



# SPRAT

THE JOURNAL OF THE G-QRP CLUB

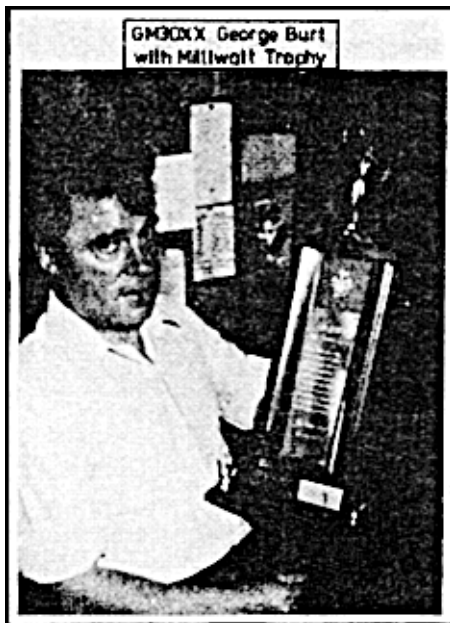
**DEVOTED TO LOW-POWER COMMUNICATION**

**ISSUE NR. 20**

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**Autumn 1979**

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INTERNATIONAL ENERGY CONSERVATION MONTH

Rev.G.C.Dobbs[G3RJV] Willowdene, Central Ave,  
Stapleford, Nottingham.NG9 8PU.[tel:394790]



Dear Member,

Yet another exciting period for QRP Club members. A new format for SPRAT - comments welcome- membership now over 600 and October, as International Energy Conservation Month, promising a lot of QRP Activity. The 10 metre band should also be in good condition during the autumn period, perhaps more so for those members who operate QRP on SSB.

The club is now large enough for more personal contact to be feasible. Sadly the RSGB HF Convention was cancelled, but members are invited to meet each other on any of the days of the Leicester Exhibition. It would be pleasant to see groups of members trying to follow the lead of our GM members in organising local QRP get-to-gethers. Most areas now have enough members to make this worthwhile, and I am willing to help any member who wishes to plan a meeting, contact the other members in his locality.

So enjoy the autumn conditions, take part in the October QRP programme and get your soldering iron out for the approaching winter constructional season.

Hpe cu QRP,

73.

Carry a SPRAT at Leicester !

G3RJV.

STOP PRESS NEWS.....Gwyn (G4FKH) will be in Mauritius from Dec. 15th for 7 weeks. He will be on the QRP QRG each Tuesday and Thursday at the time published in the Rad Comm for 3B8 land. He will be using his homebrew 20m transceiver.

#### ARRA LEICESTER EXHIBITION

The above exhibition is again being held in 1979, between 8th and 10th November. It is suggested that members attending the exhibition who may like to meet other members of the club, be in the tea room at 4pm. on each of the three days.

SUBS DUE: 155-177, 223-232, 326-350 and 445-466.

DATA SHEETS : Usual sheets in stock for a S.A.E. (LARGE) to G3RJV.  
New Sheets: 28 MHz TRANSMITTER - solid state, 10watt, vfo controlled.  
SILVER TERN - Good, but simple, 'straight' solid state receiver from SPRAT.  
DIREX - Direct Conversion 40/20 receiver by G3RJV - print from S.W.M.

ITEMS FOR SPRAT ARE ALWAYS WELCOME. SHARING IDEAS IS WHAT THE HOBBY IS ALL ABOUT. ROUGH SKETCHES AND NOTES ONLY REQUIRED. TO G3RJV, PLEASE.

#### SUBSCRIPTION RENEWALS

The subscription is £2.00 (\$5.00) per year. Cheques made payable to 'G.C. DOBBS RE QRP CLUB'. Overseas members please send paper money if possible (cheque exchange rate poor) TO: Alan Lake G4DVW, 7 Middleton Cl., Nuthall, Nottingham. PLEASE QUOTE YOUR CLUB NUMBER. Membership numbers due will be published in each SPRAT. 'SUBS DUE' will be stamped on all due numbered copies automatically, please ignore if you have paid. SIX MONTHS OVERDUE MEANS EXPULSION

#### International Calling QRP Frequencies

CW	SSB
3560	3690
7030	7090
14060	14285
21060	21285
28060	28885

#### G-QRP-Club Weekly Net Frequencies

Every Sunday (times in GMT)

1100 - 1230	CW on 7030
1400 - 1500	CW on 3560
1600 - 1700	SSB on 7090

# INTERNATIONAL ENERGY CONSERVATION MONTH

OCTOBER 1979



## CLUB PROGRAMME

As already reported in SPRAT, during October 19 leading industrial nations, including the UK, are joining in the first International Energy Conservation Month. The event will focus on the crucial role of energy conservation. In the UK Government Departments, Nationalised Industries etc etc are supporting the event. As far as we know the only amateur radio body recognised amongst these organisations is G QRP C, amateur radio leaders in energy conservation. To provide maximum publicity during the month the Club asks all members to give maximum support to the events listed below.

### INTERNATIONAL ENERGY CONSERVATION MONTH QRP AWARD

This Award will be issued to any member submitting proof of having accumulated the required points in respect of QSOs made between 1st and 31st October, 1979. All bands and modes may be used, but cross-band contacts and repeater contacts are not allowed.

The Award will be in 3 Classes, obtained as follows; Class 1 25 points, Class 2 50 points, Class 3 75 points. A member may apply for Class 1 then update to a higher Class if more QSLs come through.

Only QSOs between QRP stations both using not more than 5w dc input count.

Points for QSOs are as follows. Own country 1; own continent 2; other continent 3.

Bonus points are as follows. Each QSO on 70 Mhz or higher 1 point. Each QSO when TX and RX not mains operated 1 point. Each QSO using simple wire antenna (dipole, long wire, zepp or similar) 1 point.

If the station is capable of operating continuously without mains supply (such as from batteries and a wind charger) the applicant may add 10 points to his total score; if claiming these points he should briefly describe his

power supply system on the front cover of his Award claim. A signed statement

re the power used is also required (see General Award Rules). Closing date 31 December 1980.

### ALTERNATIVE TECHNOLOGY PRIZE

The Club will award a prize (RSGB Publication up to £5-00) for the best alternative technology idea submitted to the Editor of SPRAT by 30th November, 1979. Applications should take the form of design notes, circuits and sketches. Typical ideas might be independent power supplies, energy conserving shack heating, a re-cycling suggestion for radio equipment, or some other idea that saves or re-uses resources.

### RSGB 21 MHz CONTEST

This year the Contest takes place during Energy Conservation month. It has QRP classes (5w maximum rf output) for both UK and overseas stations. The rules appear in Radio Communications for July 1979 (Contest date is 21st October, 0700-1900 gm). Overseas readers can obtain a copy of the rules from G3HCT, Brookland, Ullenhall, Solihull, West Midlands, B95 5NW, England - see and IRCs please).

### G QRP ACTIVITY WEEK-END 6th/7th October

Already publicised in the previous issue of SPRAT. EVERY member is requested to try and be on the air during this event, even if only for a few minutes. Let the world hear the amateur radio of the future really active. But do not confine your activity just to these two days. October is OUR month, so let us hear the International QRP Frequencies really humming during the whole period. Even if you can only get on for 10 minutes per week, do let us hear your CQ QRP.

### CQ WW CONTEST

This is also during October - and it has QRP sections. Give it all the support that you can.

MAKE OCTOBER YOUR ACTIVITY MONTH AND SHOW THE WORLD THAT WE AT LEAST CAN FACE ENERGY CONSERVATION WITHOUT FEAR.

# CLUB NEWS

## SSB QRP ACTIVITY WEEK-END

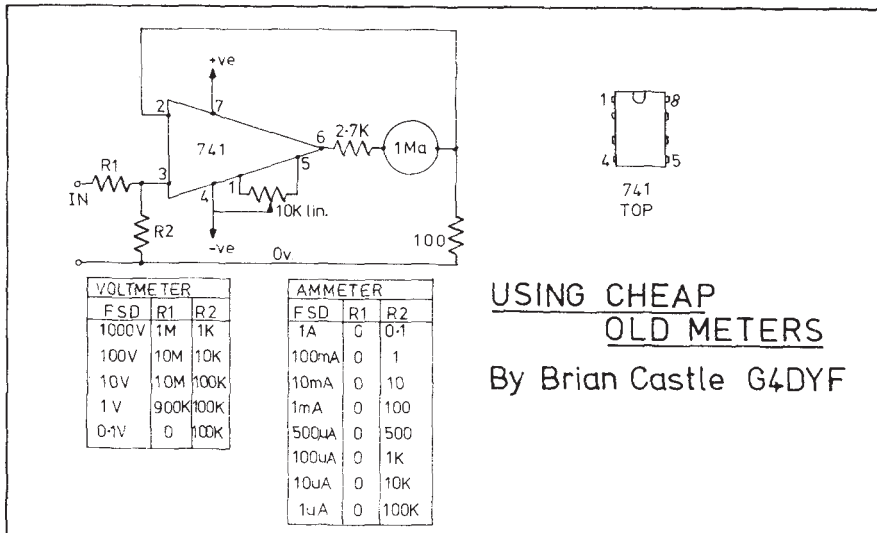
This event was held over the week-end 5/6th May 1979 and only one report was received by Chris rage, that being from G4DYF. Brian worked OE1SBA, but no other members, although he spent some time on the bands. Chris also spent time on the bands, both calling CQ QRP and looking for QRP stations, both without success. It would therefore appear that there is very little support for SSB QRP within the club, despite the number of Argonauts being used by members.

## CW QRP ACTIVITY WEEK-END

The first of the three cw activity week-ends was held on 23rd/24th June. From reports received by Chris Page it would appear that at least 23 club members were active over the week-end. Members known to have been QRV :- DK5RY, G4ETJ, GM3OXX, G4BUE, G3NEO, SM0GMG, DJ1ZB, G3RJV, PA3ABA, G4EJV, GM3RKO, G3JKB, G3PEQ, G3DNF, G4FKH, G4EFJ, G3HQQ, PA3AJU, G8TB, GM3MXN, G3IVP, G8VN and G4HWZ/PA.

Everyone seemed agreed that conditions were generally poor, and no DX was worked. DJ1ZB (Ha-jo) worked 8 members and said that the week-end showed that QRP stations can make contact with each other if defined operating times and frequencies are given. G3RJV (George) also worked 8 members including four QSOs with G4BUE! Not a good week-end for him as he finished up using batteries and a straight key! DK5RY (Willi) worked 9 members and said that activity days are a famous idea. He had to go QRT both afternoons due to thunderstorms. GM3OXX (George) worked 7 members from his /A QTH despite high noise level. SM0GMG (Lars) worked 11 members on the Saturday, but said he had some chores to do on the Sunday. G4BUE (Chris) worked 10 members mostly on 3.5MHz and 7MHz. G8PG (Gus) sends his apologies for not appearing, but spent the week-end working on a future project. G4HWZ/PA (Mike) working from Oegstgeest, Holland only worked 1 member, although he had other QSOs on 14MHz.

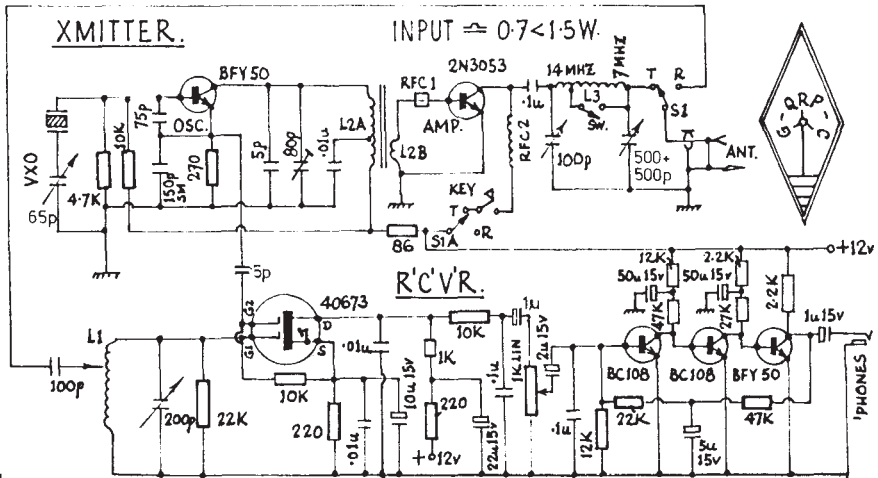
Many thanks to the above who sent in reports. Reports will be very welcomed by G4BUE, Chris Page on the August Activity Week-end to be reported in the next edition of Sprat. Reports can be passed to Chris either by post or over the air during QSOs.



The circuit shown in Fig 1 allows a cheap 0-1 mA meter to be used as a micro-ammeter or milli-voltmeter. It is based on an idea published in "Electronics Today International". The +Ve and -Ve supplies can be of any value between 3 and 18 volts, and they need not be symmetrical. The 10K pot is used for zero setting. (If the output from a diode type radiation meter was connected to this circuit the end product would be a very sensitive field strength meter, Ed)

HELP REQUIRED: G3RJV is 'playing with' a polyphasing board, (G3TDZ Rad Com type) and would like to hear from other members who have used this circuit.

# THE "JU-6": 7-14 MHz TRANSCEIVER - J. McDONNELL - G3DOP



L1	22 SWG	20t. ON	T50-2 TOROID, TAPPED TO SUIT.
L2A	26	11t.	1/4" $\phi$ FORMER
L2B	28	5t. OVER	L2A — R.F.C.1 — 1t. 26 SWG. ON FERRITE BEAD.
L3	22	20t. ON	1" $\phi$ FORMER; TAP FOUND EXPERIMENTALLY, FOR MAX. OUTPUT. (APPROX. 10t. FOR 14 MHz)

This little rig was evolved from various sources (particularly the Wes Hayward 'Mini' transceivers) and built from junk box parts. On 7MHz the VXO gives a swing of 3-4 KHz and 14 MHz crystals swing about 7 KHz. One can use a 7MHz crystal for 14 MHz operation with some loss in output and RX gain, but always use an antenna tuning unit if this is done. The RX is excellent and the gain usually has to be turned down on DX signals. With a low, much bent LW antenna 30 countries have been worked so far, including W and VE. Those who are worried about the 40673 being damaged during transmit periods can modify S1 to break the RX 12V line when transmitting, although the circuit as shown in Fig 1 has given no trouble in this respect.

**CRYSTALS FOR JU-6 TRANSCEIVER:** G3EDW, who sells crystals, has made an offer to the club for suitable 14MHz crystals. This is for 14060 (QRP calling frequency). If we can get 5 - 9 members who require crystals the price is £2.90 (inc.), for 10 - 15 £2.80 (inc.) and for 16 - 25 £2.50 (inc.). Will members who require these crystals let G3RJV know as soon as possible (do not enclose money) and an order will be placed. Five weeks delivery.

## THREE GOOD HW8 MODIFICATIONS J Livingston [GM4FDD]

These three modification help to improve performance. They are:-

1. Stopping local key click interference. Connect a 0.22  $\mu$ F capacitor between the base and collector of Q11, soldering it to the foil side of the printed circuit board.
2. Decreasing the send/receive delay. Remove C38 and fit a 0.47 pf capacitor in its place.
3. Reducing long-term calibration drift. The screw and insulating washers were removed from the existing trimmer. A 12pf piston trimmer (ex Pye Vanguard xtl trimmer) was mounted on a 1/2 in x 1/2 in L bracket. The moving plate of the existing trimmer was bent outwards and the L bracket was fixed to the main tuning capacitor by means of the original trimmer screw. The moving plate of the original trimmer was then soldered to the tubular plate on the new trimmer. Finally the HW-8 calibration was adjusted with the aid of the new trimmer. (This HW-8 sounds very good on the air. Ed)

## INPUT POWER v. OUTPUT POWER

The article by Ade Weiss, K8EEG, in the Summer edition of Sprat has sparked off some reaction by members as to whether input power or output power should be used as a standard in QRP. Before we go onto the comments from members, let us consider the present position.

Basically here in Europe input power is used, whereas in the U.S.A., output power is used. The G-QRP-Club, The Benelux QRP Club and the AGCW-DL all use input power as a basis for their awards and contests. The ARCI-QRP of the U.S.A. also use input power (although they define QRP as 100 watts!!). Ade, in his C.Q. column has always been a supporter of using output power, and the C.Q. Contests use output power as defining QRP. The R.S.G.B. seem to favour output power if their new 21MHz contest rules are anything to go by, although their LP Contest and 3.5MHz Field Day refer to input power.

We would like to hear from you as to whether you feel the club should use input power or output power. It is very important that all QRP organisations throughout the world adopt the same standard in order that true comparisons can be made, etc.

The ARCI-QRP of the U.S.A. is presently considering whether to change from input to output power and is seeking the views of its members. The club is also considering whether to do away with their present 100 watt definition of QRP, and lower it to 5 or 10 watts in keeping with the remainder of the world. Judging from the comments of their members in the April Newsletter (many of whom are also members of G-QRP-C), the majority opinion is in favour of lowering the power level. Should this happen, the G-QRP-C may have some competition as an international QRP club.

To return to the question of input and output power, the following comments have been received from members, but more are requested, as we want to obtain a majority view of the membership.

G3DNF - Gordon Bennett: 'I don't go along with K8EEG's views on output power as the basis for contests and awards. What do you think?'

G3YCC - Frank Lee: '.....this I found very useful and illuminating and it also highlights the importance of output, rather than input power as mentioned by K8EEG'. Frank was referring to the milliwatt DXing of Chris Page, G4BUE.

G3ZXK/C31DV - David Powell: 'I cannot agree with the author's remarks concerning the use of RF output power as a contest and award standard for QRP. It would seem to me that a QRP operator should be much more interested in the efficiency of his communication facility in its entirety rather than just the bit between the output socket of his TX and the other chap's receiver! I would contend that it is much more laudable for someone to work X Kms with a rig running 2 watts input at an efficiency of 67% than for someone else to work X plus 1 Kms with a rig running 100 watts at an efficiency of 1%!.....As part of the self-training aspect of amateur radio, an amateur should be interested in getting the most Kms. per pound of electricity consumed (and this becomes very sensible if you must use dry batteries as sole power source....).

G8PG - Gus Taylor: '.....power input is the only satisfactory method for certificates, contests, etc. The main reasons for this view are :- 1. Power input can be measured to better than 5% accuracy with inexpensive, readily obtainable instruments and the maths involved are simple. 2. Use of power output for a standard is a charter for inefficiency'.

G4BUE - Chris rage: 'Using output power as a standard does not do anything to encourage amateurs to find ways of improving the efficiency of their PAs. Had the G-QRP-C not adopted input power as a standard I doubt whether I would have carried out the experiments which led to discovering more efficient methods of running the Argonaut PA. Further, I regard communication by QRP as including the TX, not just the antenna and the amount of RF radiated from it. I recall an article in CQ a few years ago when a W8 transmitted a 10mW signal across the Atlantic. On reading the article it was discovered that the 10mW had been arrived at by using output power, and then adjusting the power level down to take account of the co-ax between TX and antenna, and the power loss of inserting antenna switch, SWR bridge. This is nonsense as all these items (PA, coax to antenna, etc.) are necessary to establish the QSu, and are therefore to be taken into consideration.

## A QRP SQUEEZE KEYS

D.R. Powell G3ZXX/C31DV

This article presents the results of a long-cherished desire of the author: the realization of a squeeze keyer that uses minimal power, thanks to the use of CMOS integrated circuits. Commercial CMOS keyers are advertised at about £60, whereas the parts for this keyer cost about £3.

### Circuit Details

The circuit of the keyer is shown on figure 1.

G1, G2 and I1 form the gated oscillator; the set-reset combination of G1 and G2 ensures that the oscillator always completes its full period when it is commanded "off".

FF1 divides the oscillator output by two so as to ensure a 50% duty cycle. FF2 further divides the output of FF1 by two so that in combination with the latter, a "dash" output equal to three "dots" may be obtained.

FF3 constitutes the heart of the squeeze keyer. If the "dot" paddle is pressed then G5 sends an "on" command to the gated oscillator. The rising edge of the keyer output (pin 11 of G3) forces the Q output of FF3 to '0' which in turn blocks G4 so as to obtain a "dot" output. If the "dash" paddle is pressed then the Q output of FF3 is forced to '1' which enables G4 thus giving a "dash" output.

If both paddles are pressed at the same time (squeezed) then FF3 toggles at the rising edge of the output signal thus giving an alternating "dot-dash-dot" signal.

The output of G3 is used as an input to G5 in order to ensure that the output signal completes its present cycle before turning the gated oscillator off.

FF4 is used as an optional "dot" memory. With the jumper in position 'x', this function is inhibited (not all operators like the "dot" memory facility). With the jumper in position 'y', FF4 is set whenever the "dot" paddle is pressed, the Q output commands G5 and FF3. The "dot" memory is reset by the rising edge of the output signal. Thus, if the "dot" paddle is momentarily pressed during the output of a "dot" or a "dash", then this "dot" or "dash" will be immediately followed by a "dot".

The transmitter keying circuitry is commanded by either T1 or T2 depending on the position of S2. With S2 in position 1, the keyer will command positive earth transmitters, and position 2, negative earth transmitters. Note that if S2 is in the "wrong" position, then the transmitter is commanded "key-down" thus enabling tune-up with both hands free. This idea for a dual polarity output circuit is due to LA8AK (Technical Topics, Radio Communication, February 1979).

### Construction Details

The keyer is constructed on a double-sided printed circuit board that fits inside a die-cast box of dimensions 60x110x25 mm. Figure 2 shows both sides of the printed circuit and the component mounting details (note that C1, R2 and R3 are mounted on the underside of the board).

The keying paddle is also made out of printed circuit board. The way in which this is done is indicated on figure 3. The paddle consists of a sandwich of seven pieces of printed circuit board held together by two 4mm. bolts. The keying contacts are made of two 2mm. brass bolts that are screwed into two 2mm. nuts soldered onto the outside of the paddles. The central contact is made of a 2mm. bolt with the head sawn off, that is screwed into two 2mm. nuts soldered onto each side of the central piece of printed circuit board.

The distance between the contacts can be adjusted by screwing in or out the two bolts and then fixing them with lock-nuts.

The mounting of the paddle onto the printed circuit board is achieved by a further two pieces of printed circuit board that are glued to each other and to the paddle assembly on one side and the circuit board on the other side. The central contact must be directly soldered to the appropriate place on the circuit board using a mounting pin. Two small flexible wires are used for connecting the paddle contacts.

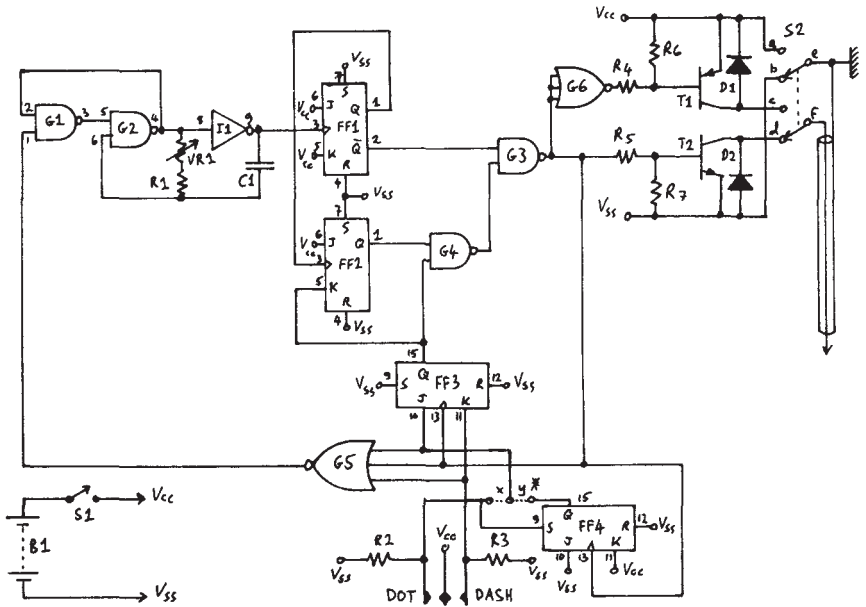


Figure 1 : Circuit diagram of CMOS squeeze key  
 \* (jumper in position x ... without dot store  
 jumper in position y ... with dot store)

G1		R1	100k
G2	CD4011	R2	2k2
G3		R3	2k2
G4		R4	4k7
I1		R5	4k7
G5	CD4000	R6	4k7
G6		R7	4k7
FF1		VR1	100k
FF4	CD4027	S1	SPST
FF2		S2	DPDT
FF3	CD4027	B1	9v battery
T1	2N2907 or similar	C1	0.1µF
T2	2N2222 or similar		

Table 1 : Parts list

No measurements are given here regarding the drilling of the die-cast box as this will depend on the actual components used for S1, S2 and VR1 (the latter must be of the miniature variety). Figure 4 gives a sketch of the layout used by the author

The author can offer professionally made, ready drilled printed circuit boards for the above circuit for £1.20. Dave Powell, 8 rue Soule, 31520 RAMONVILLE ST. AGNE, France.



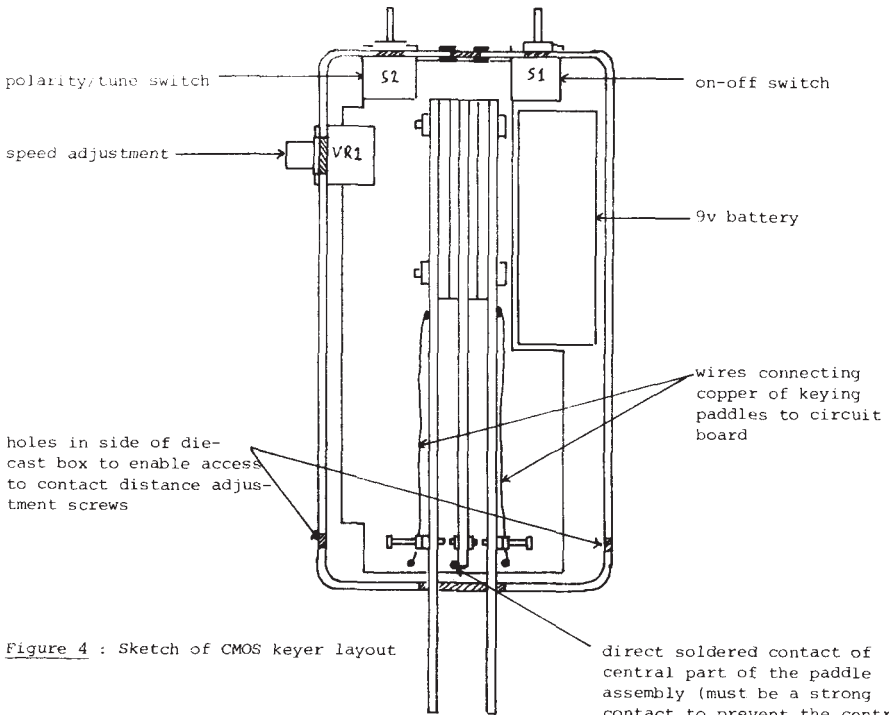
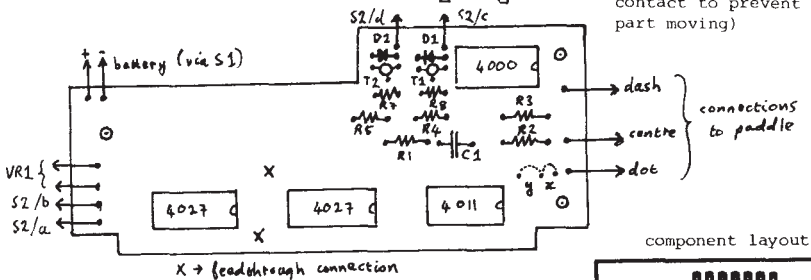


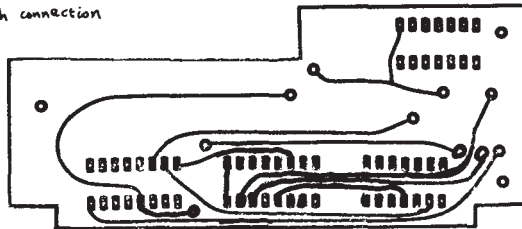
Figure 4 : Sketch of CMOS keyer layout



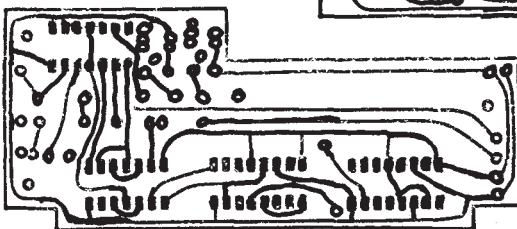
X -> feedthrough connection

connections to paddle

PCB TOP



BOTTOM



Thickness of printed circuit board = 1.5mm

Leave copper on both sides of shaded areas.

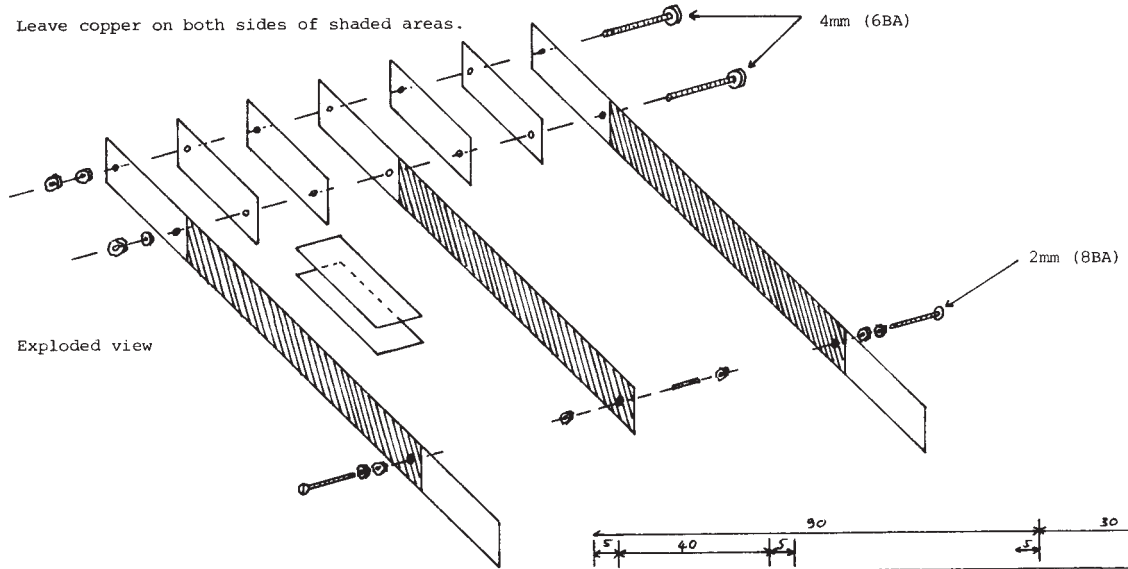
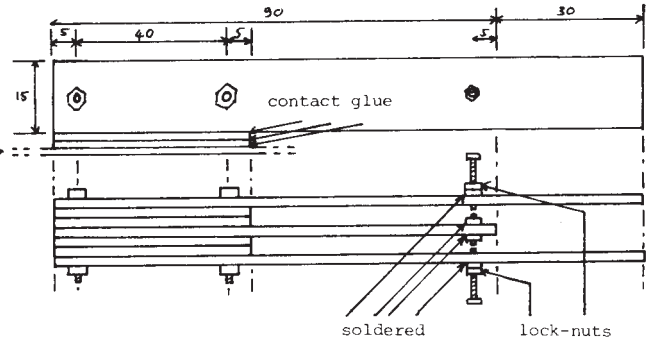


Figure 3 : Construction of printed circuit squeeze paddle.

Side view

circuit board

Top view



## MEMBERS NEWS

By Chris Page G4BUE

DJ1ZB - Ha-Jo Brandt: Ha-Jo has come to the conclusion that a better RX is desirable for two-way QRP work. At the moment he is using an experimental superhet version for 28MHz. Ha-jo said that the German radio journal 'CQ DL' has published details of the Club's Activity Week-ends, and will publish details of the Winter Sports later in the year together with some details about the G-QRP-C. Many thanks on behalf of the Club.

GM30XX - George Burt: George has been experimenting with antennas and has come down in favour of a double extended zepp. for 28MHz (44 feet top and 36 feet feeder) which he uses with an ATU for other bands. As he has worked W.A.C. with it, he thinks it must be working o.k.! The Summer QRP Test proved a disaster - he intended operating /A from his work QTH and tried to put up a ground plane on top of a water tower, and a long wire. Along came the rain and big blue sparks everywhere and the S meter on full scale. This resulted in only three QSOs between static crashes. He then decided to go home and got soaked to the skin cycling home. Finally got on the air from his home QTH and the rig packed up - so he went to bed! Never mind George, there's always next year. George had better luck in the 3.5MHz Field Day - 33 QSOs with a 300 feet long wire.

DK5RY - Willi Scherrer: Willi uses an Argonaut 509 to a Hygain 12 AVQ and is looking to work more club members on the HF bands.

G3RJV - George Dobbs: I am sure that all Club members will join me in sending congratulations to George and his XYL on the birth of their son (Stephen Christopher) on the 22nd July. Hence the reason for George's absence from the bands lately. George is trying to find time to test some commercial QRP kits which are shortly going on sale in the U.K. No doubt he will write up the results for a later edition of Sprat.

G3ZXX/C31DV - Dave Powell: Dave has lost his F0HX licence but still has his C31 ticket. During the Summer QRP Test he was QRV from Andorra and worked several lucky members. He has a claimed score of 2466 points, mostly from 14MHz contacts. Dave now uses a HW8, the RX part of which he finds much better than his old HW7. Dave feels the new rules for the QRP Tests are very good except that there is no encouragement to work other QRP stations - a view shared by several of us in the club.

G3YCC - Frank Lee: Frank uses two transceivers, both homebrew. His main interest is cw on 14 and 3.5MHz and the antennas are a TA31 and a trap dipole. The output power is 1 watt and at this level Frank has worked many European stations, W1,2,3,4, and 0 call areas, and VK3MR who came back to a CQ. Frank can use cw or SSB on 3.5MHz and up to 10 watts. He has just acquired a FT202R which gives 1 watt output on 14.4MHz, and has worked a PA0 via a repeater. With the same rig he worked an amateur who was operating from a parachute using a helical antenna at 3000 feet!! The antenna was gradually getting lower during the QSO. I think this last QSO must qualify as the most unusual for 1979 - or do we have any challengers?

G4GIE - John Spinks: John found conditions quite good during the Summer QRP Test, he worked N2AA and N2IT for his first two-way QRP QSOs with the U.S.A. He also had two-way QRP QSOs with OK, OZ, I, SM, YU, PA0 and C31. A very good effort considering that he was only using a Joystick at 33 feet.

VE5JQ - John Dudley: John also entered the Summer QRP Test and made 26 QSOs, only one of which was outside North America. The only European John heard was an OH station. He is at present trying for the illusive QRP DXCC and has worked 86 with 56 confirmed. Antenna in use is a newly erected two element tri-band quad at 30 feet. 5 watts is the power from an Argonaut and a Yaesu FR101 has just been added to the shack. In 11 months DXing, John has made over 650 QSOs outside North America, 225 of which have been with Japan! Recent DX worked by John includes OH0, ZK2 and XF4.

SM0GMG - Lars Mohlin: Lars has now worked 85 countries towards his QRP DXCC, and hopes to complete the 100 during his Summer vacations. His final WPX score was 170,352 points, which is the highest European score I have heard. A very good effort Lars.

G3DNF - Gordon Bennett: Gordon was another member who took part in the Summer QRP Test and commented on the poor conditions. Gordon worked 21 and 14MHz for 35 QSOs and a claimed score of 1820 points. He said he heard no other U.K. stations on the HF bands and to had to work hard for all his QSOs. The used was a two element collinear with reflectors, which seemed to work out very well for Gordon.

G4BUE - Chris Page: Chris has just received the '1000 Mile per Watt' certificate for a 21MHz cw QSO with N1YL when he was using an input of 5mW. The certificate is endorsed '650,000 miles per watt'. Since then Chris has worked two W4 stations in Florida which should work out around 850,000 miles per watt! Activity during the Summer QRP Test was restricted to the LF bands looking for new club members. Recent DX on the HF bands includes 5N0DOG, ZK1DR, J3ABP, KP2A (750mW), VP5PX, VP2VJ, FP8HL, FG0DDV/FS, and VU2GO. Country scores now stand at 162 (5 watts) and 98 (1 watt).

G3ZWH - Doug Hill: Doug has been QRV with QRP since obtaining his licence, but has only recently joined the Club. He uses an Argonaut 505 and is a very good cw operator. He recently worked VK2AHK on 14MHz cw.

G3VAI - Paul Carter: Paul has recently moved QTH north of the border, so look out for him as GM3VAI. His current country score is 52 worked and 27 confirmed.

I7CCF - Felix Carbonara: Felix has modified a Yaesu FT7 to enable it to run with an output of 2 watts. He uses this to a three element beam at 10 metres on 14MHz. In the Summer QRP Test he was only able to operate for a few hours due to QRM in the shack!?, but even so he made 1178 points.

G3HQQ - Lew Ely: Lew is now the proud possessor of a new Argonaut 509, which he is very pleased with. His previous rig was the HW8.

G3DOP - John McDonnell: John has been trying out his homebrew transceiver. The TX uses a BFY 50 oscillator to a 2N3560 PA, and the RX a 3N 141 oscillator to an audio amplifier. A VXO pulls about 3 KHz. John has worked the U.K. and PA0 with it on 7MHz with an input of 700mW to a 132 feet long wire from his QTH in Cornwall.

W9PNE - Brice Anderson: Brice made 233 QSOs with his Argonaut at 5 watts during the WPX contest and 152 prefixes. By using 13.5 volts to the PA he managed to get 4 watts output, (I must make a note to try that myself next year as the CQ rules define QRP as not more than 5 watts output). His biggest thrill was to work ZL3GQ on 3.5MHz on the first call right through a pile up of other U.S. stations - what an achievement. Brice has one acre (lucky fellow) in which to put up antennas and at present has a 456 feet long wire, with 50 feet of open wire feeder.

-----  
This column can only exist with your help, so please let Chris Page, G4BUE know who you have been working, what equipment you have been using, what experimenting you have been doing, in fact anything of interest to your fellow QRP club members. Many thanks to the above members who either wrote to Chris or passed details over the air during QSOs.



TAD AWARD (Ten American Districts). This Award is given for working (with QSL proof) all ten (1 to 0) American call areas. The cost is \$1.00 and full details can be obtained from W6LS, 2814 Empire Avenue, Burbank, California, 91504, U.S.A. A stepping stone to WAS, this award is within the capacity of all QRP stations.

## A CRYSTAL CALIBRATOR

D.R. POWELL G3ZXX/C31DV

Some sort of portable means of checking transmitting frequency was considered essential by the author after a recent bumpy journey to an Andorran mountain site caused his HW8 transceiver to shift about 60KHz off its laboratory calibration.

The design is by no means original but might be of interest to other readers. Figure 1 shows the circuit diagram and figure 2 the printed circuit board and component layout. The calibrator uses TTL logic circuitry which means that it needs about 100mA at 4.5v, but since it is only intermittently used, this was not considered a handicap. CMOS technology would have decreased the power consumption but the harmonic content of the output signal would not nearly have been so high due to lower switching speed of CMOS devices.

The author can offer professionally made, ready drilled printed circuit boards for the above circuit for £1.20. Dave Powell, 8 rue Soule, 31520 RAMONVILLE ST. AGNE, France.

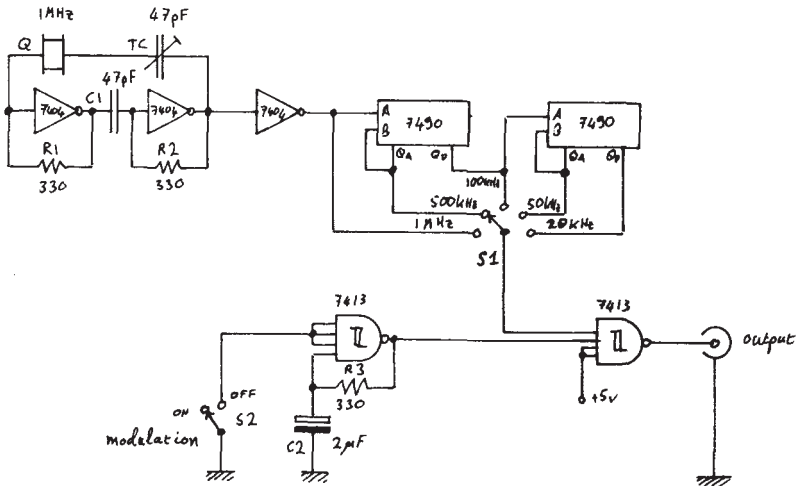
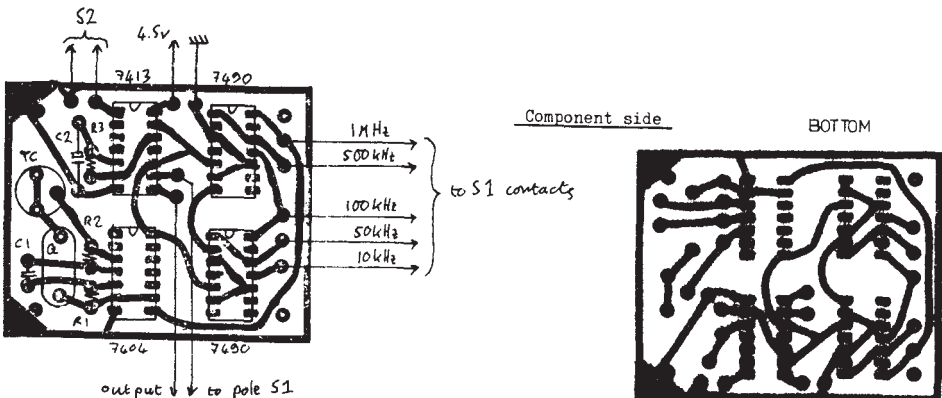
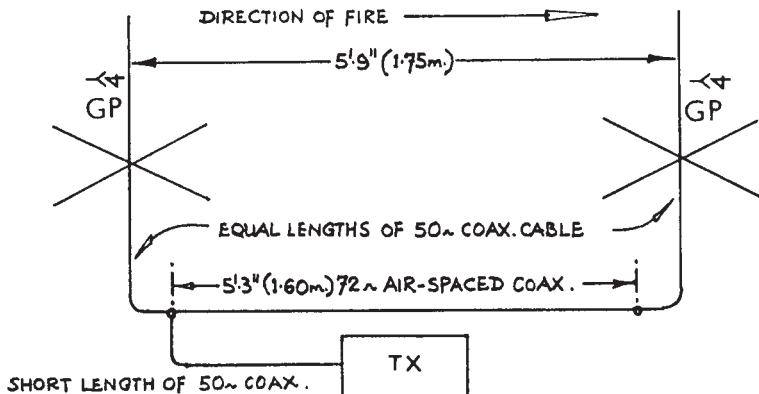


Figure 1 : Circuit diagram of crystal calibrator

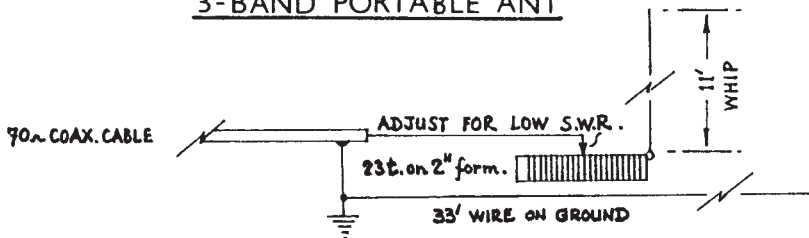


## DIRECTIONAL 15M. ANTENNA ..... G3MXN



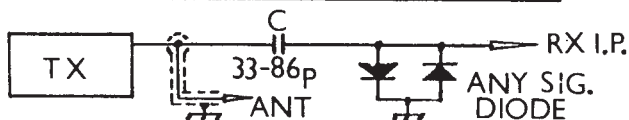
These two aerials have been used with good results by Tom using his HW8. Antenna ideas from other members are always welcome for SPRAT.

## 3-BAND PORTABLE ANT



40m. & 20m. - AS ABOVE. FOR 15m. - OMIT COIL, TUNE VIA A.T.U.

## SIMPLEST T-R SWITCH ..... G3RJV



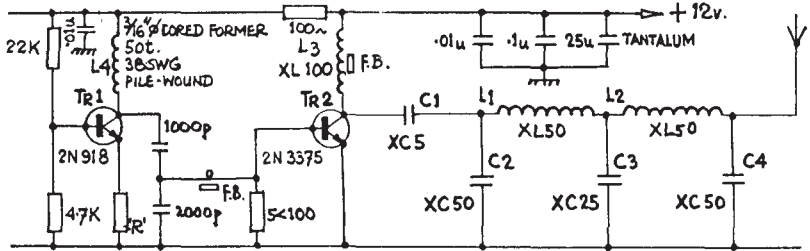
*C = smallest value for full A.F. output*

I have found this little circuit invaluable at G3RJV for break-in operation on QRP rigs. The origin is lost in the dim past, but I think it came from an old K8EEG circuit.

### IMPORTANT PROGRESS TOWARDS THE CW-ONLY RADIO AMATEUR NOVICE LICENCE

The European CW Association are pleased to announce that in response to the great interest shown in this proposed new facility the Telecommunications Liaison Committee of the RSGB have set up a sub-committee to investigate the matter and then make an approach to the Home Office. Owing to the great pressure of work caused by WARC 1979 meetings action is unlikely before early in 1980, but the formation of the sub-committee is an important step forward. From now on members of the RSGB who support the proposal should put their views forward through their elected representatives. It is suggested that non-members who support the proposal might consider joining the Society so that they can make their views known in a similar manner. As a Founder-Member of EUCW G QRP Club congratulate the Association and RSGB on this historic step forward in British Amateur Radio.

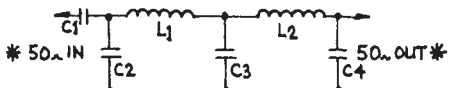
# P.A. DESIGN IDEA ~ G.BURT ~ GM30XX



**CONSTANTS FOR 160m. OPERATION :**

- L3 - P.A. CHOKE - 7t. ON SMALL F.B.
- C1 - .01μ
- C2 - 1800p
- C3 - 2x 1800p
- C4 - 1800p

L1, L2 ~ 30t., 26 SWG ON 'T50-2' CORES



\* FOR OTHER I.P./O.P., E.G. 75Ω OR 100Ω, ADJUST XC/XL TO SUIT.

INPUT ~ 12V @ 150mA = 1.8 WATTS (COLLECTOR 80Ω)

INPUT ~ 12V @ 200mA = 2.4 WATTS (COLLECTOR 60Ω)

FOR 8 WATTS, OR 18 WATTS, INSERT 4:1, OR 9:1 TRANSFORMER BETWEEN P.A. NETWORK.

Most of the problems of matching a PA stage into an antenna can be reduced if the constructor simply recalls that running about 2 watts into a transistor stage should automatically give an output impedance of about 50 ohms.

The example given above is for the present GM30XX 160m PA. The idea can apply to any suitable transistors on a required band. 'R' is adjusted for the correct drive for 2 watts DC in at the PA, the collector impedance is then 50 ohms, fed into a broadband pinet. The pinet output must have a 50 ohm antenna load, or 'see' 50 ohms through an ATU.

Further design information on this theme can be gleaned from 'Solid State Design For The Radio Amateur' by the ARRL. PINET VALUES FOR OTHER BANDS :

80m.	750pF	750pF	750pF	21T	21T	No.22	T-50-2
40m.	470pF	470pF	470pF	14T	14T	"	T-50-2
20m.	210pF	210pF	210pF	12T	12T	"	T-50-6
15m.	105pF	105pF	105pF	9T	9T	"	T-50-6

Capacitors close tol. silver mica, or smaller 'poly' types matched on a bridge.

Dennis Andrews, G3MXJ, Chairman of the R.S.G.B. Contest Committee, has contacted the club about low power sections for Society contests. He hopes to work with the club for the addition of QRP sections to existing contests. Any views on the operation of low power sections in contests may be sent to Chris Page, G4BUE.

**AWARDS MANAGER - QRP ARCI**

W4BCNN (Hugh) who is awards manager of QRP ARCI (who promote the WAS/QRPP and the famous 'Thousand Miles per Watt' certificates) has changed his address. He can now be reached at 5 Keiffer Drive, St. Albans, West Virginia, 25177, U.S.A.

FOR SALE: BC221AF Good Condx + PSU £10, 2m FM Handbook (Foulsham) 50p, US Sigs J38 KEY-offers, Homebrew Sideswiper (vibroplex style) offers WANTS (or EXCH. ABOVE) 10XJ (pref) CW end, 160m and other bands, CRYSTALS. G4GDR, 39 Barn Cl. Highworth, Swindon, Wilts.

USE THE QRP CALLING FREQUENCIES

# PASS THAT BAND! David Reynolds [G3ZPF]

Real QRP miniaturisation means that front panel controls must be reduced to a minimum. Pre-tuned TX output circuits and RX input circuits help to achieve this. Figures 1 and 2 show suitable circuits for use in the hf bands. The necessary component details are given in Tables 1 and 2. The insertion loss of the TX output filters is very low, varying between 0.1 dB at 1.8 MHz and 0.3 dB at 28 MHz. All the transmitter coils are wound on Amidon T-80-2 toroid cores. The 80/40m receiver coils are wound on T-50-6 cores and the 20/14/10m coils on T-50-10 cores. (Gw3TMP (QTHR) is the UK Amidon dealer and he has stocks of these cores.) Note that the TX coils are specified in US wire gauge, the UK equivalent being 18 swg. Metric equivalents of the wire sizes are 1.1mm (18), 0.6mm (22), 0.5mm (24) and 0.03mm (28). Also note that the tap on L3 in Fig 2 may have to be adjusted experimentally to provide a good match to the RX input device. Use of an antenna tuning unit is recommended with the circuit of Fig 1.

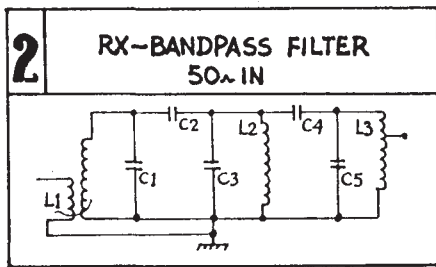
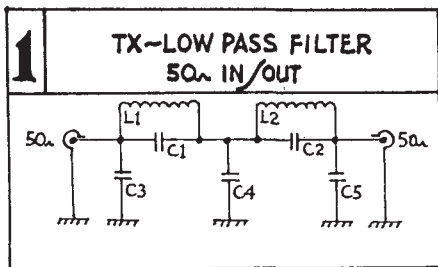
-----TABLE 1. TX OUTPUT CIRCUITS.-----

160m	80m	40M	20m	15M
L1 26 t 18swg	L1 18 t 18swg	L1 15 t 18 swg	L1 10 t 18swg	L1 9 t 18swg
L2 23 t 18 swg	L2 16 t 18swg	L2 13 t 18swg	L2 9t 18 swg	L2 8 t 18 swg
C1 200p	C1 100p	C1 51p	C1 24p	C1 15p
C2 680p	C2 300p	C2 160p	C2 75p	C2 51p
C3 1000p	C3 560p	C3 270p	C3 150p	C3 100p
C4 2000p	C4 910p	C4 500p	C4 250p	C4 160p
C5 820p	C5 390p	C5 200p	C5 100p	C5 68p

-----10m:L1 8 t 18swg, L2 7 t 18 swg, C1 10p, C2 39p, C3 68p, C4 120p, C5 51p-----

-----TABLE 2. RX INPUT CIRCUITS-----

80m	40m	20m
L1 59t 28swg, link 12t.	L1 23t 24 swg, link 5t.	L1 16t 22 swg ,Link 3t.
L2 AsL1 less link	L2 as L1 less link.	L2 as L1 less link.
L3 As L1, tap at 42 turns.	L3 as L1 tapped 17th turn.	L3 as L1 tapped 10th turn
C1 130p, C2 15p, C3 100p	C1 200p, C2 8.2p, C3 200p	C1 120p, C2 3.9p, C3 120p
C4 15p, C5 115p.	C4 8.2p, C5 200p	C4 3.9p, C5 120p
15m	10m	
L1 10t 22 swg, link 2t.	L1 As for 15m	
L2 as L1 less link	L2 As for 15m	
L3 as L1 tapped at 7th turn.	L3 as for 15m	
C1 120p, C2 3.3p, C3 120p	C1 60p, C2 2.2p C3 60p	
C4 3.3p, C5 120p	C4 2.2p, C5 60p	



**WANTED:** Codar CR45 or similar inexpensive receiver. Tom Williams, 51A Alamein Drive, Winsford, Cheshire.

**WANTED:** HRO 80m Bandsread coil. J.E. Anderson, 77 Ivy House, Coseley, West Midlands. WV14 9JU.

**HELP REQUIRED:** Claudio Borri would like to obtain the circuit diagram for the COSSOR DOUBLE BEAM 339A SCOPE. His QTH is :- 34142 Trieste, Via Milano 3, Italy.



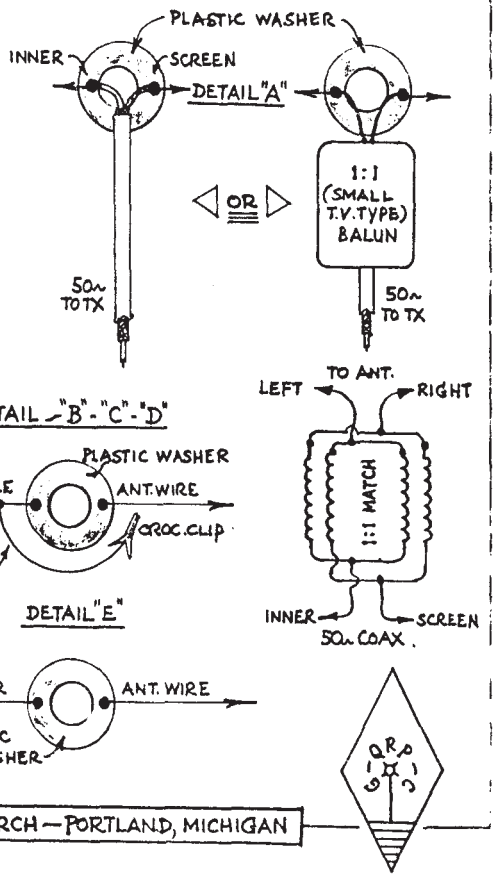
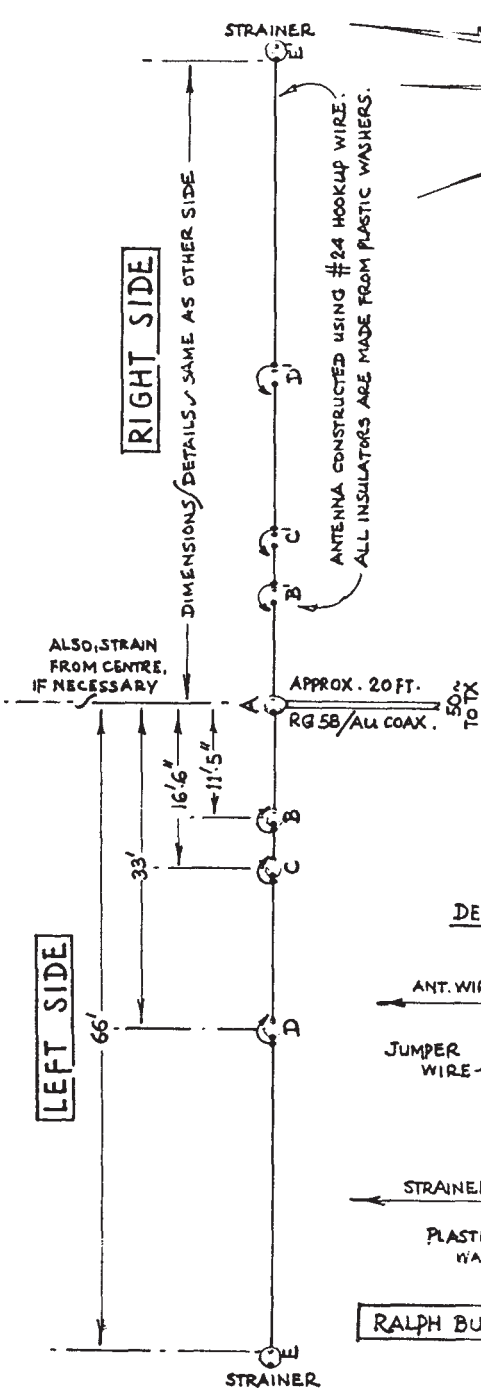
**QRP ANTENNA  
W8LCU**

3540 KHZ.  
7040 KHZ.  
14,065 KHZ.  
21,040 KHZ.

ERECT ANTENNA ABOUT 8-10 FT.  
ABOVE G.L., BEFORE TUNING -

FIRST, MAKE UP 15M. SECTION, AND  
TUNE, THEN 20M. SECTION/TUNE,  
THEN 40M. SECTION/TUNE, AND  
FINALLY 80M./TUNE.

CONSTRUCTIONAL DETAILS



**RALPH BURCH - PORTLAND, MICHIGAN**

## QRP WINTER SPORTS 1979

The above event is being held daily between 26th and 31st December 1979. Details have been widely publicised and it is hoped that other QRPers who are not (yet) members of the club will join in. Please pass reports of two-way QRP QSOs made together with any other interesting contacts to Gus Taylor, G8PG. Certificates will be awarded for outstanding achievements. All times are in GMT.

1000 - 1100	21060	for inter Europe QSOs
1100 - 1200	14060	for inter Europe QSOs
1130 - 1230	7030	
1200 - 1500	21060 and )	for Europe x U.S.A. QSOs
	28060 )	
1330 - 1530	3560	

## QRP ACTIVITY WEEK-END

Members are reminded of the third QRP Activity Week-end 1979 to be held over 6/7th October 1979. Times and frequencies are as given on page 8 of the Spring 1979 edition of Sprat.

## R.S.G.B. 21MHz CW Contest 1979

Members attention is drawn to the above contest, which is a new one being promoted by the R.S.G.B. who are to be congratulated on including two QRP sections. The rules are reproduced as follows :-

0700 to 1900 GMT on Sunday 21st October 1979 on 21MHz CW only. Single operator stations only. Class (b) QRP British Isles and Class (d) QRP overseas. QRP is defined as stations using less than 5 watts rf output. Exchange RST and serial number commencing 001. Overseas stations can only contact stations in the British Isles, and British Isles stations can only contact overseas stations. Scoring is three points for each QSO to be multiplied against the total of multipliers. For overseas stations each British Isles prefix is a multiplier. For British Isles stations each country from the RSGB countries list, and each call area of VE, VK, W, ZL and ZS count as multipliers. Entries should be sent to J. Bazley, G3HCT, 'Brooklands', Ullenhall, Solihull, West Midlands, B95 5NW and should arrive by 31st December 1979.

The R.S.G.B. is considering including QRP sections in some of its other contests, so it is very important that we support the 21MHz contest, and show the R.S.G.B. that there is a need for QRP sections. A good opportunity for club members to show (again) that they are top QRP operators.

## AGCW - DL

The Activity Group CW of Germany are well known to club members as organisers of the very popular Winter and Summer QRP Tests. In a recent letter to Gus Taylor, Uli Eberhardt, DK9TZ said that several of their members who are also QRPers, have been trying to contact members of G-QRP-Club. Perhaps the weekly club net on 7030 on Sunday mornings would be a good time for contacts between members of both Clubs.

## Reminder:

### G2NJ TROPHY, 1979

Will be awarded for the best log of QRP results submitted for the period 1 January to 31 December, 1979. All modes and bands may be used with a maximum input of 5w cw or 3.6 w pep. In making the award the Committee will not be looking purely for strings of DX worked, but also for contacts of outstanding technical/experimental merit. Last time G3NEO used all bands 160m to 70 cm, and his log included outstanding QRP contacts via OSCAR. So, whether you have worked 300 countries with 500 mw or regularly work 300 miles with 5w to a 6 inch nail antenna, send your entry to the Communication Manager by 28 February, 1980,

## NEW MEMBERS

573	ON6QF	Louis Demeulder, 94 rue Renise, 5053 Meluaigne, Belgium	
574	G3DRP	Wilf Fletcher, 23 Wesley Place, Stapleford, Notts.NG98DP	H/Brew
575	G4GZS	K.A.Wallace, 55 Tennyson Ave., Shakespeare Gdns, Rugby.	T.B./CW
576	G4GJA	38, Collet Walk, Parkwood, Rainham, Kent, ME89RX.	
577	G4ICC	Mike J.E.Gater, "Sunnyside" 268 Main Rd, New Dunston, Northampton, NN5 6PP	QRP
578		Kirk George, 110 Meadow Rd., Beeston, Nottm.	CW/SWL
579	G4HPS	Paul Barker, 11 Dipton Gdns., Tunstall Estate, Sunderland, SR3 1AN, Tyne and Wear.	Gen.
580	G4FKL	John Robert Farnie, Cedar Lodge, Ashbrooke Range, Sunderland, SR2 7TR, Tyne and Wear.	Gen.
581	GM4IIR	Andrew R. Nelson, Chapland Cottages, Bellefield Road, Lanark, Scotland, ML117RH.	
582	G4CZB	John R. Cockrill, 57 Smitherway, Bugbrooke, Northampton	CW
583	G8OQX	Tony Borkowski, 25 Stroud Rd., London, S.W.19 8DQ	H/Brew
584	G4FBA	R.E.Edeson, 15 Askam Ave., Nevison, Pontefract, W.Yorks.	
585		Ken Maxted, 18 Castleton Ave., Newton Mearns, Glasgow.	H/Brew
586	ZL1AO	D.Limbrick, 40 Marshall Street, Hamilton, New Zealand.	H/Brew
587	G3AGX	Leonard D.Colley, Micasa, 13 Ferry Rd., WAWNE, Nr.Hull.	
588	G2HII	R.S.Ashley (Dick) 7, Sutherland Drive, West Bridgford, Nottingham, NG2 7BX.	CW/H.Brew
589	ZL2AUJ	J.D.Catchpole, 25 Taipakupaku Rd., Wellington 3 New Zealand..	
590	ZL1BHT	Brian Newcombe, Wallace Rd., Te Puna R.D. " Tauranga, New Zealand.	Gen.QRP
591	WA1JVY	Mark Pareira, 4633 Acushnet Ave., New Bedford, Mass 02745 U.S.A.	HW7/DX
592	ZL2BJS	Don Jamieson, Hillocks Road, R.D.3, Blenheim, New Zealand.	
593	ZL1BGS	J.L.K.Waterhouse, 36 Gloucester Rd., Mount Marnganui, New Zealand.	
594	OH5WH	Kari Termonen, Oksatie 5, 45120 Kouvola 12, Finland	DX.Const.
595	G3PTO	John Reynolds, 24, Shaldon Rd., Harfield, Bristol BS7 9NW.	
596		John F. Feeley, Meadow Cottage, 79 Narrow Lane, North Aston, Sheffield, S31 7BJ	
597	AE9G	Hans Schroeder, 2400 E. Bradford 706, Milwaukee Wis 53211 U.S.A.	QRP/H.Bre
598	G3VTD	57 Cobblers Lane, Pontefract, W. Yorks.	
599	ZK1HV	A.G.Godfrey, Chairman, New Zealand A.R.T. 28 Carlisle Rd., Browns Bay, Auckland, New Zealand.	
600	PEØLIA	Frits J.J.Ogg, Postbus 244, 6500 AE Nijmegen, The Netherlands.	Alt. Tech
601	G4GSC	John H.Osborne, 3 TempleGdns, Chertsey Lane, Staines, Middx. TW18 3NQ.	
602	K6DFP	Chester A.Beck, 9045 Margaret St. Downey, Cal. 90241 U.S.A.	H/Bre
603	OH2KF	Veikko Leinikka, Heinakorventie 3, 01680 Vantaa 68, SF Finland.	QRP/DX
604	VE1BFL	Copthorne Macdonald, P.O.Box 2941, Charlottetown, Prince Edward Island, Canada C1A 8C5.	
605	G41DG	Graham Tonge, 27 Prestwood Rd. West, Wednesfield, Wolverhampton, West Midlands.	CW/H.brew

- 606 G4G21 Mrs Gill Apperly, 35, Denise Drive, Harborne, QRP/CW  
Birmingham, B170BN.
- 607 BRS George W. Keene, 6 Thornhill Grove, Steeton, Keighley, CW/H.brew  
40007 West Yorks. BD20 6ST.
- 608 G3HRD Jack Ellis, 9 Boscawell Terrace, Pendeen, Penzance, CW/H.B./  
Cornwall, Trig 7DS. DX
- 609 GW8GBJ Lionel V.J.Bailey, 6 The Reddings, Bulwark, Chepstow, Gen.CW.  
Gwent, Wales. H.B.
- 610 ZL3WL G.Erry O Connell, 31 Murray St., Greymouth, West Coast  
Sth. Island, New Zealand.
- 611 K4BNI Richard McIntyre, 611 Coral Drive, Cape Coral FL.33904, U.S.A.
- 612 K8AEM Walter J. Wilson, 14249 Eden Street, Marshall, Mich.49068. U.S.A.
- 613 HB9IK H.P.Schaufelberger, Reservoirstrasse 12, CH 4104 Oberwill  
Switzerland.
- 614 G3IRW Reg Wade, Partacre, Westhorpe, Stowmarket, Suffolk, IP14 4SU.
- 615 WA2LZZ Timothy Cook, Box 23, Tuslog DET 63-2, APO N.Y. 09040. U.S.A.  
(Note: from Nov. WA2LZZ will be stationed at RAF Mildenhall)

CHANGES IN QTH SINCE LAST ISSUE:

- 017 G3DOP 7 Boscean Cl. Troon, Nr.Camborne. Cornwall.
- 029 G3KPP "Silverdale" Shepherds Lane, Bicton. Shewsbury. Salop.
- 190 GM4EWM School Cottage, Barthol Chapel, Inverurie, Aberdeenshire. AB5 8TD.
- 423 GM3VAI 3 Braemar Park, Dunblane. Perthshire.
- 462 G4HKD 14 Spey Bank, Acomb Park, York. Yo2 2UZ.
- 539 G4GIU Flat 5, Block 2, The Flats, Royal Shrewsbury Hospital (North)  
Shrewsbury. Shropshire, SY3 8XF.
- 540 G4EYA 29 Heath Lane, Little Sutton, Wirral, Cheshire. L66 5NN.
- 459 SM5CCT Frejävagen 10, S-150 22 Nykvarn. Sweden.

MEMBERS CORRECTIONS:

G3ZLA is number 475 NOT 546, G4CCB is number 386 NOT 409.

\*\*\*\*\*PLEASE QUOTE MEMBERSHIP NUMBER IN ALL CORRESPONDENCE \*\*\*\*\*

