

DEDICATED TO THE  
ADVANCEMENT OF  
LOW POWER RADIO.  
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Q R P .

December 1949.

EDITORIAL.

As the next issue will be too late in reaching you I must take this early opportunity of offering every one of you all those good wishes which combine to make up Christmas Greetings.

During the short existence of "Q R P" a warm feeling has arisen here of a great many new friendships gained in all parts of the country. If only it could be possible for all of us to meet together during this Season of Goodwill I know that we should cement a comradeship far more strong than exists in the usual radio club where interests are, of necessity, fairly diversified. Since such an event, at present, is not possible I can only hope that, in the pages of "Q R P" I shall be able to convey, more and more, that sense of personal contact which we cannot yet achieve by any other means.

Referring back to my remarks of last month on the subject of the numeral one --- believe me I've oiled up my little '1', blushing profusely the while at my incautious display of ignorance. Very many thanks for your advice, OMs, which arrived by every means except carrier pigeon. Solutions came by personal call, telephone, telegram, letter and postcard. It has been quite overwhelming!

Finally, don't forget the contest announced last month, for the first week in January. It is our most important effort up to date and I do want full support from all of you, please.

BEST REGARDS.

While on the subject of good wishes it has occurred to me that some of our newcomers to amateur abbreviations may not realize that "73" means "best regards" --- a complete and self-sufficient phrase. The common renderings "73's" and, worse still "best 73's" will not therefore transcribe correctly.

GRAB - CHANGE.

Here's a real QRP snip for this month: Our Section Secretary, Alec Jotcham of 119 Exeter Road, Dawlish, Devon, is offering his well tried and proven battery O-V-1. It is Det, RCC pen, with a filter output circuit. Complete with valves, two Eddystone 6-pin coils, and Eddystone Bandspread Tuning Assembly, but less cabinet. Alec wants £5.0.0 for this very fb QRP receiver.

G 3 ERD.

I have received copies of the Derby and District Amateur Radio Society's quarterly magazine and I am pleased to say our "Q R P" has found a space in their club library. Their mag bears full witness to the energy and grand co-operation which obviously pervades the club and any member of our Section in that district would be well advised to get in touch with their Secretary, Mr F.C. Ward (G2CVV), 5 Uplands Avenue, Littleover, Derby. I am quite sure a hearty welcome would be forthcoming.

Incidentally Derby have a club Tx with the call G3ERD. So keep an ear cocked for G3 Experimental Radio Derby, OMs.

ACTIVITY.

A.L.F. West once again turns up with his usual interesting letter. I always look forward to his fb monthly contact and am coming to feel I can rely on it should all else fail. The Air Ministry have decided that Alf's reflex experiments are quite unimportant, so they have posted him to a station boasting only DC mains--- the usual short sighted policy! Yet even this has not damped his ardour. He is temporarily turning his attention to modifying the mains O-V-1 which appeared in the Oct "Q R P" to AC/DC use. This will be interesting and I hope to be able to include the results as a Rig of the Month before long. Good luck Alf and I hope you get a long pass for Christmas, OM.

D.W. Auton, who is in the Navy, is also under the threat of a draft, though in his case there is a chance that the Admiralty may have more respect for the needs of amateur radio! It would be a serious loss if D.W.A. did have to up-anchor as he is responsible for the Services Section magazine as well as being a regular correspondent to "Q R P". Let's hope the authorities realise the Home Fleet can't do without you, Dan, OM.

A. Jotcham, who's O-V-1 occupies Gear-Change this month, is going to try and repeat his Dx achievements with a O-V-0. Before it's too late, Alec, can we please have the circuit and full gen on the O-V-1 for Rig of the Month --- that filter output circuit should be of interest to many of us, OM.

G.H.M. Yule, strangely enough, was in the act of experimenting with a circuit when he found the completed version of it in the Oct "Q R P". It was sponsored there by C.E. Atherall. G.H.M. agrees that it is excellent on the BC bands but, so far, he has had very poor results on all amateur frequencies. He is continuing experiments in this direction and has promised to keep us posted on results.

H. Lefebure, who has been a staunch adherent of the 1-V-1 layout has now reduced the Rx to O-V-1 and finds that he gets better Dx results with the PM2HL RCC into a KT2 than he did with the previous buffer stage in front. Personally I am not surprised as I have yet to meet the "buffer" stage which earns it's keep in anything but a super-regen. Even the tuned HF stage is hardly worth the extra trouble as regards increasing distance though it may give a slight improvement in selectivity, so far as VHF's are concerned in the TRF type of rig.

### HINTS.

Alec Jotcham has sent me the following useful hints on obtaining a really commercial looking finish to plywood. Alec suggests it as useful for panels but I would say it covers cabinet construction as well. And, incidentally, if you do use plywood panels don't forget that, though the job may be nice and rigid, it does need a metal or foil backing.

Alec says: "First cut the plywood to size and drill all necessary holes, then with a piece of medium grade glass paper, give the panel a good rub down till the grain is well "up" and the wood is quite smooth, finally brushing off the wood dust. You will now require a small tin of varnish stain and a clean paint brush. Give the wood a coat of stain, brushing well in, and when the work is quite dry (and be certain it is quite dry) take a clean rag and a little olive oil or salad oil. Rub this well in, drop by drop, repeating once a day for several days. The result will be a nice rigid polished panel."

PRACTICAL AERIALS, (1): The Inverted "L".

This type of antenna is undoubtedly the most common and the most varied in "design". A glance along any row of back hardens will prove the truth of this. Ninety percent of the "lash-ups" that vainly try to collect radio signals out of space are some form of inverted "L" in which the horizontals may cover any distance from 6 to 160 feet and the supports may consist of anything from a clothes prop to an elm tree.

And yet, with correct and logical design, it can be a highly efficient rig and need not be excessively long.

Excellent results can be obtained with a horizontal of only  $\frac{1}{4}$  wavelength, the vertical being also  $\frac{1}{4}$  wave. The junction of the vertical and horizontal should be

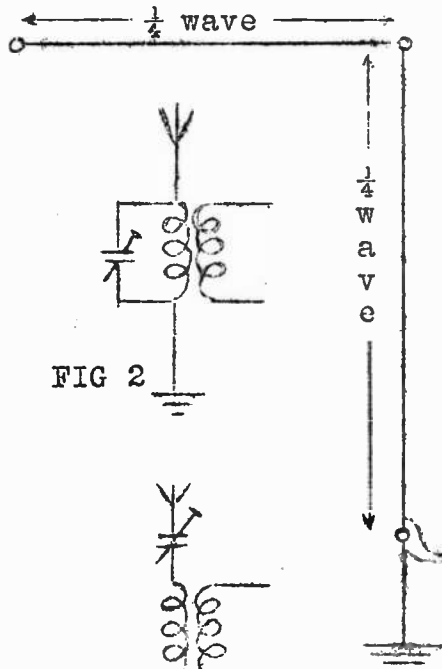


FIG 1.

as near 90 degrees as possible and may be supported from the eaves above the "shack" window. But the most important point is to arrange the earth plate directly below the

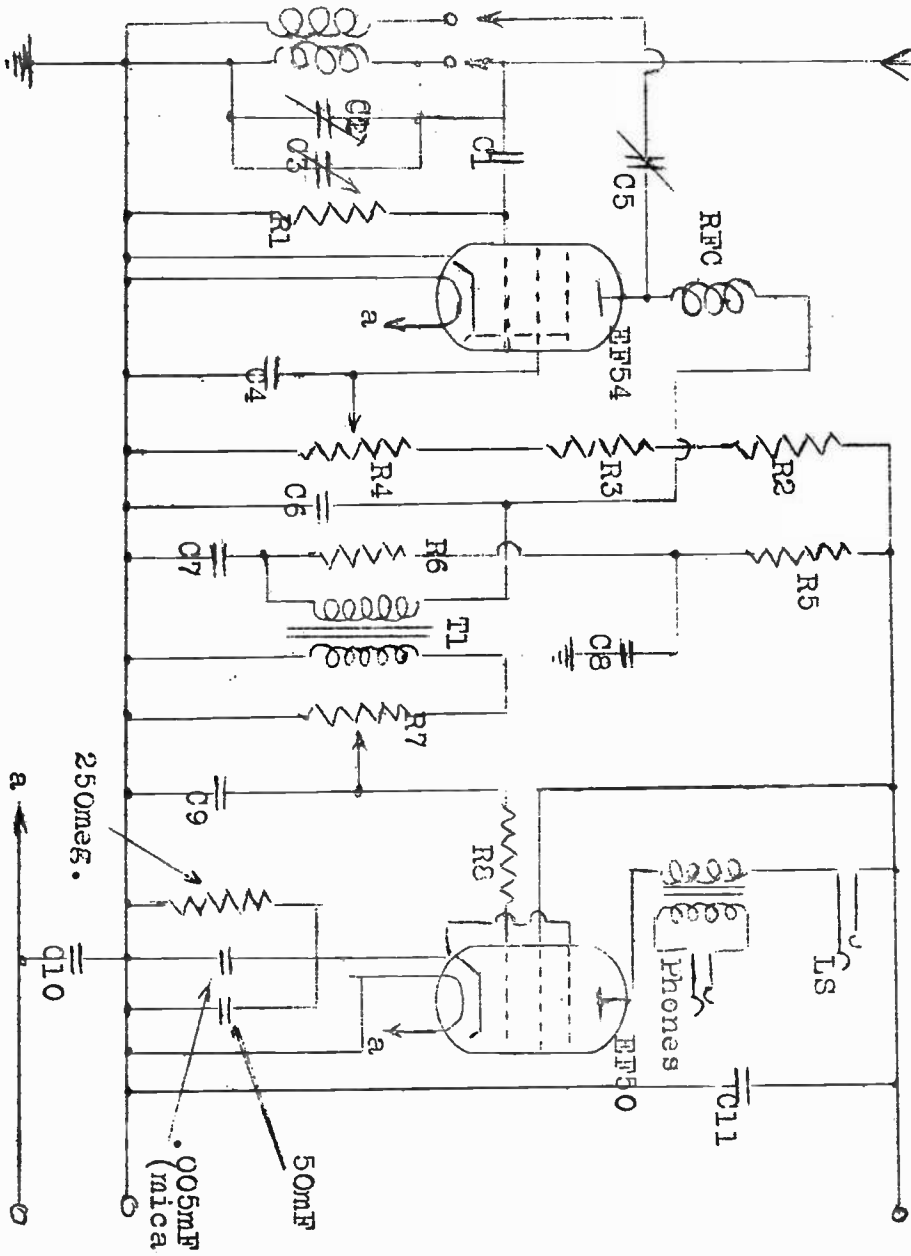
the vertical wire. The diagrams will explain the rig without further comment except to say that the vertical is anchored fairly taut via it's insulator by the lead to the earth plate. From either side of this insulator a connection is taken to the Rx, preferably through co-ax cable, though good flex (or twisted wire) will answer the purpose with little loss if kept reasonably short, and is almost as efficient in preventing pick-up by the lead in. With such a lay out (i.e.,  $\frac{1}{4}$  wave top and down) the aerial coil of the Rx should have a suitable pre-set in parallel (Fig 2), but if it is not possible to gain greater height than, say,  $\frac{1}{8}$  wave or less, then the rig can still be reasonably efficient if the aerial is series tuned as in Fig 3,

RIG OF THE MONTH, No 4: A O-V-1 By Ron Turner.

This Rx is built on a chassis 8" x 5 $\frac{1}{2}$ " x 2" with a panel 8" x 19", the two sides of which are bent back to form a channel section giving a very rigid construction which also helps screening. The 150 pF variable is controlled by a Muirhead drive. The bandspread (32), however, is so small that no reduction gear is necessary. It is an ex-service 10C/4321 stripped down to one rotor vane and two stator vanes double spaced, thus giving approximately 2 pF.

The fully switched coil pack is a neat example of amateur design. There are only two  $\frac{1}{2}$ " diameter formers, but each carries two grid windings with a common reaction winding so that, in all four ranges are covered. One former mounts 8 turns (for 10 to 15 m/cs) and 16 turns (for 6 to 12 m/cs) with a common 2 turn reaction winding. The other mounts 30 turns (for 3 $\frac{1}{2}$  to 6 $\frac{1}{2}$  m/cs) and 60 turns (for 1 $\frac{1}{2}$  to 3 m/cs) with a common 10 reaction coil.







The pre-set capacitor C5 is adjusted during initial tests to give smooth overall reaction. Thereafter all reaction adjustments are obtained with R4. The transformer T1 has a ratio of 5/1 and the HT input to the Rx is approximately 2 watts.

Component values are:

C1: 50 pF.	C8: 0.1 uF.	R4: 20 K.
C2: 2 pF (see text)	C9: 100 pF.	R5: 47 K.
C3: 150 pF.	C10: .005 uF.	R6: 20 K.
C4: 1 uF.	C11: .005 uF.	R7: 100 K.
C5: 3/30 pF.	R1: 2 meg.	R8: 10 K.
C6: 100 pF.	R2: 20 K.	V <sub>1</sub> : 6F54.
C7: 0.1 uF.	R3: 20 K.	V2: 6F50.

By way of test report on this rig Hon Turner has had no time since completing assembly and erradicating various teething troubles to compile a comprehensive log, but he hopes to make ammends next month. Meanwhile he sends the following, picked up in odd moments between 26/8/49 and 8/10/49:

KP4CV; ZL4HP; VK4KS; PY3CQ; OX1BD; TA3FAS; VK5RN.

These are all on 14 m/cs.

### THE ATOMIC ASPECT.

Despite the title this article has no connection with stockpiles or plutonium. It has been devised to explain, as briefly as possible, and with a minimum of academic padding, the influences which cause such components as resistors, capacitors and inductances to function in the ways with which we are so familiar.

We know well enough that a battery or a generator will make a current move, but.....well, what IS a current? The answer

calls for a trip down the 'size' scale to the atom. The size of an atom is somewhere about a 100 millionth of a cm. in diameter and it consists of a nucleus which is about 10,000 times smaller still. Surrounding the nucleus are groups of electrons which are so very much smaller even than this that they are really quite tiny, but the influence of the whole set up is so enormous as to be out of all proportion to it's measured size. Now the nucleus is made up of "protons" which are particles of positive electricity (always of identical mass and charge) while the electron is a particle of negative electricity (always of similar mass and charge to one another).

It is the affinity of such unlike charges which cause the great bond between the proton and the electron, but some of the electron groups are relatively distant ( perhaps several millionths of a cm.) from their nucleus and are thus more easily detached, an event which will upset the electrical neutrality of the whole atom. Such an unbalanced atom is called an "ion" and is said to be either positively or negatively ionised. The electron which has become detached will endeavour most strongly to regain electrical neutrality and will join the nearest positive ion it can find.

Thus "positive potential" really means a deficiency of electrons --- not the addition of anything positive. Similarly "negative potential" means that the material in question contains a surplus of electrons. Notwithstanding the conventional theory that current flows from the high potential point to the low potential one, it is infact a movement of electrons from neg to pos round the outside circuit and from pos to neg (under force) within the generator (or battery).

From this we may gain a picture of conditions in a circuit consisting of a copper wire joining (or shorting) the terminals

of a battery. Due to chemical action the battery will drive it's own electrons over to the negative plates. The positive plates, becoming deficient, will tend to draw electrons from the atoms of copper in the wire in an attempt to balance things up. The process will thus be extended throughout the whole circuit in a fraction of a second and will be maintained until, owing to the heat generated by the electron movement, the wire melts (i.e., fuses), or until the chemical action in the battery is exhausted.

Now, suppose a portion of the copper wire is replaced by a wire whose electrons are less loosely arrayed in their atomic orbits. The electrons themselves are identical to those in the copper, but due to their closer packing around the nucleus they are more subject to it's retaining influence and are thus more difficult to shift. The electron flow throughout the whole circuit will therefore be slowed down. The copper wire will now keep cooler but the iron section will now heat up quickly as a result of the extra energy being expended in trying to disrupt it's stable state. By the judicious selection of material, length and section in such a "resistor" the electron flow in any circuit may be accurately controlled.

(To be continued)

### DIFFICULTIES TO BE OVERCOME.

In our last issue we mentioned a spot of bother which Ron Turner was having with hum around 7 m/cs. He has now traced the trouble to his mains pack and has put matters right by decoupling the rectifier anodes to earth via a pair of .005 uF condensers,

H. Lefebure has experienced the same trouble in the past

but he found that the cause was that his lead-in ran along a wall on the opposite side of which (in the next room) an electric light lead had been installed. His remedy was to fit a well earthed screen round the lead-in.

### NOVEMBER CONTEST RESULTS.

The contest arranged for November 6th / 12th was outstanding for two reasons --- (1), the regrettably small support which it gained, and (2) the proof at last of what a QRP receiver really can do.

The honours go to Bert Glass without any hesitation at all. His report reached me promptly and was a most creditable effort in neatness and painstaking attention to detail. Every point asked for (as in the plan for the January contest) was covered and consequently I had no trouble to analyse it. I only wish that I could find space to publish the full and entire text of the report, but as it occupied eight quarto pages I must obviously be content to give you a greatly condensed version of it at the moment. It may be possible however, during December, to find a few extra reams of paper to enable me to give you the full report as a supplement. It's educational value to our newcomers would be well worth the attempt.

At the moment I can only say: "Thank you, Bert, for a very grand job. I do appreciate your effort, OM."

So here are the essential details, with a list of the prefixes heard.

A. E. GLASS, ISWL/G2597 Plymouth, Devon.  
 Rx: Q-V-1 (0.5 watts). Antenna: 66 ft. long wire.

Prefixes logged:

28 m/cs: CR9, HA, KP4, CA4, OK, PY2, TF, UB5, VE1, VE2, VE3.

VK4, VQ4, VQ5, VU2, W1, W2, W3, W4, W5, W6, W7, W8, W9,  
 W0, ZB1, ZS2, ZS5,  
 14 m/cs: CB3, CB7, C08, C09, CR6, CR8, EL, EA, EK, E18, H2, HA,  
 KH6, KL7, KV4, LUL, LU4, LU5, LU6, MB9, 197, OB, OH, OK  
 OY, PY1, PY2, PY7, TF, UA3, UA4, UA6, UA0, UB5, UB6,  
 UD6, VE1, VE2, VE3, VE5, VE6, VE6, VK2, VK3, VK4, V06,  
 VP6, VQ3, W1, W2, W3, W4, W5, W6, W7, W8, W9, W0, YO,  
 ZB2, ZL1, ZL2, ZL3, ZL4, ZP, ZS1, ZS2, ZS5, ZS6.

The total number of calls logged was two hundred and sixteen, most on CW; the total number of points scored (on the basis laid down on pages 35 and 36 of Issue 3) was 783 and, the HT wattage being 0.5, the Grand Total was 1,566.

Listening was carried out each day of the week, the average hours for week days being  $2\frac{1}{4}$  hrs per day, usually between about 0700 and 0745 and again between about 1830 and 2000.

Well, there you are, chaps. That is what CAN be done on a QRP receiver. NOW what about YOU! I am extremely disappointed that more of you were unable to get down to this contest, especially when so many of you have said you were keen on the contest side of the game. Do please let's have a better showing for the January contest.

### DX LOGS.

Here again we have fallen very far below the average to which we had been working. S. Beharrell has sent in his usual welcome and interesting report and of course Bert Glass has excelled himself in his contest achievements. But what of all you others whose logs I had begun to look for as a regular feature? Has the reconstructional bug stung you ALL at the same time? Or is it, perhaps, that some of the fine logs which

we have had lately have made you feel that anything less showy was not worth sending in? I do hope it is not this as such an attitude is quite wrong. Even a complete month of "band blank" entries is of value (providing you know your rig is performing OK) since it gives us an insight into condx in your district. That is the aim of the "Q R P" method of log recording --- we hope in course of time to be able to publish a complete picture of condx throughout the country each month. So don't loose heart just because your results have been poor --- far from being any reflection on yourself or your gear it may be very much needed information. Remember, too, that THIS feature is THE one which I cannot run without your co-operation.

S. B. HARRELL (York), 1-V-2 (1.2 watts HT), 14 m/cs:

13.10.49	(2135/2229)	: PY2AKA; VO2CX; VP3MCB.
15.10.49	(2130/2221)	: CR5UP; OQ5CF; PY7GB; VQ4ERR.
16.10.49	(0930/1926)	: VK2HW; YR3RI; OH2SJ (mobile).
18.10.49	(2205/2245)	: CX2CO; CX4CS; PY4BU; ZB2G.
19.10.49	(2215/2247)	: CE2CC; CX1VD; CX4CS; HK1IY; PY4XI; VP3MCB; VQ4SC; ZB1BS; ZB2G; 4X4AB.
30.10.49	(1908/2220)	: CX2CO; OK1HI; TI2RC; W8LYO.
4.11.49	(1816/2254)	: EA4CK; HC1FG; HC7KD; LU6AJ; 4X4AV; 4X4BC.
6.11.49	(2210/2256)	: HI6EC; VE3OR; W9FUS; W9ARE; YN4CB;.
8.11.49	(1948/2259)	: VE3WI; VO6EP; W8ANT, 8BM, 8LZ, 8TTS.
9.11.49	(2018/2255)	: CO6BE; PY2AKA; VE1CR.
10.11.49	(2215/2300)	: ---Band dead. No Dx at all. ---
13.11.49	(1945/2237)	: CO8MP; TI2TG; VQ4SC; YV5AY.

NEW I S W L CHAPTERS.

SUTTON COLDFIELD: The November S W N announces the launching of a Chapter under the guidance of Selwyn Jones of 12 Kegworth Rd., Erdington, Birmingham, 23. Selwyn is already an active member of the QRP Rx Section, so we shall take especial interest in the development of this Chapter. There is at least one staunch supporter in the district --- H. Lefebure of 8 Berwood Rd., Sutton Coldfield. H.L. is another of our members and one who has already expressed a desire for the formation of a QRP Chapter in the area. If these two get together things should certainly move with energy and foresight.

EXETER: Also in the November S W N is the news that the newly formed Exeter Chapter has got away to a promising start, thanks to the endeavours of still another QRP Rx Section member, Geoff Fowle of Magda House, Maldalene Rd., Exeter. Very good luck, Geoff, and may you get all the support you deserve.

These items certainly make an outstanding demonstration of the enthusiasm which fills the ranks of our QRP membership. Moreover it is pleasant to know that at least two ISWL Chapters exist which, while not essentially QRP, will at least save the haughty contempt for Low Power receivers normally met with in club circles.

Let us have all your news of QRP interest, OMs, and if there is any way in which we can help either of you remember that you have only to ask.



## LAYOUT.

Issue No 1 covered 8 pages; issue No 2 increased to 13 pages; issue No 3 went up again to 17 pages.

When first planning the general layout of our little mag I was quite unprepared for this rapid increase in the amount of "gen" --- infact I anticipated some difficulty in maintaining the original size of it and decided (as announced in the editorial of issue No 2) that it would be sound policy to print on only one face of each sheet.

It will be appreciated that since we carry no advertising matter at present to help defray the costs of publication, the whole of this cost must be met by annual subscription. In assessing these I worked on a basis of 10 pages per issue, and to exceed this quota continuously would have us facing bankruptcy long before the year is out.

I am sure that none of you would wish me to restrict the scope of our growing mag, but would rather have me make every possible economy in paper space. With this issue, therefore, we are utilising both faces of each sheet.

I am sorry if this change causes any of you any inconvenience, but, on the other hand, I am very pleased indeed that "our lusty infant should so soon have outgrown it's clothes" --- it demonstrates a very healthy condition.