

**JOURNAL OF THE
Q R P
RESEARCH SOCIETY**

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JOURNAL OF THE

Q R P SOCIETY

ISSUE 53
- FIFTH YEAR. -
MARCH 1954

.....PUBLISHED IN THE LAST WEEK OF EACH MONTH:.....

PRESIDENT, Mr E.Banks, GC2CNC
PAST PRESIDENT, Mr A.O.Milne, G2MI. CHAIRMAN, Capt A.M.H.Fergus, G2ZC
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John Whitehead, 92 Ryden's Avenue, Walton-on-Thames, Surrey.

E D I T O R I A L

Last month I announced the simplification of our title to "Q R P SOCIETY". If the ensuing four weeks are any indication of the way this Society is to forge ahead in the future we are in for a busy time! We have had our biggest ever intake of new members, coming from all sections of the hobby, and from countries as far afield as Denmark (in the person of OZ5BP). We have had our biggest ever turn-over of subscriptions. We have encouraging comments published in every British national radio periodical, and in the Danish "ham" magazine, "OZ". We have been first in the field with a description of the G3IEE Transistor Transmitter, a fact which has been dubbed "quite an editorial scoop" by one person who is in a position to know. We have played a small, but quite prominent role in the biggest "hamfest" of the month, at Sutton. And, finally, to prove that we ourselves are a truly live concern, we have had so much material, and so many letters pouring in to HQ that our cry, this month, is "Space -- we must have more SPACE!". . . Can we keep it up? -- We certainly can! We can promise you plenty of still more outstanding events in our calendar.

.....: DESIGN OF QRP SUPER-HETS,: by DAVID WHITE, G3JKA

CORRECTIONS TO PREVIOUS ARTICLES IN THIS SERIES: In the January issue, diagram on page 3, the grid 1 should have been shown as a diode anode. In the February issue, page 4, line 4, "where f2 = f1" should read "where f2 > f1". On the same page the portion within brackets of the denominator of Equation 3 should read (f2 ± f1), and in each of the following three lines f1 should be read for f1.

Now, continuing from the last issue, if the frequency range to be covered is small it is possible that no padding condenser will be required. This will also depend however, on the IF to be used and the higher the IF the more likely becomes the necessity for a padding condenser. If a padding condenser is used the tuning capacity at the low frequency end of the band becomes:

$$Clf = \frac{Cp \times Cm}{Cp + Cm} \dots \dots (4)$$

where Clf is the effective tuning capacity, Cp is the padding capacity, and Cm = dc + C. Now Clf may be determined from:

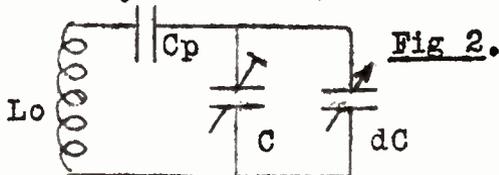
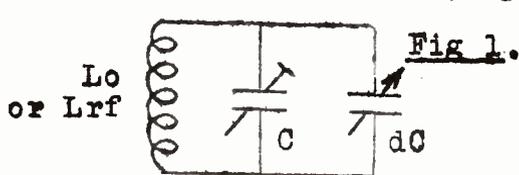
$$Clf = 1 / 4\pi^2 Lo (f1 \pm f1)^2 \dots \dots (3a)$$

or from an abac as before.

Then, having found Clf, we may determine Cp from:

$$Cp = \frac{Cm \times Clf}{Cm - Clf} \dots \dots (4a)$$

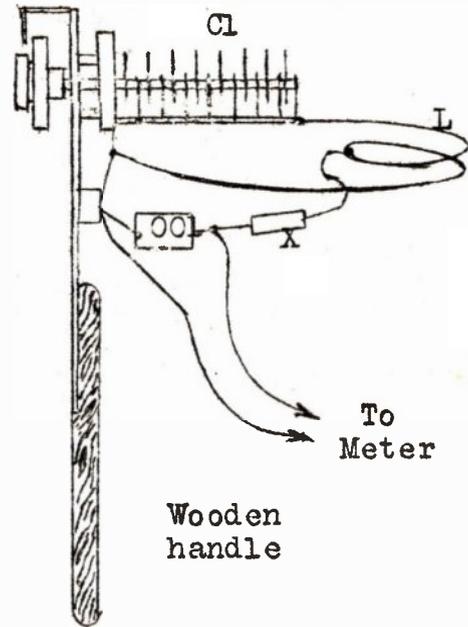
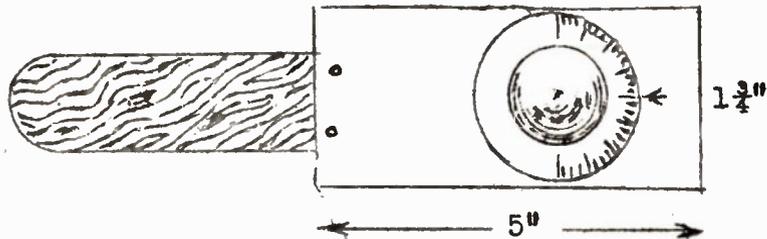
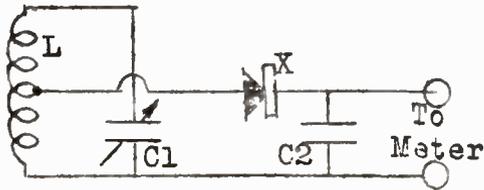
Hence the values of C, Cp and Lo may be found.



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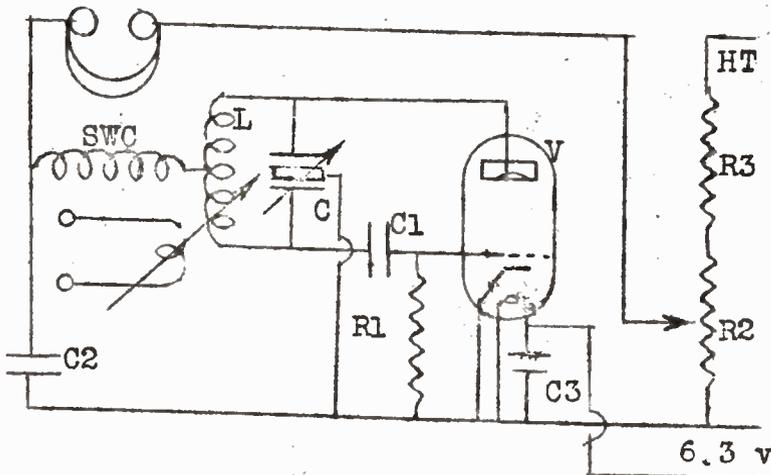
I regard the building and accurate calibration of the few items of test equipment described as being absolutely necessary for the would-be VHF enthusiast if he is to obtain good results. The two really essential items are a calibrated wavemeter and a calibrated grid dip oscillator. If possible a ready calibrated GDO should be borrowed, stolen or otherwise acquired in order to calibrate ones own meter; failing this, it is only necessary to buy or borrow a 7 Mc/s crystal (a few Kc/s either side does not matter) and calibrations can then be done by ones own efforts, with kind permission of the local TV transmitter.

ABSORPTION WAVEMETER:



Values for the wavemeter are:- L, 2 turns, 16 swg enamelled, $\frac{7}{8}$ " diameter, spaced $\frac{3}{16}$ " between turns, centre tapped. C1, 100 pF midget variable. C2, .001 uF midget mica. X, germanium diode. The meter should be 0-500 uA, and a small epicyclic drive (5:1) will be required for C1. The coil and condensers should be earthed to a common tag. Approximate coverage is 60 - 150 Mc/s.

SEARCH RECEIVER:



This is a normal super-regen receiver. Any type of self-oscillating super-regen Rx can be used. The only thing to note is that the condenser must be placed so that the coil L can easily be soldered on and off. All grid and anode leads must be kept to the absolute minimum length. All earth leads should come to a common tag. A 7193 gives the best layout.

Use a dipole 38" long, broken in the middle and coupled with 70 ohm feeder. This antenna need be only a

few feet above the work bench. Values for the Search Receiver are:- L, see following text. C, 50/50 pF split stator. C1, 50 pF. C2, .01 mica. C3, .001 mica. R1, 2mA. R2, 50 K. R3, 50 K. SWC, VHF short wave choke. V, 7193, 955 or any VHF triode.

CRYSTAL CALIBRATOR: This calibrator is, in effect, a miniature transmitter with a dummy load instead of an antenna (and it must not, of course, be coupled to an antenna except in the hands of a licenced

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The reason for these operations is as follows: The search receiver is used to tune in the harmonics from the Xtal calibrator, and the absorption wavemeter is then tuned in to that frequency from the search receiver which must be in an oscillating condition, ie normal super-regen operation. In order that the frequency of the harmonics be known the receiver is first fitted with a coil which will tune in the local TV sound channel. This sets the frequency of the nearest Xtal harmonic (eg, Holme Moss sound channel is 48 Mc/s and a xtal harmonic found just HF of this setting will be the 7th harmonic of the 7 Mc/s xtal, ie 7×7 Mc/s = 49 Mc/s). The search Rx is then tuned slowly until the 8th harmonic is picked up which will give 8×7 Mc/s = 56 Mc/s. The wavemeter coil should then be brought near to the search Rx coil and tuned to see if a reading can be obtained. If not the 9th harmonic (63 Mc/s) should be tuned in and the wavemeter tried again. A reading should then be obtained with the given component values.

(THIS ARTICLE WILL BE CONCLUDED NEXT MONTH- Ed.)

.....: RADIO CONSTRUCTOR FOR APRIL :.....

The April issue of "R-C" will be of special interest to our own members as it will contain a half page article on THE QRP SOCIETY. There will also be articles on "A Low Voltage Portable Electronic Flash"; "Using the New 807"; CRYSTAL DIODES, TRANSISTORS and THEIR APPLICATIONS; "Grounded Grid Interstage Coupling at VHF"; "Oscilloscope Traces No 8"; AN ECONOMICAL PERSONAL RECEIVER; A Sine-wave/Square-wave Generator covering 17 c/s to 175 Kc/s; AN ELECTRONIC SELECTIVITY FILTER; A Crystal Feeder Unit; and the usual R-C features.

All our new members should make a point of obtaining a SOCIETY BADGE from the Hon Sec. They are 2/6 post free and it is important that every member should wear one at all times.

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.....: MORE ABOUT THE TRANSISTOR TRANSMITTER,: :
By G3IIE.

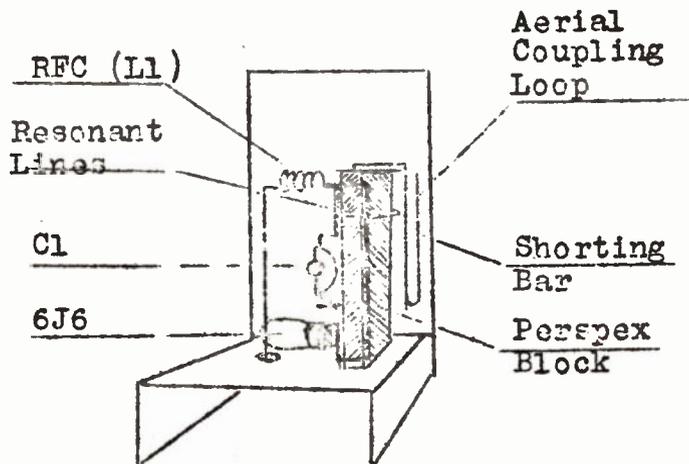
Tony Cockle, whose air tested transistor transmitter we described last month, informs us that the maximum dissipation can, infact, be up to 100 milliwatts. He says, also, that he has since found that the OC51 transistor gives better results in this circuit than does the OC50 which he had previously used, and stresses the fact that all transistor circuits require "frigging" -- ie, the emitter, collector and bias (base) resistors may all need slight variation, to get oscillations, as between one transistor and another.

3IEE points out an error in our diagram last month -- the fixed condenser valued at 100 pF should have been given as 1000 pF.

.....: TRANSMITTER / RECEIVER FOR 70 CMS.: :
By David White, G3JKA

It is hoped that the following very brief notes which we have received from David JKA may help to dispel to some extent the "fear" of UHF which seems to have been engendered by the many lengthy articles which have been published recently and which are usually profusely illustrated with photographs and diagrams of intricate "plumbing". It is doubtful if there is anything more "difficult" about this little rig than there is about any O-V-O for the LF bands.

The only coil winding involved is for the three radio frequency chokes, L1, L2 and L3, which are each only 6 turns, $\frac{3}{8}$ " diameter x $\frac{3}{4}$ " long. The resonant lines are sheet copper, about 20 swg, 3" long x $\frac{3}{8}$ " wide and spaced $\frac{1}{2}$ " apart on either side of a perspex block. The valve holder is supported by the soldered connections to the anode lines, and the variable condenser is a split stator of about 10/15 pF per section maximum, connected across the lines as close to the anodes as possible.



L1, L2, L3, see text.

V, 6J6.

C1, see text.

C2, 0.001 μ F

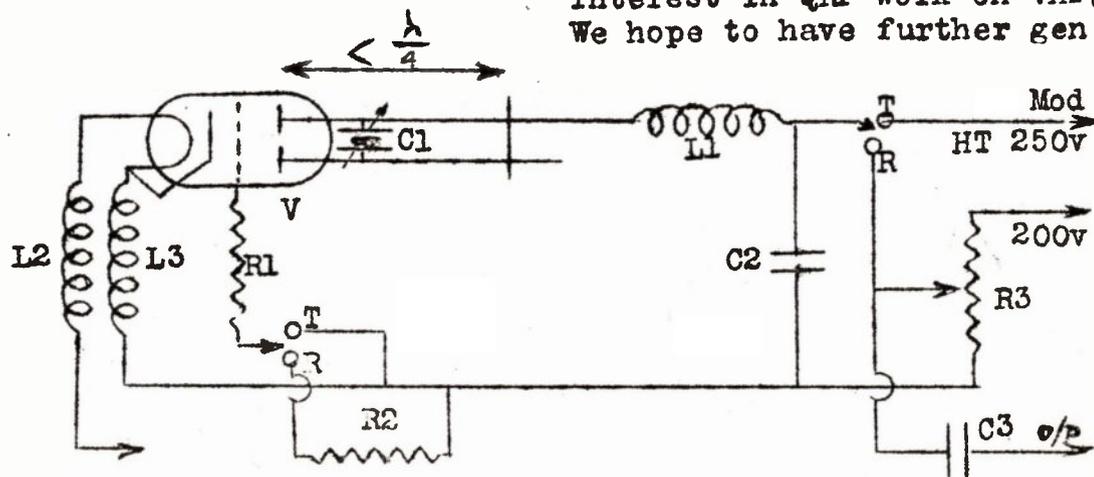
C3, 0.01 μ F.

R1, 20 K.

R2, 8 Megohms.

R3, 100 K.

This transmitter/receiver has not yet been air tested and is described here in order to encourage greater interest in QRP work on VHF. We hope to have further gen



on this rig, and the results of its actual performance, in our next issue. The Kingston Society QRP Section are building several sets on similar lines and hope shortly to have a regular UHF net running.

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.....: SOCIETY NEWS & ACTIVITY :.....

George Partridge, G3CED (Broadstairs) has been on the sick list for over a month, but hopes to be in circulation again soon (We certainly hope so, too, George. We miss your cheerful and helpful notes. OM)

Frank Colborne, G3ISC (Fakenham, Norfolk) holds a 150 watt ticket but is finding he gets a lot more "fun and interest" with a QRP rig. His only "ham pal" is now taking out a VI call, so Frank would be pleased to have a line from any of our members who might care to write to him -- 118 Packfield Rd, RAF West Raynham, Fakenham, Norfolk.

Peter Coppins, G3GPT (Dover) uses a Hartley oscillator for 2 watts on 80 and a VFO PA Tx for 3 watts on 160. A QRP Tx is being planned for Two (Let us have fuller gen, OM -- there might be something there which would be of interest to other members).

G.H. Tillet (Hornchurch, Essex) joins with a quite surprising number of our members in sorrowing at the loss of Radio Amateur. "It was doing more for radio 'hams' through its pages", he says, "than its editor can ever hope to do on the Council upon which he is now sitting".

Peter Gollidge, VOPW (Chingola, N. Rhodesia) is not on the air a great deal lately and usually it is late in the evening when condx are FB for W but not for Europe. He has just received an RL155 which he plans to modify considerably. Pointing out the disadvantages of living in "Darkest Africa" he says "it has taken nearly six months to get here and the original price of £9,10.0 has been hoisted to nearly £20 by the addition of carriage, dock dues, customs duty, agents fees etc. Peter wants to know when we are going to run something like a "Countries Worked Panel" in which all our DXiles can also participate (CONTESTS COMMITTEE PLEASE NOTE -- Ed).

Arthur Gee, G2UK (Oulton Broad) is nearing the completion of a radio-controlled sailing yacht, and we hope in due course to persuade him to let us have detailed gen for our Radio Control Section.

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George Haylock, G2DHV (Lewisham) has just completed a 1.9 Mc/s transmitter, EP91-V10/TP11-PA at 4 watts for CW/Phone (6SN7) using the layout of G3CVO in the Bull. of Oct 1953. George is also responsible for the call G3NEV/A. The 2 metre rig is QRT until the summer, and the 4/4 Yagi is now 12' high indoors!

Peter Amy, ex-G06IDP (Shaibah, Iraq) didn't manage to get a VQ4 call through before his next move came along, but he is hoping to go back there in October for demob and is anxious to settle in Kenya. He has no printable opinion of his present surroundings and he has been unable to rouse enough interest among his companions to start a ham club, though he and another DXile (as Peter VQ2W would say) run the Shaibah Broadcasting Service between them -- 8 watts from a Collins Tx for local listeners. The Tx is being replaced by a new job with a couple of VT104s in parallel.

Peter Huntsman (Hexham-on-Tyne) wants to know what is wrong with all the contest minded bods at the beginning of each year. "Not a bit of wonder", he says, "that I am top of this year's C-Z panel -- I'm the only one in it!" He found Feb an interesting month on the air -- On 14 Mc/s VKs broke through at about 1200 on Feb 9th. On 7 Mc/s condx were particularly good round 0745 on the 15th and 16th with ZL, FF9, UA4 and ZC4 stns at good strength. Plenty of medium Dx was available on the 28th between 1400 and 1900 with TA, VP9, VS9, W8, 9 and 0, VI2, ZS6, CR7, VE and KP4.

D.R.Veney (Blatchley, Bucks) has a 2½ watts (ECC32) CW Tx all ready and waiting for the receipt of his call from the GPO. He is particularly interested in our DF Section as he has made an extensive study of the subject during his years as Radio Officer in the Merchant Navy. His permanent station will be at Barry, so the call will be a GW.

I do regret, OMs, that at least two dozen letters, many of them very interesting ones, must be held over for mention next month. But PLEASE DON'T STOP WRITING on that account. I depend on your letters.

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.....: S P A C E ! :.....

The plaintive cry at the bottom of the last page is typical of our editorial difficulties these days. Your Editor is as bald as a coot, having ripped out the last few strands over this SPACE problem! It is so heartbreaking to have to continually condense everything into its most abbreviated form, and so disappointing to have to leave out good, interesting gen altogether -- especially as the possession of all this valuable material proves that we have an exceptionally live and enthusiastic membership. On our present financial set-up we cannot yet afford to increase our size, but our monthly intake of material would easily be enough to fill a small printed magazine. We have reached that uncomfortable stage when we have outgrown our baby cloths and yet cannot afford to fit ourselves out with a grown-up suit. For the moment, OMs, please bear with our shortcomings and forgive us if we cut down your particular interest. But DO NOT imagine for one moment that we don't need your regular gen -- the more you send us the quicker will we reach the point where we shall be able to afford that new, grown-up suit.

The question of increase of space is our number one problem here at HQ and it is receiving our continuous attention. With your continued solid backing we shall be able to produce some surprising results soon.

.....: THE SUTTON & CHEAM SOCIETY'S DINNER :.....

On March 13th, your Hon Sec and his XYL had the honour of being guests of the President of the Sutton and Cheam Radio Society at the 6th annual dinner of that Society, held at "Wilson's", Sutton. It was a most excellently organised evening, and seldom indeed can so many VIPs of the amateur radio world have been gathered together at one table.

Your Secretary had the onerous duty of following a number of very experienced and interesting speakers in a brief presentation of the "200" cup to Jack Harris, G2BCF, and our most sincere thanks are due to

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the Sutton and Cheam Committee for making it possible for us to carry out this presentation under such ideal circumstances.

The best story of the evening, we thought, came from Mr John Clarricoats, G6CL, who told us of the youth who applied for a staff post with a radio engineering firm and was asked to describe the applications of Ohms Law. After several false guesses he had to admit that he had never "studied the legal side of radio".

.....: THE LEA VALLEY REFLECTOR :.....

We have received a copy of the Feb issue of the above journal, which is the organ of the Enfield R.S.G.B. Group, containing a reprint of the 1-V-2 described by Harry Wells (now G3JZQ) in our own mag in 1951. We must compliment the editor of the Reflector (H.Hyman, G3IZQ) on the excellence of his production, especially in the matter of circuit diagrams, the perfection of which leaves a very great deal to be desired by many of the present day national journals, let alone those private to individual clubs. Good show indeed, Enfield!

.....: SOCIETY BADGE PRINTING BLOCKS :.....



Printers blocks reproducing the Society badge as shown here are now available at 2/6 each, unmounted. They have four small holes for mounting to suitable blocks of wood and may be used with an ink pad like a rubber stamp for members envelopes or letter headings, or they may be loaned to printers when producing member QSL cards. IN THE LATTER CASE PLEASE NOTE THAT THEY MUST REMAIN THE MEMBERS PROPERTY & should be returned to the member with each batch of

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cards printed. Please note that there may be a slight delay in initial supply of these printing blocks, so please give us ample warning of your requirements. And please enclose sufficient to cover postage with your 2/6

.....: QRP SOCIETY VHF GROUP :.....

The Group Secretary, Ted Stonestreet, reports most encouraging enthusiasm, being shown by several members on new 2 metre equipment, despite the generally "dead" state of the band recently. Ernest Ashby, G3HCW, has been completing conversions to an S440B Tx (FB job available at 15/- less valves and coils; mods very simple, but power a little hot for QRP) with which he hopes to develop a really good antenna set-up on which to go strictly QRP. Alec Clark, G3BII, has already provided us with a sample of his enthusiasm earlier in this issue. Peter Huntsman has developed an interest in "two" and has got as far as a 4-element beam which is to be mounted atop a 20' mast. His nearest 2 metre stns are about 40 miles. Norman Bason has, of course, been keeping up the 2 metre-SWL flag in the Isle of Man for many months already and has been the means of spreading the delightful disease among a number of mainland members. Monty Barks, G02CNC, is still listening with his new O-V-O, but so far he has only found G5TZ/A in the Isle of Wight with it. He complains that the last time the band opened, to his knowledge, was on Jan 2nd when he worked 5TZ and heard G8CU, G3WW and F9OK. Sam Hall, G2AOL, has sent along a description of his VHF gear which we hope to reproduce next month. Finally, we notice that several members with recognised VHF inclinations (including the whole of the Kingston QRP Section, who are shortly embarking on 70 cms) have failed to contact our VHF Group Secretary -- Shame on you, OMs! Get busy and drop him a line as soon as you read this:- Ted Stonestreet, 29 Chaplin Road, Willesden Green, London, NW2. THE VHF GROUP HAS CERTAINLY FOUND ITS FEET AT LAST -- IT IS UP TO YOU TO KEEP IT GOING NOW!

.....: SOCIETY STUDENT SCHEME :.....

The Student Adoption Scheme, devised and introduced by this Society a couple of years ago, has, in the first two months of this year, expanded to such an unexpected degree that we are in dire need of extra "tutors". You remember the set-up, laid down in the Society Membership Data Sheets? -- "The Society Student Adoption Scheme provides for any Student Member to be 'adopted' by one of the experienced members of the Society who, acting as a tutor, will make it his personal charge to assist the selected 'pupil' over the snags and pitfalls of theory and practice which beset the novice. The student is expected to defray the costs of the correspondence involved by the provision of stamped, addressed envelopes for his tutor's replies. The scheme MUST NOT be expected to include the construction of any apparatus by any tutor for his pupil"

This Student Scheme offers our more advanced members a quite unique opportunity to undertake an outstandingly important service for the direct benefit of many radio newcomers who may be unable to find similar facilities with a local club; and indirectly, through them, to influence the future welfare of the hobby as a whole, ensuring that the "Ham Spirit" they themselves show in this manner is automatically instilled into future generations of radio hams.

There is a keen newcomer waiting for the friendly help of every "old timer" in this Society -- of every member who has already overcome most of the innumerable difficulties which beset the beginner.

PLEASE -- I want the names of every member who has acted as a tutor under this scheme in the past, and of all those who have not yet done so but feel that they could extend a helping hand. READ THIS PAGE AGAIN, THEN PUT THE MAG DOWN AND WRITE ME A POSTCARD. Don't wait till Sunday -- you'll gain a new pleasure from your hobby by showing another chap how to enjoy it.

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.....: THE QRP "200" CONTEST :.....

		COUNTRIES WORKED (Mc/s):-			Total
<u>ALL TIME RECORD:</u>		1.8	3.5	7	
1:	G2AOL	73	64	40	177
2:	G2BOF	69	62	44	175
3:	G3HJL	11	60	-	71
<u>1954 ONLY RECORD (For the "200" Cup, now held by G2BOF):</u>					
1:	G2AOL	28	14	7	49
2:	G2BOF	37	3	-	40
3:	G3HJL	4	12	-	16

.....: TOP BAND SWL PANEL :.....

COUNTRIES (X) / COUNTRIES (Y) for:	ALL TIME		1954 ONLY		TOTAL	
	(X)	(Y)	(X)	(Y)	AT	'54
Peter Huntsman (Hexham-on-Tyne)	13	/ 64	5	/ 32	77	/ 37
N.Bason (Peel, Isle of Man)	8	/ 51	3	/ 20	59	/ 23
W.B.Baker (Berwick-on-Tweed)	8	/ 60	-	/ -	68	/ -
D.G.Gordon (Bournemouth)	5	/ 46	-	/ -	51	/ -
H.G.Wells (Waltham Cross)	7	/ 39	-	/ -	46	/ -
E.Gardiner (Diss, Norfolk)	4	/ 35	-	/ -	39	/ -

.....: THE 1954 QRP C-Z PANEL :.....

<u>COUNTRIES</u> heard on:--	3.5	7	14	21	28	Total	Zones	C Z
Peter Huntsman	19	53	65	1	-	85	28	113
Norman Bason	20	24	29	-	-	47	11	58
D.G.Goddon	16	2	22	3	-	32	12	44