560 +/- 20kHz, 7030 +/- 10kHz. Further details available from G3XJS (sae please).

WAB 144MHz QRP Contest, 0900z-1500z 29th June. For further details please send an A5 sae to G8UYD.

WARC QRP FREQUENCIES

I suspect that it is largely because of recent poor hf band conditions that there has only been a small response to last month's request for comments on the subject. However, it is one I have long thought ought to be resolved if possible. It may not be long (fingers crossed!) before the 17m and 12m bands both see increased activity, along with improving conditions. Space this month does not allow me to expand my thoughts further, but taking into consideration the recommendations of OK-QRP, and QRP-ARCI (and bearing in mind the need to clear QRO stations lower in the band, and the digital 'stuff' higher up) I suggest the following:

	30m	17m	12m
cw	10116	18096	24906
ssb		18130	24950

I would like your reactions (whether you agree, or not) before making them definite G QRP Club recommendations. NOW is your chance to comment. I will also seek the views of QRP ARCI and OK QRP.

YEOVIL QRP CONVENTION

Don't forget this year's event at Yeovil (18th May). This is always one of the prime QRP occasions of the year, and definitely not to be missed. I hope I will be able to continue the excellent service Gerald has given us. If you let me have details of QRP contests (and other events) IN GOOD TIME, I will do my best to publish them here.

The deadlines for this column remain the beginning of February, May, August and November.

MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS

FOR SALE : Icom U16, (70cms) 99 channel, pre-programmed, 5 watt, ctcss fitted. Radio with one battery+Speaker-Mike+Wall charger. £165 ovno. Professionally converted by Icom. Icom h6, (2m) 6 channel, Diode programmable, 5 watt, takes six AA sized cell in it's drycell pack. Professionally converted by Icom for 2m. Currently programmed with two simple channels, a repeater, two packet and one unknown. Complete with manual and programing data! Radio + hard leather case. £70 ovno.

Two Icom compatible, Periphex? BP8S BIG and I mean B.I.G batteries 9.6v at 1400mA. These have only been used in the last couple of weeks. £25 each. Can only be charged in a desktop charger. OR, buy both batteries and the desktop fast charger, together, £85.

Microwave Modules 144/28 Mhz transverter ten watts out on ten meters from two metre multimode. Inc manuals and some leads. £80 ono. National instruments ieee-488/gpib card (only) for sale. Offers?

Tandy/Radio Shack DX400 (Minus carrying handle)CW/SSB/AM & broadcast FM. Not sure what these it's worth but I'm open to offers, 2/3 years old.Say £70+P&P. Based on Santegan? radio works well with long wire. Steve Walters G7Vfy, 0171-431-1204

FOR SALE : SPRATs 41, 45-79, 81-89. Reasonable offers considered. I will split numbers to make your set. Jim G QRP 1531 QTHR. Email: 203311@Compuserve.com (mark "for Jim")

FOR SALE : Following move to new home and decision to go QRT. I offer a Complete QRP Rig : Century 22 with built in keyer and calibrator, Power Pack, ATU, Kent straight key, and manual. Superb CW TCVR for 3.5,7,10,14,21 & 28. Has won me many awards. Prefer you collect, No test facilities here. £250. Phone 01462-896732. Baldock, Herts, G0KJN. G QRP 5270.

The 13th Yeovil QRP CONVENTION

Yeovil Amateur Radio Club will hold the 13th QRP Convention on 18th May 1997 at the Digby Hall, Hound Street Sherborne. (The same venue as last year!) The convention will feature lectures by Ian Keyser, G3ROO, (Getting the best from small gardens).. Gerald Stancy, G3MCK, (Dx'ing on a shoestring), and Rob Micklewright, G3MYM, (Negative Resistance Oscillators).. The event also features Trade Stands, bring-and-buy, prize draws, plus the ubiquitous "Constructors Challenge". (Lets see some more entries this year), and now we have added Morse Tests on Demand. (Don't forget the passport sized photographs). We will also have the same Top Class refreshments that received such acclaim last year. Don't forget the "Fun-Run" Contest on 80m and 40m on the week leading up to the convention. Convention start time 0900. Talk-in on S22. Remember too, that the historic Abbey town of Sherborne offers a wide range of interest for the XYL. For further details, contact Peter, G3CQR, (QTHR), or Telephone 01935 813054.

13th YEOVIL QRP CONVENTION FUNRUN 1997

Funrun Bonus Stations GBLOW from GXICO in Yeovil on 3.558 and 7.028 MHz +/- 2 kHz.
GW3JSV near Welshpool, Powys on 3.563 and 7.023 Hz +/- 2 kHz.
GD0LQE in Laxey, Isle of Man on 3.553 and 7.023 Hz +/- 2 kHz.

RULES

When

Tuesday 6th May to Friday 9th May 1997
8.00 pm to 10.00 pm UK Clock Time each evening.

Frequencies

3560 kHz and 7030 kHz both +/- 10 kHz

Contacts

Contacts must be between QRP stations, maximum 5 W output.

All station may be worked ONCE EACH EVENING on EACH BAND. Funrun Bonus Stations will be operating each evening randomly for one hour on each band.

Call

"CQFR"

Scoring

Each QSO with another QRP station scores 10 points

Each QSO with any Funrun Bonus Station (including GB2LOW) scores 25 points. All duplicates must be marked and no points claimed Points will be deducted for unmarked duplicates at twice that particular QSO score.

Exchange

RST, Serial Number (see below), Output Power and Name.

Serial Number

The three figure serial number must start at any random number of your choice not less than 100 and MUST be incremented by one for each QSO throughout the WHOLE of the contest. However the three Funrun Bonus Stations listed above will all commence at 001.

Entry Sheets

Separate log sheets for each band, with sub-totals for each evening, preferably in the RSGB format. A separate signed RSGB style cover sheet stating the Rig, Power Output and Aerial. Entries should be sent to Eric H. Godfrey, G3GC, Dorset Reach, 60 Chilton Grove, Yeovil, Somerset, BA21 4AW. To arrive not later than Thursday 15th May 1997.

Awards

Certificates will be awarded for the highest score for any three evenings out of the four on each band and also for the highest total overall score for any three evenings on both bands. These evenings do not necessarily have to be the same on 3.5MHz as 7 MHz. A certificate will also be awarded to the station consistently using the lowest power. All four certificates will be presented at the Convention on 18th May 1997 immediately after the lunch break.

SW Listeners

Listener reports will be appreciated and a certificate will be awarded to the listener who submits the most comprehensive report.

NOTE: Apart from the Club's GB2LOW Funrun Bonus Station, this year like last year the other two Funrun Bonus Stations have been selected from amongst last year's entrants. This provides not only variety but also allows a geographical spread of their locations. This year, to try to sustain interest over the whole period of the contest, ALL stations may work ALL other stations again every evening. Further information from G3GC, Tel No. 01935 75533.

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

Novice Instructor News Letters

In the latest RSGB news letter for Novice Instructors there is a call for a simple TX for the 6m band. A novice op' in the south of England is reported to have worked Israel and Argentina on 6m so it can yield some exciting DX. RAYNET for Novice op's is also mentioned. The RSGB is hoping to put a draft regulation to the RA which would allow Novice ops to take part in emergency activity on their own. Local radio clubs are asked to throw away the "old gits" attitude and make an effort to attract younger members. Fund raising schemes for local good causes may be an idea to involve a wider range of members.

The closing date for entries for the 2 June 97 NRAE is 14 April 97.

The City and Guilds is still on the look out for NRAE exam questions and will pay for them.

DL2EAS is keen to make a Universal QRP for 28MHz and he wonders where to find details. Well Alex you need the QRP Bible "Solid State design for the Radio Amateur" Better details with a PCB are given in "QRP Classics" You will find the output a bit low on 28MHz. I have followed these simple Txers with another PA to give about 4 Watts out.

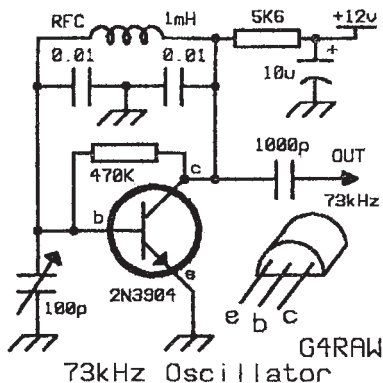
Novice member Ron 2E0AIS would like to practice CW so perhaps a member near Ron's Chesterfield QTH could help. Ron caught an opening on Ten to work SP3JHY, OM3RM, OH2LZC, DL7SW, and I0MXE so well done Ron it just shows what can be achieved on what is regarded as a dead band by many. Ron complains of poor reports but they all began with 5 so that means "Perfectly readable" and that is what is important. Ron has made a simple power supply from a model railway controller but the forward/reverse control must be correctly set or the Morse comes out backwards!!

73 kHz Oscillator

Is it possible to make a simple direct conversion RX for 73 kHz I wonder?? I have made this VFO which seems to work well but I have not completed an RX'er yet and would welcome ideas.

Please keep sending your news or ideas you may have that would be of interest to Novice members.

**73kHz
V.F.O.**



SSB COLUMN : Dick Pascoe GØBPS

Seaview House, Crete Road East, Folkestone. CT18 7EG. Tel: 01303 891106

Email : Dick@kanga.demon.co.uk.

via packet to GB7RMS

Readers may have missed the SSB column last time round, this time we have some news to report. Chris G4LDS has been busy on the bands using an elderly FT707, I well remember these rigs having had a couple of my own. Chris uses a switchable attenuator between the driver and the final PA so that he can reduce the power from QRO to QRP quite quickly. He only lives in a small flat with the spare room as a shack. The current antenna is a G3FGZ fed with 300 Ohm ribbon. His favourite band is 10m and with the sun spot cycle promising to improve next year that should come alive a little more. Some of his captures include 3B8, 4N, 5B4, 9A, 9K2, S55, T9, VE9, W and ZB2.

Rune SM0GKF writes to say he now has 257 countries on QRP SSB, Well done Rune.. He took part in the 'all Asia' contest on SSB and made several contacts into JA with FB reports from them. Rune operates a lot on 20m but complains about the Greek stations on 14,285. I can only reiterate that we don't own these frequencies. QSY a little. Rune uses a Ten Tec 509 and also occasionally his new Icom 706 down to 5-6 watts. His antenna is a Ground Plane for 20/15 & 10m with 15-16 radials. Listen for Rune between 14.280 - 290.

Have any other readers modded the 706 for low power yet. I am considering one of these myself.

That's it this time, please let me know how you are getting on with SSB. TTFN de Dick

Introducing QRP by Dick Pascoe GØBPS

The first totally British book on the subject

Rob Mannion said: "This book will become a QRP classic"

Available from R Pascoe for just £6.95 (p/p £1)

Seaview House. Crete Road East. Folkestone. CT18 7EG

A DATE FOR YOUR DIARY

ROCHDALE MINI-CONVENTION 1997

SATURDAY OCTOBER 25th 1997

HIGHLIGHT YOUR QRP CONTACTS by attaching a "Two Way QRP QSO" label to

your cards. Black lettering on gold with club logo. 200 labels £2 inc post (overseas plus 30p)

For Order Form (or to order now) M.L. Prickett, G3BSK, 260 Haslucks Green Road, Shirley, Solihull, West Midlands, B90 2LR. Cheques: M.L. Prickett. (The G QRP Club benefits from each order)

G QRP CLUB DIY QSL CARDS

These are a "Do It Yourself" design, just add your call sign etc (Able labels, Rubber Stamp etc). Price including postage and Packing (UK) is £2.50 for 100 cards, Airmail extra. S.A.E. for sample. Please make cheques payable to G QRP Club. Orders to : Frank Lee, G3YCC, 8 Westland Road, Kirk Ella, Hull. HU10 7PJ. (Allow 28 days delivery)

G3VML QRP CW TRANSCEIVER

Commercial grade printed circuit boards now available to build the single band version, of the transceiver published in *RadCom October 1995*. For further details send an sae to
PALLET ELECTRONICS 38 Hayley Bell Gardens, Bishops Stortford, Herts, CM23 3HB

VHF MANAGER'S REPORT

John Beech, G8SEQ 124 Belgrave Road, Wyken Coventry CV2 5BH
Tel. or Fax 01203 617367. Packet Homebbs : GB7COV. Email : johng8seq@aol.com

Not much to report in the way of construction this quarter. However, after an accident with a PSU, I found I needed to replace both the driver and PA transistor in my MM 144-432 Transverter. The transistors in use (CD 5944 & CM10/12A) are now obsolete but fortunately some are still obtainable from RAEDEK ELECTRONICS, Bannerly Road, Garretts Green, B'Ham B33 0SL Tel 0121 784 8655 normal hours, weekdays only -- cheque with order, so 'phone first for price. Many other RF devices are also available from this source.

As a temporary measure, I replaced the driver transistor with another device, a BLV91 and linked out the PA transistor with a piece of copper strip. This had a bit more gain than the original device and thus gave me about 2 W RF o/p. Incidentally, the tuned o/p circuits are quite narrow, so I tend to tune for peak power around the SSB calling frequency 432.200, with the result that at repeater frequencies only about a quarter of the max. power is available.

Finally, some news. On the 12th January 1997, Petra, G4KGC and Charlie G3WGD broke the UK Dx record on 24 GHz by working Ari PA0EZ at a distance of 391 Km -- just 5 Km short of the World Record! Running 400mW & 100mW respectively, the RST's were 419/529 A longer path was tried (425 Km) but a QSO could not be completed, though Ari DID hear a carrier from their portable equipment. Obviously some sort of ducting occurred, but strangely no 10 GHz Dx signals could be heard at the time. Well done to all parties!

73 de John G8SEQ

A NEW QRP EVENT

The Red Rose QRP Festival is a new event devoted to QRP inspired by the Red Rose Amateur Radio Club in Manchester.

The event is on **Sunday 1st June 1997 from 1100 to 1600 at the Formby Hall, Alder Street, Atherton, Manchester.**

It is designed for anyone who is interested in amateur radio construction and QRP, "to encourage homebrew and QRP and let you have a good day out" It will include many stalls, club stands, a large bring and buy, pie and peas and a large meeting area. Access is easy from the M6, M61, M62 and M63, the hall is located on the outskirts of Atherton Town centre, off High Street. Admission is £1 and some tables are available at £5 each for clubs and individuals wishing to sell radio related items. Further details can be had from

**Les Jackson, G4HZJ, 1 Belvedere Avenue, Atherton,
Manchester, M46 9LQ (01942 - 870634)**

STANDING ORDERS

There are over 100 members who have paid by Standing Order and have paid £1 short as they have not revised their SO s to £6. Please check your SO and send any shortfall to G0BXO save the club both time and money.

Chris's QRP Party 1997 : Saturday 26th July

The Church Hall of Our Lady of Lourdes, Weydown Road, Haslemere, Surrey.

Doors open 1030, finish around 1630. QRP Traders + Lunch and refreshments

MEMBERS' NEWS



by **Chris Page G4BUE**

"Alamosa", The Paddocks, Upper Beeding,
Steyping, West Sussex BN44 3JW.

Tel: 01903 879750

Fax: 01903 814594

E-mail: g4bue@pavilion.co.uk

Packet: **GB7DXS** on **UK DX PacketCluster**

F6OIE entered the CQ CW Contest with 4W and made 911 QSOs in 88 DXCC for 402k points. Pat used home-brew mono-band transmitters and receivers to a FB23 on 20, 15 and 10m and a G5RV on 80 and 40m. **G3LHJ** made his best score ever with his usual 20m single-band entry. Derrick used the Oak Hills Spirit 20m transceiver and made 448 QSOs in 76 DXCC and 25 zones for 95k points, even though the band closed at 1830z Saturday and 1945z Sunday for QRP working. Between 1600 and 1800z both days of the CQ CW Contest, **F6GGG** made many QSOs with North America on 15 and 20m with his 2W and in-door dipole, including **KIZZ**.

F6ACD uses 3W to a five-band vertical and Pat says, "the 15m band is often closed and there is nobody around 14060kHz, however in the first week of February I had three good QSOs with our old friend Al, **KB1FK**. The third QSO was with a good S6 signal. Why is the band empty? Are conditions really poor when three nice two-way QRP QSOs are possible? Three times cannot be an accident." **G4HYH** is in a new QTH and QRV with an Argonaut 509 to "40 feet of wire just above the ground". David had a QSO with **G3YHO** which was his first for five years, apart from two QSOs he made during a Christmas Party at G3RJV's QTH!

G4JQT (ianls@patrol.i-way.co.uk) has a small selection of articles about the HW9 and

would like to exchange ideas and information with other members about this rig. Ian offers to photocopy any of the articles for other members. **KP4DDB** has changed his call to **KP3S**. Bill says that after 30 years it was a tough decision. **G3YCC** worked VK8AV with his 3W to a Cobweb antenna at 32 feet on 15m through contest QRM.

PA3BHK joined a "599 contest" at the end of the Winter Sports with 500mW and worked QRP station HBØMX on 80m, followed by a GU station running 1W. **G4LQO** thanks those members who replied to his request for help for magnetic loops. Bill only uses a small ML80 outdoor magnetic loop nine feet high covering 40-10m, because of a neighbour. The challenge was to get on 80m and he did this by getting another amateur to make up a three feet diameter magnetic loop which fits in Bill's small shack up in the loft space. The loop has 34 pairs of plates and also tunes 40, 30 and 20m. Bill would like to hear from other members who also have to use antennas in restricted spaces.

GØFJN recently purchased an HW8 but needs a copy of the manual. John will pay expenses, if anyone can help him. He has a Howes 80m Transceiver for sale at £69, a Howes ATU for £40, a Howes DC2000 for £45 and a MFJ 9040 3W transceiver for £65, (12 Gilpin Rd., Poulton Broad, Lowestoft, Suffolk NR32 3NS (01502 518745).

GØDJA was disappointed to find two members calling "CQ QRP" in the Winter Sports while running QRO! One of them was running 6W, not enough to make any difference from 5W but just enough to disqualify the QSO from the club awards. Dave says some of his QSLs for the Worked Club Members award were disallowed because they did not show the QRP power used by the member, and reminds members to please put this on their QSLs.

IT9TZZ and **IT9NGN** will be active from Stromboli Island in the Eoloian Archipelago (IOTA EU-017) 30 May to 6 June. Giovanni and Tino will be on all bands CW/SSB and will use QRP some of the time. **SP9NLI** (see photo overleaf) lives ten minutes walk from the football stadium where the England v Poland match will take place, and will be glad to offer accommodation to a member who is an avid football fan. Andy says his shack, "in comparison with other member's shacks looks rather empty, but I think that is exactly what QRP is about - sticking to the bare minimum."

F6GPA says he was surprised to learn in my column in the last **SPRAT** that he had been staying in the /alps with **F6GGO!** Hugues says he did have a QSO with Joseph while he was staying there with his 2W rig, "but if he told you that I was with him I would say that he was dreaming after having finished off a bottle of the stuff that the local peasants distil in that part of the country! Or, since I gave him a 599 report (read off my S meter), he concluded that I was only a couple of fields away." Sorry about the confusion



Andy, SP9NLI, in his 'bare minimum' shack.

which can be put down to the translation from French to English between Joseph and me! Hugues says the last time he operated /M was with a convoy trying to get to Sarejevo by Christmas 1993, finally arriving on the 6 January after many problems. He used a 100W rig then but is building a QRP rig for his next (more peaceful) portable adventure.

Meanwhile **F6GGO** asks me to correct the caption under the photograph of the Suitcase HW8 in my column in the last **SPRAT**. The equipment is his and not **F6GPA**'s as I incorrectly stated, (that translation again!). Hide, **JA9MAT**, has a QRP home-page at: <<http://www.nsknet.or.jp/~ja9mat/Index.htm>>.

GW8ELR says **MØAAG** has been testing a 30m version of the GQ transceiver and made QSOs around Europe and KP2. Sheldon says the GQ30 will now be added to the list of kits and priced the same as the 40m version. **ZS6QL** (roger@inet.co.za), who is a newcomer to QRP, cannot find any QRP interest in South Africa. Roger would like to hear from QRPers in Australia and other large countries about their sub-continental QRP DX QSOs.

PA3BHK says the 'fish foners' on 3560kHz are definitely Danish. One evening in January, Robert tried to make contact with them using the few words of Danish he knows. They seemed upset but continued their QSO, and in the end, after several "hej"s (the common used Scandinavian for 'cheerio'), what

appeared to be a social QSO ended. Robert then politely thanked them (in Danish) for their interference and was answered by someone speaking English with a strong Danish accent, telling him they "had been using the frequency for 30 years". Robert wonders when 3560kHz was adopted as a QRP frequency and why the 'fish fone' interference only started a few years ago? I believe 3540kHz was originally used for QRP in the early '70s by the Benelux QRP Club, and 3560kHz came into use when the G-QRP-Club was formed in 1974, but I may be wrong. Robert has also heard 'fish fone' with Dutch and Flemish accents. He accepts amateurs and fishermen have to share 80m, both as primary services, but it is a shame that 3560kHz has become so popular with them.

The first edition of the quarterly Alaska QRP Club newsletter, the *The Tundra Telegraph*, is now available for downloading at the AK/QRP website: <<http://www2.polarnet.com/~akqrp>>. **G3XJS** had a QSO with Abdul, OD5NF, on two-way QRP at the beginning of February. Abdul is located in Beirut and uses QRP CW but is QRS. **LZ1BB** built the HF9 TRF receiver from **SPRAT** 82 and says the "results are amazing". Harry has copied stations in JA on 80m CW and ZS on 80m SSB with it, as well as long-path JA and W6/7 stations on 40m.

Please let me know how your spring goes, by 20 May, please.

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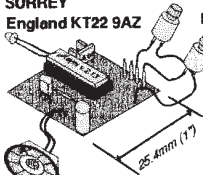
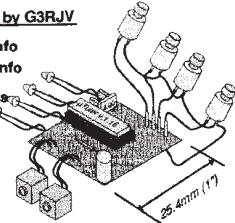
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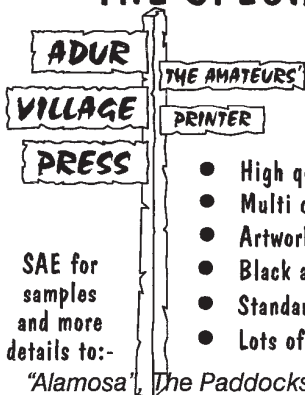
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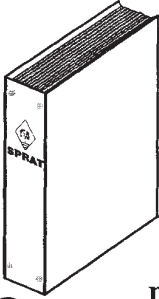
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