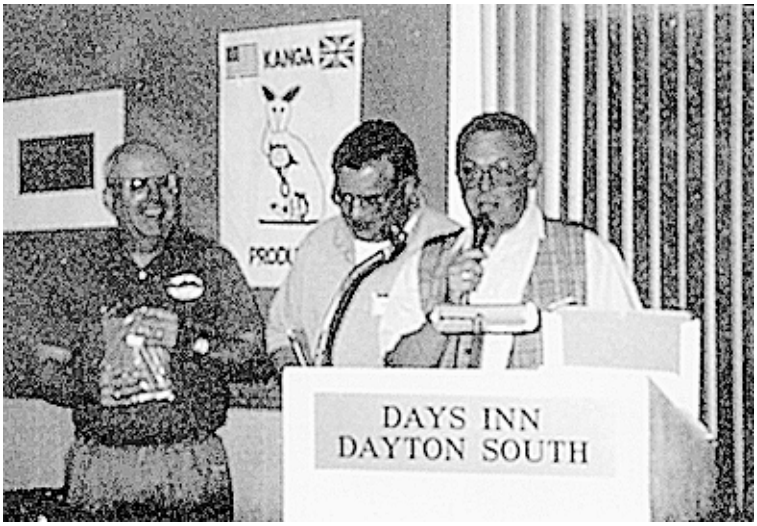
SPRAT

THE JOURNAL OF THE G-QRP CLUB

DEVOTED·TO·LOW·POWER·COMMUNICATION

ISSUE NR. 91 | © G-QRP CLUB | SUMMER 1997



GØBPS Inducted into the QRP ARCI Hall of Fame

Dick Pascoe, GØBPS accepts his Hall of Fame Plaque with the other recipients
Left: Doug Hendricks, KI6DS, Editor of QRPp (Journal of NorCal)
Right: Mike Czuhajewski, WA8MCQ, President of QRP ARCI

ROCHDALE CONVENTION - FOXX 2 - SUBHARMONIC RESONANCES IN PAs
ONER STOCKTON METER - SIMPLE SSB FOR 18MHz - GQ2000 PART 2
REVIVAL RIG - ROO SYNTH WITH G4OPE DDS -POPPET MOD
W1FB PARALLELED PAs - ANTENNAS-ANECDOTES-AWARDS
COMMUNICATIONS & CONTESTS - YEOVIL & POTTENSTEIN REPORTS
NOVICE NEWS - VHF REPORT - G8SEQ 18MHz YAGI - MEMBERS NEWS

JOURNAL OF THE G QRP CLUB

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Rev. George Dobbs G3RJV

EDITORIAL :

THE G QRP WORLDWIDE SERVICE AWARD

This new award will be made at the discretion of the G QRP Club Committee to suitable persons who have, over a period of years, rendered outstanding service to QRP on an inter-continental basis. Such service may be in the organisational, operating, technical, or administrative areas of QRP, or any combination of these. The award will be the highest honour that the club can bestow.

The first recipient of this award is **Dr. Hartmut Weber DJ7ST** for all his work over 25 years in organising QRP Contests. For a full citation see Antennas - Anecdotes - Awards by G8PG in this issue.

60 Years.... and still going strong.

The end of May marked the 60th Anniversary of G8PG being first heard on the air. Our congratulations to a real radio amateur. A lovely man who gives his time, experience and knowledge so freely to others. Gus is also a founder member of the G QRP Club and formed the World QRP Federation which did so much to standardise QRP Calling Frequencies and power levels

Because it is difficult to circulate the committee without including Gus, I have decided that **Gus Taylor, G8PG** will be the 2nd recipient of **G QRP WORLDWIDE SERVICE AWARD** I am sure that all members will endorse this choice.

My Best Wishes for Summer

G3RJV

EDITED BY GEORGE DOBBS G3RJV ARTWORK BY A.W. (MAC) McNEILL G3FCK
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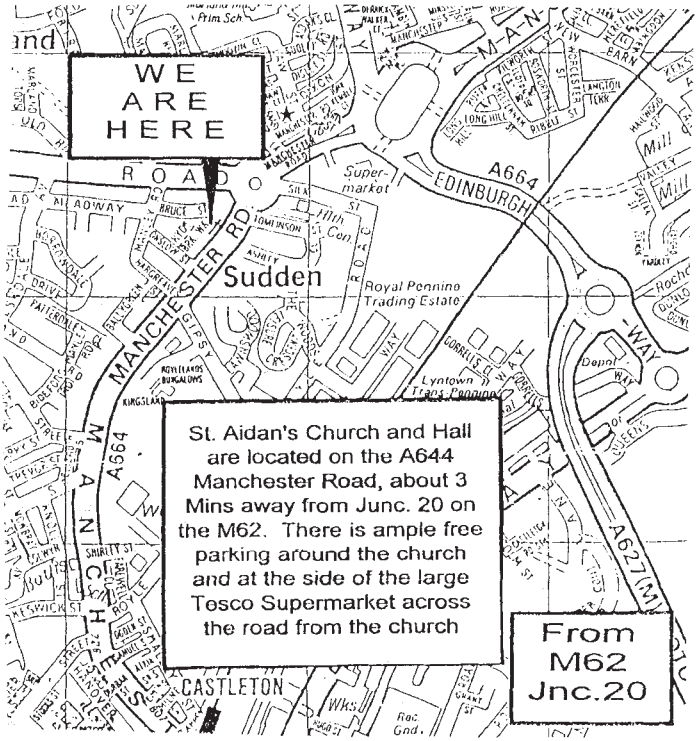
THE G QRP CLUB
MINI-CONVENTION
SATURDAY 25th OCTOBER 1997
ST. AIDAN'S HALL SUDDEN ROCHDALE
ADMISSION £1 - DOORS OPEN 10am - TALKIN S22
LARGE SOCIAL AREA - LECTURES ON QRP SUBJECTS
BRING & BUY - SURPLUS - JUNK - COMPONENTS - KIT TRADERS
FOOD & DRINK ALL DAY - INCLUDING THE FAMOUS PIE AND PEAS

On a sad note: Mr. Salaway, supplier of our pies for many years, died early this year. We are looking for another good supplier to ensure the tradition of fine food at the convention.



LOCAL ACCOMMODATION

A NEW HOTEL - Across the road from the Vicarage

The Royal Toby Lodge - Tel: 01706 - 861861. Friday/Saturday Tarriff : £39.95 per room
All rooms en-suite each with a double and a single bed. 2 Restaurants and Public Bar
Also within close range of the site : Oakenrod House : 01706 - 42115
The Midway Hotel : 01706 - 32881, The Norton Grange Hotel : 01706 - 30788

THE FOXX 2 - An Old Favourite Revisited

G3RJV after George Burt GM3OXX

In recent times a lot has been written about the simple PIXIE transceiver based upon the Micro-80 of RV3GM. Both use the transmit PA transistor as the mixer on receive. But this was not a new idea. In the summer 1983 issue of SPRAT, that master of the simple radio circuit, George Burt, GM3OXX, described his FOXX transceiver. An elegant little circuit which used the same transistor for the transmit power amplifier and the receive mixer. It is capable of transceiver operation on several bands and generates around one watt of RF power out. To keep the simple transceiver ideas flowing, I thought it a good idea to revise the FOXX circuit with a few changes.

TR1 is a VXO (Variable Crystal Oscillator) stage. The feedback loop formed by the crystal and the trimmer capacitor (C1) tunes the circuit to the desired frequency. C1 provides a small amount of frequency shift. The output is coupled to a Power Amplifier stage. This stage is unusual in that a PNP transistor is used with the emitter connected to the positive supply and the output taken from the collector load which goes to ground. The output of the transmitter may be adjusted by a resistor (Rx - a few hundred ohms) to around one watt of output power. TR2 should be fitted with a clip-on heatsink. TR3, another PNP transistor allows the transmitter to be keyed with respect to ground. TR3 and TR2 are both 2N2905A PNP switching transistors.

The low pass filter is a seven element circuit based on the circuit and constants described by W3NQN. The transmit - receive function is performed by a double-pole, double throw switch, SW1 A and B. The receive position has two functions. It bypasses the keying transistor, TR3, to ensure that the oscillator TR1 remains on during the receive position to provide the local oscillator. It also switches the supply line away from the power amplifier, TR3, and connects TR3 to the audio amplifier. In this position TR3 functions as a diode mixer, mixing the signals from the antenna which appear at the emitter and the signal from TR1.

The audio amplifier is an LM386 working in maximum gain mode. The supply for the LM386 is taken directly from the 12 volt supply line which means it is on during both transmit and receive functions. This has the advantage of providing a rudimentary sidetone to monitor the keying. Side "tone" is an over statement because all it does is produce clicks in time with the keying.

A pre-set potentiometer is added in series with the TR1 supply on receive. This is a very simple form of RIT (receiver incremental tuning). If the supply voltage to TR1 is reduce enough, it shifts the frequency of the oscillations. Assuming the value of Rx to be in the order of a few hundred ohms (just to reduce the drive from TR1 a little on transmit), a 1K preset at R6 can be set to shift the frequency by around 700 - 800 Hz giving a comfortable off-set for CW reception.

VALUES FOR LOW PASS FILTER FOR FOUR BANDS

Band MHz	C1,7 pF	C3,5 pF	L2,6 turns	L4 turns	Core	Wire swg
3.5	470	1200	25	27	T37-2	28
7.0	270	680	19	21	T37-6	26
10.1	270	560	19	20	T37-6	26
14.0	180	390	16	17	T37-6	24

Note : Wire gauge is not critical.
Use size to comfortably fill the core about three-quarters of full circumference.

KITS FOR THE FOXX 2 AT A SPECIAL CLUB PRICE

Kanga Products are offering 100 FOXX 2 Kits
to members only - at only £10 each plus £1.50 pp

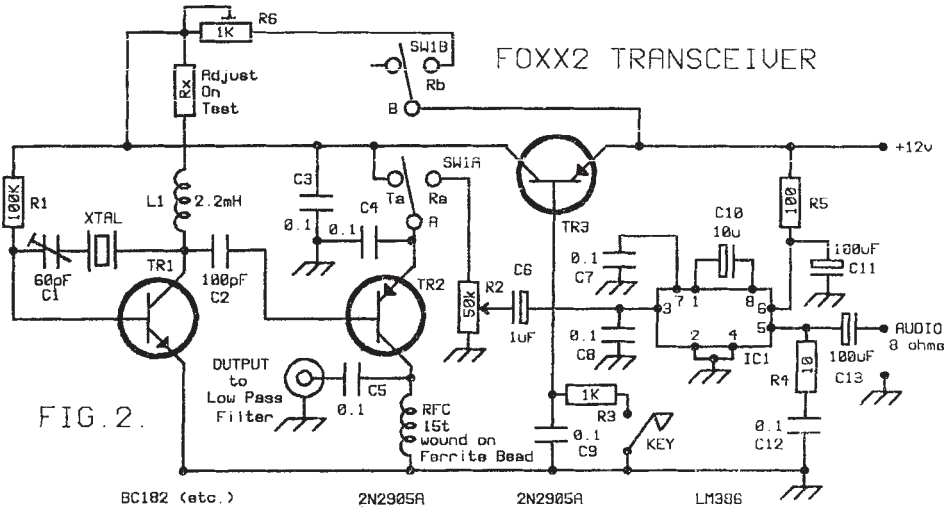
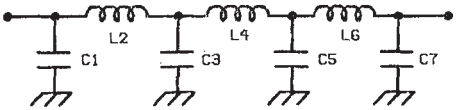
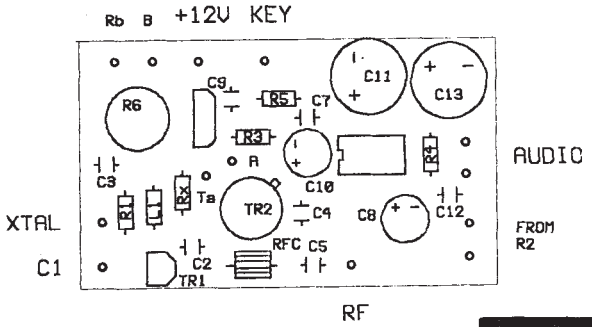
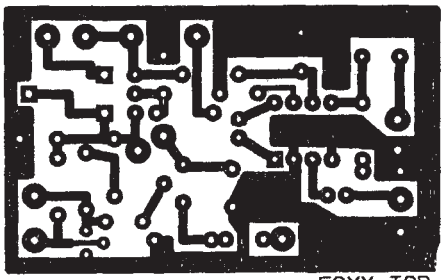


FIG.2.



SEVEN ELEMENT LOWPASS FILTER





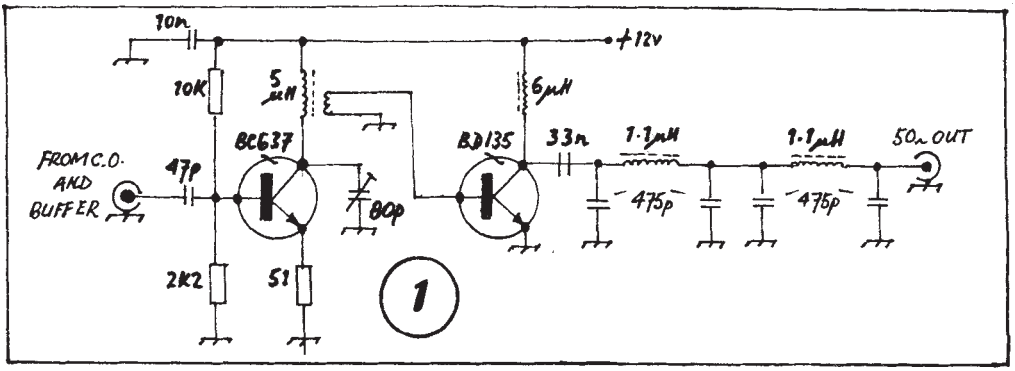
FOXX TOP

Destroy Subharmonic Resonances in Transistor PA Tank Circuits!

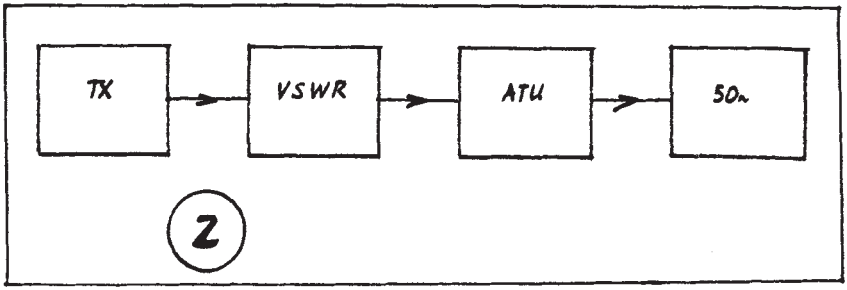
Some observations and ideas concerning Tuned Transistor PAs

Ha-Jo Brandt DJ1ZB, EICHENWEG 7, 84160, FRONTENHAUSEN, Germany

If You see a TX circuit like that in Fig. 1, would You recommend any principal changes? As long as its users seem to be pleased with it, I surely would not, because it is a straightforward design which can be found in many QRP publications. For my own purposes, however, I would have designed some details differently, and others might assume this just to be my personal style.



But if a question is raised:" How to design a transistor PA circuit free from parasitic oscillations at a VSWR of 2 or higher", I would propose definite changes in the circuitry of Fig. 1 to cure the problem. This was the situation when preparing the themes to be discussed at the 1996 meeting of the German G-QRP-C members at Pottenstein. DK6SX, himself author of several QRP publications, had raised this question. Fortunately, he could also provide me with a PCB of the 7 MHz TX of Fig. 1, to test out my ideas.



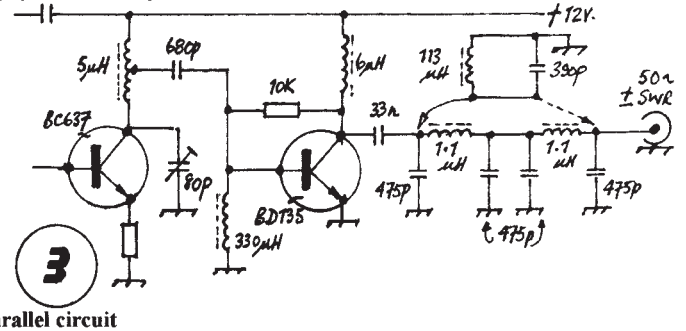
Driver to PA coupling

Firstly, I have asked the coupling between driver and PA to be changed from inductive to capacitive coupling, as discussed earlier in SPRAT Nr. 64; Autumn 1990. This change however, shown in the driver section of Fig. 3, did not cure the main problem. After the main problem had been solved, this coupling problem has been re-examined, confirming that capacitive coupling is insensitive to PA load changes whilst there remains a tendency to parasitic oscillations when employing inductive coupling. This may also depend on the type of PA transistor and its collector-to-base capacitance.

Test circuit for creating definite PA load VSWR.

For all VSWR tests the setup of Fig. 2 had been used, the ATU being my "Mini ATU" from SPRAT Nr. 57, Winter 1988/89. In general, the ATU should contain a series tuning capacitor, because the 50 ohms dummy load must not be able to load the transmitter output at low frequencies.

At VSWR = 1, the transmitter delivered 1.5 watts to the dummy load. After the VSWR had been increased to 2 by tuning the ATU, the circuit continued to deliver output power even with the key open. Oscillations ceased after a short interruption of the supply voltage but started again when pressing the key for a short moment. With a simple absorption wave meter (a frequency calibrated resonant circuit combined with a diode RF detector, coupled to the TX by a wire loop through one of the low pass filter toroids) it could be shown that the emitted power consisted of the wanted 7 MHz carrier with additional sidebands roughly +/- 1 MHz apart.



Additional parallel circuit

Guided by earlier experiments, I then designed a simple parallel resonant circuit for 7 MHz with an operational Q of 1 (both reactances XL = XC = 50 ohms), consisting of a 390 pF styroflex capacitor and 18 turns on a T50-6 toroid (1.3 æH). As soon as this circuit had been connected in parallel to the TX output filter, as shown in Fig. 3, the parasitic oscillations ceased immediately and could not be reactivated even by a higher VSWR. At VSWR = 1, output remained at 1.5 watts.

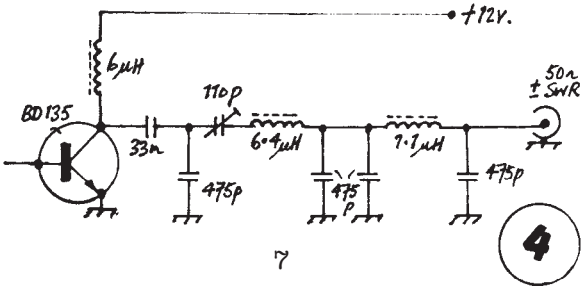
Additional series circuit

After disconnecting the parallel circuit of Fig. 3, a series resonant circuit had been added to the first coil of the PA low pass filter, thus forming a peaked low pass filter. The total series arm of the first filter section then consisted of a T50-6 toroid of 40 turns (L = 6.4 æH) and a 110 pF foil trimmer (Fig. 4). The trimmer was tuned at VSWR = 1 for maximum output (again 1.5 watts). At higher VSWR, the output decreased, of course, but without any tendency of instability.

BD226 PA

But something else happened: The PA transistor BD135, carrying no cooling fan in this experimental setup, was destroyed, because without oscillations collector dissipation increased with higher VSWR. Another BD135 was not available, therefore it had been replaced by a BD226. This is a similar transistor, but capable of higher output power at higher drive. A cooling fan had also been applied.

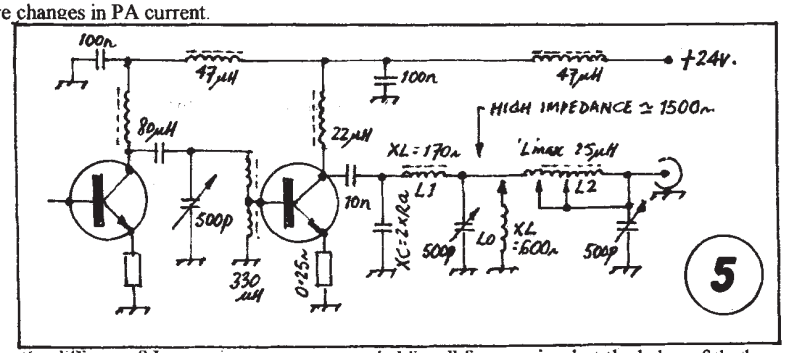
In the original circuit of Fig. 1, the BD226 output had been 1 watt only. No attempts have been made to change or optimize the match between driver resonant circuit and PA input (after having measured the internal capacitances later I guessed this should have been done). The output power could be increased to the former level of 1.5 watts by placing an RF bypass capacitor across the driver emitter resistor. With the BD226 the original transmitter showed a tendency for oscillations at much lower VSWR, even close the VSWR = 1. But again, after the output tank had been changed to either Fig. 3 or Fig. 4, no instabilities could be initiated by tuning to higher VSWR. What may be the reason for this behaviour?



Frequency division in transistor PAs

I have experimenting with transistor PAs since 1960, and, for financial reasons of course, very often have tried transistors with a reasonable high Ft, but which were not especially designed for RF applications. Around 1968, the aim had been to develop a fieldday transmitter employing a TO-3 case transistor with an Ft of 60 to 100 MHz. Especially on one occasion it had been very difficult to achieve sufficient output power at 14 MHz. But suddenly, after retuning the PA, plenty of power could be obtained, but at quite unusual high L and C settings. Finally a check with a frequency absorption meter confirmed that the output power had been on 7 MHz!

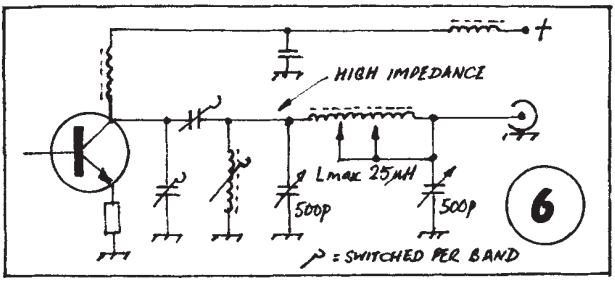
This had been my first experimental proof that transistors, especially those with high collector-to-base capacitances and when driven hard (typical for class C applications) are capable of frequency division. This is an entirely new aspect compared to tube transmitters and must also influence tank circuit design.
On the same transmitter mentioned I had also been experimenting with a double Pi tank circuit of Fig. 5, capable of matching cable fed aerials (50 ohms nominal) as well as high impedance long wires. In the field, no problems were noticed with long wires, but when the PA had to be tuned to a 14 MHz beam, there were problems. When searching for the optimum match there were settings with definite instabilities, with excessive changes in PA current.



What was the difference? Long wires were open ended for all frequencies, but the balun of the beam presented a low impedance at low frequencies. In this configuration, the double Pi tank could inhibit additional resonances at lower frequencies. These resonances would not be loaded and therefore be very sharp. When these resonances were passing through 7 MHz or 14/3 MHz during tuning, for instance, frequency division occurred.

The simplest way to destroy the subharmonic resonances was to add a parallel circuit for the wanted frequency to the double Pi network. The Q of this circuit must not be high, values of 2 to 3 should be sufficient. In reality, just the coil Lo was needed; the capacitance could be provided by the centre variable capacitor (Fig. 5).

To reduce the tank circuit to two coils, the network had been simplified to that of Fig. 6. This solution had been employed in my first 5-band 2 W cw qrp transmitter (PA 2N3553) of 1968 (DL-QTC March 1971), also in the Lagos QRPeter (SPRAT Nr. 23; Summer 1980) and my first 10 MHz transmitter (SPRAT Nr. 31; Summer 1982). In many years of service, and with several types of coax-fed and random wire aerials, no instability problems were noticed.

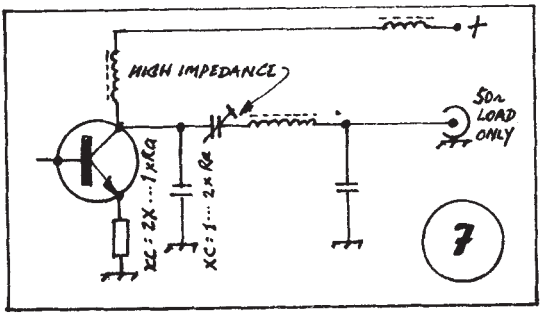


Other designers' problems

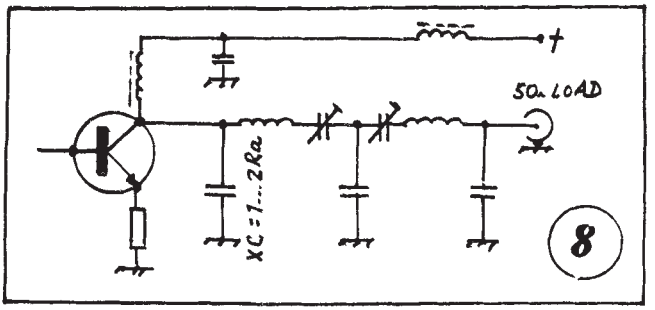
From this period, I remember an article by Ade Weiss, K8EEG, emphasizing the need for a coil in parallel to the PA tank output, to stabilize a transmitter. Also, when DL7AV designed the 100 watt transistor PA for the DL0IGI 28.204 MHz beacon using a Philips BLX15, he also found a parallel coil necessary as soon as a multi section low pass filter had been added to the basic application circuit as published by Philips. DL7AV knew about my subharmonics theory, because we had been colleagues for almost three decades.

Peaked low pass filter

In the eighties I have been looking for another tank circuit avoiding subharmonic resonances without the need for a parallel coil. This resulted in employing a "peaked low pass filter" (Fig. 7), as KN1H has called it (SPRAT Nr.58; Spring 1989). Typical applications were in the TTL transmitters (SPRAT Nr. 51; Summer 1987) and the FO transmitters (SPRAT Nr. 64; Autumn 1990). In contrary to the previous designs, these transmitters were tuned for a fixed 50 ohms output load, and were used in conjunction with the "Mini ATU" mentioned earlier, also without any instability problems.



The peaked low pass filter has the same number of components as a single section low pass filter, including a capacitor to block the PA collector voltage. But unlike the low pass filter it is not broadband. It must be tuned (peaked), and it may be given a Q of 5 to 10, as in tube transmitters (this being a difference to the parallel resonant circuit of Fig. 3, which effectively destroys subharmonic resonances even with a Q of 1). And it provides much better harmonic suppression and also offers attenuation at lower (and subharmonic) frequencies. In contrary to the ordinary low pass filter it may also be used for impedance transformation (necessary to obtain more output power than 1.5 watts from a 12 volts supply)



Better harmonic suppression

Future requirements concerning harmonic suppression may lead to a combination of a peaked low pass filter followed by a conventional low pass, or the combination of two peaked low pass filters (Fig. 8). The T connection of the three capacitors in the centre of Fig. 8 may be converted to a equivalent Pi connection

(Fig. 9). This may be an advantage when designing a tank circuit capable of matching loads up to a VSWR of 3 or so, because in this case the rotors of both tuning capacitors are at ground potential. For fixed tuning for 50 ohms loads only, both circuits are equal.

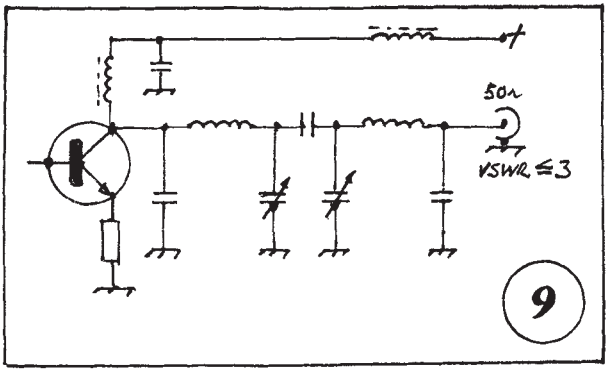


Fig. 1 circuit with various loads

It is not generally known among radio amateurs that multi-section low pass filters may exhibit additional resonances in the pass band if they are not properly terminated for all frequencies. The exact analysis of this problem in conjunction with the PA collector choke is rather complex and an interesting task for computer aided design programmes. The simplest low frequency resonance is formed by the inductivity of this choke and the sum of all low pass capacitors to ground, for the low pass coils may be neglected at low frequencies.

Most cable fed aerials will show a nominal impedance of 50 ohms only at one or a few specific frequencies. Therefore, the transmitter may behave differently from being connected to a 50 ohms dummy load. The behaviour of the aerials may also depend on the circumstances whether a balun or a lead choke is employed at the feed point or not (The groundplane of DK6SX had a lead choke). As shown, the introduction of a resonant circuit for the wanted frequency band can decouple the PA transistor from possible subharmonic resonances and thus prevent instabilities due to frequency division.

Effects of transistor capacitances and driver resonant circuit

In the data sheets of transistors recommended for general purpose and audio applications such as BD135 or BD226, usually no values for internal capacitances are given. To get some additional insight into the problems mentioned, the capacitances of these types had been measured, employing a resonant circuit connected to a diode RF voltmeter and exited by a signal generator.

Table 1. Transistor capacitance values:

type	capacitance	12.5 volts	5 volts
BD135	Ccb	17.5 pF	25 pF
BD135	Ceb	-	640 pF
BD135	Cce Base open	-	31 pF
BD226	Ccb	13 to 15 pF	10 to 22 pF
BD226	Ceb	-	250 pF
BD226	Cce base open	-	30 to 33 pF
MRF476	Ccb	25 to 35 pF	-

Comparison to a MRF476 PA

DL1GKE has built the 14 MHZ version of the "VXO controlled CW Transmitter for 3.5 to 21 MHZ" from the 1988 ARRL Handbook, section 30-43, employing two MRF476 in parallel in the PA followed by a multi section low pass filter (Fig. 10). This has given the opportunity to test this transmitter too for possible instabilities at higher VSWR. Therefore, the datasheet values of the Ccb of the MRF476 were included in table 1.

However, this transmitter did not show those parasitic oscillations observed and treated in the former chapters, and this in spite of the fact that the sum of the collector to base capacitances of this PA is much higher than of the PA in Fig. 1. But the difference to Fig. 1 is that the ARRL transmitter does not use a driver resonant circuit, but a broadband transformer.

Therefore it seems that the conditions for the instabilities treated here are as follows: There must be a transistor PA with a tuned input and output tank, and the output must shows additional resonances at subharmonic frequencies. From this reasoning it could be deduced that commercial boradband amplifiers with push-pull PA might be free from this problem. But this is not generally true: The well known FT-7 QRP transceiver employing a 10 watts push-pull PA also shows instabilities when connected to high VSWR loads. When connected to an ATU, a match can only be found if a pre-load is used to limit the maximum VSWR to 2.

Within broadband amplifiers, there are other problems. The driver current of the ARRL QRP transmitter had to be more than 100 mA for sufficient excitation of the PA, causing an unusual high voltage drop across R12. The match between driver and PA using a bifilar step-down transformer was far from optimum. Therefore I have changed the circuit and tried a tuned driver output. Due to the better match obtainable, the driver current could be reduced by 50%! Therefore I think that the tuned transistor transmitter has still a roll to play in amateur radio techniques.

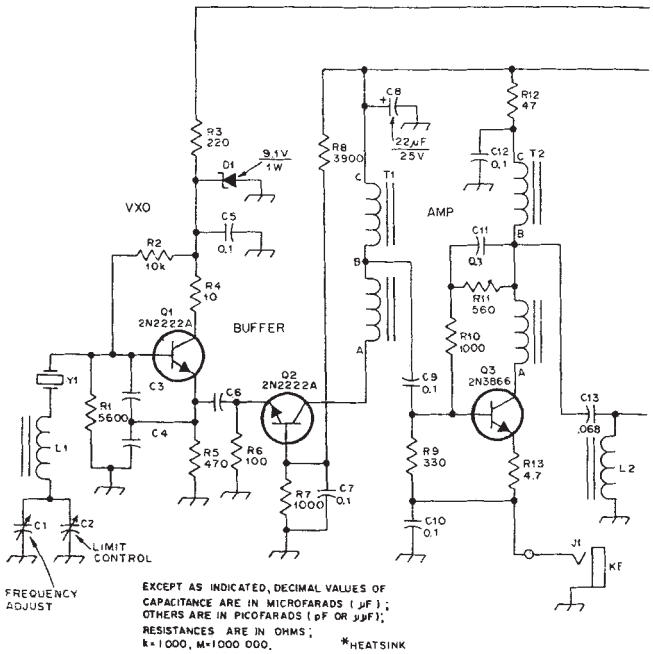
There was another type of instability in the ARRL transmitter: By tuning to a certain phase at rather low VSWR, a hiss sound in the VHF receiver could be generated. This problem could be cleared by converting the output circuitry to a transforming peaked low pass filter followed by a conventional low pass filter (thus eliminating the step-up broadband transformer and providing some capacitance directly from both collectors to ground).

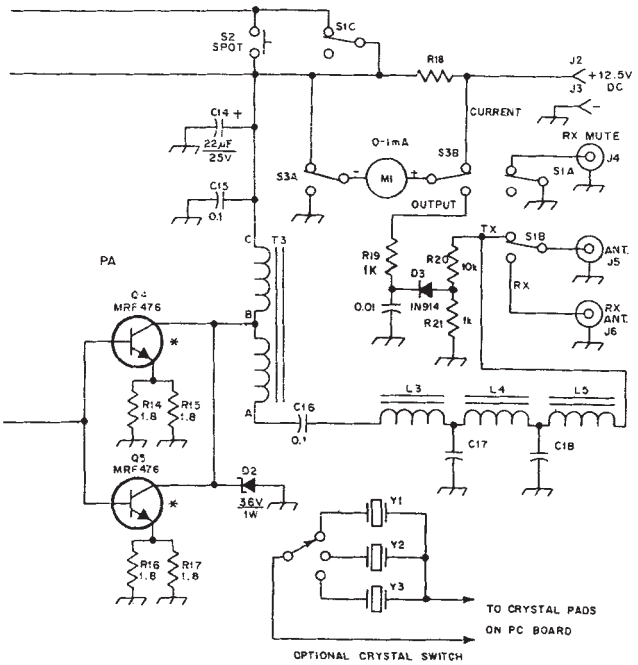
This tendency to VHF noise shows that, for the suppression of VHF frequencies, it is not advantageous to separate the first capacitor of the output low pass filter from the PA collectors by an inductive device like a broadband transformer. I have no personal experience with these broadband designs yet, but have looked up in the schematics of commercial japanese push-pull PAs, that both collectors are directly bypassed to ground by rather high ceramic disc capacitances, e. g. 220 pF to 1000 pF, for 10 to 100 watts PAs. Obviously, the broadband transformer to 50 ohms is mainly designed to pass the fundamental frequency and the lower harmonics to the 50 ohms output filter. Higher harmonics are directly bypassed to ground at the PA collectors.

All these details show, that there is a lot of specific know-how hidden in the heads of some key designers, and the final chapter on how to design transistor PAs, either broadband or tuned, has not yet been written.

Fig. 48 — Schematic diagram of the VXO-controlled transmitter. All resistors are ¼-watt carbon types unless noted otherwise. All capacitors are mylar or disc ceramic unless otherwise noted. Polarized capacitors are electrolytic or tantalum.

C1, C2, C3, C4, C6, C17 and C18 — See Table 1.
D1 — Zener diode, 9.1 V, 1 W.
D2 — Zener diode, 36 V, 1 W.
J1, J2 — Binding post.
J3 — Key jack.
L1, L3, L4, L5 — See Table 1. Wind with no. 24 or 26 enamel wire.
L2 — 8 turns no. 26 enameled wire on FB73-801 ferrite bead.
M1 — 0-1 mA meter, Calectro DI-91Z or equiv.
Q1, Q2 — NPN transistor, 2N2222A or equiv.
Q3 — NPN transistor, 2N3866 or equiv.
Q4, Q5 — Transistor, MRF476 or equiv. (see text).
R14-R17, incl. — Fixed resistor, 1.8 ohms, ½ W.
R18 — Meter shunt, 13½ inches no. 26 enamel wire wound on a high-value 1-watt resistor.
S1 — Toggle switch, 3PDT.
S2 — Push-button switch, SPST normally open.
S3 — Toggle switch, DPDT.
T1, T2 — Broadband transformer, 10 turns no. 24 enameled wire, bifilar wound on an FT37-43 core.
T3 — Broadband transformer, 10 bifilar turns no. 24 enameled wire on an FT50-43 core.
Y1 — Fundamental crystal for frequency range desired.





ARRL HANDBOOK
1988 - 30 - 44 / 45

VXO CONTROLLED CW TRANSMITTER

A SIMPLE SSB TRANSCEIVER FOR 18 MHZ

Olivier Ernst F5LVG,
2 rue de la Philanthropie, F- 59700 MARCQ-EN-BAROEUL, FRANCE

Usually, QRP transceivers are designed for CW transmission because SSB transceivers seem much more difficult to construct. However it is not true if we use the phasing technique for the transmitter, and a direct conversion technique for the receiver.

I describe below a very simple transceiver for 18 MHz. With this transceiver, 20 watts output, and a dipole antenna, I have made many QSOs with Europe and North America from France. The transceiver contains 4 parts: VFO, receiver, USB modulator (and microphone amplifier), and RF amplifier. The output is 400 mW. We can expect a LSB suppression ranging from 10 to 30 dB, depending on the AF frequency if we used RC components with 2.5% tolerance for phasing filters. The quality of the modulation is good, even when copied on a DC receiver.

VFO Figure 1: T3 is a Colpitts oscillator on 5.2 MHz. The frequency is tuned by D4 and D5, Zener diodes used as varactor diodes. T4 is a 12.9 MHz crystal oscillator. T5 is the mixer and T6 a buffer for the modulator.

RECEIVER Figure 2: IC20 is the mixer. A better sensitivity can be obtained by connecting a 47nF capacitor between pin 14 and ground; however AM detection is strongly increased. AF resistors and capacitors are chosen to obtain a band pass filter from 500 to 2000 Hz.

MODULATOR Figure 3: The RF phasing filter is constituted by R50-R51-C49-C50, and the AF phasing filter by R45-R46-C47-C48. The tolerance of the components is 2.5% for C49-C50, 10% for C47-C48 and 5% for the resistances. However, except for C49-C50, the components have been tried with a digital multimeter to obtain an accuracy better than 2%.

The microphone gain is determined by R41. In phasing transmitters it is important to restrict the audio bandpass to the speech range (500-2000 Hz). Adjust RA52-RA53 to obtain a good carrier suppression (>30dB). The turn ratio between L40 and L41 is critical. The number of turns for L41 has to be carefully adjust to obtain the greatest power from T60. Transmitter tune up is accomplished by unbalancing the modulator. This is performed by applying the 13.2 voltage to R47.

RF AMPLIFIER Figure 4: This is a linear power amplifier with an output of 0.4 watt.

The transceiver is built on a single PC board (15 cm x 20 cm). A DPDT relay is used for the T/R switch. The antenna is switch on the RF amplifier or the receiver. The 13.2 V is switch on the RF amplifier and IC40 (modulator), or on R28 (receiver). During the transmission there is no supply to IC21, therefore there is no noise in the headphone. The transceiver is built in a metal box. To obtain 20 watts output I use a modified CB power amplifier made with a single EL509 tube.

This paper is dedicated to the memory of Didier Gaudé F9LD.

PARTS LIST

C 1	100µF,	C 2	100µF;	C 3	4,7µF,
C 4*	2,2nF,	C 5*	2,2nF,	C 6	100nF;
C 7	100nF;	C 8*	220pF,	C 9	100nF;
C10	220pF,	C11	100nF,	C12	100pF;
C13	220pF,	C14	100nF;	C20	47pF;
C21	47pF,	C22	47nF,	C23	100nF,
C24	470pF;	C25	4,7nF,	C26	4,7µF;
C27	4,7nF,	C28	100µF,	C29	100nF,
C30	100µF;	C31	47µF;	C32	47nF;
C33	10µF,	C34	47 nF	C40	100nF;
C41	4,7nF;	C42	4,7nF,	C43	100µF;
C44	47µF;	C45	100nF,	C46	47µF,
C47*	1µF;	C48*	1µF,	C49*	330pF;
C50*	330pF;	C51	680pF,	C52	680pF;
C60	220pF,	C61	100nF;	C62	47pF;
C63	100nF;	CA 90pF adjustable			

* Styroflex (polyester) capacitors

D1	BY155;	D2	zener 6,8 V 1W,	D3	zener 4,7 V 1W,
D4	zener 6,8 v 1W (BZX85-6V8);			D40	diode Schottky (BAT85);
D41	diode Schottky (BAT85);			D42	diode Schottky (BAT85),
D43	diode Schottky (BAT85);			D5	zener 6,8 v 1W (BZX85-6V8);
D60	1N4148;	IC20	TDA7000;	IC21	TDA2003;
IC40	TDA20003;				

P 1	10K	P20	1K	P21	1K
R 1	1K	R 2	1K	R 3	10K
R 4	100	R 5	470	R 6	220
R 7	100K	R 8	100K	R 9	100K
R10	22	R11	220	R12	220
R13	100K	R20	100	R21	1K
R22	1,5M	R23	10K	R24	100
R25	10	R26	2	R27	10
R28	100	R40	10K	R41	4,7
R42	10	R43	10	R45*	150
R46*	150	R47	1K	R48	1K
R49	1K	R50*	27	R51*	27
R60	100K	R61	10K	R70	10 (1W);
RA52	1K	RA53	1K		

T1	BD135;	T2	BC549C;	T20	BC549C;
T3	BF960;	T4	BF960;	T5	BF960;
T6	BF960;	T60	BFR91A,	T61	2N2219A;
Xtal	12.9 Mhz	Relay 12V DPDT			

L1 0.82 µH miniature coil; L2 1.8 µH miniature coil
L3-L4: 14 turns;
L21-L22: 10 turns; L20: 4 turns;
L40: 14 turns, tapped 7 turns (centre), L41: 7 turns
L60: 13 turns; L61: VHF choke (VK200); L62: 13 turns tapped 2 turns; L63: HF choke (50 turns)
Home made coils: diametre 8mm.
CB microphone 500Ω.

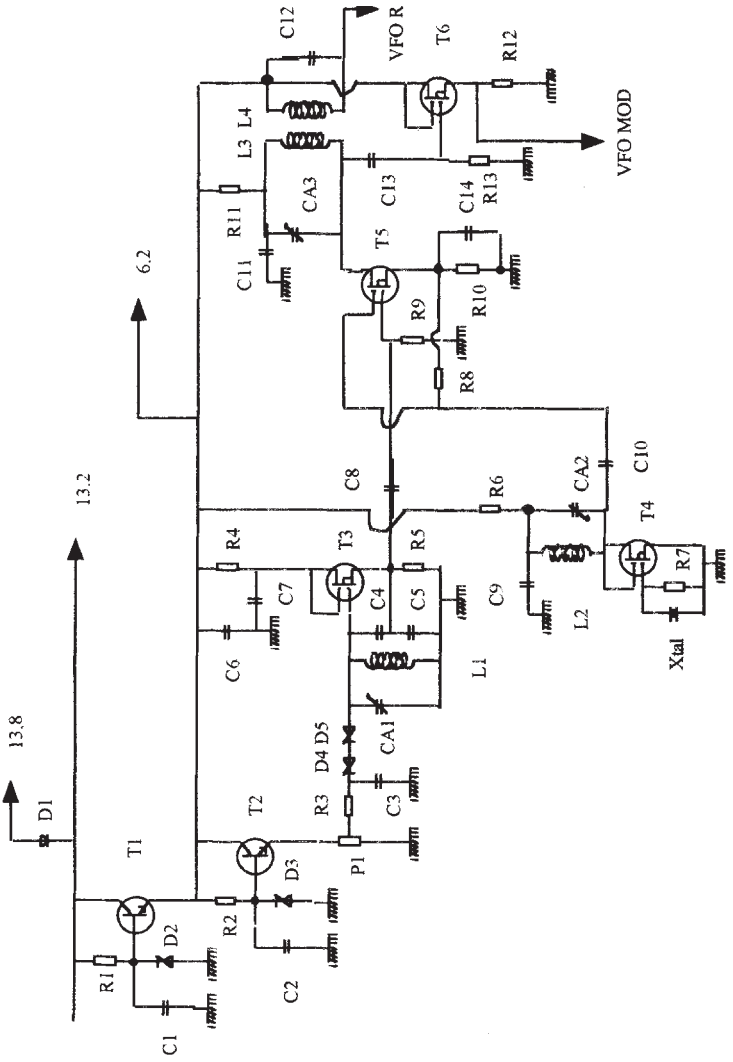


FIGURE 1 VFO

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

FOR SALE & WANTED - Wanted : Mizuho MX14S 14MHz SSB/CW Transceiver. For Sale : Mizuho MX21S, 21MHz Transceiver. Henri Heraud, F6AOU, 9 Avenue De Bellvue ,91130 Ris Orangis, France. Tel: 01 69 25 84 17

FOR SALE: Icom 735 Transceiver, Boxed as new, little used, plus Kenwood PS430 for above £550.00 [ovno], 35ft Tilt over Mast £30.00 [ono], Daiwa lowpass Filter 500w, as new £20. Jon, G4TJP, Sutton Coldfield. Tel : 0121308 2430

FOR SALE: Howes CTU30 & HA30R ATU [built] new £40, Large Roller Coaster £20, Turns Counter TC48 £15. Tom, GM3MXN, Tel: 01698 - 330248

FOR SALE: Ten Tec Argonaut 515 with Ten Tec notch/audio filter 209A, price 350.00 ono. G3YCC tel 01482 650410 (email g3ycc@gqrpclub.demon.co.uk)

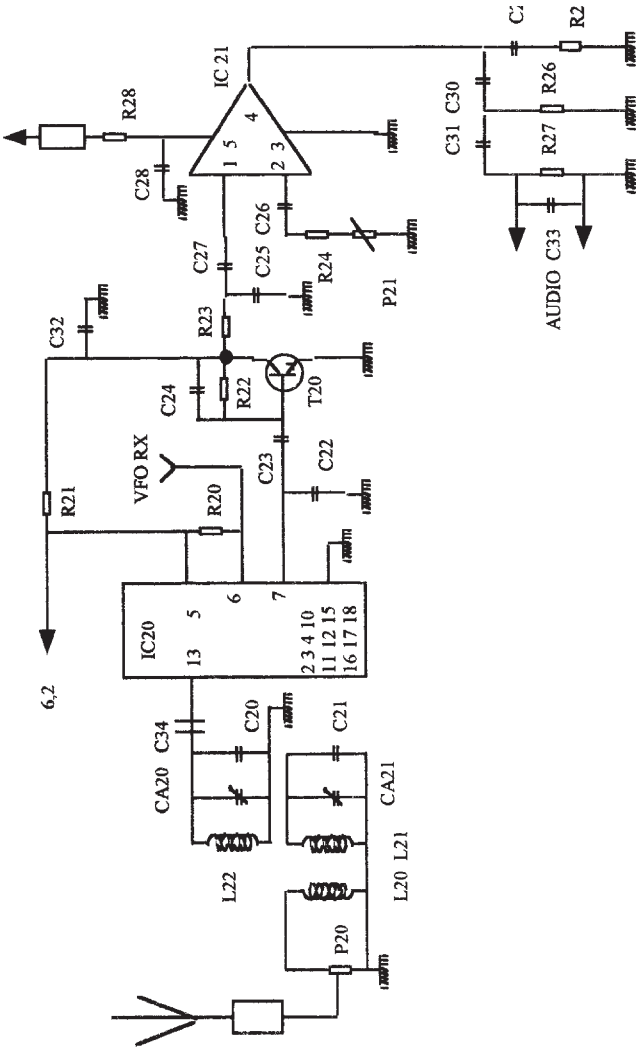


FIGURE 2 : RECEIVER

CLUB SALES UPDATE: **White Rose Converter Boards** are now £2.25 each, The **G4OPE PIC KEYER** - PCB and PIC chips sets still available at £10.50. **SBL1** mixers still available at £4+50p post. and Plessey **SL6440** mixers at £1 each, Please send a self addressed sticker. Cheques G QRP Club
All from : **Mr. Ian Wye GØOKY, New House. Hook Road. Amcotts, Nr. Scunthorpe. DN17 4AZ**

NOTE ON 73kHz Transceiver - G8SEQ : SPRAT 90

" It has been found that the band pass filters in 73 KHz Tx (& probably Rx) suffer from instability . The reason is that the bias supply decoupling capacitors were left out. Fit 10n - 100n capacitors to Pin 3 of the IC's to cure. Also the value of the feed back capacitor in the low-pass filter shouild be reduced from 100n to 10n" G8SEQ

We regret to announce the death of Barrie Longfield, G3IOA, President of the Manchester Amateur Radio Society and member of the G QRP Club. Barrie was a member of the Manchester society for 45years.

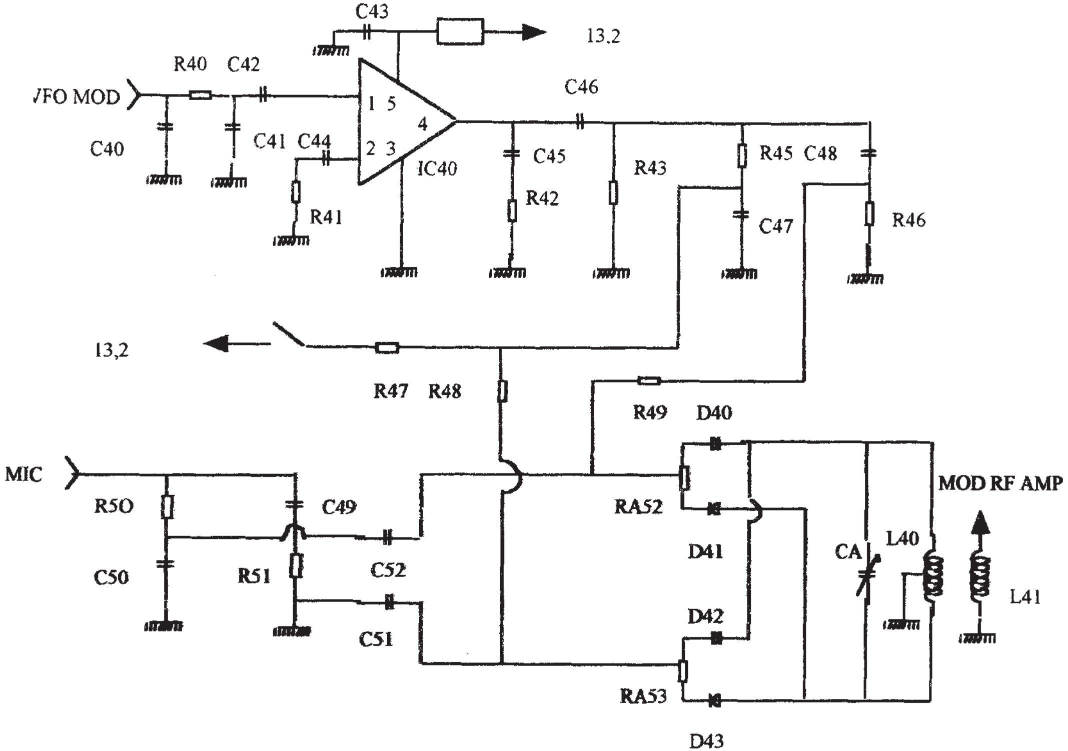


FIGURE 3 : MODULATOR

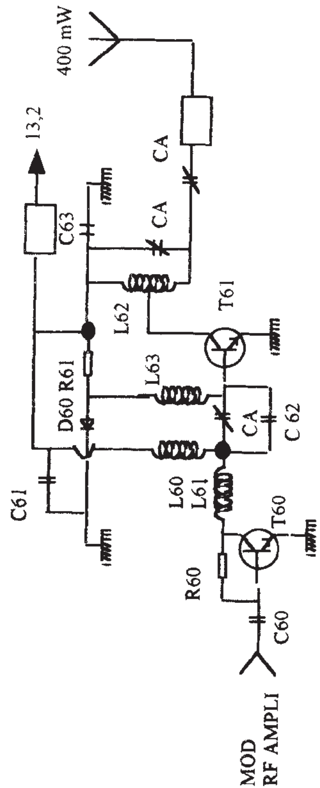


FIGURE 4 : RF AMPLIFIER

The ONER "Stockton" Wattmeter

DICK PASCOE G0BPS, SEAVIEW HOUSE, CRETE RD EAST, FOLKESTONE, CT18 7EG

The ONER range of units is very well known, it all started with the transmitter from George Burt GM3OXX who gave the design to the G-QRP Club. This latest addition to the range is also on an (almost) one square inch PCB but for mounting purposes we have added two edges. If you wish to keep to the true ONER tradition you can cut off these edges of course.

A BI-DIRECTIONAL INLINE WATTMETER : SPRAT 61 by David Stockton GM4ZNX is one of the classics of QRP design. This unit is a miniature version of the Stockton wattmeter which is a full four port hybrid and is totally reversible. If a signal is passed through one connector and out of the other into some unknown load and both of the other connectors are connected to a fifty ohm load then the hybrid passes a fraction of the power passing forward through the unit to the other pair of connectors.

It is almost identical to the full Stockton Directional Wattmeter but in this case solely for QRP use. I.E. under 5 watt right up to 145MHz It has been tried with some success on 70Cms but the accuracy of our dummy load is questionable at this frequency.
It is bi-directional of course but in this application it uses just the one meter and a switch. Winding the cores is fairly easy providing you remember that once through the middle of the yellow core is one turn. Put 14 turns of the fine wire on the core and spread them evenly. Keep the wire tight, (it will be beneficial to use some bees wax or hot glue to hold the wire in place)

Trim the coax end so that the inner is separated slightly from the outer and solder these to the twin pins as shown next to the core you have fitted. (This may seem a strange way to do it, but the coax is springy and it can be held taut when it is done this way)
Wind on the 3 turns of coax, again remember that once through equals one turn. Trim the screen back from the coax and solder the inner to the point marked. In both cases the outer shield is only connected at one end. Next wind the second core and fit as previously described beside the first. If you are concerned about the cores moving then bees wax may be used to fix them in place. Do not be tempted to use candle wax as this is too brittle.

The output from the diodes should be fed to the meter via the potentiometer as shown in the diagram. There are no setting up procedures to do and the unit should work first time.
In use the rig should be keyed with the switch in the forward position and the pot used to set the meter to full scale deflection. The switch then set to the reflected position and the return power measured. Tune your ATU for the returned power lowest position.

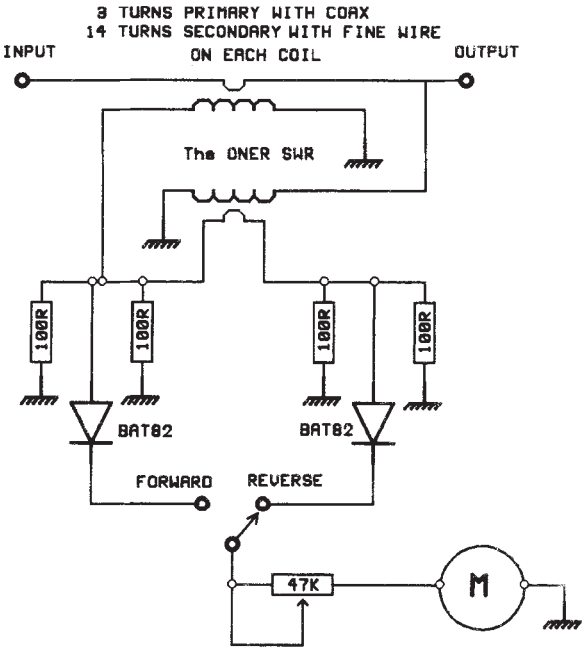
Components

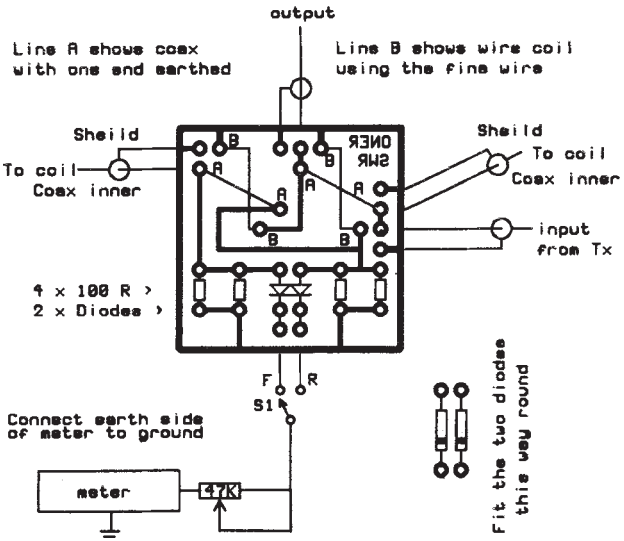
2 x Yellow Cores	4 x 100 Ohm
2 x Diodes	1 x 47K pot
1 x Fine Coax	1 x Meter
1 x Fine Wire	1 x SPSW Switch

The addition of a pair of two watt resistors to provide a 50 Ohm load that can be switched in at the output may also be of benefit. They could be fitted inside he same box to make an even better piece of test equipment for the QRPer.

A KIT FOR THE ONER STOCKTON WATTMETER is available from **KANGA PRODUCTS SEAVIEW HOUSE, CRETE ROAD EAST, FOLKESTONE, KENT. CT18 7EG**

SPECIAL G QRP CLUB PRICE : £16.00 [plus £1.50 p/p]


3 TURNS PRIMARY WITH COAX
14 TURNS SECONDARY WITH FINE WIRE
ON EACH COIL
INPUT
OUTPUT
The ONER SWR
100R
100R
100R
100R
BAT82
BAT82
FORWARD
REVERSE
47K
M


output
Line A shows coax
with one end earthed
Line B shows wire coil
using the fine wire
Sheild
To coil
Coax inner
Sheild
To coil
Coax inner
input
from Tx
ONER
SWR
4 x 100 R
2 x Diodes
F
R
S1
Connect earth side
of meter to ground
meter
47K
Fit the two diodes
this way round

The GQ200 Multiband CW Transceiver - Part 2 RF Stages

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

The mixer in the GQ2000 is a high dynamic range bi-lateral ring mixer using a Mini-Circuits SBL1. The board has provision for 5 input/output 7 ele bandpass filters with a pin out to interface a further daughter board with extra bands. Also on the board is high level LO buffer, receive post mixer amp,TX input buffer, low level TX driver and an optional TX/TX relay isolator [for QRO SSB]

For very high dynamic range the mixer may be changed to a level ten SRA1H if required, and the biasing on the LO driver adjusted. To obtain the best performance the mixer IF and LO ports should be terminated in 50R over a wide bandwidth. This is accomplished on the IF by use of a MMIC. The device used is a MAR8, although this has a gain of 30dB, the effective net gain is reduced by the 7db mixer insertion loss and the following 10bB loss in the IF ladder filter together with the filter input T pad. The MAR8 has a ip3 of 23dBm and therefore complements the SBL1 mixer, alternatives for the SRA1h or for better performance on the SBL1 would be the ERA5 MMIC which has an IP3 of 32.5dBM.

The input/output filters are switched by BYD11M avalanche diodes, again the use of these diodes maintains the dynamic range. A typical IP3 is 45bBm at 7MHz compared to 15bDm for a 1N4148 !!!!!

Looking at the circuit detail, on receive one of the bandpass filters is selected by applying 12v to the relevant band select pin. Diode D1a-x/D2a-x are biased on to enable the filter.
TX signals are coupled via C18 to the filter either from the optional relay isolator RN or direct via the TX IN pin. The filters may be built from the low loss Butterworth table for amateur band operation with a bandwidth of 300kHz or from the wideband table for general applications. The filters use capacitive dividers C1/2 and C6/7 match the characteristic filter impedance to 50R.

The filter output feeds IC1 a double balanced hot carrier mixer type HPF-505x/SBL1 etc. LO drive for the mixer is provided from a 2N3866 high power buffer amplifier. To insure a correct termination on the mixer LO port a 3dB 50r T pad is used. The mixer is terminated MAR8 MMIC which is very near 50R from DC-1ghz
IC1 may be substituted by a Level 10 mixer such as the SBL1H or SRA1H. R15 is then lowered in value and C16 fitted for the required higher drive level. In transmit TR2 buffers the IF signal to IC1 mixer. D3 provides isolation during the TX period. The IF signal is mixed in IC1 to the output frequency and filtered by the bandpass filter.

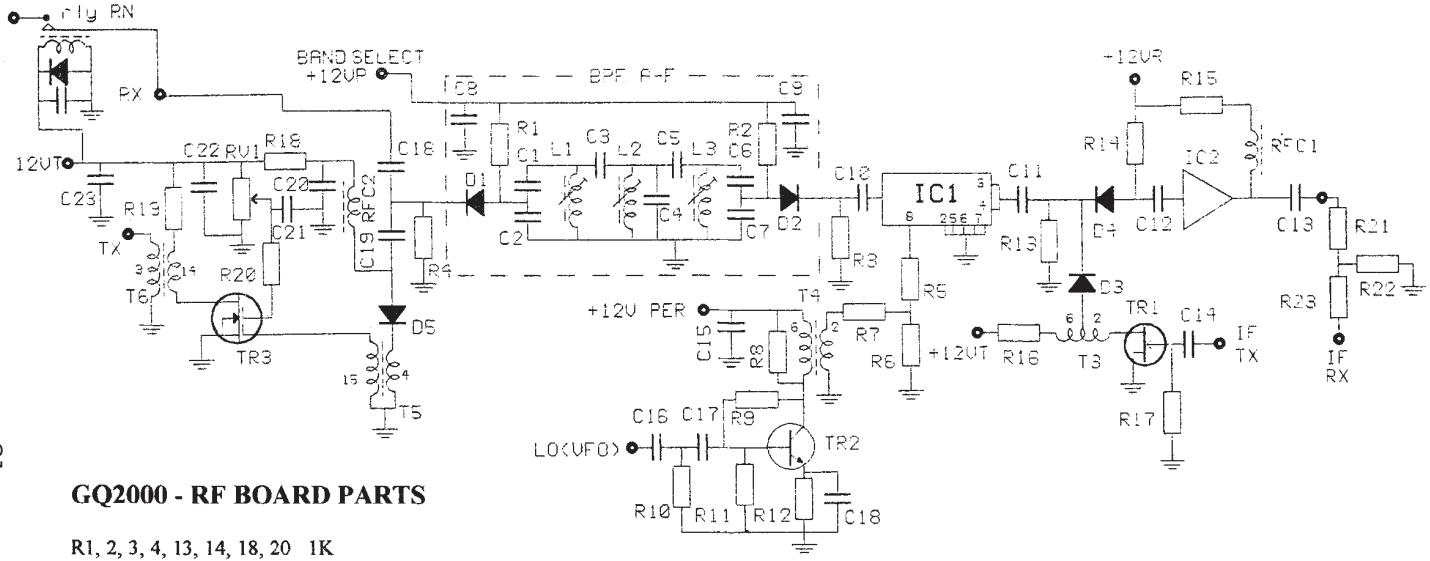
The signal is routed to the pre-driver amplifier by C19/D4. The pre-driver is a dual gate mosfet, gate 2 is used as a control element by varying its voltage by RV1. This may be a board fitted pre-set or a panel mounted potentiometer. The output is transformer coupled by T6 a broad band matching transformer.

The next part will look at the amplifier and LO options

FILTER TABLE

BAND	C1/7	C2/6	C3/5	C4	L1/2/3
MHz	pF	pF	pF	pF	Type
1.8	1K +1K	1K+680	180	1K	KANK3334 (yell)
3.5	1K+100	390	33	390	KANK3334 (yell)
7.0	1K	100	3p9	100	KANK3334 (yell)
10.0	470	47	1p8	39	KANK3334 (yell)
14 .0	1k	100+12	6p8	82+12	KANK3335 (pink)
18.0	680	100-68	5p6	100+33	MC120 E526HN-100109
21.0	470	120	6p8	82	as above (White)
24.0	330	82	4p7	68	as above
28.0	270	68	3p9	56	as above

FOR GQ2000 KITS - CONTACT HANDS ELECTRONICS - SEE PAGE 40



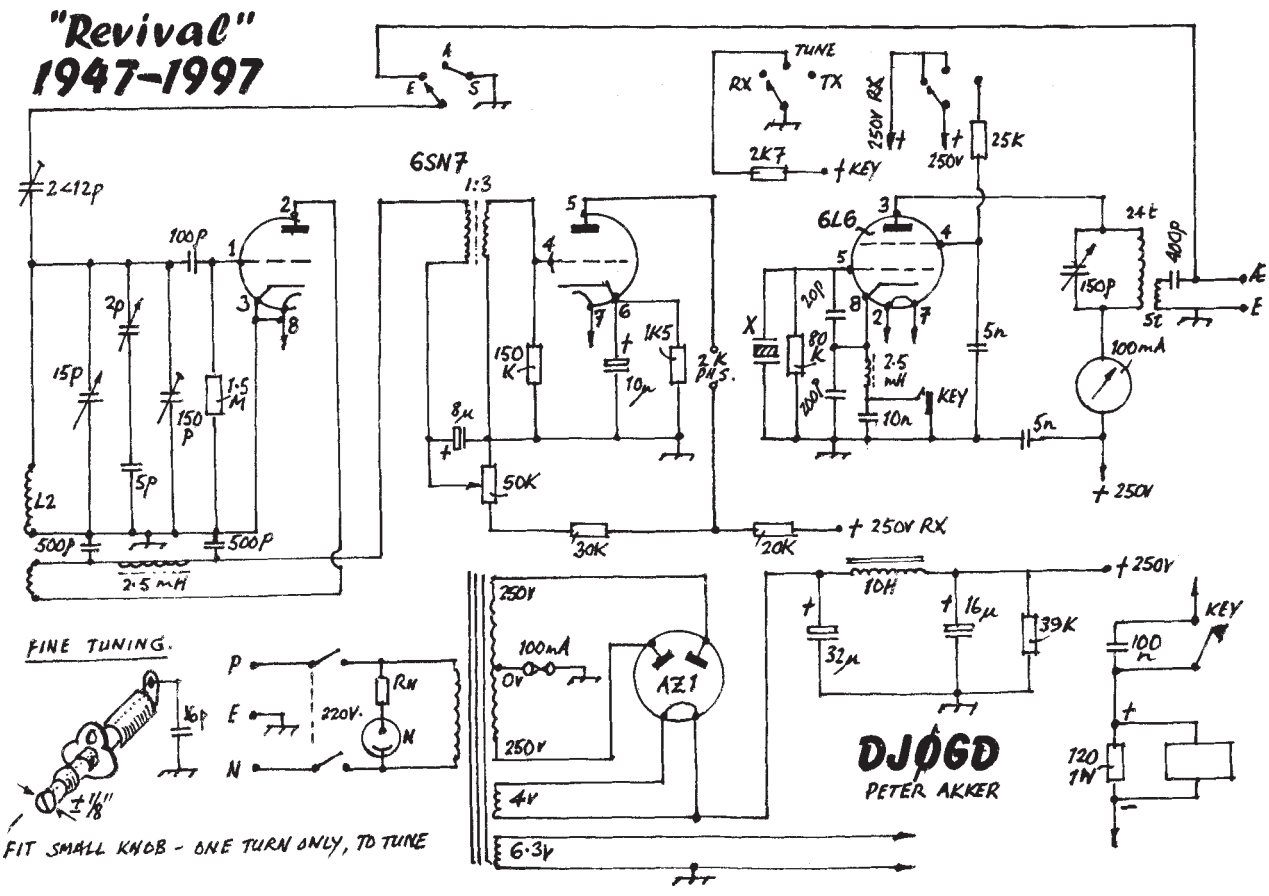
GQ2000 - RF BOARD PARTS

R1, 2, 3, 4, 13, 14, 18, 20 1K
R5,7,12 10R
R6 180R
R9, 18 4K7
R14 100K
R8, 10, 16, 19, 100R
R11 680R
R15 BIAS SOT for 36mA [typ.120R]
R17 100K
RV1 47K

RFC1 1mH axial
RFC2 1mH TOKO7BS
T3,4 K37X830
T2,1 BLN43002402

C8,9,10,11,12,13,14,19,20,21,23 10n
C16,17 1n
C18 SEE TEXT
C15, 22, 100n
C/RN-RLY 10n
IC1 SBL1 / HP505 etc
TR1 J310
TR2 2N3866
TR3 MFE201
D1, 2, 3,4 BYD11M
IC2 MAR8
D RN-RLY,D MATRIX 1N4148

WIDE BAND TRANSFORMERS
T1 2T TR2 6T 12VT CT TO D3
T2 6T TR3 2T IC1 PAD
T3 4T D4 15T TR4
T4 14T TR4 3T OP LINK


"Revival"
1947-1997
6SN7
6L6
1:3
TUNE
RX
TX
KEY
250V RX
25K
2K7
2<12p
100p
20
15p
150p
1·5M
5p
L2
500p
2·5 mH
150K
1K5
10µ
8µ
50K
30K
20K
2K pHS.
20p
80K
200p
2·5 mH
10n
5n
100mA
150p
400p
5t
+250V RX
+250V
FINE TUNING.
±1/8"
FIT SMALL KNOB - ONE TURN ONLY, TO TUNE
P
E
N
220V.
RH
250V
100mA
0V
AZ1
4V
6·3V
10H
32µ
16µ
39K
100Ω
120
1N
DJ0GD
PETER AKKER

THE REVIVAL [1947-1997] Transmitter Receiver

Peter Akker DJ0GD, Semmarstr. 17, 47441 Moers, Germany

In the Benelux QRP Club Newsletter from Dec. 96 was an article describing a one Tube Transmitter and also one Tube Transmitter. The author was K1GHD. PA0WDW was working him in 2way QRP on 30 metres with a Transmitter is using a 6L6. This Transmitter was very popular in the late thirties. In the USA it was called QSL, as it has the size from a QSL card. An 6C8 is used for the Receiver.

I decided to build such a rig for 80 mtrs as I have some crystals for that band. I found some schematics in an old German book called "Starhilfe fuer Funkamateure" (Starting help for Hams) they are very similar to the K76HD schematics. (His RX is from ARRL Handbook pg38). I use an 65N7 for the Receiver. I have constructed 3 units : Receiver, Transmitter and Power Supply. I put them together in a cabinet front over 60 years old (with many holes) an extra switch is mounted for Receiver-Tune-Transmitter.

Tune means receiver antenna grounded and the transmitter functioning as triode with large resistor in the cathode. Together with a large Tuning Scale (10 degrees is +/- 1kHz) it is easy to tune if there is not too much QRM.

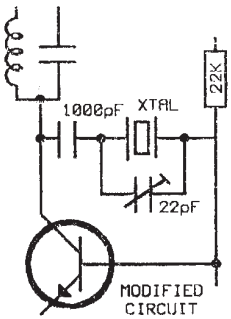
The Transmitter has 4W output and sidetone is made with a Piezo-sounder build into an old German Key. It is powered by Ia through an extra 720 resistor (45mA x 120Ω). The Rx works much better than expected, even QRP stations are receivable if there is not too much noise.

Since last week I have made 10 QSO's (DL-PA-ON) and also two 2way QRP QSO's with Frank ONSA6 and PA3ALX Heman, both G-QRP. My antenna is an indoor dipole 2 x 17m (comudipole by PA0SE). So everyone can do it even without a Beverage. I call my new old rig *Revival 1997*, made in 1997 with technology and parts from at least 50 years ago. I hope to work others soon with an old timer rig.

Using the G3ROO Synth with the G4OPE DDS VFO

Malcolm Horton G4DMH, 79 Swinnow Gardens, Bramley, Leeds. LS13 4PH

I have built the G4OPE DDS VFO and coupled it to my G3ROO Synth - and it works! One disadvantage of having the readout from the 5MHz VFO is that the crystal oscillator has to be dead on frequency. The G3ROO crystal oscillators [RadCom Dec. 1993] can be 5kHz off which makes a mockery of the 10Hz readout. I replaced the 27pF series capacitor with 1000pF then put a small (22pF max) trimmer across each crystal. Too much capacitance here stops the oscillation. Get the frequency as close as possible with the trimmer and then make the final adjustment with the coil core. I have done this to all the crystals.



Ref: RadCom Dec. 1993 p.35

MODS FOR THE POPPET 160m AM TRANSMITTER

Steve Hartley, G0FUW, 5, Sydenham Buildings, Lwr Bristol Road, BATH, BA2 3BS.

Helping fellow amateurs is one of the aspects of our hobby that I really enjoy - especially when the one being helped is me! This work derives from helping a good friend and being helped at the same time.

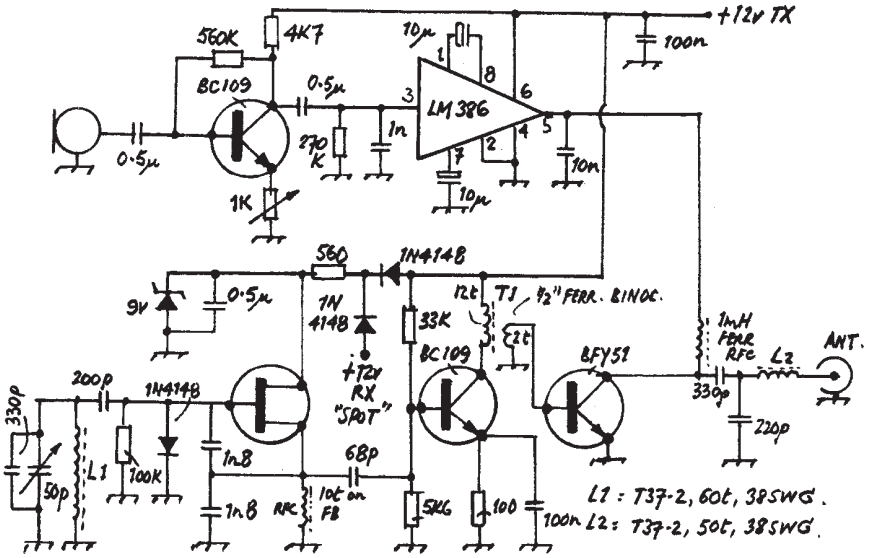
Having spied The Poppet by G4RGN in Sprat 84, I promised to build one for another club member. However I found the the VFO refused to fire up. A note to Doug Gibson was returned with more info and a ferrite core to boot - thanks Doug!

Despite Doug's help I still could not get the VFO to go. I then saw Ian Keyser's article in Radcom April, 96, where he used The Kanlgo VFO to drive a similar PA design. I opted for a slightly less elaborate approach and used an old favourite FET oscillator. Success!

The second problem then reared its ugly head. My RX had the VFO at S7 on receive so some off set circuits were tried. I eventually settled on a simple TX/RX switching circuit with a "SPOT" option for netting purposes. The oscillator seemed quite stable despite being shut down each over. I think the AM band width hides a multitude of sins!

I have a PCB design/layout should anyone wish to follow suit with the son of POPPET.

PS As I was building the a TX I wondered if the same technique could be used at higher power levels. The next day I saw PW, Feb 97 where Doug has a "Transformerless Chatterbox". Nice one Doug - give that man an award please.



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

EXCHANGE: Very nice 35mm Praktica Automatic Camera. Complete with 500mm mirror telephoto lens in hard leather case, in fine condition. Offered in exchange for Insect, FL3, or similar CW Filter. Must be Fits Class. Ring Tony, GW0NSR, 01492 - 583386.

WANTED: Back issues of SPRAT, reasonable price paid, and copy of The Hotwater Handbook. Mark, MW0AWM, 01437-890228

WANTED: Himound Straight Key, made in Japan, chrome on black base. Offers to Charles A Fiford, 2055 Gulf of Mexico Dr. Apt. 104, Longboat Key, Florida 34228. USA.

PARALLEL SMALL-SIGNAL BJTs FOR MORE POWER

Doug DeMaw, W1FB, PO Box 250, Luther. MI 49656. USA

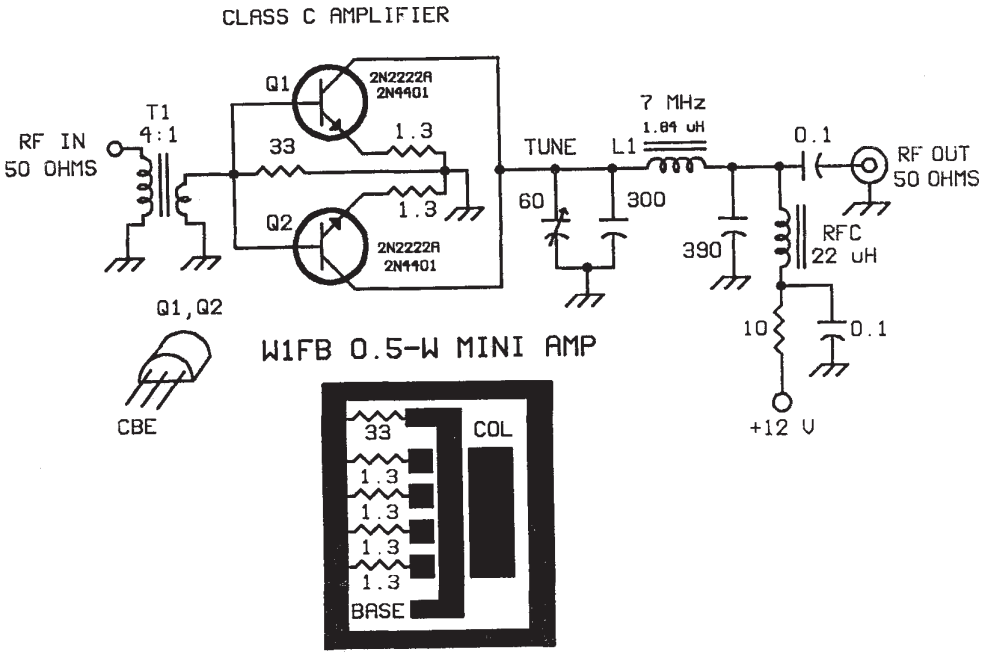
A low-cost solution for obtaining reasonable QRP power lies in the paralleling of small-signal bipolar transistors, such as 2N2222 and 2N4401 devices. Emitter ballasting helps prevent any one transistor in the group from hogging the current and self-destructing when matched transistors are not available.

Fig.1 shows a practical class C RF amplifier that delivers 0.5 watt to a 50-ohm load. The circuit is set up for 7-MHz operation. The collector tuned circuit is not the usual low-pass filter found in many QRP rigs. Rather, it is a pi network with a Q of 8. It is designed to match 1440 ohms to 50 ohms. A 60-pF trimmer provides tuning for resonance. The efficiency of this circuit surpasses that which results when using a low-Q low-pass filter.

The 1.3 ohm emitter resistors ensure relatively equal transistor currents when Q1 and Q2 are driven. Most Motorola high-power RF transistors (BETs) contain numerous small-signal devices on a common substrate. Each of their emitters is returned to the package emitter terminal through internal 1 - ohm resistors on the substrate.

Although only two transistors are shown in Fig. 1 as many as eight are practical. Assume 1/4 watt of output for each 2N2222 used. The pi-network capacitors and inductor values must be modified from those shown if more transistors are used since the collector impedance will become lower. T1 is a small 4;1 toroidal matching transformer.

Fig.2 shows a suggested PC board layout for paralleling transistors. Wide conductors are used to minimise parasitic inductance, which can cause instability. The pattern is larger than necessary. A 50% reduction is recommended. Four 2N2222s can yield 1 watt of output power. Small aluminium heat-sink tabs can be epoxy cemented to the transistor bodies to aid cooling.

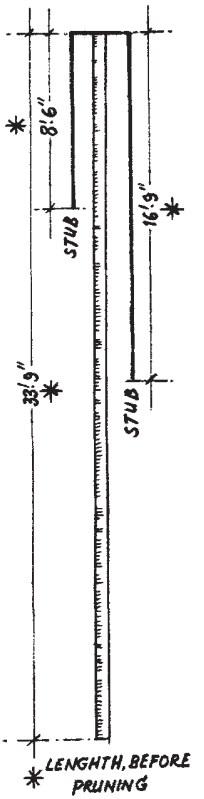


ANTENNAS - ANECDOTES - AWARDS

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

THE G2WI MULTI-BAND VERTICAL

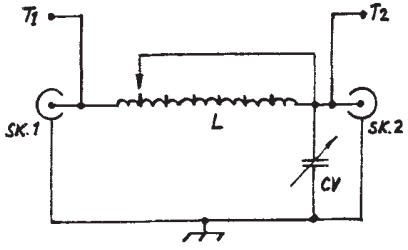
Jack Holstead, G3OZC, 72,Woodlands Ave,
Blackburn, Lancs, BB2 5NN.



I made this one from information supplied by G2WI. Operated over a good ground system it gave very good results. When correctly tuned it operates as a ¼ wave on 40 metres, ¾ wave on 15 m, ½ wave on 20 m, and ¾ wave on 10m. Although not tried, it should be possible to add additional stubs for the WARC bands. In my version a 1½ inch diameter metal mast was used for the 33ft 9 inch section. If a non-metalic mast is to be used, 4 wires 33ft 9 inches long and soldered together at their ends can be used to simulate the metal mast (this is to provide a broad band section). The stubs are spaced 3 inched from the mast, being attached to lengths of glass fibre pcb which have aluminium angle brackets attached to them. These are clamped to the mast with Jubilee clips which can also be used to connect the bare ends of the stubs to the mast. Carefully weatherproof these connections and all other connections used in the system.Use heavy guage wire for the stubs, terminate them on insulators and fit turnbuckles for tensioning. Setting up is as follows. Check the 33ft 9 inch section for 1;1 swr at 7050 KHz ; adjust length if necessary. Do this with the stubs disconnected. Attach the 16ft 9 inch stub; trim its length for minimum swr (about 1.2:1 at 14,200 KHz).Add the 8ft 6 inch section and carefully trim for lowest swe at 28,550 KHz. Check swr at 21.25 MHz ; it should be about 1.1:1. If radial lengths for the different bands are used disconnect any earth connection and trim them ihdividually for lowest swr on the band.Elevated radials should work well.

A UBIQUITOUS L NETWORK

AAA Technical Staff



L can be 40 turns of 0.670 mm (22 swg) enamelled copper wire on a 2.5 cm former. Tap at 2 turns, 4 turns then every 4 turns. CV can be 150p or larger. With a 50 ohm TX input on SK1 and an antenna on T2 antenna impedances of greater than 50 ohms can be matched. With a 50 ohm TX output connected to SK2 and the antenna to T1 antenna impedances of lower than 50 ohms, such as those of whips or short 1f band antennas can be matched to 50 ohms.If desired the taps can be wired to a suitable multi-position rotary switch . Note that if a metal cabinet is used L must be mounted at least its own diameter clear of any metal.

W9SCH VERSION OF THE W9BRD COMPACT LOOP - FURTHER NOTES

C.F. Rockey, PO Box 171, Albany, WI 53502, U.S.A.

The W9SCH small version is supported by a wooden X frame. The wire used is U.S. No 10 B & S copper, and the sides of the outer loop are each 33 inches long. The capacitors used are 150p. The loop tunes from 7 MHz upwards, and works well on the higher bands. (For serious 7 MHz work use the bigger version described on page 26 of SPRAT No 89.) The theory of operation is that the two loops are connected in parallel but in phase opposition. It thus makes use of appropriate phasing of the currents and voltages involved. For a given operating frequency each loop is tuned a little off resonance. The two loop currents then add vectorially, their vector resultant then being combined at the common connecting point. Thus, when the system is correctly tuned both the magnitude of the combined loop-current and its phase relationship to the applied rf are such as to reasonably match the impedance of the co-axial feeder cable. Because the loops are of high Q neither need be detuned enough to affect performance and the end result as an excellent radiating system. (Note. No 10 B & s = 12 s.w.g.)

AND DICK K9ZNZ SAYS "Just a note to let you know how well the W9BRD compact loop works for us.Our version is the smaller 3 foot square version using 300 ohm twinlead for the two turns.Tuning is critical but we can obtain zero swr from 3.5 to 14 MHz.We now have our eye on the 40"x50" shack window frame as a former . Watch this space !"

I LIVE IN A LONDON TERRACED HOUSE WITH ONLY 30 FEET OF GARDEN says John, G4XVE. One end of the G5RV antenna runs from the chimney to a flower bed at the bottom of the garden, and the other runs along the roof ridge, down the front of the roof, then down the front wall of the house. My results show that a restricted site is no bar to worldwide QRP operation. The voice of authority speaks here - John is now QRP Master No. 95.

NON MEMBER EDUARDO, CO8LY HAS AN OLD XT PC1000 COMPUTER BUT NEEDS SOME 360K 5¼ INCH DISCS TO MAKE IT WORK.ANY HELP VIA G8PG PLEASE.

APOLOGIES TO JOHN, G3DOT,QRP MASTER,whose call became G3DGT in SPRAT 90.

QRP MASTER HAS BEEN MY AMBITION since starting to study for the RAE, says Tim, GoTYM ,Master No. 97."It gave me even more satisfaction to achieve it in the sunspot minimum and entirely with indoor antennas! A typical example of the real QRP spirit and it should encourage others who operate from difficult locations .

HAS ANY MEMBER HAD PERSONAL EXPERIENCE OF USING THE DDDR HULA HOOP antenna ? If so please report your experiences with it to G8PG. If the professional tests on this antenna are anything to go by one wonders why it has not been much more widely used by amateurs. Also, is it really necessary to use a very thick conductor if it is made 28° long at the operating frequency .(Note; we already have the "Electronics" (USA) ARRL and RSGB articles on the antenna.)

AWARD NEWS

QRP MASTER

Correction. In our last issue G3DOT became G3DGT -sorry John !
The following have been admitted to the Worshipful Company:-
G4XVE, GoTYM,GMoUTD. Well done !

QRP COUNTRIES

75; G4XVE, GoTYM,GM0UTD; 50 DF7IS ; 25; GoHDJ,DL2LQC,G8PX,IK5JPZ.

WORKED G QRP CLUB

760;G8PG; 400;G3FCK,GoKCA;240;G3ZHE ;180 G3BPM,GMoUTD;140;GoTYM;
120;Gi4SRQ;100; GW3VLU,G8PX,G4LQO,DF7IS,IK5JPZ;60;GoUTF,GM4BAE,
2EoAMW;40; GoUAP;20;DL1HTX,2EoAOZ, US7MM,DF1IAL.
(Nice to see those Novice calls in the frame !)

TWO-WAY QRP

40;G3FCK,GMoUTD;30:G3BPM;20;GoDJA,G8PX,US7MM;10;GoHDJ,DL2LQC,
GW3VLU,IK5JPZ,OZ1BXM.

Congratulations to all the above !

IF YOU WANT TO SEE CW OPERATING SURVIVE ENCOURAGE LOCAL NOVICES TO TRY FOR THE CW NOVICE AWARD. See your Members Handbook for details. Of course some Novices do not need encouragement. " I got the call 2EoAOZ soon after taking the 12 wpm test"says Ian." My intention was to work a little cw, but to date my QSO record shows 955 CW contacts on against 5 on ssb". That speaks for itself ! Ian is now preparing his XYL for the Novice test. Careful lad - you may not be able to get near the rig once she passes !

Andre, ON5UP writes to say how honoured he was to receive the Partridge Trophy. Now the spring is here he will develope the "Antenne Verticale Bobinée" for other bands using his home brew antenna noise bridge. He has also produced an 80 metre version of the Malta 40 (Sprat 78) and promises us a description for publication.

25 YEARS AGO HARTMUT,DJ7ST,WAS HARD AT IT ORGANISING QRP CONTESTS. As those who took part in the Contest he organised as part of the last Winter Sports will recognise, he is still at it. Hartmut has put an enormous amount of time, effort, and some money into organising these events over the years, and at last his fellow QRP operators have taken action to recognise his great contribution to this important aspect of QRP work. Your Club has decided to award a special plaque to him as a mark of thanks and respect for his outstanding work. Those who have been around for a long time know that owing to the pressures of his medical career he had to give up contest organisation for a period, but as soon as his circumstances allowed he was back on the job that he does so well. This type of contest is perhaps unique; no enormous linears, little disruption to other band users, high operating skills, and a goodly proportion of home built equipment. Simple antennas are also used by the majority of stations. Maybe others could learn from such pleasant, environmentally friendly events. They represent an awful lot of the good things which still exist in amateur radio despite the ever increasing trend towards the automated big spender approach. QRP is still about people, and Hartmut has helped give such people a lot of pleasure.

Stop Press. Also see the Editorial in this issue.

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"

Firstly, I would like to make a correction to the Winter Sports results published in the last Sprat. Owing to an oversight on the part of Gerald, G3MCK, he omitted to mention that G3XUO was awarded a certificate for being the leading European staion on HF only. Our apologies to Keith.

CHELMSLEY TROPHY

Gus, G8PG, sent me a log entry from our good friend US7MM which he unfortunately received after the deadline. It was a good log, and a pity that we were not able to include it in the table of results, but congratulations go to Willi for his efforts.

RESULTS OF 1997 SOMERSET HOMEBREW CONTEST

Call	QSO's	Points	Comments
G3DOV	12	52	Disappointed by lack of support.Condx normal.
G0THX	11	51	Nice to find stations spread
PA0DML	11	43	
G3CQR	7	27	
G3XUO	6	26	Very noisy, with SSB QRM
G3MCK	6	26	Check log. Condx normal
SM5DQ	2	10	Check log. Very bad condx.

Many thanks to Walford Elecronics for sponsoring this contest. It is very disappointing that there were so few entries, especially as we had incorporated most of the suggestions that had been made to us for its improvement.

Tim Walford has already sent the FROME Rx to G3DOV, and (following the completely independent draw made by G3JUL) the PITNEY Rx to PA0DML. Tim would like to express his thanks to Gerald for his work helping to organise the event over the last 2 years.

Despite the poor level of support, I think it right that we continue to promote a contest involving homebrew equipment. Maybe a £10,000 prize would secure more entries, but Tim feels unable to make such an offer! He is, however, willing to sponsor the contest for another year, in the hope we can encourage more entries. As soon as we have the date, may I suggest you make a note in your diary - you may even win a prize.

WARC BAND FREQUENCIES

I have received a generally favourable response to my suggestions in the last issue. The frequency most discussed was 10116KHz, with the very sensible request being made that we consider adopting a frequency within the UK Novice 30m allocation - say 10135KHz. I think there is a lot to be said for the idea, but do not think we can go against what has now become established custom and practice in many parts of the world. There are just too many QRP stations using 10116KHz for us to ignore, and I think we therefore have to stick to that choice. In addition, I notice a growing tendancy for ssb stations to use 10130 to 10140KHz, as well as the digital operators. However, I do think we should underline the value of looking above 10130KHz for UK Novices (who have a maximum power of 3 watts out), and would like to nominate 10136KHz as a secondary frequency. This would also retain the tradditional '6', hopefully making it easier to remember.

As far as 17m is concerned, I understand my suggested frequency of 18096 is rather prone to heavy qrm from nearby countries (eg Cuba) in the States, and that 18086 would therefore be a better choice. Keeping in mind that these are not calling frequencies, but suggested meeting places on each band, my list of QRP frequencies for the WARC bands now looks like this:

	30m	17m	12m
cw	10116 (10136 UK Novice)	18086	24906
ssb		18130	24950

I will try and arrange for these to appear in the Members Handbook.

QRP DX and CONTEST NEWS

Some of you will know that (whenever I have the information) I try to provide advance publicity for QRP operations from rare, or interesting, locations. Nothing is more frustrating than to miss somebody (particularly a Club member!) operating QRP from a rare dx location just because nobody knew he was going to be there. For those with access to the Internet, I now have a simple Website containing as much QRP Dx, and contest, information as I can.

Point your browsers at **"http://www.barville.demon.co.uk/qrpinfo.htm"** for all the up to date news, and please let me know if you have any comments, or know of information I can add.

CZEBRIS

There has not yet been time for details of the non-UK activity to be collected, but these should be available for the next issue. In the meantime, here are the UK logs:

Call	Points	QSO's	80	40	20	Pwr	Comments
G4MQC	106	46	24	14	8	3	PRM4031 Manpack, Inv Vee
G4APO	62	28	22	4	2	4	Corsair II, extended Double Zepp
G3ESP	42	18	15	2	1	5	TS50, parallel dipoles
G0THX	28	8	8			5	H/B Tx, JR310, Doublet
G3XUO	20	9	9			5	TS130V, 20m end fed
G3GVY	16	7	4	3		2	Argonaut, bent dipole
G4OTY	12	5	2	3		4.5	TS530S, indoor wire
M0ANQ	11	6	6			5	FT747, trap dipole
BRS8921	95	3	9	32	1	6	
Check log :							
G8PG	51	21	14	1	6	3	Century 22, 60'x20' loop

There are more entries than last year, I'm pleased to say. How good it is to see an entry from our stalwart SWL Bill, who has been QRT for a little while - welcome back. Sadly, QSO's with OM were lacking in all the logs, and there were not too many OK's either. Conditions were very poor, which didn't help of course.

EUROPE FOR QRP WEEKEND

Dates/Times: 1600z on 26th September 97 to 2359z on 28th September 97. Modes/frequencies: CW only on 3560, 7030, 14060, 21060 and 28060, all +/- 10 KHz. Power: Not to exceed 5 watts RF output. Stations unable to measure their output should take half the DC input to the PA (eg 10W DC = 5W out). Call: CQ EU QRP. Exchange: RST, power out, and name of operator.
Scoring: Only QRP/QRP qso's count. Contacts with own country do not count.
European stations score 1 point for each European qso, and 3 points for each qso outside Europe. Stations outside Europe score 5 points with each contact with Europe. Final Score is the sum of points obtained on each band. Logs: Separate log sheets for each band showing (for each qso) date, time, call, exchanges sent and received. Logs should be sent to P Doudera OK1CZ, U 1 baterie 1, 16200 Praha 6, Czech Republic. They must be received by 11th November 97. The leading 3 stations in each continent will receive a certificate. In the unlikely event of any dispute, the decision of the organisers will be final.

ORIGINAL QRP CONTEST

This contest is open to stations using original QRP equipment (commercial or homebrew) only. QRO equipment (greater than 20 watts output) which has been temporarily adjusted to QRP levels is not allowed.

Dates: 5th/6th July 97, and 27th/28th Dec 97. Times: Saturday 1500z to 1500z Sunday, with rest period of 9 hours minimum in one or two parts.

Frequencies: CW segments of 80/40/20m. Call: CQ OQRP (original QRP).

Classes: VLP (1 watt or less out), QRP (5 watts or less out), MP (20 watts or less out).

Operation: Single Op CW. Various rigs may be used, but only one at the same time.

Exchange: RST, serial number, Class (eg 579001/VLP).

Scoring: The log checker counts 4 points for a qso with another contest station whose log has come in. All other qso's count 1 point. The exchange of RST is sufficient with stations not in the contest.

Multipliers: The log checker counts 2 multiplier points for each DXCC country from a qso with a station whose log has come in. Otherwise each DXCC country counts 1 multiplier point per band.

Final Score: Sum of qso points multiplied by the sum of multiplier points (calculated by the log checker) please do not try your own calculations, as you will not know who will send in their log, and who will not).

You can see that every log is important, even if it is only 3 qso's on a postcard from your holiday location!

Summary Sheet: Must show name/address/callsign and the minimum rest periods. Indicate the types of all rigs used, with ouput (or input) on each band according to manufacturer, or measured under the contest conditions. Homebrew rigs description should name the PA transistor (or valve), and possibly a reference to its origin (eg Sprat No. ..). Logs: List qso's for each band separately. Add DXCC prefix if you claim a multiplier for a qso. Deadline: 31st July 97 / 31st January 98 to Dr. Hartmut Weber DJ7ST, Schesierweg 13, D-38228 Salzgitter. For more details please send an sae to G3XJS.

AGCW QRP SUMMER CONTEST

A reminder that the contest takes place between 1500z on the 19th, and 1500z on the 20th of July. Within this time interval a break of nine hours must be taken, 5 hours at one stretch and the rest by your own choice. There are 4 classes - VLP: one watt or less output, QRP: 5 watts or less output, MP: 25 watts or less output, QRO: more than 25 watts output. Exchange RST, serial number, class (eg 579001/QRP). Bands: 80/40/20/15/10m. Score: no points for QRO-QRO; 3 points for QRP-VLP, QRP-QRP, VLP-QRP, VLP-VLP; 2 points for all other QSO's. 1 multiplier for every DXCC country on each separate band. Logs to Lutz Noack DL4DRA, Hochschulstrasse 30/702, D-01069 Dresden. For further details, sae please to G3XJS.

DK0WCY

You have probably noticed that the German propagation beacon has now moved from its original frequency, rather close to 3560KHz, to (approximately) 3579KHz. This is generally much more satisfactory for 80m QRP operators, although it may cause some problems for those using rigs with the cheaply available 3579KHz crystals.

The deadline for the next issue is the beginning of August.

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

FOR SALE: Kenpro Squeeze Keyer Model No KP100, boxed with instructions hardly ever used nearly new condition. £45 ono, Hi-Mound Telegraph Key Model No HK706 boxed as above condition. £20 ono Plus Carriage. P. Mitchell, G4XYX. Tel: 0181-368-8674

FOR SALE: Motorola MT707 PMR single channel handheld should convert to 70cm and poss add a channel £20 ono. MFJ8100 Shortwave RX boxed £35. Howes MW1 Rx kit unbuilt in original box £28 ono. TRF Rx 1.6-30MHz in Howes case with S meter £22.50 ono. 13.8v 5A PSU £5. Howes VOGAD Mike module built with instructions £8.50 ono. 2x2SC2166 & 2x2SC1945 [one may be bad] £14 all four. Weller 40w mains soldering iron £12.50 ono. YEOVIL transceiver manual £3. 100K 0.5w resistors 5p for 20, 100 for just 20p, greater discount for even more. 30A ammeter 50p. 500uA meter 50p, Icom BP84 - 7.2v, 1Ah Nicad battery pack, damaged but usable [from 24ET etc handhelds] £19.50 ono. LM323 regulators 50p for 2. WANTED: Pair of high impedence headphones. Call David on 0181 - 317 - 2223 eves and weekends or write 4 Jashoda House, Connaught Mews, Woolwich, London SE18 6SU.

A REPORT OF THE 13th YEOVIL QRP CONVENTION

Our convention weekend VIP Ian Keyser G3ROO and XYL Margaret 2E1DFH joined Yeovil Club Chairman Mike Smith G7SDD, a number of club members with XYL's and weekend visitors for a lively dinner at a Sherborne Hotel. Next morning, Sunday at 10am he was in full flow again welcoming the first of the 300 visitors who were to visit the Convention during that bury day. Quite a number were already sharing the breakfast fare with the record number of Traders who had worked rapidly with the Yeovil Club team since 7am to have their displays ready for the doors to open at 9 am.
At 10.15am the first Talk "Negative Resistance Oscillators by Club member Rob Micklewright G3MYM with every one of the 70 seats in the lecture room occupied as they were to be in the two other talks which followed later in the day.

In the meantime operators were invited to use the novel 1938 vintage Transmitter, nicknamed "The Plank", home brewed by Eric G3GC on al wooden floorboard, the valve line up being 6K7 Crystal oscillator plus 807 PA with a 5" dia 3/4" copper tube tank coil. In the true spirit of the event the output to the 40M wire Dipole was reduced to 5 watts RF, and a link coupled torch bulb gave visible evidence of RF output. "ROO" was the one of the first to have a go and like the others who worked some 20 European QSO's he received a numbered raffle ticket which eventually went into a draw. Guess who's number came out of the Bag! I'm sure the Walford Electronics donated Pitney Tcvr Kit will soon be assembled and warming the airwaves down Folkestone way, but will it be the G3 or the 2E1 on the key?! More electronic goodies were distributed when the programme draw was made by our three founder members, thanks to the generosity of our traders, Even Convention veteran, of 12 events, Chris G3TUX who was slaving away at that other, less significant, event across the pond sent enough sheets of "TWO-WAY QRP QSO" Stickers for one to go in each of the 300 Programmes given out at the Door.

The mid morning talk by Gerald Stancey G3MCK "Are you Getting Your Share", on the Art of making successful QSO's was very informative and amusing.
In the afternoon came Ian Keyser's Talk "Getting the best from small Gardens" this was fascinating review of Aerials of all shapes and sizes together with a few anecdotes from his earlier years in Amateur Radio. Meanwhile the promotion stands manned by the G-QRP Club's Bob G4JFN and Xyl Anne Hudson, the Royal Signals ARS stand was busy as was the Morse Test Team hidden away back-stage, for them I think, "Thanks a lot Boyo's"! Would be appropriate. We can only guess that the passes were in double figures, Well done, we'll look out for the new Callsigns!

And so after a few more cups of tea and a final chat with old and new friends they were all off on the journey home from sunny Sherborne!. Finally Thanks to Out Team, the Traders, our visitors and all who helped make the Convention a successful Event.

THE CONVENTION FUNRUN RESULTS,

THE LEADING STATIONS

80M	Points
1 G0ADH	885
2 G4BWP	853
3 G4ELZ	806

40M

1 G4ELZ	163
2 G4BWP	93
3 G0ADH	10

OVERALL WINNERS

1 G4ELZ	969
2 G4BWP	946
3 G0ADH	895

PERFECT LOG G3IXZ
LOWEST POWER 250MW G6NA

Certificates were awarded to the 1st in each section and to 1st Overall. Also to G6NA Spenny who used no more than 250 Milliwatts throughout the Contest.

Annual Meeting of the German Section of the G QRP Club Pottenstein - May 2nd-4th 1997

An increasing number of QRP enthusiasts take to Pottenstein meeting as a welcome opportunity every year to spend a weekend with fellow members and take part in a very interesting convention - both for specialists and for the (X)YLs who always enjoy the unique atmosphere sitting together in a certain ice cream parlour, chatting the days away... Although the 1997 convention had a strictly technical focus (as usual), there was time enough for a very civilised opening: Karl, DK6NC Nr 6051,a went into some academic detail to present the audience a very special introduction of the Pottenstein area, north-east of Nuremberg, which is known to the travelling public as "Franconian Switzerland". This extraordinary stretch of land became famous among writers of the romantic epoch in literature because of its breath-taking gorges, formations of rock and numerous caves - some of them considerably large and really worth a visit today. The comparison to the "real Switzerland 350 Kilometres away has been make in the 18th century and still gives a good deal of tourist benefit to the area! Saturday, however, saw quite a few interesting technical events; Manfred, DJ3KK (Nr. 3333), and Bernd DK3Wz (Nr. 6080), showed the audience how easy it can be to generate stable HF signals with a new DDS unit. Besides its small package (two ICs and a few capacitors and resistors), the extremely clean output signal of the unit was impressive; diagrams showed no significant difference to a DRAKE LC-VFO. Further applications included helpful gadgets such as a marker generator, and even a simple way of programming a low-cost frequency counter. Is this the future of home construction?

For the more practical-minded, Ha-Jo, DJ1ZB (Nr.115), offered a do-it-yourself lecture in painting and etching of PCBs. He had all the tools and liquids with him, and in the afternoon the participants had their own PCBs ready and got some additional hints how to finish them. This Saturday also was an important day for many home brewers and kit builders. Wolfgang, DK4RW (Nr. 7696), spent hours at his high-end test equipment to check more than half of the community's QRP rigs. Many owners were really anxious to have their sets tested, and Wolfgang could give valuable and most appreciated details about RF output, spectral purity (or not..) RX sensitivity, intermodulation, and keying.

For those who were sure their rig was okay, a dipole and a "bicycle reel" magnetic loop gave the opportunity to get really on the air instead into a dummy load. DL0VLP was quite active with a number of operators, and several QSOs were made.

So the Pottenstein Elementary School was again venue of many hours of intensive technical lecture, discussion, and practical performance, and the downtown pub was again an ideal place to raise a glass or two, to meet old friends and make new ones, exchange construction ideas, jot down a new Z-match circuit diagram on a bill et. And the ladies enjoyed themselves too, on their one-day coach trip to Bamberg where they were showed the romantic city and its famous cathedral.

As well as all the years before, the about 60 QRPers from Germany, Austria, and the Czech Republic made the most of that May weekend. The Pottenstein meeting has indeed become a centre of QRP activity in DL and many of the members are looking forward to shaking hands again in 1998..

Special thanks to Rudi, DK4UH (Nr.2901), for doing all the organisation, and Manfred, DK4NQ, (Nr.6203) for making the rooms available. Without their work the convention wouldn't have been a success.

(DF6MS) Oliver Borkowski

Note by G3RJV: I regret to say that I missed the notice for the above meeting in the last issue of SPRAT

NOVICE NEWS Steve Ortmayer G4RAW

14 The Crescent, Hipperholme, Halifax. HX3 8NQ. Tel: 01422-203062

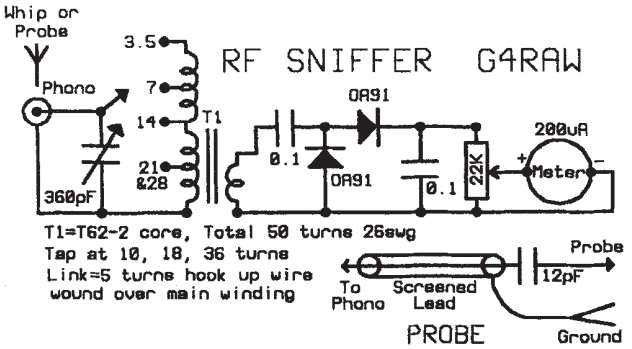
A nice long letter from Wyn GW8AWT from "WILD WALES" gives details of Novice activities. 2W1BPS, 2W1CSI, 2W1DIK, 2W1EDK, and 2W1FAJ make up the gang with Wyn as their "shepherd". If you hear "Chwildo chwech" it means Wyn and the gang calling CQ in Welsh! Wyne askes for a simple Novice project with kit for 6m AM, so any offers?

Mike G8OGO of the RSGB Training and Education Committee has sent details of the Living Science and Technology Project run by BT's Schools Liaison programme. BT provide schools with core curriculum material, engineers to help with the Young Engineer Scheme, and most important help with the Novice scheme. Tuition is provided for the NRAE.. The scheme is managed by Dave Powis G4HUP Tel 01437 605362 or Marilyn Makley Tel 01473 647671.

Mike has also sent details from AMRED the journal published by STELLAR of the record NRAE entry at Farlinglaye High School Woodbridge. No less than 30 students took the NRAE exam in March.. The good work was started by GQRP Club member Lindsay G3VNT when he tutored two teachers at the school and their sons for the NRAE. What a great story and it shows what can be done with the right kind of enthusiasm to bring new young persons into our radio world.

The report on the NRAE for December 96 says that many candidates thought that an absorption wave meter was used to prevent spurious emissions rather than to check the approximate frequency of a transmitter. Well you can look for harmonics with a wave meter and it is possible to gain an Indication of their strength. Try sniffing a simple HF transmitter before and after fitting the usual low pass out-put filter and you can detect the reduction in harmonics.

My simple RF "Sniffer" comes from an old ARRL Handbook and has given good service.



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

FOR SALE: KW2000B with matching PSU, both in vg condition, plus handbook, spare valves, Q multiplier and SWR Meter. £200 ono. Also TenTec Century 22 with built in calibrator and keyer £190 ono. Syd Fenwick, G3AIO, QTHR, 01892 - 822836 [Kent]

FOR SALE: A4 Sized SPRAT, No.s 3 to 19 inclusive, plus Membership List Jan. 1977. Offers for all, or any, to GM4EWM. 21 Milnefield Ave. New Elgin, Morayshire. IV30 3EJ. Enclose SAE. Best Offer secures.

WANTED: FT7, TS130V or TS120V, 10w Rig in good condition - no mods. G3VTT. 01634-230860

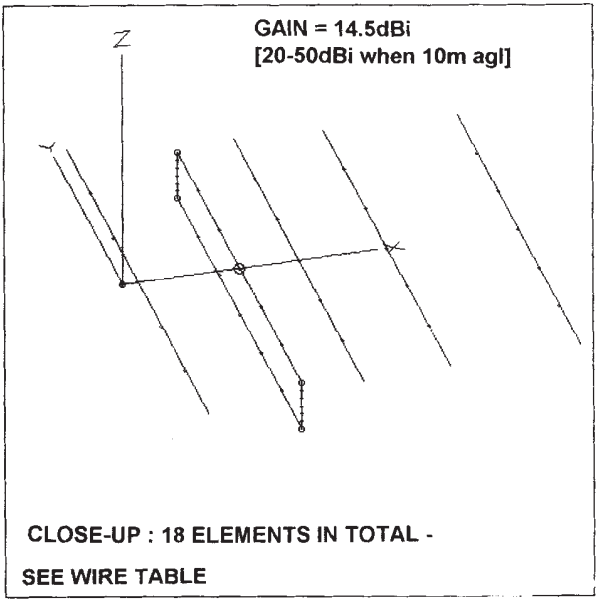
VHF MANAGER'S REPORT

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

It has been a while since I have published a VHF or UHF antenna design, so this issue I have produced one for 70 cm. The design, part trial & error and part computer aided design, using ELNEC. The end result is a compromise, which has useful gain, a good front to back ratio and a fair SWR. It is also easy to construct using readily available materials.

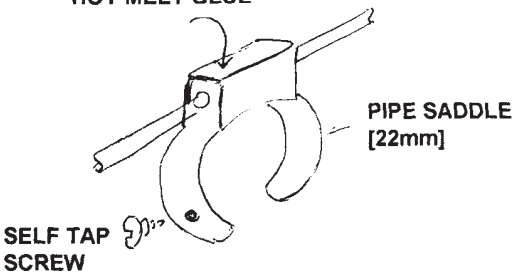
The boom consists of 1" (25mm) aluminium tube, which is normally sold as supporting masts for TV antennas. I had to join on a short length as my supplier only sold it in 6 ft lengths. To do this I cut a 2" (50mm) length of the tube, hacksawed along the length and pushed the two booms in. Two self tapping screws through to each part of the boom prevents slippage.

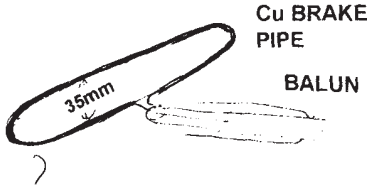
W7EL ELNEC 3.08 G8SEQ Yagi 70 cms 05-23-1997 21:17:04



PLOTS FROM ELNEC 3.08 BY W7EL

DETAILS FROM
Roy Lewallen W7EL
5470 SW 152 Ave.
BEAVERTON
OR 97007
USA



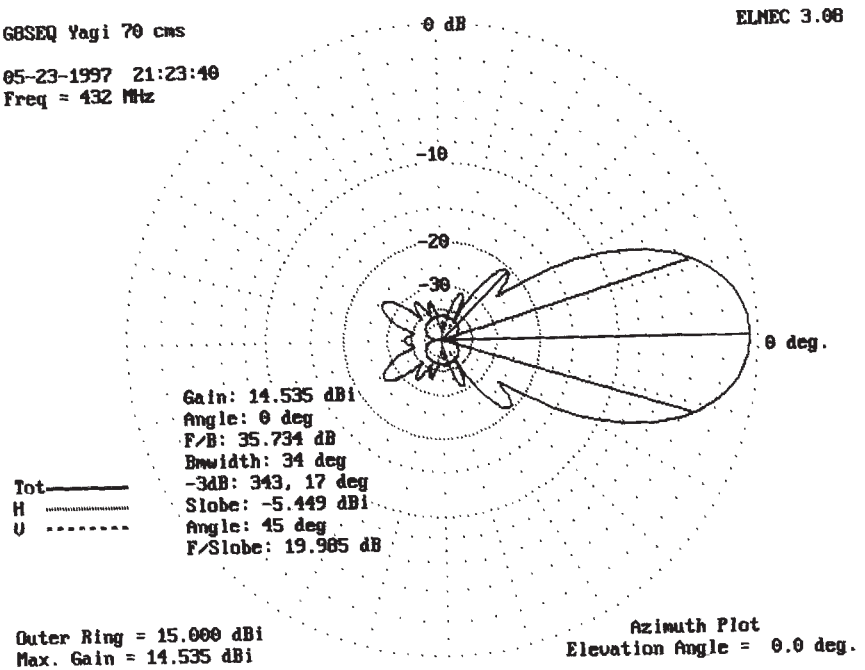


DRIVEN ELEMENTS
ENDS FORMED AROUND DOWEL
rather than as shown by ELNEC

All the elements, except the driven element were made from 10 swg stainless steel welding rod. These were fitted to 22 mm water pipe clamps by drilling through the base of the clamp and then filling the hollow part of the clamp with hot melt glue. (If you don't want to buy a glue gun, the glue sticks can be melted in with a soldering iron.) The clamps should be soften with hot water before forcing them onto the boom. A small self tapper is screwed into the clamp to prevent slippage again.

The driven element was made from some 3/16" copper tube, which is sold in car accessory shops as brake pipe. This is easy to bend round a broom-handle to form the folded dipole driven element. (Thread through a pipe clamp first!) Some RG58 coax is then inserted into the open ends of the feed point & soldered.

I used about 2.5 m of this thin lossy coax. To take the signal to some LDF250 coax fixed to the mast. This takes unnecessary weight of the boom. A coaxial sleeve balun can be made from some coax braid slipped over the outer of the RG58 and soldered to the outer at the end furthest away from the feed point. From practical tests I have done, the antenna performs about the same as predicted by ELNEC. Notice that the first two directors are spaced closer than the others. Adjusting these with respect to the driven element has a considerable effect on SWR; using the pipe clamps shown allow easy repositioning of the elements (before inserting the grub screws). My actual SWR is better than the predicted SWR of 1.348 at 432 MHz.



SWR WHEN FED WITH 50Ω COAX : 1.348

G8SEQ 70cm YAGI WIRE TABLE

Frequency = 432 MHz.

Wire Loss: Zero **Using real wires gain is only reduced by 0.1dB!**

---------- WIRES ----------

Wire	Conn.	End 1 (x,y,z : mm)		Conn.	End 2 (x,y,z : mm)		Dia(mm)	Seg
1		10.000,-180.00,	0.000		10.000,180.000,	0.000	2.54E+00	6
2	W4E1	80.000,-157.00,	0.000	W5E1	80.000,157.000,	0.000	4.70E+00	6
3	W4E2	80.000,-157.00,	35.000	W5E2	80.000,157.000,	35.000	4.70E+00	6
4	W2E1	80.000,-157.00,	0.000	W3E1	80.000,-157.00,	35.000	4.70E+00	6
5	W2E2	80.000,157.000,	0.000	W3E2	80.000,157.000,	35.000	4.70E+00	6
6		120.000,-165.00,	0.000		120.000,165.000,	0.000	2.54E+00	6
7		180.000,-160.00,	0.000		180.000,160.000,	0.000	2.54E+00	6
8		270.000,-156.00,	0.000		270.000,156.000,	0.000	2.54E+00	6
9		380.000,-154.00,	0.000		380.000,154.000,	0.000	2.54E+00	6
10		560.000,-150.00,	0.000		560.000,150.000,	0.000	2.54E+00	6
11		730.000,-145.00,	0.000		730.000,145.000,	0.000	2.54E+00	6
12		890.000,-145.00,	0.000		890.000,145.000,	0.000	2.54E+00	6
13		1060.00,-140.00,	0.000		1060.00,140.000,	0.000	2.54E+00	6
14		1230.00,-140.00,	0.000		1230.00,140.000,	0.000	2.54E+00	6
15		1400.00,-135.00,	0.000		1400.00,135.000,	0.000	2.54E+00	6
16		1570.00,-135.00,	0.000		1570.00,135.000,	0.000	2.54E+00	6
17		1740.00,-135.00,	0.000		1740.00,135.000,	0.000	2.54E+00	6
18		1910.00,-135.00,	0.000		1910.00,135.000,	0.000	2.54E+00	6
19		2080.00,-135.00,	0.000		2080.00,135.000,	0.000	2.54E+00	6
20		2250.00,-135.00,	0.000		2250.00,135.000,	0.000	2.54E+00	6
21		2420.00,-135.00,	0.000		2420.00,135.000,	0.000	2.54E+00	6

POSITION ON BOOM ← → **ELEMENT LENGTH eg 270mm**

THE NEW G QRP CLUB WEB SITE (now maintained by Tony, G4WIF) is located at
http://ourworld.compuserve.com/homepages/g4wif/gqrp.htm.
this site includes the FULL SPRAT INDEX and updated Club News
there are links from the Kanga Web Pages and shortly acccess from www.gqrp.demon.co.uk

MEMBERS' NEWS

by Chris Page G4BUE

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E-mail: g4bue@adur-press.prestel.co.uk
Packet: GB7DXS on UK DX PacketCluster

Welcome to the first *Members' News* column written from our new QTH near Nutbourne in West Sussex. Please note our new address, telephone and fax numbers and new E-mail address.

It is two weeks since we moved here and we are still in a state of semi-chaos. Despite the careful labelling of over 150 packing boxes, "Have you seen....?", or "Where did we pack.....", is the most common question June and I have been asking each other. We now understand why several of you have said you would never move again!

The combination of moving QTH, the business and all the bulky equipment associated with our hobbies of amateur radio and gardening, caused the removal company to plan a three day move with three full size vans, and even then they had to go to a fourth van load! And this was after we had sorted everything and thrown and given a lot of things away!

Anyway, we are here, and enjoying the peace and tranquility of the West Sussex countryside. We are in the middle of a farming area and our nearest neighbours are farm houses over a quarter of a mile away. Sitting in our garden we can only hear the birds and the other sounds of nature. We are back on the UK DX PacketCluster with a very good path into GB7DXS, and should be back on HF soon with a Butternut vertical before planning a more extensive antenna system.

The downside of moving QTH was that we had to cancel our planned annual trip to the USA for the Dayton Hamvention and the FOC North American Weekend. Reports tell me that Dayton was enjoyed by everyone, the weather was good but prices in the flea market are creeping up.

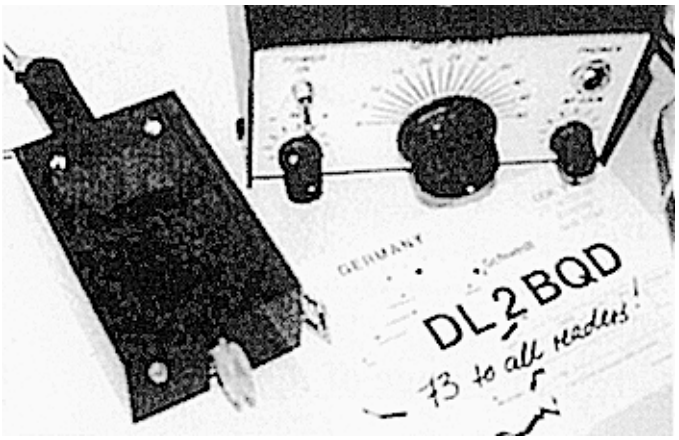
DL2BQD says the latest edition of the German paper *Funkamateur* contains an article by **DK4RW** on the last Pottenstein meeting of the German section of the G-QRP Club. Dieter says tests were done with rigs taken to the meeting. 10 rigs were tested and although the report is by no means representative, it shows some tendencies. Kits are mostly used with a tendency to multi-banders (4 out of 10). 40 and 20m are the bands most used, 30m only in connection with other bands, and for 80m there was one single bander. Only one rig was for CW plus SSB, 8 of the 10 produce 2W or less, and all follow the demanded technical standards of the postal authorities. The receivers were mostly superhet with four to eight crystals, only two were direct conversion. More than half used an active or passive NF filter and all were very sensitive, one (a GQ40) being at the top, was remarkable with less than 0.2µV.

G3JES built the Pixie and says the transmitter side goes well but the receiver needs more work, but Ivor says he will get there in the end. **G3JNB** and his trusty HW8 worked 9A, IK3 and LY on 20m usine one watt to a fishing rod vertical helical and a handy metal field gate as a ground. Victor was working /P in rainstorms from a hilltop in North Devon following an enjoyable

Victor's equipment while working G3JNB/P in North Devon recently.

weekend at the Yeovil QRP Convention.

"Thanks to a fellow QRPer from thousands of miles away", **K5BDZ** is starting to rekindle his old interest in amateur radio after "I had my first major ham radio burnout after 42 years of the hobby". Bill says, "We needed a fresh view of the world and we chose a driving tour through the Bavarian (Germany) area. We were staying in a zimmer (bed & breakfast) in Seefeld, Meiling, a small town southwest of Munich. At 0600, while exercising outside, I noticed the upstairs window open beneath the two element quad across the road. It was then I first met Kurt, **DL4MBR**, who handed me his QSL card which proudly, and boldly noted his G-QRP Club membership and number. Immediately his German and my English melted into the commn language of QRP. Kurt and his wonderful wife, Lydia, invited my wife and me into their lovely home, where we visited for hours. Kurt's pride in and love of QRP helped me to put things in perspective, so here I am back in the fold. I'm just designing QRP projects for my own edification, and am constructing a SSB 20 metre QRP transceiver. G-QRP Club and SPRAT contain kinetic energy that continues to surprise. Thanks!".



DL2BQD's Sprint and key for his Yorkshire holiday operation.

G3HBN took his portable kit to Gibraltar on holiday, and then found Martyn, G3RFX, was operating from the 5th floor of the same hotel, Jimmy was on the 3rd! He was soon QRV as **ZB2/G3HBN** on 14060kHz with his QRP+, and later in the day met Martyn in the bar of the hotel only to find he had been on 20m SSB at the same time with a TS850 SAT. This says a lot for modern technology. Jimmy had 307 QSOs in nine days in 37 DXCC with 36 two-way QRP QSOs with 23 members. Best QRP QSOs were with **EA1CHC** (500mW), **DL3SEU** (500mW), **GM3OXX** (1W) and **OK2PEX** (1W). He also worked JA, TT8, 9K and 8Q, and was pleased with the performance of his home-brew 80cms diameter magnetic loop, a floppy portable design that fits inside his camcorder case for travelling, and sits on a tripod on the balcony of the hotel room. Jimmy will be taking it to Chris's, **G3TUX**, QRP Summer Party on 26 July.

GM3MXN says Danish 'fish fone' on 80 m seems to be getting worse despite EEC laws reducing the number of fishing boats. Tom listened for 30 minutes on 28 April and heard USB in Danish on eight QRGs. He says amateurs are primary users of the band and suggests 80m users write to the RSGB to approach the DTI who should in turn pass our complaints on to the Danish authorities. Congratulations to **WA8MCQ** on being elected president of the QRP ARCI.

G3XJS had a QSO with Daniel, **9V1ZV**, on 14059kHz on 1 May, and Peter says he is a keen QRPer. **G3LHJ** worked three new QRP countries in the CQ WPX CW Contest with is OHR Sprint on 20m. Derrick says, "conditions were great, made 222 QSOs and 81k points, which was an improvement on last year". **GØTYX** will be QRV from Grenada for four weeks from 12 July as **J3/GØTYX** running 5W to dipoles on all bands, including WARC. Most activity will probably be on 30, 20 and 17m. Abdul, **OD5NF**, is QRV with QRP, CW on 20 and 15 metres. Moshen, **EP2SMH**, is QRV from Tehran, SSB 20m with 6W QRP and a dipole. Richard, **G3RWL**, will be QRV 1500-1700z daily 10/22 August while on holiday in the Balearic Islands, CW 20m 5W QRP with a MFJ transceiver.

DL2BQD "proudly announce the birth of a newly built transceiver DTR5-7. It really was a pleasure to build it". Dieter's new key (described in SPRAT in breadboard version and now housed), and his OHR Sprint gave him lots of fun in the Winter Sports. He will be taking both rigs to Gland, Yorkshire between 29 June and 12 July on holiday.

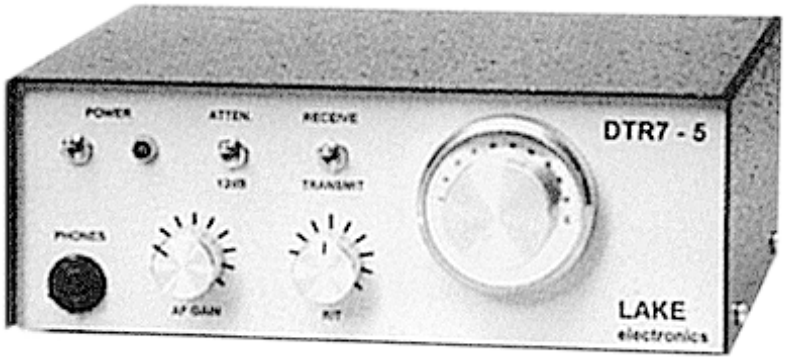
G4GIY is on 80m with a DTR3 (1W) and trap dipole, and 30m with an OHR Sprint (5W) and delta loop. Robin finds it drifts HF sharply for 10 minutes on warm up and wonders if anyone has a solution? Brian, **G3MBN**, <brian@brimar.demon.co.uk> is requesting member's E-mail addresses for the club list he runs.

Sorry about the smaller print, not enough space! Let me have your news and photographs for the Autumn SPRAT by 20 August, please.

LAKE Electronics

for

The Kits with ALL the Bits !



The **"DTR" series of Single Band CW Transceivers**, sold world wide for nearly ten years, have been upgraded ! Power output has been increased to a nominal five watts - up to about 8 (if you *must* QRO!) and down to a around 25 milliwatts if you're really keen.

The low pass PA filter, a 7 element Chebychev configuration, achieves better than -50dB second harmonic level with other spurious signals virtually non-existent.

The receivers, Direct Conversion, have a sensitivity of better than 1μV MDS and selectivity (an audio filter is included, of course) of about 250Hz @ 6dB. VFO coverage is nominally 7.0 - 7.1 MHz and 3.5 - 3.6 MHz respectively. Since the scale on the new silky-smooth Jackson drive is calibrated 0 - 100 this gives a good indication of frequency.

Audio output - up to 1/2 watt (8 ohms)
Antenna - 50 ohms, SO239 connector.
Power requirement - 1A (key down) at 12 - 14 Vdc

RIT ± 4kHz
Receive Attenuator 12dB

(For a completely independant assessment and an objective comparison with other QRP rigs, see Peter Hart's review in November 1995 RADCOM.)

Kit price, including ALL components AND hardware,

DTR3-5 (80m) or DTR7-5 (40m) £97.80 plus £4 postage.

Either kit can be specially built to order for £162 inclusive.

LAKE ELECTRONICS
7 Middleton Close, Nuthall, Nottingham NG16 1BX
0115-9382509 100775,730@compuserve.com

VISA

For full details of our range of Kits, please phone or send SSAE