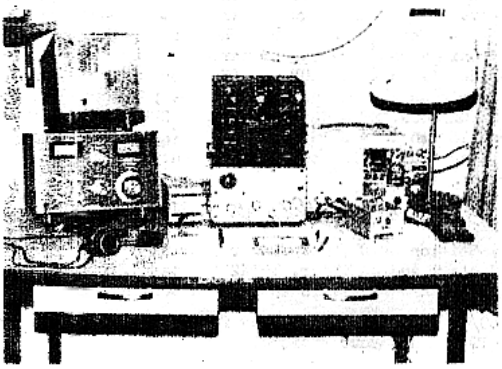
G.C. Dobbs, 61 Park Street, Cleethorpes, South Humberside DN35 7NG.

Devoted to Low Power Radio Communication

SPRAT

NUMBER THREE. SUMMER 1975.



The G3ICO QRP Transceiver.
Shift Those Rocks.
The Club Award Scheme.
The 'Rock-o-nator.'
The Transistor 1.
Club offers.
QRP News.
Contest News.
etc. etc.

DL 7DQ/P

S.P.R.A.T. The Journal of the G - QRP - Club. Number Three.

Rev.G.C.Dobbs (G3RJV) 61 Park Street,Cleethorpes.South Humberside. DN35 7NG.

EDITORIAL NOTES

As I hinted in the last SPRAT, a change of QTH is in the air for me - well it's no longer in the air. I will be moving to Nottinghamshire within the next couple of months. As yet, no "fixed abode" has been found, but I will send out change of address details to all members ASAP.

You may notice that this issue of SPRAT is produced in a slighly different way. Electronic stencils have been cut for the illustrations. The problems I had a few weeks ago about how I might reproduce the future issues of SPRAT have been solved when I found that an old student friend of mine owns his own electronic stencil cutter and duplicator. He has kindly offered these for club use, if we provide stencils, paper and ink.

This equipment has not solved the problem of obtaining a few PHOTO COPIES of useful items (eg. HW7 mod articles etc.) for members use. Apart from single copies, my photocopying source has now dried up. I would be grateful if any members could find a way of obtaining photocopies from orginals in the club files, to continue the "data sheet" service. Usually only about 10-12 copies are required of each item, and the club will naturally pay for paper, postage,etec

The next issue of SPRAT will contain a summary of the club accounts for a half year. Looking through the expenses so far, it is amazing how much has been spent on postage (or is it amazing!) So with this in mind may I suggest that I become a little more"stingey" in answering mail. I get about a dozen to 20 QRP club letters each week, and in a sense these are the "pulse" of the club. From them, I am able to keep abreast of members interests, news etc. This is useful in compiling SPRAT, sending club information to the national periodicals, and directing items of mutual interest between individual members. The latter is increasing - if I find that a member has a special interest or problem shared by another member, I either pass on the letter or the name of the other chap. Therefore I think it is useful for your letters to keep rolling in (and it makes breakfast brighter!) but please don't think that I am being rude if I don't reply to every one - hence saving postage costs. It could be helpful if you indicate whether you want a reply - naturally I will reply to any questions or problems I receive.

As you will see from the Additional Members List, the club is growing quite well; 120 members on 31.5.75. It is time to look into election of officers, constitution of the club etc. At the moment Gordon,Gus and I and working out ideas along these lines, and possible affiliation to the RSGB. More details in the next SPRAT. Any ideas are welcome.

This issue of SPRAT contains our first paid advertisements; an insert from John Birkett of Lincoln and an advert from Partridge Electronics. I would be glad to accept any suitable advertisements for future issues. These can either be typed as part of the text, or an electronic stencil can be prepared for any artwork.

This SPRAT also contains full details of the CLUB AWARDS. You have the gen. and the full members list and the diplomas are in the hands of the printer - SO.... Finally may I mention the DL AGCW QRP CONTEST - details as last SPRAT - 5th/6th July, 1800 to 1500 gmt. FIVE bands from 160 to 10 - G8PG will accept (and even score) your log. I only operated for a few minutes in the last one, but I don't come last! So let's have a good club turn out.

73's George G3RJV.

COVER PICTURE (if it turns out!) Station of DL7DO/P winner of winter QRP contest. left to right: IC700R (fet RX) 3 stage Audio Filter, TRTX2 (6 stage TTx vfo/xtal) Stab. Power supply, Keyer, Wavemeter on TX - All in 2nd QTH in Berlin.

IN THE NEXT SPRAT: G3YUQ DSB 160/80 TX. and all the way from the Shetlands! : GM3RFR xtal TTX. and your article?

INTERNATIONAL: The BENELUX QRP CLUB was formed by PAoGG and nine other Dutch QRP fans on April 12. They invite open membership - I have a "rough idea" from their first handout (in Dutch-not my tongue!) that the club hope to encourage QRP EU skeds on Sundays : 10.00gmt@ around 3540, 10.30gmt @ around 7030, 11.00gmt @ around 14065 for DX working. The QTH of PAoGG is in the mebership list - we hope to keep links.

QRP CALLING PERIODS: An idea from G8PG to reduce the chance factor in working QRP to QRP. The idea is that QRP calling periods should be for five minutes at the hour and every 15 mins during the hour. (00-05, 15-20, 30-35 & 45-50). This means that you never have longer than 10 mins to wait for a calling period. Calling freq's to be international QRP frequencies (3540, 7030or7040, 14065, 21040, 28040 all ± 5kHz) and UK members to watch especially around 3540 for UK and EU - Gus mentions EU results already by watching this frequency.

WELL DONE 1. to John Gell an exSWL member of Nottingham, now G4EAX, let's hr u John!

WELL DONE 2. to the amazing Q.S.O. of George Partridge (G3VFA) 1.5.75, 1431gmt on 14031 kHz a RST of 5/3/9 from W1TW - - George was using 750 Milliwatts to his JOYSTICK V.F.A. Must be about 3600 miles per watt to a 3ft 6" antenna!

FAREWELL. Sadly we say farewell to David Earl-Clark G5BIU, who has now returned to the States - new address in membership list. On behalf of QRP operators in the UK, I would like to thank David for his interest in the club, coupled with his DX skill using his HW7 from the Scillies. Hope you can return sometime, David.

UK TOP-SIDE. Our furthest north UK station GM3RFR, in Baltasound, Shetland Islands, is struggling a bit to stay in the QRP stakes. Very little is heard up there on 80m (except oil rig QRM!) so Samuel is hoping to try 14030 and 7030, lets hope the latter may yeild some QRP to QRP contacts.

AWARD NEWS. Before the ink was dry on the award scheme, two had been claimed, each for the basic 25 country QRP COUNTRIES AWARD. They are:
No.1 dated 5.4.75 to G8PG/GW8PG. No.2 dated 14.4.75 to DL7DO/P.
DX contacts for these include: 10m. CR6, OD5, UA9, ZC4; 15m. K; 20m. FP8, KV4, UA9, UL7, W, VE; 40m. 7X2,; 80m. VO; Both stations use a DC input power of about 2 watts.

The race is now on for the first 50 countries endorsement. G8PG has 48 confirmed, and DL7DO/P 47 confirmed, so it could be a close race. On the other hand some dark horse may quickly submit 50 cards out of the blue and scoop the pool! (since this news, Gus has informed me that Gordon G3DNF has claimed a basic COUNTIES AWARD.)

The membership list should get the WORKED G-QRP-C award off the ground. Don't forget that to claim for this award QSO's must be after Jan. 1st 1975, so turn up your log for the 1975 RSGB Contest and make out those QSL's! ALSO ..SWL members can claim this award, so this puts the onus on transmitting members to return their QSL's.

Your committee is willing to consider a VHF QRP award if there is sufficient interest so if you want one ideas to G8PG. BUT remember that EU mainland and US members may be located hundreds of miles from the border of the neighbour country, so perhaps kilometres, rather than countries should be the yardstick at VHF.

THE PARTRIDGE SHIELD. G3VFA has kindly informed me that his company Partridge Ltd are willing to donate a presentation shield for QRP acheivement. The actual details have yet to be worked out, but keep your eyes open in the next SPRAT.

******AD's and SWOPS'**********

G3FCK... Crystals to swop... Available: 14312.5 (ITT) 14325 (ITT) 3645 (USA) 49212.5:
Wanted: (20m) 14to14.15 (80m) 3.5to3.6 (160m) 1.8to1.9, Standard 1 MHz.
Also wanted GDO or Absorption Wave Meter covering 160,to 20m bands (to buy)

G3ZOF...to swop for 80m or 20m CW section Xtals, the following Xtals : all HC6U.
12129.167, 12125.90, 12021.40, 1816.00, 1987.00 - one for one.

G3DBU... Bill has a number of 80m Xtals free for any member who will pay post and package costs (about 4 oz.) I must confess I have lost his orginal letter (laid aside in a safe place!) on this kind offer, so requests please to Bill, please remember his return postage.

WHAT ABOUT A SMALL AD. OR SWOP OR WANTED REQUEST FROM YOU - the cost? nothing to members, just a brief note to G3RJV, printed in SPRAT as space permits.

THE G3IGU Q.R.P (80m) TRANSCEIVER. FROM NOTES BY KEITH COATES (G3IGU).

1. The circuit is straight forward, the Direct Conversion receiver is based upon the circuit by J.Young in Radio Communication (Feb. 1975) although the RF amplifier is tuned, and an RF gain control was found to be essential for evening use. The AF amplifier is a simple circuit.

2. The layout isn't very critical. The VFO, EF, and BA is very well screened with the components mounted on a length of tag strip. The RX and sidetone generator are built onto paxolin panels (see diagrams) and wired up at the rear. The whole transceiver is built into one box, including the ATU, so that all that is required are aerial and earth. Batteries may be fitted into the case, if required.

3. The PA stage may be considered odd, with the 680 and 10 ohm resistors, but there have been several other types of coupling tried resulting in accidents to the BFY51. This circuit has never damaged a PA transistor. The actual RF power output will depend upon the transistor used - various BFY51's have given DC power inputs of between 800 mW and 1.3 watts.

4. The coils used were something of a mixture, all salvaged from the junk box. The usual coil winding for 80m is about 35 turns of 22 swg on $\frac{3}{8}$" alladin formers, tuned to resonance with a G.D.O.
(see my notes on suitable coils - G3RJV)

5. The information for the AF filter (L5,L6,L7) is based upon the filter circuit of J.Young (Rad. Comm. Oct 1973 also Rad. Comm. Feb. 1975) using 38 swg onto Mullard ferrite ring type FX1593. In the prototype scrap ferrite rings were used and only about 200 turns could be wound onto them, but these appear to work OK.

6. The PA coil and ATU coil use a ferrite rod ($\frac{3}{8}$" dia ?) from a scrap transistor radio broken in two, so each length is about $2\frac{1}{2}$" long. These are wound with 15 turns of 20 swg the ATU coil being tapped every two turns to fed the aerial at the correct impedence (Keith gives no gen, on coupling winding s L9/L10, I suggest about 4 or 5 turns - G3RJV

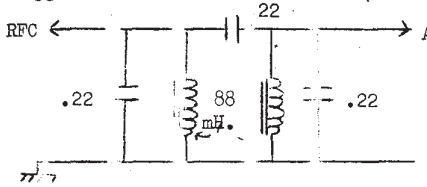
7. Different values of R20 will alter the drive to the PA, giving different power outputs. 1K ohm preset in series with a 470 ohm fixed resistor will give a variable output from about 300 mW to about 1.5 watts. This could be useful for points in contest operating.

8. It would be advisable to have a 500 Ma fuse in the HT input lead, especially if a car battery is to be used. (and a diode to prevent reverse polarity accidents in the 12 volt line - G3RJV)

SUGGESTED COIL INDIN.S (notes by G3RJV)
These notes are based upon another 80m rig I have built up, using some of the gen. in the J.Young article I have also worked out values for Amidon toroid formers, but these are untried, so I may publish these in SPRAT 4.(if they work!)

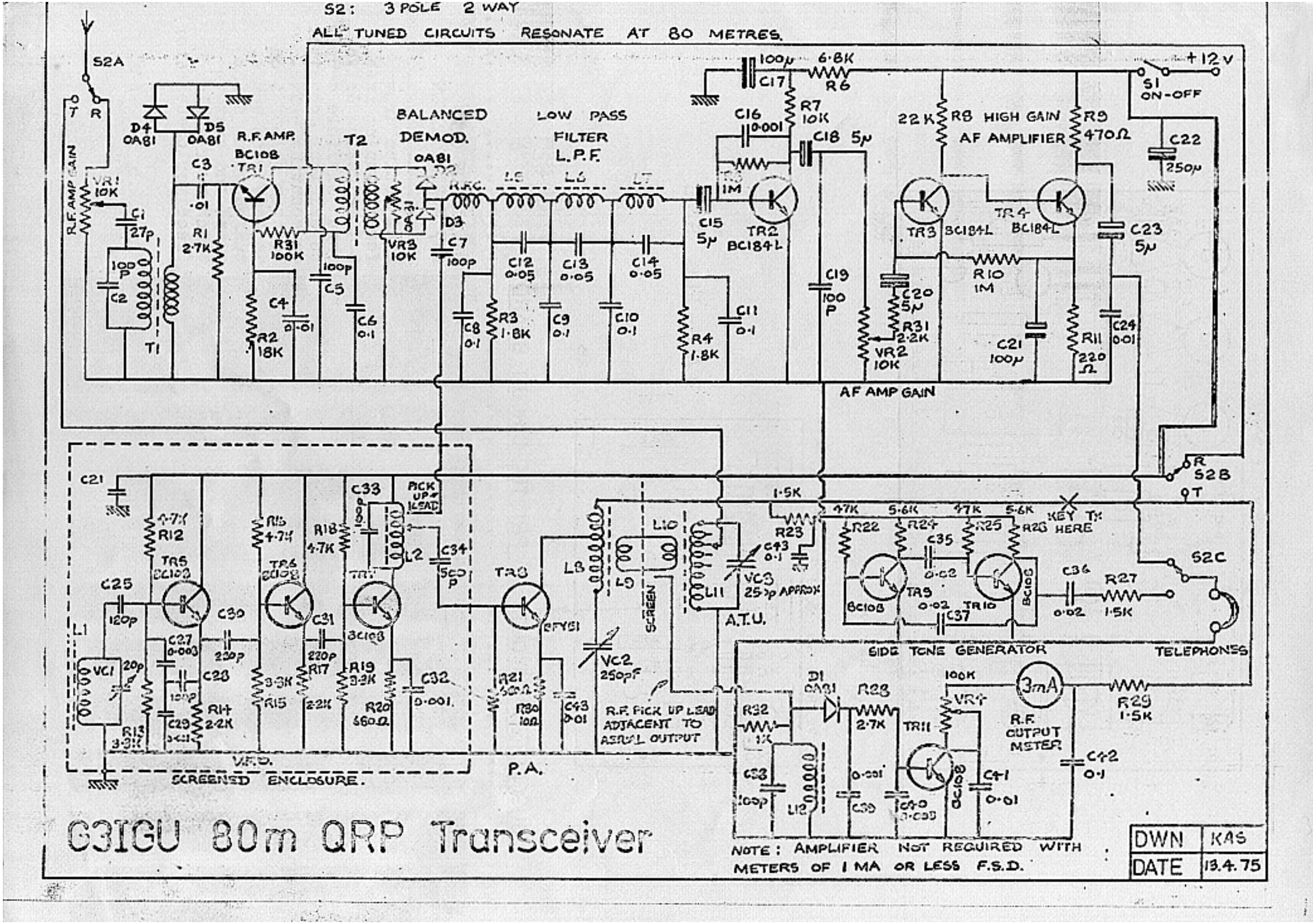
T1. Prim: 40turns 30swg closewound on $\frac{3}{8}$ former with slug, Sec: 5turns on earthy end
T2. Prim: as T1, Sec: 12 turns 34swg closewound in centre of prim
L1. 30turns 30swg on $\frac{3}{8}$ former with core with 100pf fixed & 50pf trimmer in parellel to tune on to CW end of 80m.
L2. As prim. T1. tapped about two-thirds up from earthy end.
L8. 15turns 20swg on $\frac{3}{8}$ dia ferrite rod ($2\frac{1}{2}$"long) L9. about 4-5turn link.
L10/L11. L11 as L8 with toppings about every two turns. L10. as L9.
L12. as L2 (or pehaps a 1.5mH RFC)
L5, L6, L7. see AF filter from "The Cadet" RX by J.YOUNG in Rad. Comm. Oct 1973. or:

Suggested alternative AF filter (untried in this circuit - G3RJV)

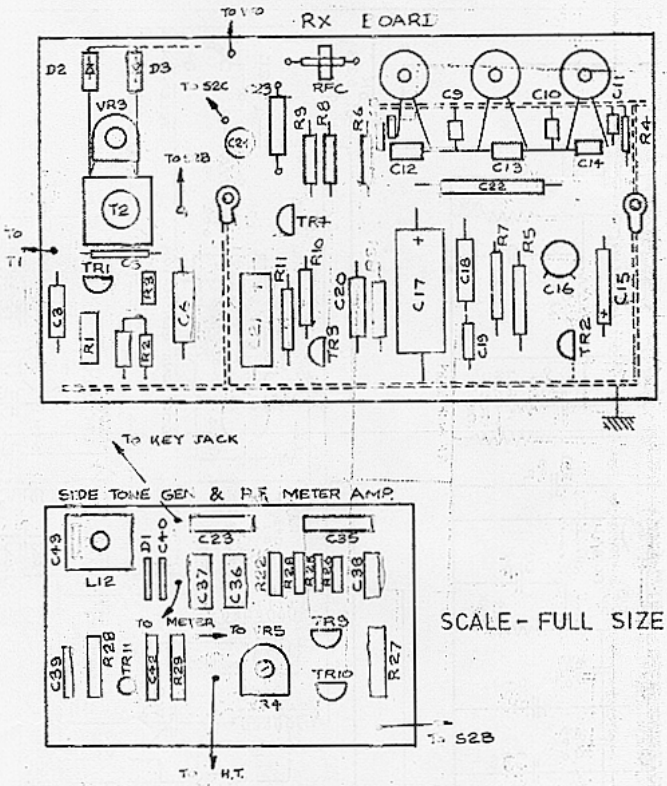


Alternative AF Filter

Using 88mH toroid chokes available from Markspace Ltd. (see S.W.M. Adverts)

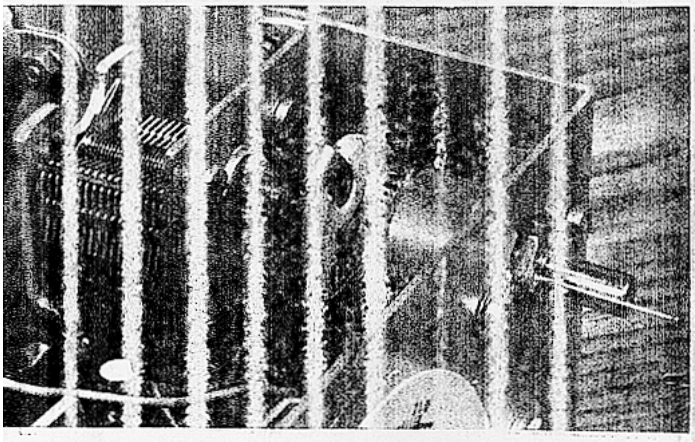


S2: 3 POLE 2 WAY
ALL TUNED CIRCUITS RESONATE AT 80 METRES.
BALANCED DEMOD.
LOW PASS FILTER L.P.F.
HIGH GAIN AF AMPLIFIER
R.F. AMP
AF AMP GAIN
R.F. AMP GAIN
S1 ON-OFF
+12 V
SIDE TONE GENERATOR
TELEPHONES
KEY TX HERE
A.T.U.
SCREEN
P.A.
V.F.O.
SCREENED ENCLOSURE.
R.F. PICK UP LEAD ADJACENT TO AERIAL OUTPUT
PICK UP LEAD
R.F. OUTPUT METER
G3IGU 80m QRP Transceiver
NOTE: AMPLIFIER NOT REQUIRED WITH METERS OF 1 MA OR LESS F.S.D.
DWN KAS
DATE 13.4.75



SCALE - FULL SIZE

SUGGESTED LAYOUT OF PRINTED CIRCUIT BOARDS



DETAIL OF G2FWA HW7 MODIFICATION.

Slow motion drive for rf tuning knob. 8:1 reduction drive, thru' flexible couple to original capacitor on mounting plate. Pointer soldered on in line with shaft, pushed thru' front panel and bent to track over scale. (receiver preselector)

SHIFT THOSE ROCKS! Some ideas for the novice crystal grinder.
By Dr. G. Bennett G3DNF.

Why use crystals for the HF and LF bands? Many have asked themselves this question.. ...and decided not to. Crystals made to order were never cheap, and the supply of surplus ones for the amateur bands has dried up. Anyway, it's now so easy to build a rock-steady VFO that the advantages of crystal control may not be readily apparant.

However, there are circumstances in which crystals are better than a VFO. For portable or /A operation the use of crystals avoids the need to carry around a XTAL calibrator. The easiest way to get started with CW on the amateur bands is by building a CO/PA TX (see SWM, April 1975, page 85). In the DL AGCW QRP Contests the use of xtal control can bring some useful bonus points (see this and last issue of SPRAT).

Although there is no longer a good supply of surplus crystals for the amateur bands there are still plenty of cheap "useless" frequencies available outside the amateur bands. It is possible to make use of some of these by regrinding the crystals. This is often shugged off as "too difficult" or "time consuming". In fact very little practice is needed to master the basic skills required. It is the purpose of this article to pass onto the beginner as much information as is needed to make the first attempt. The writer cannot claim to have superior knowledge or skill...except that gained the hard way, by experience. Like most basic skills, it is easier to show than to convey in writing, but let's see what can be done....

Firstly, it is obvious that Xtals mounted in hermetically sealed cans are not suitable for grinding. The old styles of mounting (in use up to the '50's) such as FT243, 10X & 10XJ permit the removal of the crystal plate. In these mountings the crystal is sandwiched between two metal plates, each of which has a raised area at the corners, (for square or rectangular plate) or around the edge (circular plate). See fig.1.

N.B. Some of the later HF xtals in the 10X guise are actually constructed, like hermetically sealed types, with electrodes plated onto the quartz plate. These should be avoided; they are much ligher in weight than the usual 10X package.

For a beginner, the best plan is to start with a fairly large, easily handled plate. Typically this should be a 10X tpe with a frequency of about 3,000KHz, for regrinding to the 80m band. Such a xtal will be about 1" square and one-sixteenth of an inch thick.

The equipment needed is as follows:

Carborundum Pwder (2 grades - see note below)
Paper tissues (toilet, kitchen or hankie varieties)
Saucer or shallow dish, and a Glass Plate.
Screwdriver
Test Oscillator (see fig.2.)
Amateur band or general coverage receiver.
A tube of toothpaste
Add water, patience, and off we go....

Using the test oscillator, check that the crystal oscillates and note the frequency. Some old crystals are inactive, but in most cases this can be cured. Open up the xtal holder over a tray or cloth, so as not to lose parts. Withdraw or unscrew the spring tensioner, and gently tip out the metal plates and quartz sandwich onto a tissue. Examine all parts for traces of dirt and corrosion.

To clean the quartz and metal plates, rub them gently between the finger and thumb with a little toothpaste and water. Rinse well with water, blot with a tissue, allow to dry in warm air, and reassemble. Check the frequency and activity again. This treatment will often make a "dead" xtal come to life again. Note that the toothpaste (the white kind) is used instead of carbon tetrachloride (Thawpit) which is toxic and less effective as a general cleaning agent where plain dirt, as distinct from grease, is concerned. Avoid fingering the quartz plate, during the drying and reassembly. Hold it by the corners, between finger and thumb, or use plastic tweezers (see fig.3.)

Two types of Carborundum power required for this operation are a FINE grit (often refered to as carborundum flour) and a MEDIUM grit. Both are easily obtainable in small quantities by purchasing a beginners rock polishing kit. This will contain a few pieces of rock (real rock!) and four tubs of power (coarse, medium and fine, and a polishing powder. These kits can be bought for about 50p ay many hobbies shops. Only the medium and fine carborundum will be required.

Place the Glass Plate on a steady table. Put some water in the saucer and stand it near the plate. Sprinkle a good pinch ofmedium carborundum in the centre of the

of the plate and add afew drops of water - enough to mske the powder swim,don't drown it. Work the paste out to a patch about 3" wide with the finger before placing the crystal on it.
Throughout the grinding,use a steady pace and even pressure. Never grind for too long without shifting the area of pressure on the crystal. Rember the aim is to obtain perfectly plane and parallel faces. Use the tips of the index and middle fingers to apply the pressure,when dealing with the larger crystals such as the LF 10Xtypes.

The first few strokes will break down the grit a great deal,so just give a couple of rubs,clockwise,with the finger tips on the diagonal AC (fig.4.) Next reverse the direction,give a couple of strokes anticlockwise. Now turn the Xtal 90 degrees,shifting the to diagonal BD. Repeat 2 stokes each way - Turn another 90 degrees and repeat... turn...repeat...Until the Xtal will now have a total of 16 rubs, evenly distributed on one side. Now turn the Xtal over and repeat the above procedure. Rinse the Xtal in the saucer,wash it well in running water,then allow surplus water to drain off,while holding the Xtal by it's corners(fig.3). Carefully bot with a tissue then dry it in warm air or under a lamp.

Remount the Xtal into holder and check frequency. It may not have moved far, but the change should be measurable. The grinding can now continue using more stokes... say ten each way. The only way to judge is to measure the result. Never let the grinding bed become dry. Add more grit as required. If too much water is added,it slows down the cutting rate of the paste. Keep the grinding track well distributed over the glass plate,by working the tracks in overlapping circles(fig.5).The grinding process also removes glass from the surface,avoiding local wear will improve the chances of a properly ground crystal.

Check progress at intervals,take care not to overshoot the target frequency. When the Xtal approaches the target - say 3400 for a target of 3500,stop using medium grit. Wash the plate clean and turn it over.Use the fresh surface to continue grinding with fine carborundum. The cutting rate will be slower, but easier to control. As the target frequency is approached check more often. With practice,it is possible to grind to within 1 kHz or better.

The grinding of an Xtal from 6500(say) to 7000kHz is also feasible. Such Xtals are only about half the size of the example described above. It following that the grinding of thin Quartz Xtals requires more care. Use only fine grade powder,and apply pressure with the tip of the forefinger. The final stages are ticky,as a single rub can make a difference of one kHz. It is a matter of fact that the grinding of an Xtal causes microscopic surface damage,which can affect long term stability. For this reason;commercial crystals are etched to the final frequency after grinding. Etching entails the use of dangerous chemicals and should not be lightly undertaken. Even without etching,Xtals which have been ground are quite satisfactory for amateur use. Occasionally an Xtal ground to a spot frequency,"settles down" after a few months to a slighly different frequency (say 1kHz in 7000). This is unlikely to be a matter of concern in a CO/PA transmitter, but as a filter or SSB oscillator, it must be etched to final frequency, but this is a different story.

If reasonable care is taken over grinding, the chances of success are high. A crystal that fails to perk after grinding can often be restored by the "toothpaste treatment",but little can be done for badly ground or scratched crystals,which fail to oscillate or behave unpredictably. Corrective grinding is difficult and is likely to take the Xtal out of the target band. It is far better not to spoil the Xtal in the grinding;the temptation to hurry must be resisted.

The first attempt will take longer than the rest. With practice,several crystals can be ground in an evening. Forget any ideas of relaxing after such a performance by doing a bit of snappy CW. Your hand will feel as though it has been through a wringer! A more domestic hazard can arise through sloppy disposal of waste carborun--dum. It can play havoc with the glaze on a washbasin,if traces are left for "someone else" to clean off. Pouring it through a waste disposal unit will also prove expensive.

The economically minded can recover some of the carborundum by washing the spent paste, but the stuff is so cheap that it is hardly worth while. In any event, at all costs keep the grades of grit separate. If the fine grade becomes even slightly contaminated with the coarse, it will be ruined. When it is intended to grind several crystals, it is better to grind them all with the coarse grit first, then transfer to the fine grit. The only advice that remains to be given is....

Go on...Try it!

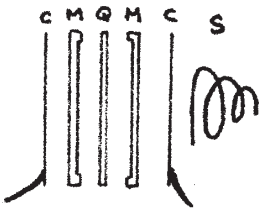


Fig.1. Quartz Crystal Mounted - exploded view.

C = Contact. Q = Quartz.
M = Metal Plate. S = Spring.

1

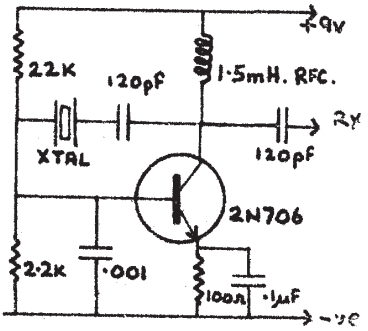


Fig. 2. Test Oscillator.

2

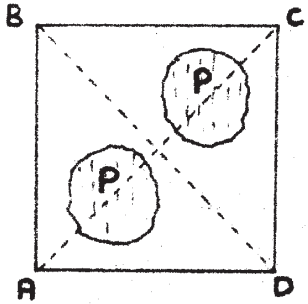


Fig.4. Example of fingertip position (P) when grinding a large crystal.

p = fingertips

4

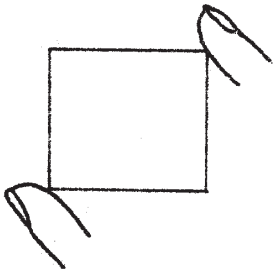


Fig.3. Holding a crystal by its corners.

3

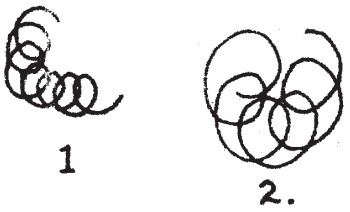
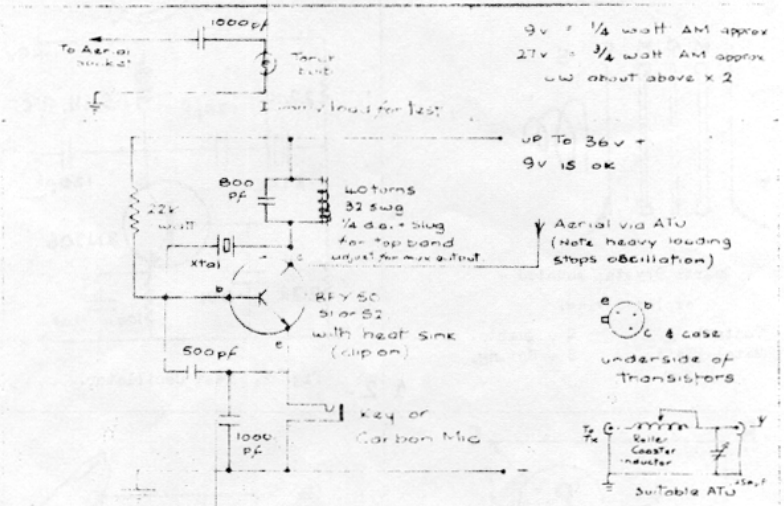


Fig.5. Overlapping circles to form a distributed grinding track ; 2 patterns

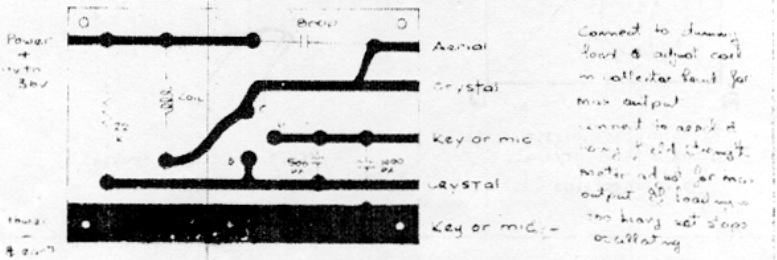
5

FT-243 TYPE.

A typical pressure type mounting crystal The FT-243 type: 10x & 10XJ are [illegible].



Circuit Diagram.



Printed Circuit Board (
Copper Side.

"Transistor 1" Simple AM/CW 160 metre transmitter
Designed by G3YUQ Oct 1978.

G-QRP-C AWARDS

TEST & CONTEST MANAGER: Mr. A.D. Tatlor, G8PG/GW8PG.
37 Pickerill Road,
Greasby. WIRRAL.
Mersyside. L49 3ND.

AWARDS TO BE MADE BY G-QRP-C.

THE G2NJ TROPHY.

Silver Cup with Keepsake.

This will ba awarded on a 3 year cycle, starting 1975. In the first year it will be awarded to the member who, in the opinion of the Committee, has achieved the most outstanding QRP operating performance during the year. In the second year it will be awarded to the member who, in the opinion of the Committee, has made the most meritorious technical contribution to the club journal SPRAT. (articles from the previous 2 years could be considered) In the third year it will be awarded to the amateur (member or non-member) who, in the opinion of the committee, has made the most outstanding contribution to the furthering of the cause of international QRP amateur radio. In any year that the committee feel that a suffic--iently high standard has not been achieved they may recommned that the trophy is not awarded.

WORKED G-QRP-C AWARD.

Diploma.

The basic award will be made to the operator of any amateur radio station who, after 1st Jan. 1975, works 20 members of the G-QRP-C who are using an input of 5 watts or less. Contacts may be made on any amateur band using any authorised transmitting mode. Endorsements will be issued for proof of contact with each further group of 20 G-QRP-C members under the same power limitations. The general award rules apply.

HEARD G-QRP-C AWARD.

Diploma.

Rules as for the Worked G-QRP-C Award, but applicants must sunmit written confirmation of the reception of 20 Club Member stations when the said stations were using a power input not exceed--ing 5 watts. The general award rules apply.

QRP COUNTRIES AWARD.

Diploma.

For members only. The basic award requires written proof of contact with 25 different countries (ARRL DXCC LIST) when using an input not exceeding 5 watts. A written and signed statement to this effect must accompany each application. Any amateur band and mode, after 1st Jan. 1975, count for the award. The staion of the claimant must be located in the same country for all the contacts, the United Kingdom shall be deemed to be one country. Endorsements will be issued for each additional 25 countries for which proof of contact is submitted. The general award rules apply.

QRP LISTENER AWARD.

Diploma.

This will be awrded to listeners who submit written proof of the reception of amateur radio stations from 15 countries, each of whom was using an input not exceeding 5 watts. Endorsements will be issued for each additional 15 countries. The general award rules apply.

GENERAL AWARD RULES.

1. Award claims should be submitted to the Contest and Test Manager. If QSL carsd are submitted either 25p. in sterling or 4 I.R.C's shall accompany them to cover return postage.

2. If QSL cards are not submitted, the applicant shall submit a list detailing the calls, dates, times, frequencies, modes, (and if required power inputs) of contacts or recption on which the claim is based. This shall be signed by two licenced anateurs in the form, "We undersigned certify that we have examined the QSL cards confirming the contacts (or reception) listed above and have found the details to be correct."

3. For the QRP COUNTRIES AWARD the applicant shall include a declaration as follows: "I ....., operator of amateur radio station ....., certify that during the contacts upon which this claim is based my power input did not exceed 5 watts(input D.C.) or p.e.p. if applicable. Signed, Date.

4. The committee reserve the right to reject any application for an award, and their decision shall be final.

MERIT CERTIFICATES: DL AGCW QRP CONTEST.

As a mark of their respect for the great effort which has gone into the organisation of this contest, the committee propose that the CLUB award a certificate of merit to the WINNER, SECOND & THIRD places in all future contests.

HINTS ON QUALIFYING FOR THE G-QRP-C COUNTRIES AWARD.

By Gus Taylor G8PG/GW8PG.

The basic award requires confirmed contacts with 25 different DXCC List Countries. It is therefore possible to qualify for it without working any country outside Europe. Anyone trying for the award will find that at least a 3 band capabiltity is helpful, and the current cycle of the sunspot cycle means that the most useful bands are likely to be 3.5/7/14 MHz. The results obtained by a number of stations have been examined,and from them lists of counrties likely to be worked by QRP stations have been derived. These lists have been divided into EU and DX, and even further divided into 'easy' & 'more difficult' categories. It is hoped that these lists will encourage the beginner to have a go at working new countries;they may also remind the old hand of an easy one which is not on his list. Incidently, don't think that these lists indicated everything that you can work on QRP-everywhere in the world is possible. As regards working the countries listed, a lot depends on skill and patience,and also the ability to really search bands for the countries you want. A survey made of a number of operaters (QRO) in the 300 country class indicates they spend 95% of their operating time listening and only 5% transmitting. Obviously we do not need such an extreme ratio, but we need the ability and patience to search throughly for the countries we need. The keen QRP operator will also take part in lots of QRO contests in order to pick up new ones. The ARRL DX,BERU, TCC and similar contests are excellent sources of new contacts if one has the patience to keep on calling and the ability to use snappy 'tail-end' calls and slight frequency changes to put your signal where the station will hear it. The short exchanges, the fact the other chap is trying to make as many contacts as possible mean that if your signal is getting there at all, it will be heard sooner or later, Also,you can usually tell if the path is peaking by the number of G's being worked and the reports that they are being given. Much of the same tactics apply to DX-pedition stations who are having snappy contacts. So here's hoping that the ideas above and the lists below, will help you add at least one country to yourlists!

EUROPE EASY: CT1, DL, DM, EI, EA, F, G, GC(Jersey), GD, GI, GM, GW, HA, HB, I, LA, LZ, OE, OH, ON, OZ, PA, SM, SP, UA1-6, UA2(Kaliningrad) UC2, UP2, UQ2, UR2, YO, YU.

EUROPE:MORE DIFFICULT:C31, CT2, EA6, FC, GC(Guernsey), HBØ, HV, IS, LX M1/9A1, OHØ, OJ, SV, SVØ, TF, UF6, UG6, UO5, ZB2, 3A, 4U1, 9H,

DX:EASY: FP8, UA9, UL7, VE/VO, W/K.

DX MORE DIFFICULT: CT3, EA8, EA9, FG7, JY, KV4, KP4, OX, PY, UH8, UI8 UJ8, UM8, ZF1, ZC4, 3V8, 4X4, 6W8, 7X2.

NOTES ON THE LISTS: All signal paths are considered to be, under good conditions, at maximum 3 hop paths. Both GD3HQR & GD4BEG are very sympathetic to QRP and often use it - watch for them if you need GD. Note that the UA2 stations in Kaliningrad or Kaliningradsk count as a country. For GD and GC, and for DX-peditions to places like HBØ,OHØ OJØ etc, a card send direct with a sae or irc is suggested. Back it up with a card via the Bureau. Boldly mark your card "2(or whatever it is) watts QRP QSO" - it seems to work!

Your best bet for KV4 is Dick,KV4AA, but never make your call longer than,"KV4AA de G9BF bk". He will QSL diredt if you send an irc.

Wtach the mags for news of expeditions to rare EU countries, then listen for them. ZF1 is included in the list because it is now a favourite area for ARRL HQ staff testing new QRP designs to be published -ed in QST. They will certainly be tickled pink to work a two watter in the UK !

WATERS & STANTON ELECTRONICS

Waters and Stanton - 22 Spa Road, Hockley. Essex. - Importers and agents for the MFJ range of QRP products, including the famous MFJ Audio Filters, have kindly offered a 10% DISCOUNT to G - QRP - C members. This offer applies only to the MFJ range of products (see Waters and Stanton Advert in S.W.M.) To obtain the discount, place your order with Peter Waters (G3OJV) stating your G-QRP-Club number.

G3CED, GEORGE PARTRIDGE.

George has been experimenting with a Q.R.P. WATTMETER, which has proved to be very useful. It is a combined Dummy Load and direct reading Wattmeter, suitable upto about 10 watts of RF and easily readable down to 100 milliwatts or less. George could offer details and a few kits of parts for the meter. Write direct to G3CED as in the membership list.

G - QRP - CLUB TIE.

GM8JQF, Rev.Tom Fleming, has obtained details, and a sample for a club tie. The tie is navy with a single G-QRP-C badge picked out in gold - very splendid ! The price will be in the order of £1.25 to £1.50 including a little profit for the club funds. Unfortunely the full details and sample tie are in the post to me as I write this, but the postal delay bug strikes again! So, full details in the next SPRAT - Although it would be helpful if interested members could drop me a line before then so that I could gauge demand. Makers:John Grieg of Edinburgh.

SKEDS WANTED: (if you require skeds, reports etc. details to G3RJV)
GM3RFR : Working 5 watts xtal controlled from Shetlands on 7032 @ 0730-0800 gmt and about 1230 gmt
G3VFA :750 mW to VFA on 80m most mornings around 0515 to 0700 gmt.

DL AGCW WINTER CONTEST 1975.

73 QRP entries from 13 countries in 4 continents! 5 entries from the USA, 6 from Japan plus Argentina, Brazil and EU both sides of the Iron Curtain! 8 entries in the QRO section. And they say that a sunspot minimum year kills enthusiasm for QRP! If that is true, one wonders how many hundreds of entries we will get in the sunspot maximum years. Turning now to the entry list, the event proved to be a runaway victory for DL7DO/P. His 2 watts, xtal controlled, plus an aerial farm, gave him almost 10,000 points more than second place DL6ZG (16,512 to 6,860). Third place went to SP6HEK and fourth to HB9QA. The only other non-DL in the first 10 places was G8PG. (But recall that the first 3 places in the last contest went to stations outside DL).
Now let us see how the G entry (the largest to date) fared :-

CALL.	PLACE.	POINTS.
G8PG	7	5244
G3DNF	11	2618
G3VDW	20	1276
G4AYS	22	1240
G5BIU	34	648
G3FMW	50	192
G3IGF	59	124
G3RJV	70	15

Several of the above were unable to operate for long in the contest, but their enthusiasm in entering logs is greatly appreciated by the organisers who think highly of the great deal of support they got from the UK. This appreciation is reflected in deeds as well as words. The rule alteration to allow 160m to be used in all contests is a mark of appreciation of UK and Czech support, and the new operating times for Winter 1976 and subsequent contests - 1500gmt to 1500gmt, with break extended to 9 hours - results directly from suggestions made by the UK manager.
Now to facts and figures. Conditions were such that no DX was worked from the UK, but UK competitors worked 23 different EU countries. Highest scorers per band were: 160m-G8PG, 80m-G8PG, 40m-G3DNF, 20m-G3DNF, No contacts were made on 15m or 10m, although these bands were open elsewhere in EU. The highest number of countries worked per band by UK entrants were: G3VDW 5 on 160m, G8PG 11 on 80m, G3DNF 5 on 40m, G5BIU & G3DNF 8 on 20m. During Saturday evening all of eastern England appeared to be in the 80m skip zone for Europe, but this was not so in the west coast where G8PG worked 7 different countries on the band in 2 hours (all with 2 watts) including UA2,UQ2,& OH. All this at a time when G3DNF, only 70 miles further east could hear virtually nothing from Europe. These contests show several interesting propagation features, and it is hoped to invited members to assist in propagation experiments at a later date.
As regards equipment, G8PG used between 2 and 3 watts, VFO controlled on all bands. Transmitters and receivers fully transistorised and equipment 70% home made. Aerials were a 90ft wire about 22ft high and the indoor broadband dipole desribed in the previous issue of SPRAT (incidently this dipole has since provided contacts with VO,VE1,VE2,W1,2,3,&4). G3DNF used a 2 watt vfo controlled ttx and a 9watt xtal contr. ttx, both homemade. The receiver was a Trio and the aerials, a garden wire similar to the G8PG one, and a vertical, which on this occasion was hardly used. Other equipment included an 8watt vfo and 800mW co. (both valve) and a 4 watt ttx (G4ATS), 9 watt valve TX (G3VDW), a Ten Tec PM2 (G3FMW) and HW7's (G5BIU,G3IGF,G3RJV). All these were used with simple wire aerials.

The next contest is 5th and 6th July (see note in last SPRAT). G-QRP-C will award certificates to the stations obtaining 1st, 2nd, and 3rd places overall. If you require rule sheets contact G8PG. AND PLEASE SEND A LOG TO G8PG, HOWEVER FEW (OR MANY) CONTACTS YOU MAKE. If in doubt send your log unscored and we will do the rest, but please use a SEPARATE SHEET FOR EACH BAND. CU 5th July.....

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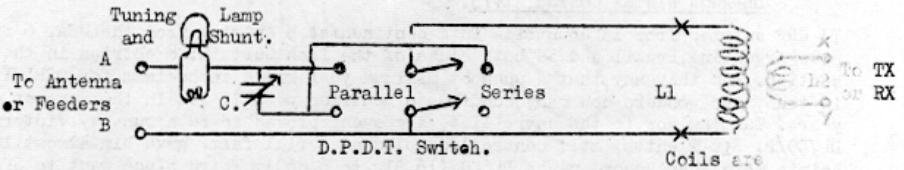
R.S.G.B. 80m QRP CONTEST. (a comment from G3RJV)

Quie a number of club members took part in this contest, but results have yet to published (at the time of typing this). I have had several letters about the contest from G3YCC and several others. The overall view is that the contest was fine BUT the rules are rather odd. The system of multiplying points for power seems unfair - So comments please, so that as a club we can approach the RSGB about this contest.

THE ROCK - O - MATOR By 'Rock', C.F.Rockey. (W9SCH)



CIRCUIT DIAGRAM. OF ROCK - O - MATOR.

In the Spring issue of SPRAT, I observed two circuits for A.T.U's, supposing therefore some interest in this topic, I send-across an old favourite of mine.

This thing will tune any tunable antenna or feed system I've ever tried. But there's nothing new about it; I stole it from an old receiver circuit of the sparkera. But I've used it entensively, especially for QRP, for 5 years with entirely satisfactory results, upper harminic attenuation is satisfactory, and effectiveness almost any other type to terminals A and B. Terminals X and Y go to to TX or RX antenna relay via a short piece of coax cable. (or even lamp cord) If your antenna or feeders show a high impedence (hundreds of ohms) throw the DPDT switch to the left, PARALLEL position, if low impedence (tens of ohms or less) to the right SERIES position. Then tune C. for maximum antenna current. Adjust the Pi-Network or antenna coupling of transmitter to obtain desired DC power input. Keep all wiring SHORT, DIRECT and HEAVY.

You may build this gadget in almost any physical form you wish, providing you keep good insulation, and L1/L2 it's own diameter from large pieces of metal. C. is any air-spaced capacitor of 200pf or more (max.) Keep this capacitor insulated from the metal box or chassis if you use one. The DPDT switch should be of what we call the "knife" type, as the toggle or slide types will often have poor insulation, excess internal capacitance, or both. (Switches of this type are readily available in parts shops on this side, and should be available over there, too) The lamp and shunt for indicating maximum antenna current will depend upon your output power. I use a 60mA 2volt pilot lamp for 2 to 5 watt QRP and a 6 volt, 150mA lamp for "High power" (30 to 40 watts input). In each case the shunt consists of ten turns of almost any old coil wire (somewhere near 22 AWG) wound around a ¼" pencil, and the pencil removed. Most of the current goes through the shunt; only enough goes through the lamp to noticeably light it, thus little power is lost. (Rich folks might like a thermocouple ammeter instead, but this is a needless luxury)

Rather than bother with coil switching, I use interchangeable coils, wound with what we call in the USA "Bell wire", No.18 or 20 wire insulated with a thick plastic coating (We have it too - G3RJV.) The coating spaces the turns, producing a high coil with little effort. All coils are close wound.

Some of our variety stores sell small plastic water tumblers very cheaply. These are small taper - an average diameter of about 2 inches, and make handy coil formers where space is not at a premium. I use these for all but the 15metre coil, which is a plastic pill-vial obtained from a chain drug-store (Chemist Shop!) It's diameter is ½ inch. I suggest the number of turns in the Table below:

BAND.	L1.	L2.	FORMER.	
160	50	5	2" TUMBLER	
80	25	3	"	
40	10	2	"	L2 wound over centre
20	5	2	"	of L1 in every case.
15	5	1	½" PILL VIAL	

These values work well with my 100ft centre fed "ZEPP", with 30ft open wire feeders, (Feeders tied together and tuned against ground for 160 m.) But you may need to change these to fit your specific set-up, since this set-up also tuned a number of random wires I've tried from time to time, things can't be too critical..

There are many types of antenna tuner, but I don't think you'll find a more flexible or cheaper one. Try it and see....

098	G3NTM	W. Trevor Brown. 18 Georgian Close, Staines. Middx. TW18 4NR	General QRP QRP S.S.B. FT75 plus dipole.
099	G3ZDR	W. Cyril Stampton. 88 Wilberforce Way,Gravesend. Kent. DA12 5DM.	HW7 & indoor dipole. Construction from junk. General radio meanness!
100	G3SGY	Arnold R. Nesbitt. 43 Oak Tree Close.Middleton St George, Darlington. Co.Durham.	PM2, HW7, B2 (spy rig) Home brew rigs. Mainly CW plus SSB & DSB.
101	G13314	John M. Raynes. 32 Hawthorne Ave Immingham. Grimsby. South Humberside.	Monitoring QRP stations. Sending requested Reports. Obtaining licence for QRP.
102		George Musk. 71 Dover Rd. Capel-Le-Ferne, Folkestone. Kent.	CW training and RAE. QRP transmission.
103	G3PZP	M.L. Aspinall. (Len) 19 Nicholas Rd. Hounslow. TW3 3QH.	General QRP. Ant: 14AVS & 90ft e.f. + ATU. R.N.A.R.S.
104	G4BJS	Joseph Loose. 43 Willows Crescent. Birmingham. B12 9NE.	PM3A & Joystick. Barlow Wadley RX + MFJ Filter
105	G3WBO	Len Butler. 88 Crawley Road, Horsham. Sussex.	Modified PM2 HW7
106	G3RRD	Douglas Watson Marmont. 'Woodcote' St.Chloe,Amberley, Stroud, Glos. GL5 5AP.	General QRP QRP S.S.B.
107		Frank Harrop. 15 Keymer Road,Hollingbury. BRIGHTON. BN1 8FB	ex G3DVL SW717G. RX Construction.
108	G4AHF	Ron Ashall. 110 Waverley Cres. Droylsdon. Manchester.	CW operation. Home Construction.
109	GW8ITP	Wyndham M. Johns 53 Bryn St. Brynhyfryd. Swansea. SA5 9HR	General QRP Morse Test.
110	DJ7ST	"Hal". Hartmut Weber. D-3201 HOLLE 1, Kleine Ohe 5. Germany.	QRP portable Open air operation, field days etc.
111	G3OSJ	Lionel H. Parsons. 93 Roman Way, GLASTONBURY. Somerset.	SW operation. 15/20/40/80 metres.
112	G3CWL	Geoffrey R. Haynes. 'Sans Nom' Fir Tree Rd. Leatherhead. Surrey.	QRP interest since early '50's HW7.
113	G4CFW	Ronald Raven. 5 Cammel Road, Ferndown. Dorset.	HW7.

114	G3ZPN	"Sandy" J.V.Gibson. 56 Hull Rd. Withernsea. Nth. Humberside. HU19 2EQ	AT5 160/80m 9R59 & FRDX 4000 RX's
115	DJ1ZB	Hans-Joachim Brandt. Ubostrasse 31/0 8000 Munich 60. Germany.	80 to 10m TTX (2 watts) 160m TTX (10 watts) 0-T-2 transistor RX.
116		Gwyn Williams. 120 Linnet Drive, Chelmsford. Essex.	QRP SWL ex RAF telegraphist.
117	EI6BA	Thomas J. Foley. 40 Hillcourt Est. Donnybrook, Douglas,Cork, Rep.of Ireland.	QRP operating. ex seagoing operator.
118	G4AEM	Philip Ellis. 104 Melbourne Rd. Bushey. Herts. WD2 3NE.	CW operation. 80m QRP KW2000
119		Paul Kelly (A8113) 30B Roughdale Ave,Southdene, Kirkby.Mersyside.L32 7QW	QRP SWL student M.N. Radio Officer.
120	G2BOF	Frederick John Harris. Ashleigh, The Green, Upper Poppleton. YORK. YU2 6DR	80m ($\frac{1}{2}$ watt) CW operation.

Changes of Address:-

064	WA2TLQ/2 exG5BIU	David Earl Clark. c/o Rt.12,Box 541. Tallahassee, Florida. U.S.A.	as above.
059	G4DEP	Dave Dabinett. The Flat, 19 Market Place, PICKERING. Nth, Yorks.	Temp. address.

Add:-

084	G4EAX	John Gell.	NEW CALL SIGN.

MEMBERS CALL SIGNS FOR QUICK REFERENCE - Additions to (31.5.75)

G2BOF.
G3CWL, G3NTM, G3OSJ, G3PZP, G3RRD, G3SGY, G3WBO, G3ZDR, G3ZPN.
G4AEM, G4AHF, G4BJS, G4CFW, G4EAX.
GW8ITP.
DJ1ZB, DJ7ST.
EI6BA.

As per club files on 31.5.75.

Please report errors, or changes to G3RJV.

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HAVE YOU : Spread the news of G-QRP-C around ?

Talked "QRP" to fellow operators ?

Offered a "QRP Talk" to the local club ?