

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

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JOURNAL OF THE
Q R P
RESEARCH SOCIETY

Q R P

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..... EDITORIAL

It is, in a way, unfortunate that QRP is such an all-encompassing subject. It can cover every phase of radio, and among the members of this Society we have enthusiasts in just that many different spheres. It is impossible, in the space of this magazine, to offer a satisfying quantity of any one subject at a time. We concentrated on aeriels last month and had to cut our "QRP DIRECTORY". Letters of protest are still reaching us by every mail -- "had we forgotten it?" -- No, we hadn't, but we can't make this typewriter write type any smaller! Our policy must always be curb a wholesale coverage and concentrate on those subjects which, by the volume of ensuing correspondence, appear to be most popular. Actually the articles on "THE H-Q Rx" have drawn more letters than any other item since our first issue. Conversely, our attempts, most ably assisted by CC2CNC, to rouse VHF interest, have met least response. This seems to us a most surprising condition since there are so many sound reasons why VHF should claim a very great deal of enthusiasm.

The future of amateur radio lies more and more completely in the VHF field. The gear entailed is no more complicated than for lower

frequencies and, in many cases such as coils, is far more easily constructed. The necessary antenna takes up much less space and can be erected even by flat-dwellers. The Dx-hound is often able to accumulate reward from a chap a couple of counties, rather than a couple of continents away. And VHF, surely, is the only remaining facet in which can be found that spirit of adventure and ultimate achievement so well known to the "boys" of early amateur radio days.

.....: DESIGN OF QRP SUPERHETS - 1 :.....

(This is the first of a comprehensive series of articles written specially for "QRP" by Mr David White who is with EMI Institutes)

In the design of QRP Superhets we have all the usual considerations which apply to high performance receivers -- ie, sensitivity, selectivity, etc and, in addition two more -- low power consumption &, generally speaking, low cost.

In these notes the second of these two factors will be dealt with as of secondary importance. However, if any particularly costly item is called for, as far as possible a cheaper (and of necessity somewhat inferior) alternative will be given.

Now, the first of our additional factors means that the number of valves will have to be kept to a minimum and the valves used must have the lowest possible consumption. It follows that the use of battery valves would be advantageous if heater consumption is to be taken into account. The line-up for a mains Rx will be limited to, presumably, three valves -- frequency changer, IF amplifier and detector/AVC/audio. (The advisability or otherwise of using AVC will be dealt with later). Since it does not constitute an addition to the HT drain the use of a noise limiter in particularly noisy locations is not precluded.

Using battery valves it should be possible to add one addition-

al valve. Whether or not this should be an RF amplifier rather than an IF amplifier will depend largely on whether there is sufficient image rejection or not. If sufficient rejection can be obtained without the use of an RF tuned circuit, which will usually be the case at the lower frequencies, then greater gain will result from using the valve as an IF amplifier. It may even be worth while obtaining the necessary image rejection by raising the IF. The increase in gain then obtained by using an additional IF stage will often be greater than that given by an RF stage even when the loss due to a higher IF is taken into account.

In the interest of optimum performance and ease of bandspread it is advisable to limit the coverage of the Rx. Coverage of the amateur bands only is all that is usually required, though perhaps coverage of one or other of the standard frequency transmissions as well would be helpful. If a limited band only is covered on each range then tracking is simplified and the coils can be arranged to have a high L/C ratio.

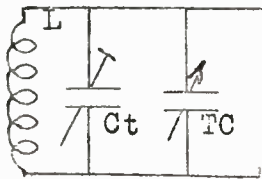


FIG 1.

Fig 1 shows the usual arrangement. TC is the tuning condenser and Ct is a trimmer. The combined capacity of Ct and TC should be fairly small and L fairly large in value to obtain a high L/C ratio.

Over a limited band such as an amateur band at 7 Mc/s or above there should be no necessity to pad the oscillator.

(Next month a stage by stage discussion of the receiver will commence with "The Converter or Frequency Changer" -- Ed.)

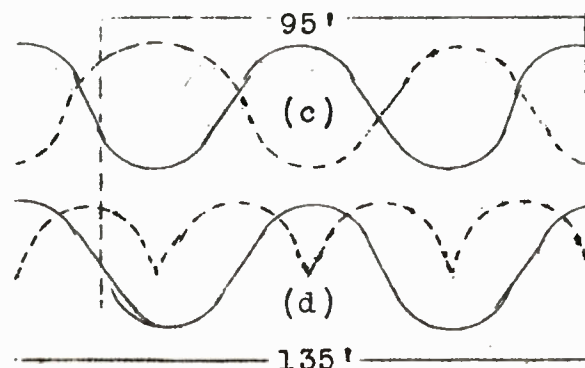
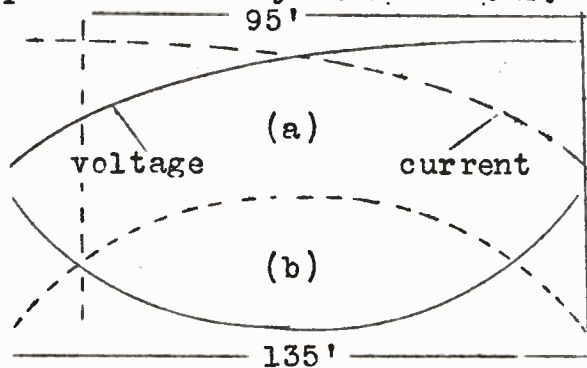
.....: KALEVELD CUP :.....

Don't forget the date -- 0001 hrs, Sat, October 3rd to 2359 hrs, Sunday, October 11th. WE DO WANT ALL POSSIBLE ENTRIES FOR THIS CONTEST TO MAKE IT A NOTORIOUS SUCCESS. DO PLEASE BACK US BY HAVING A GO!

.....: THE ALL-BAND ANTENNA IN USE AT G3HJL :.....

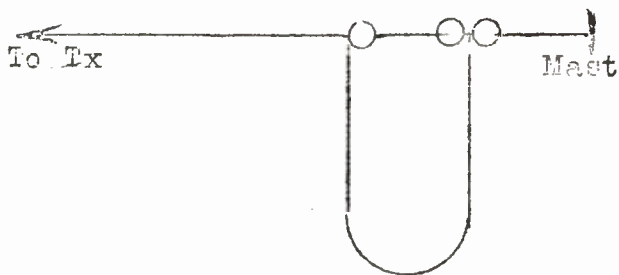
The system to be described is not claimed to be an "end all" to every skywire problem, but it does represent the best compromise under the difficult conditions at G3HJL. It was desired to use an endfed antenna, as a tuned coupling system would probably necessitate a trip to the back of the house to re-tune each time a QSY took place. Furthermore, with QRP, tighter coupling can be used before the level of radiated harmonics is raised high enough to be troublesome.

Bringing the antenna into the shack can present some problems. A voltage node anywhere near the building is undesirable as, for one thing, the leakage losses (resistive losses, of course) are squared as the voltage is doubled. A current node, on the other hand, will tend to a heavy earth lead current, which is a bad thing usually, unless one can get a really effective earth with, literally, masses of buried metal! If, however, the length is selected with care both of these conditions can be satisfied. A wire of 95 ft, measured right up to the Tx, will do this. The ubiquitous PI SECTION TANK CIRCUIT will make an ideal method of feeding it. Incidentally, the Pi Coupler should never be used to feed a resonant length -- so here is another point in the system's favour.



The figures on page 4 show the voltage and current distribution along a 135 ft wire when working on 1.8 Mc/s (a), 3.5 Mc/s (b), 7.0 Mc/s (c) and 14 Mc/s (d). They indicate how a transmitter connected at the 95 ft point will avoid these nodes on all four bands. On 10 metres it is proposed to use a separate dipole in the roof space.

If 95 ft of space is not available, part of the remote end of the antenna can be folded as in the sketch below, though some loss of efficiency must result.



At G3HJL the system is used under what may be described as really bad conditions. The antenna leaves the Tx, passes vertically through the ceiling, across the roof space, between two roof tiles with no insulation at this point, and out to the top of a 30 ft mast. Despite this, however, some 500 QSOs have been made with 12 countries, only ten QSOs

involving more than two watts input.

(An article on ANTENNAE will appear in each future issue of the mag in order to keep the contents of as general coverage as possible and avoid specialisation as in the last number -- Ed.)

.....: MORE ON THE 435 Mc/s TRANSRECEIVER, by GC2CNC :.....

GC2CNC apologises for an error in drawing the circuit which appeared in the June issue of this mag. He also thanks members of the Kingston Amateur Radio Soc; who drew his attention to the discrepancy. He assures us, however, that the actual model does work. He asks us to pose the question to those who spotted the error, "would it be better if a lead joined the VRL side of the RFC to the top of C5, and if the T-R switch between the anode of V2 and C5 was relabeled R-T?"-- work it

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it out!

Footnote:-- In this month's mail we have a letter from George Haylock, G2DHV, who is chairman of Ravensbourne Amateur Radio Club. He says -- "Several of our members are building 420/435 Mc/s Tx/Rx as published in the June issue. I have built one myself in an evening. The Tx es mod works fine es needs a high impedance phones on output, but the Rx doesn't work properly. Output of Tx is OK with a single wire or to earth or twin to dipole etc." Thanks for that, George.

.....: FROM QRP TO TV IN CANADA :.....

We had too little space to reproduce all of last month's letter from Bob Eldridge, VE7BS, but his comments on condx are worth reporting. Bob, it will be remembered, has collected himself a job with The B.C. Television Service -- hence his interest in Tv despite his firm belief in QRP. He says:

"The most unusual things happen here on the Tv spectrum during summer. This week (written August 2nd) a station from Phoenix, Arizona -- I think it was KPHS -- pushed KING Seattle off the screen on channel 5 at times; and KNXT has been booming in from Denver, Colorado on channel two. Other odd stations come in for short periods from places thousands of miles away. VE7VC here has a 20 metre rotary beam mounted on about 60 ft of telephone pole, and some of the VE7 boys have veritable antenna farms. I am sorry to say that no one ever dreams of using QRP. The smallest final I have heard of in the Vancouver area so far is 25 watts. I am anxious to have a dabble myself with some transistors, but it is difficult to get hold of them in Canada, though they can be bought (at a price) in the States. I don't think there is any doubt that these transistor things will revolutionise radio and Tv pretty soon."

(Sounds like TVI must mean "interference from TV signals" over there!
Let's hear more from you, Bob)

.....: THE W AND QRP, by E.Banks, GC2CNC. :.....

For years now, whenever QRP has been a subject for discussion, people on both sides of the Atlantic have monotonously repeated the same old words, "yes, but the W must use QRO in order to get out". So, to be quite frank at the very beginning and to "stick out a neck", the writer refutes the claim.

Before the 1949 - 1945 upheaval the average G (and this means GM etc as well) was limited to ten watts -- yet many managed excellent contacts with a regularity rarely equalled today. During NFD 5 watts produce very fine contacts from as far afield as VK/ZL, and a few well known hams put out strong QRP signals consistently. And, in case of doubters, herewith are quoted: -- (a) G6ZN with a Hartley osc; (b) GW8WJ with 8 watts, having worked VK/ZL on 3.5 Mc/s; (c) VQ2W who gets across the "pond" with 2 watts; (d) PAOXE who has done likewise; (e) G8DL with a transmitter no larger than a packet of 20 cigarettes; (f) G5QI with a LP2 battery valve transmitter and so on

"So what", say the doubters, "that is pure luck". To borrow a very famous saying and distort it somewhat -- NEVER WAS SO MUCH TRIPE SPOKEN BY SO MANY IN SO FEW WORDS!

Back to the first paragraph; what on earth difference does it make to the reception of incoming signals if the outgoing signal is 2 watts or 300? If a W or any other real QRO station can receive an in-coming signal from a QRP station, through all the din they complain about, there does not appear to be any genuine reason why a QRP signal cannot be successfully radiated. It does not seem logical to claim that the terrific clatter in W is the real cause of a necessity to use QRO.

The truth is that, under equal conditions, QRP will lag behind QRO and, the latter being so powerful, may swamp other QRO signals to receiving station. BUT (and this is important), unless the other signal has equal pitch and frequency, the QRO signal will NOT erase it, but will in fact join forces to create more bedlam than before and a

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little child shall lead them....Yes, through this noise will come some QRP notes, emanating from a G in a council house with the barest minimum of antenna and cash, but full of real genuine enthusiasm AND skill as an operator, or from EAØ, VQ2, etc, etc.

To carry the argument further: WØ lives in a bungalow, with his nearest neighbour 40 miles away. He runs 750 watts to multi-element arrays and, blasting the ether like an atomic explosion, gets an S3 report from G9ZZZ who, living in London, with 132' end fed, running 10 watts gets an S9. What happens between WØ and G9 to those 750 watts? Why is it that W2QHH was able so very successfully to work so many countries on 25 watts, amidst the very racket which Ws claim is the cause of their urgent need for more and more power?

Perhaps a good scientific reason exists; perhaps each QRO signal inductively creates a "back RF" and so weighs down other signals so that 750 watts becomes an effective 10 watts. If not, then WHAT IS THE REASON?

Quite simply it should be no more difficult for a W to read a QRP G than for a G to read a QRP W. Surely the interference is equal on both sides of the Atlantic, and the G experiences the din on his Rx from Ws, as the W experiences from other Ws? Possibly the W hears more noise, yet he can and does read R5 QRP signals from G.

Perhaps these few lines will create discussion. It is to be hoped so. But should anyone feel the urge to bestow unpleasant names upon the author, remember that what has been written is his view, and a reliable proof that he is wrong may convince him! Who knows!

.....: DARTMOUTH & DISTRICT A.R. CLUB'S JULY LOG. :.....

7 Mc/s, 4.5 watts: VE1ZZ (449), VE1HO (339), VP9BC (459) -- the above contacts were made with a sloping dipole antenna. OE5JP (569), SM3AGD (469), 9S4AB (579), YU3APR (479), PL1G (569).
14 Mc/s, 4.5 watts: DL3DE (579), SI7ACO (579). 21 Mc/s, 4.5 watts:

DL3TG (559) -- all above made with horizontal dipole. 7 Mc/s, 0.9 watt:
 DL9NX (559), G50Q (569), G5DU (559), G3IGU (449). 7 Mc/s, 1 watt:
 G3IVH/A (439), GM3ITN (559), GM2FHH (579) -- all above made with sloping half wave dipole antenna.

(Thank you, Dartmouth, and let's have another instalment soon, OM's. I hope that other clubs will take note as well! -- Ed)

.....: A BATTERY SUPERSET FOR 80/160. :.....

An inexpensive receiver can be made from a War Time Utility Rx. These employ Mazda 2 volt valves and are complete with speaker, covering the medium BC band only. There are several versions of the basic design, of which the specification stipulates that the Rx shall operate when fed with a 60v HT via a 2200 ohm resistor. In two examples tested the HT consumption was found to be $7\frac{1}{2}$ mA and $5\frac{1}{2}$ mA respectively. Obtain one with cond coils and in working order to ease alignment problems. Note that the osc anode is tuned.

Replace the coils with ATKINS AL7R and AL7G coils and tracking condenser to suit. Coils and data from Hermes Products Ltd, Munster Park Works, Gowan Avenue, London SW6. Adjust the coils and tuning condenser trimmers. The existing tuning condensers will serve, but if desired, as a future refinement, they could be used as band-set in conjunction with a twin band spreader. Leave this alteration for the time being.

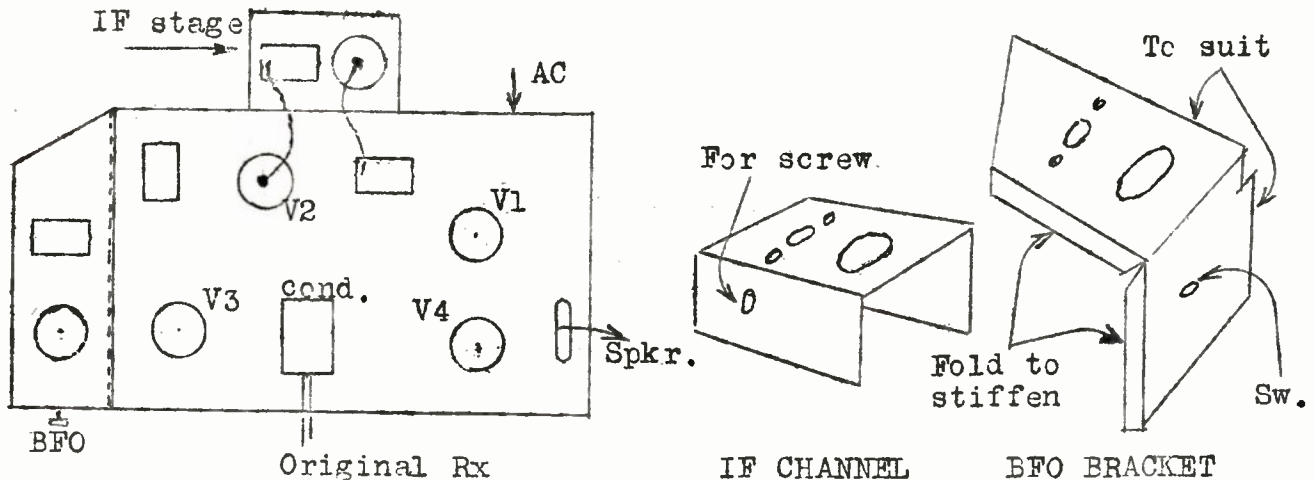
If more "punch" is required add an IF stage and not an LF one. To do this make up a 4" length of channel, $2\frac{1}{2}$ " deep and of width to suit a 465 Kc/s IFT and Mazda holder, and fix to the rear of the chassis with existing screw therein. Placing the new valve (VP23) in the middle of the chassis, wire up the stage as though the IFT follows the valve, with 0.1 condenser under the channel, and bring the insulated supply leads out at one end to pass through a grommet in the wall of the chassis to the VP23 sockets etc. Transfer the grid fly-lead on the

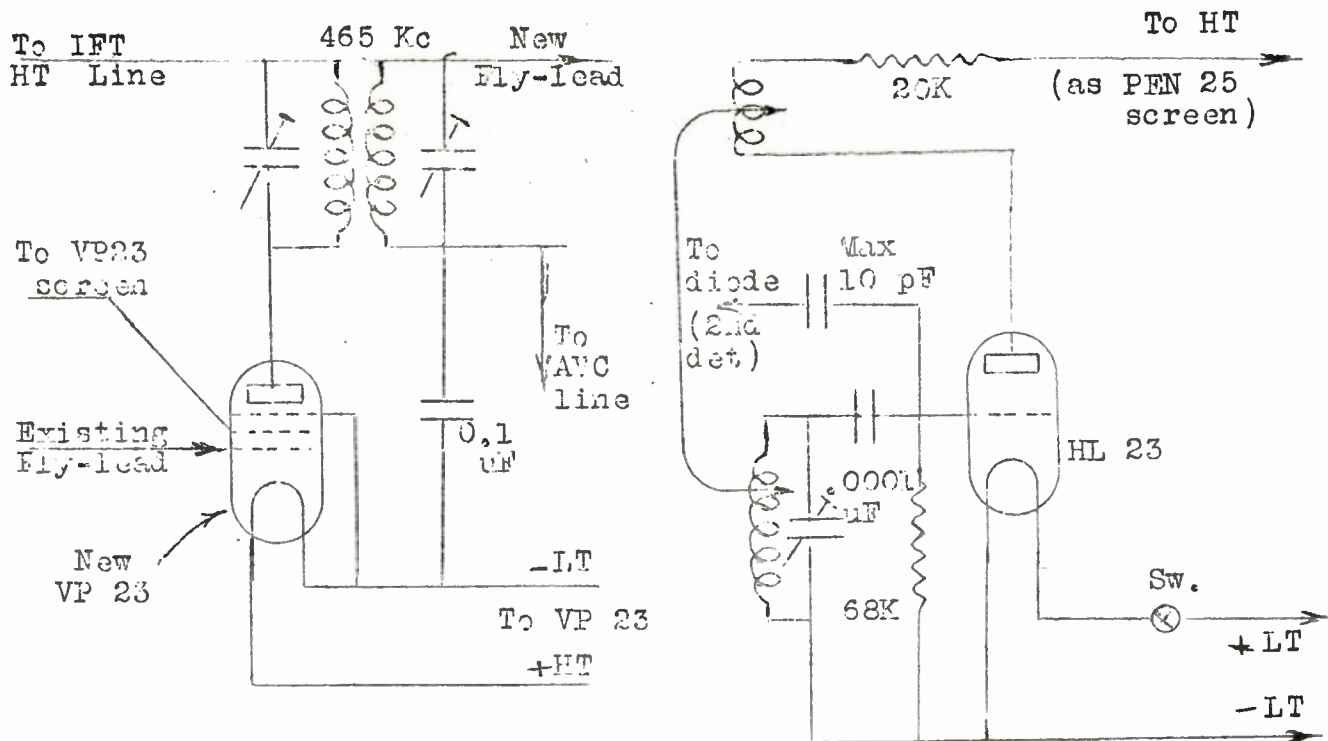
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centre IFT to the cap of the new valve. Connect the fly lead from the new IFT to the valve cap from which the previous fly was removed. Adjust the new IFT. The whole assembly should fit into the original cabinet.

Should IF break-through occur, fit a Denco IF filter near the aerial socket. A LFO utilising an HL23 valve can be fitted to the LH end of the chassis. The bracket for this rests on the top edge of the chassis, extensions being provided to accommodate screws for fixing. Unfortunately the Rx cannot then be housed in the original cabinet. An AVC switch is useful.

A tuned aerial was found to improve results, giving a better signal/noise ratio. When using a new 100v HT battery the LF end can be easily overloaded.





ADDITIONAL IF STAGE

B F O

(We are indebted to H.J.Hinks for this useful conversion data. Quantities of these sets are in "cold storage", and they are still obtainable from many "surplus" factors. -- Ed.)

Peter Huntsman (Hexham-on-Tyne) having visited G3FCV in Hull, has been fired with enthusiasm for Ground Plane antennae. He has not room for the horizontals himself but has tried out the vertical element by itself and finds a great all round improvement on his previous 66 ft rig even in a temporary hook-up form.

Vic Brand G3JNB (Surbiton) is anxious that we should produce a "QRP Calls List" supplement which can be amended from time to time in the mag. We think it is an excellent idea and will take it up as soon as time allows. Vic has been glancing through some pre-war radio mags and finds a lot more QRP enthusiasm evident than is the case now.

Ted Stonestreet (Willisdon Green) comes up with a detailed log for Two again and we are hoping to get it in complete this time. (G3GBF: R.F. Hawksley, 21 Ravenscroft Ave, NW11. Would like to see you I'm sure, OM -- personal friend of mine. Drop him line first though)

Ernest Ashby, G3HGW (Knottingly, Yorks) claims to have suffered from excessive QRM until the middle of July. He has certainly made amends, however, by (1) moving the gear to a very neat layout in the spare room, (2) building a BC rig to free his Hallcrafters from family usage, (3) building a fb Top Band Tx, (4) building a 7Mc/s Tx, (5) building a GD Csc/absorption wavemeter/ione-CW monitor, (6) and building a wavemeter for 45 - 150 Mc/s. (Good show, Ernest! We'd like more detailed gen and diagrams on some of that gear, OM)

Sam Hall, G2AOL (Oxford, Kent) has spent quite a bit of time on 40 and was delighted when G13ILV in Armagh came back to a QRP CQ. He would like a sked with G3HMR in Westmorland for his "200" on all three bands. He worked GM3HTH in Shetlands on 160 with 10 watts, but many calls with 2 watts only produced strings of QRZs.

Allan Herridge, G3IDG (London, SW12) is most enthusiastic over improved results using his new T2ED antenna. He has the 40-20-10 metre version and finds it loads OK on 80 as well. For 160 he straps the

feeders together and series tunes the lot to ground. Allan is hoping for an organised get-together at the RSGB Show this year (details on a later page in this issue, OM)

Peter Amy, ex-GC3IDP (Mwliga, Kenya) has sorted out another QTH again! He has completed the necessary correspondence for his VQ4 call and is awaiting an answer. He hasn't heard a G yet during his short spells of listening and is wondering if it may be due to the position of his antenna or to the mountains on either side of him.

Kack Cowles, ex-G2AJUQ (Karigarin, W. Australia) has got a letter through at last (we had begun to give up hope, OM -- and, incidentally ALL issues of QRP have been sent to Ipswich for forwarding so they will probably arrive in time!). His letter is interesting and merits reproduction in full. He says:-- "It looks as though I shall be able to try out QRP working here as we are miles from any mains! I have brought out a lot of gear -- the 5R0, a B2 and also the old trusty battery Tx which worked all English counties on 3 watts in 1948-49. It will be some time before I get a power supply fixed up for the 5RV but I have got the licence fixed up out here now, and sent off the fee and am just waiting the allotment of a VK6 call, so will very soon be on the air again QRP at any rate. Will let you know as soon as I get the call. So far have only listened a few odd moments on a BC Rx. I find 40 metre phone is the local "nattering" band here on Sunday mornings, when all VK comes in well and also at times ZL. On 20 at the moment plenty of Ws, Sth Americans & an odd VE, but little sign of Europe or Gs. Condx generally poor, however, a better Rx will no doubt improve results. I find the MCRI needs a couple of valves, but can get them OK out here. Expect you know we adopted Paddy and he is here with us. The XYL and he are delighted with the country and I am glad to be back after 20 years. We are about 200 miles up country from Perth and 1000 ft above sea level. MILES of room (literally!) for aerials and all growing ideal timber for masts. All you need is an axe and plenty of wire! At the moment we are staying and working on a friend's farm pending

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the acquisition of a few square miles of our own! The Wx is lovely -- still our "winter", but snow is unknown here of course, though there is a light frost at nights occasionally, and bright sunny days. September is the month of Spring when all the wild flowers make a magnificent show. Must QRT now -- Vy 73 to all friends & BCNU agn soon on the air." (Future QRPs coming direct, OM, and tnx fr grand letter -- lets have more! 73 yrself, XYL and Paddy from us all.)

.....: AUGUST 2 METRE LOG -- A.E.Stonestreet :.....

STATION HEARD	DATE	TIME	WORKING		QSA/ REMARKS
			HEARD	NOT HEARD	
G3BPL	1st	2336	-	G3ABA	5.5
G2DD	2nd	0015	-	G3DIV	5.7
G2DD	"	0020	G3FYY	-	5.9
G3GHO	5th	1945	Calling CQ (CW)		
G3GHI	11th	2300	-	G8TB	QRM by G3GSE
G3GSE	"	2305	-	F8MX	5.9
G3CBO	"	2310	Calling CQ (CW)		
G3MI	"	2320	G2HDZ	-	QRM by G3CBO
G2DD	20th	1910	G6NF	-	Wx- Dull sky
G3GSE	"	2300	G3GBO	-	Wx- Rain
G5BC	21st	2315	-	G3ISA	
G3FT	"	2320	-	G5TZ/A	
G2DD	24th	2310	G3GSE		
G2HDZ	27th	0030	-	G5DT	No Contact
G3GSE	28th	2315	-	G3DIV	

The above is by no means the full log submitted. Items have been selected at random to demonstrate the interesting and useful results which can be achieved by consistent logging and reporting. It is hoped that other VHF enthusiasts will be encouraged to submit similar reports.

..... THE 1953 QRP C-Z PANEL

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	COUNTRIES					C Total	ZONES	GRAND TOTAL
	3,5	7	14	21	28			
1: P.Huntsman	15	39	130	32	9	134	34	168
2: E.W.Gardiner	25	8	100	55	5	113	29	142
3: A.E.Stonestreet	20	26	95	-	8	107	30	137
4: mN.Bason	14	30	102	14	-	106	32	138
5: B.J.Read	6	24	83	-	-	95	31	126
6: R.Whitfield	22	7	75	26	6	84	24	108

..... THE QRP "200" CONTEST

ALL TIME RECORD:	COUNTRIES WORKED (Mc/s):--			TOTAL
	1,8	3,5	7	
1: G2AOL	62	54	13	129
2: G2BOF	53	39	20	112
3: G3JLJ	2	50	-	52
<u>1953 ONLY RECORD:</u>				
1: G2AOL	59	45	11	115
2: G2BOF	53	39	20	112
3: G3JLJ	2	24	-	26

Holidays have made a big difference to both these contests as is only to be expected. In the case of the TOP BAND PANEL, although logs have been returned, there has been no increase in any score.

XX
 YOUR HOW SEC/EDITOR WILL BE LOOKING FOR PERSONAL QSOs AT THE R S G B
 AMATEUR EXHIBITION ON SATURDAY NOVEMBER 28th AT 1530 hrs JUST INSIDE
 THE ENTRANCE DOOR OF THE HALL -- ROYAL HOTEL, WOBURN PLACE, WC1. That
 will be the focal point if you haven't made contact before that time.

.....: THE H-Q Rx :.....

Before we are accused of having forgotten the H-Q Rx, let me assure readers that it is still making promising progress, but space of late has prevented us including our monthly report. Even during our holidays it was not far from mind for, during that time, we sought inspiration in the matter of an appropriate title for it. Our final choice was THE CHALLENGE 3 -- has anyone got a better suggestion?

.....: Q R P DIRECTORY :.....

FULLY ACTIVE MEMBERS (continued): --

STONESTREET, A.E., 29 Chaplin Rd, Willedden Green, London NW 2.
SUTCLIFFE, G.M., 12 Upper Bell Hall, Saville Park, Halifax, Yorks.
THOMPSON, G.R., 139 Trinity Avenue, Llandudno, N.Wales.
TILLET, G.H., 42 Park Lane, Hornchurch, Essex.
TIIPING, J.A., 79 Wayland Avenue, Withdean, Brighton, 5.
TURNER, R. (G3IMG) 63 Tennyson St, Pensnett, Brierly Hill, Staffs.
TURNER, T.C. (G2HAW) 13 Park Road, Whitton Rd, Hounslow, Middx.
VEPRINDER, C.H.P. (G2BAM) 4 Church Path, Iwerne Minster, Blandford,
WELLS, H.G., 43 Arlington Cresc, Waltham Cross, Herts. (Dorset).
WELSH, A., 3 Belmont, Dover Rd, Walmer, Deal, Kent.
WEST, A.L.F., c/o 12 Wishford Rd, Wilton, Salisbury, Wilts.
WHITE, D., 31 St James Rd, Kingston-on-Thames.
WHITFIELD, G. (G3ETQ) 3 Goldsboro Rd, Doncaster, Yorks.
WHITFIELD R., 10 Priestlands Rd, Hexham, Northumberland.
WILKINSON, R.S., 16 Eastbourne St, Hessle Rd, Hull,
WILLIAMS, A., 319 Botwell Lane, Hayes, Middx.
WILLIAMS, D.J., 5 Coed-ethin Terrace, Ebbw Vale, Mon.
WILLIAMS, D.M. (G3ETZ) 20 Sydney St, Merthyr, Glam.
WILSHAW, J.H.F., 4 Station Rd, Bromley, Kent.
WHITTLE, J.F. (G3RFP) 2 Church Terrace, Bolton, Lancs.
WOODAGE, J. (G3REL) 107 Cableway House, Kildill St, London NW 1.