



DEDICATED TO THE  
ADVANCEMENT OF  
LOW POWER RADIO.  
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No 5.

Q. R. P.

January 1950.

EDITORIAL.

Best wishes to all of you for 1950, OMs. May prosperity lead you through the year, and may you gain increasing pleasure from our hobby.

For my part, this is something of an occasion -- as indeed it should be. There could be no more favourable date on which to bring into being the fuller and more carefully considered function of this journal which you will find proposed in the supplement which accompanies this issue. "Q, R P" has now existed long enough to prove that it is truly wanted -- that it is not just another radio mag, but is filling a definite need. To say that it carries a message to the world would sound reminiscent of pulpit or platform, and yet it is true, for "Q, R P" is the ONLY JOURNAL IN THE WORLD devoted exclusively to Low Power radio and, while our chief service must always be to those who already appreciate the potentialities of the Low Power field, our kindred aim is to spread a realisation of these potentialities among the multitude of SWLs who have yet to find the full depth of radio interest.

In the QRO game there is no doubt that the main thrill centres around the collection of Dx. In QRP circles Dx chasing, while it has got a strong following, is far outweighed by the experimental outlook. This fact is not surprising since, with the advent of the super-het, QRP was cast aside like an old boot and it's further development left to rot.

Do please read and ACT UPON the suggestions I have drawn up in the supplement to this New Year's issue. It is up to us -- you

and me -- to put QRP gear of all kinds back into the top flight of efficiency. It can be done, there is no doubt about that. Proof is easily found in the war-time development of walky-talkies, handy-talkies and like equipment, and in the commercial development of personal radios. Our mission is to instill even greater efficiency into QRP gear for amateur short wave use. But we can only do that if our own organization is highly efficient. And that calls for your action as well as mine.

### ERRATUM.

In the diagram of Ron Turner's O-V-1, facing page 42 (issue No4, Dec. 1949);--

(1): The aerial lead should go to the top end of the REACTION coil, not to the grid coil as shown,

(2): The bias resistor to the cathode of V2 should be 250 ohms, and NOT "250 meg",

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 INTRODUCE YOUR RADIO FRIENDS TO "Q R P". WE WANT EVERY ENTHUSIAST  
 THROUGHOUT THE COUNTRY TO JOIN US IN HELPING TO MAKE 1950 A REALLY  
 MEMORABLE YEAR IN THE HISTORY OF Q R P RADIO DEVELOPMENT.  
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### REACTION WITH MINIMUM H. T.

From C.E.Atherall we have the following interesting notes:--

"Having a lot of 2v valves on hand I recently built up a O-V-O. As on all my receivers I like to keep the HT voltage down for many reasons -- space, noise, etc. -- and it was found that

oscillation could not be obtained much under 20 to 30 volts. So the reaction condenser was removed and the coil closely coupled to the grid coil (as in the old swinging reaction coil idea). A condenser was then put in series with the aerial and it was found that, by using this as reaction, a good valve such as the HL 2 would oscillate on a voltage as low as 15 to 18 volts. It is surprising how smooth the reaction is, it has been tried on normal MW broadcast bands with great success, but when used on high frequencies the old hand capacity snag arises. If I can overcome this it may make quite a novel circuit."

Well, I think we'd all like to hear more of this modification and a diagram would be appreciated. One snag does rather stand out however and that is the problem of re-radiation. No doubt C.E.A., being an old hand at the game, has kept his reaction well controlled, but, in less experienced hands, the rig he describes would seem to make re-radiation dangerously easy. It would be interesting to see what reading is obtained on a field strength meter operated when the Rx is just on oscillation point. In the mean time anyone operating such a layout would be well advised to avoid breaking into oscillation.

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 A QRP RECEIVER IS NOT JUST THE POOR RELATION OF A COMMUNICATIONS  
 Rx, IT IS A SEPERATE ENTITY FOLLOWING A TECHNIQUE OF IT'S OWN. WE  
 NEED YOUR ENTHUSIASTIC HELP IN THE FURTHER DEVELOPMENT OF THIS.  
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### COIL PACKS OR PLUG-INS

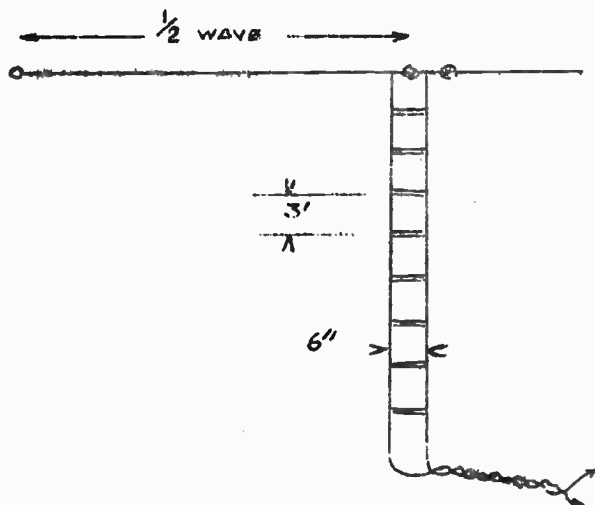
Ron Turner's recent championship of coil packs has, as he anticipated, raised quite a few protests. For instance C.E. Atherall says, ".....We can't afford even the slightest losses and I think the plug in coil wants some beating, especially the types with larger formers (Eddystone, etc) which would in any case be too large for a pack."

Well, as I said before, I'm inclined to agree with this view. A coil pack is almost bound to introduce slightly greater losses than plug-ins, given equal conditions in all other directions and, though a QRO rig has enough magnification that it can afford to accept such a loss, the QRP job MUST conserve every mV of signal strength. Anyway, while the QRO rig has a considerable number of coils to change for each wave range, the QRP job has only one, or at most two, and surely that is not too great a drawback in view of the admitted advantage.

### PRACTICAL AERIALS. (2): THE ZEPPE

In the inverted - L type antenna discussed last month the down lead, or vertical element, assisted in signal collecting. It was connected, you remember, as an "active" quarter wavelength. In the Zepp the only ACTIVE part of the rig is (or should be) the top or horizontal element. The down lead consists, as will be seen from the sketch, of two wires, one carrying the signal current, while the other is insulated at its top extremity. At the Rx end these two wires are, of course, joined to the two ends of the aerial coil. Consequently signals picked up on the "business" down lead will be cancelled out by the equal but opposite-phase signals on the "dummy" down lead. That point about the top end of the "dummy" lead being insulated is important to remember because I have seen more than one diagram recently showing this lead as being connected to the supporting guy rope -- in other words completely or partially earthed, in which condition its effectiveness is destroyed.

Dimensions for the Zepp are a half wavelength horizontal with down leads spaced 6" apart, the spacers being close enough together to prevent undue variation of distance between the leads (say 3ft apart). Theoretically these feeders should run direct to the Rx but, since this is not always possible, twisted flex may have to be used



beyond the point where the feeders are led into the shack. This distance should always be reduced as much as possible (as it should on any aerial). If co-ax is used for the feeder to Rx section it should be well insulated for the reason pointed out above.

The two leads may be taken direct to each end of the Rx aerial coil (not to the grid coil), but even better results will be obtained by using an aerial tuning unit. Such units have been much publicised lately and anyone who has not already made one up would be well advised to refer to the excellent article by Centre Tap in *SWN*, Vol 4, No 9, page 229. It is hoped shortly

to produce the gen on one of these units at present being constructed in the editorial "shack".

It may be noted once again that flex MAY be used in place of spaced leads (or feeders). Such a substitute however is never so good, especially out of doors where weathering will quickly reduce its efficiency still further. Finally, don't forget the "dummy" feeder is not earthed anywhere.

### HINTS -- TEST PRODS.

What do you do with the empty re-fills out of your ball point pens? Throw them away? Well, don't, they make first rate test prods.

There are two main types of re-fills -- the plastic tube kind and the alloy type -- and both can be converted in the same general

way. First, clean out the ink residue from inside, a pipe cleaner being just the thing for this. Then push out the ball from the INSIDE, an operation very easily achieved with a fine wire. Now, from a length of flex strip off enough insulation to allow the bared wire to pass right through the prod. The diameter of the wire being controlled by the size of the ball hole, can be reduced by removing some of the strands, but do be sure to solder down the cut ends. Pass the wire through the prod until the insulation is bedding down closely and then cut away any surplus wire protruding through the brass tip. Solder the wire at the point (just as the lead out of a valve is soldered to it's pin). Finally, clean up the point with a fine file. It is essential to make sure the point is clean before soldering, especially with the plastic tube type (to save softening the tube with too lengthy heating). With a metal type tube it is necessary to use an outer sleeve of systoflex, fairly tightly slipped over the whole length of it (plus about an inch extra at the flexy end), of course leaving the brass tip free. You can make prods in pairs with red and black, or red and green systoflex.

### S. R. P. IN THE SERVICES. (1) -- THE NAVY, by D.W. Auton.

There are few SWLs among the men in the Royal Navy. Those who have ample opportunity to listen (the members of the telegraphist branch) usually have enough of radio without devoting their spare time to it. The few members of the branch who are sufficiently interested to devote some of their non-duty hours to it are usually active hams, occasionally licenced (where a "ticket" can be obtained), but more often, due to lack of /MM licences, pirates.

There are innumerable obstacles in the way of full enjoyment of the hobby. The modern warship usually has a more than liberal collection of antennas for various service purposes and additions are not normally welcomed. The use of naval radio gear by members of branches other than telegraphist (and in some ships the visual signalman) is not possible; and, while while it may be possible to

tap a lead onto one of the ship's W/T aerials, these, being long wires, are not ideal. Besides, in many ships the aerials are used indiscriminately for transmission and reception which does not make unofficial leads-in advisable!

Another difficulty is that, in the majority of cases, it is necessary to operate the Rx on deck in the open; the construction of a ship does not allow for the use of feeders being taken to an enclosed operating position such as the mess deck, unless this opens onto the upper deck. The use of an indoor antenna in the metal hull of a ship floating on salt water is, of course, hardly to be recommended for Dx reception!

If these various difficulties can first be overcome, a floating QTH does mean that you have the opportunity of listening to Dx from a good many places most of which are above the average. QRM from motorboats is severe at times but it is not one tenth as frequent as that which besets the average SWL in a city.

As to the receiver -- a compact one is essential. Service kits make a large enough load without adding fifty or sixty lbs of fragile radio equipment. Although the receiver need not necessarily be a QRP job, conditions do tend to encourage the use of these. An MCR 1 has been the ideal of most Naval SWLs although few have managed to rustle up the necessary to obtain one. Taking the average communications super on a ship would be risky as well as largely wasted effort. It would be necessary either to rack it up to ensure safety, or to remove it to a place of safety every time it was finished with, which is likely to be quite a job. The supply, of course is generally DC, either 110v or 220v, and where AC is required it is produced by converters on the spot.

Facilities available in shore bases are better, but the uncertainty as to the period of stay makes serious work, other than with strictly portable equipment, inadvisable in most cases. In the shore establishments devoted to communications and the training of operators and mechanics there are usually some facilities available, often taking the form of a ham shack. The shack at the Signal School



at Devonport, for example, has an AR 62 and an SX 26, one of which I is normally available for listening for non-transmitting enthusiasts. Conditions in shore bases abroad vary very widely, but in most cases they are more encouraging from the view of the ham and the SWL, as the probable duration of stay is usually known with some degree of certainty -- a point very rare at home. This naturally gives much greater incentive to get down to the location of a suitable place and the assembly of some sort of shack, even though it may only be a corner of the nissen hut you live in.

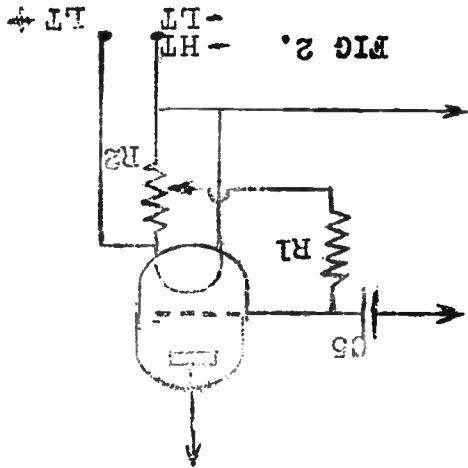
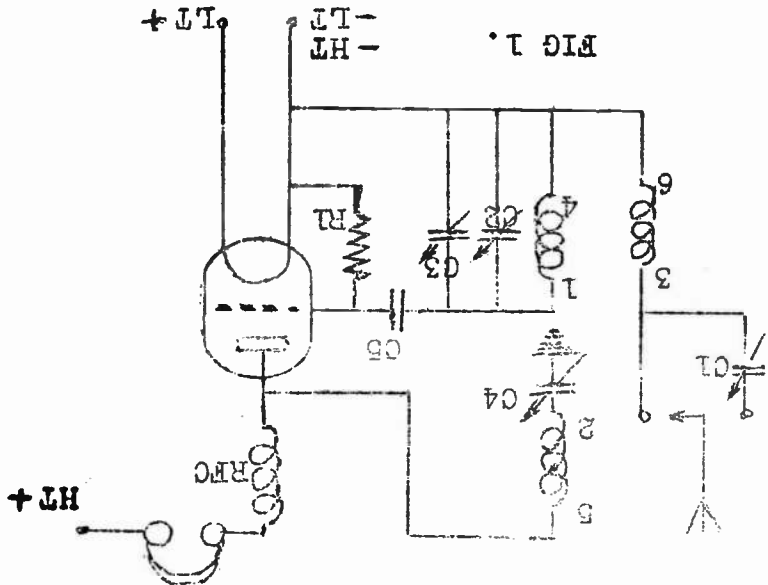
The whole thing can be summed up in two words -- "HOW LONG?" In the majority of cases this is not known, so it is better to be satisfied with the service gear available or -- go QRP.

#### RIG OF THE MONTH, No5: A O-V-C by G.H.M. Yule.

The O-V-C circuit illustrated in Fig 1 is conventional but is capable of amazing results if built and operated correctly. Standard parts are used throughout and do not make it too expensive. For the beginner it is, in my opinion, the ideal circuit. One is able to learn what the various parts of the circuit do, and the function of reaction in the detector circuit. It is open to experiment and is easy to rearrange any circuit values as required.

Standard short wave 6-pin plug-in coils are used, a suitable set of coils can be made up but the four pin coil is not satisfactory, the reason being that the aerial has an important effect upon the receiver performance. The 6-pin coil permits of a loose-coupled aerial arrangement being employed with the result that the aerial damping is eliminated.

Reaction is obtained by means of a standard .0003 mF reaction condenser. A normal fixed condenser (.0002 mF) is connected in the grid circuit with a fixed grid leak of 3 megohms. This value may be varied up to 5 megohms. The RF choke must be of good type, the



Eddystone No 1010 being used in this case. The reward for a good RF choke is smooth reaction and elimination of dead spots.

For construction the usual rules hold good. Solidity and rigidity is essential down to the last wire. It is worth while, even in this simple circuit to plan component layout beforehand, leaving space for additional components if and when required.

A metal panel and chassis are used, the former being 9" x 7" and the latter 8" x 7" x 2". Smaller sizes may of course be used if desired. The sizes given leave ample room for bandspread and tuning condensers, reaction and switch. The reaction control was built in below the chassis deck level. Two additions were later added below the chassis deck -- a .0001 mF trimmer, in series with the aerial lead and brought out to the panel, the moving portion being insulated from the metal work with a fine sleeve. This, of course, can be mounted at the rear of the chassis if desired. The other addition was a 250 ohm grid leak potentiometer, also brought out to the panel and connected as shown in Fig 2 in parallel with the LT supply and one end of the grid leak. The .0001 mF trimmer certainly assists in the elimination of dead spots, and the grid leak potentiometer does slightly assist in reaction control.

The tuning condenser is a .00016 mF Eddystone 1131 type and the bandspread condenser has a maximum capacity of 20 mmF., these two being mounted widely spaced in the panel. The moving vanes of both have been connected direct to earth, terminating with all the other earth connections of the set, so that the metal panel is NOT used as earth for these two condensers. This does make an improvement to the final results and should always be done on short wave receivers.

The aerial used is a 62 ft long wire about 15 ft high and is in a location which is not first class for Dx reception. Changing the aerial direction shows a marked effect, the best direction in my case being NW - SE. The aerial, of course, plays the MOST important part in any short wave reception and deserves ALL one's attention.

The headphones used are low resistance with a small transformer to isolate the phones from HT which is satisfactory up to about 60v. In isolating the phones this transformer also reduces head capacity. Incidentally the phones cost 3/6 plus 2/6 for the transformer -- a grand total of 6/-!

Component values are:--

C1 - 100 pF trimmer.	R1 - 3 megohms.
C2 - 160 pF Eddystone 1131	R2 - 250 ohms pot. (Fig 2).
C3 - 20 pF Raymart bandspread.	Valve - Marconi HL 2.
C4 - 300 pF	Coils - Eddystone 6-pin.
C5 - 200 pF tubular type.	

Coil coverage is as follows on the original Rx:--

Coil 6BB, 9-14 m.	Coil 6LB, 12-26 m.	Coil 6y, 22-47m.
Coil 6R, 41-94 m.	Coil 6W, 76-170m.	

EDITORIAL NOTE: In our issue of Nov 1949 we published, under the heading "Activity", a list of the Dx stations from which the author of the above had actually obtained veries. Here we attach a list of the most outstanding calls he has received on this O-V-O.

14 m/cs, phone: CE1AR, 1BE; CO2MP, 8MP; CN8AW, EA8AG, ET3AE, 3AM; K2UN; MI3SC; OA4M; OX3GE; PA0EI; PY4GJ; ST2RM; TA3EAS, VE1A4, 4IE, 4IS; VP2AA; VS7PS; W4DZN, 4MEW, 5BRR, 5HUT, 6BZE, 6DYU, 4X4AA (ZC6LA).

14 m/cs, CW: CN8BQ; H2IKE; VP8AK; VR3VU; ZP1AJ.

3.5 m/cs, phone: VE1BV, 1GD, 1MNF, 1PLK, 2ENZ, 2MI, 2ND, (3GND).

3.5 m/cs, CW: VE3IB,; W1RC, 8DDE.

RESOLUTIONS:-- Quite a number of you have forgotten to send in any gen this month. Please put "Q, R P" on your New Year Resolution list and don't just say "Oh, any old time later on will do!"

PLEASE DO NOT FORGET THE CONTEST ARRANGED FOR 0000 GMT JAN 1st TO 2359 GMT JAN 7th. LOOK UP THE DETAILS AGAIN ON PAGE 35 OF THE NOV. ISSUE. WE MUST MAKE A GOOD SHOWING IN THIS, OUR FIRST CONTEST, IF ONLY TO PROVE TO THOSE WHO SNEER AND SCOFF, THAT Q, R, P IS NOT JUST A TOY, WE DO NOT PROPOSE TO ARRANGE A LOT OF CONTESTS, BUT WE DO EXPECT FULL SUPPORT FOR THOSE WE DO ORGANISE. THIS TIME WE CHALLENGE THE WHOLE Q, R, O FIELD, AND WHETHER THEY DESCEND UPON US IN FORCE OR JUST GIVE US A SUPERCILIOUS SNIFF, WE MUST SHOW THEM WHAT WE CAN DO.

### ACTIVITY.

ARTHUR LOONEY has turned carpenter during the past month. His little girl (7 years old on Xmas eve) is getting a Doll's House and the Junior Op, aged 4, is due for a toy garage. Moreover the XYL bought a large tin of high gloss interior decorating enamel, so of course Arthur has been off the air for quite a while. He promises to be back with renewed zest for the contest, however. He is going to make up a O-V-O or a O-V-1 for 28 m/cs since he has one of those charming neighbours who blot out the 14 m/cs band with 150 watt cross town QSOs -- nice types, some of these QRO gentlemen!

S. BEHARRELL has been having a tough time on 14 m/cs. He sums up conditions over the last two weeks in one expressive word! Incidentally S.B. asks me to pass on congratulations to Bert Glass on the latter's very fine score in the recent "test run". It certainly was a log to be proud of. Re his own log S.B. is rather apologetic this month-- there's no need to be, CM; as I've pointed out before, it's the record we want, good or bad, as long as it's TRUE. If condx have been bad then a poor log is only to be expected, and it will still get a welcome which is more than we can give to no log at all.

BERT GLASS, having noticed that the majority of our Dx logs

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cover 14 and 28 m/cs has had a session on 7 and 3.5 m/cs (thanks for the thought, OM). He makes some interesting comments on condx on these bands, especially mentioning, in regard to 7 m/cs, the QRM from BC stations and the excess of INTER-G contacts which clutter up the band at the expense of Dx. On 3.5 he adds to these items the spate of DL sigs which echo round that band. Incidentally he used the rig described in our third issue except for new coils wound especially for this occasion. He says he is not yet satisfied with performance on the low frequencies and may have to make a few modifications. We'll pass them on in due course for the benefit of those who are interested in his Rx

RON TURNER, like S. Beharrell, found condx in the latter part of November "absolutely foul", a view that he checked with various QRO friends. So he turned his attention to the constructional bench and a frequency meter has been the outcome. He is now busy calibrating it with the aid of a 100 k/cs crystal. I hope that he will send us all the gen on this as soon as tests prove satisfactory.

C. E. ATHERALL is, up to date, our only BC enthusiast. He, too, found last month's condx very poor except for "some surprises" which appear among the Dx Logs. C. E. A. has acquired some button base valves and is building them into a 1-V-p. He has also been trying out a new O-V-O for minimum usable HT and has some interesting observations elsewhere in this issue.

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DO PLEASE TRY AND GET YOUR GEN IN BY THE 17th OF EACH MONTH, OMs.  
THIS IS THE FINAL DEAD-LINE IF "Q R P" IS TO REACH YOU ON THE FIRST.  
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DX LOGS.

- S. BEHARRELL (York), 1-V-2 (1.2 watts HT), 14 m/cs, phone:--
- 14.11.49 {2227/2300}: VP4TB; 4X4AA. Bad Dx.  
 16.11.49 {2200/2312}: LU6AF; VE3OE; W8BM, 8RL.  
 17.11.49 {2220/2320}: CO3AA; VE1QA; 3LH; W8KVZ. Fair Dx.  
 18.11.49 {2300/2337}: KP4JA; W8BM. Bad Dx.  
 26.11.49 {2205/2255}: PY3CO; VE1BT; W8RH.  
 28.11.49 {2200/2250}: HI6EC; VE1ECH, 2ABL, 3KF, 3LH, 3WI; W8BM, 9DTT,  
 (ØQZ.  
 29.11.49 to 15.12.49: Band closed 1900/2300 hrs.  
 14.12.49 {1926/2252}: KP4AZ; VE1GG, 1HI, 1OA; W3HAX.  
 15.12.49 {2213/2300}: CX2CO; HB9CI; KP4JF; LU9CR; PY7GQ.
- C. E. ATHERALL (Tunbridge Wells), 0-V-1 (.25 watts), 14 m/cs, bc
- 13.12.49: WOOW (11870); CKLO (9630); Bad Dx condx,  
 14.12.49: TAP (9465); HCJB (12455); PTEL8 (11710). Improving later  
 15.12.49: Andorra (5996). No Dx. (at night.  
 16.12.49: WRUA (11790); WNRX (11830). Poor Dx.  
 17.12.49: FBS, Malta (4782); Monte Carlo (6035).
- A. E. GLASS (Plymouth), 0-V-1 (0.5 watts), 7 m/cs, CW: --
- 6.12.49 {2120/2145}: HA4SA; UA5BZ; WLBOR. Condx Bad.  
 7.12.49 {0750/0810}: OH6NZ; W9MBX. Nil Dx.  
 {2230/2245}: FASCF; I1AOH; W2CTN, 2PGU. Condx fair,  
 8.12.49 {2145/2215}: HA4SB; UB5AF, 5KAF; VE1GJ, 1HT; VO6VB; W1ADC,  
 1BOR, 1CPT, 1PMR, 2AIS, 2UAL, 2VVC, 2znq;  
 YO3RI. Condx good.  
 9.12.49 {0630/0700}: CO2PY, 8FH; FASCF; I1AVD; KP4KF; OH5NX;  
 UA3CT; W1HCR, 5QIH. Condx good.  
 {2200/2230}: HA4SA, 4SB, 5C; I1AOH; W2CJX, 2ZU.  
 10.12.49 {0730/0800}: CO8FH; OH6NZ; KH6AAP; SP5ZPZ; W2DMD, 5FVN,

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- A. E. Glass, . . . . . 3.5 m/cw, CW: --
- 11.12.49 (2145/2230): DL3KL, 3VA; DK8QQ; F3DV, 8NC, 8ZW; LA2EC, 4VC;  
OK1VW, 1XB, 2UD, 2UN; OZ2NU, 7IP; PAØGS, ØRLH;  
SM3AKW, 6AIO, 7AML, 7JP. Cond. good.
- 12.12.49 (2145/2215): DL3GZ; HA5FA; SM7BVA.
- 13.12.49 (0730/0800): LA5DB; SM4AE; VELRF Cond. good,  
(1745/1800): LA5DB, 1VR (1 watt); OK1AW, 1CX; SL4BP.  
Conditions fair.  
(2210/2245): FA8CF; LALBQ, 2B, 2EC, 5B; OK1PG; OZ8CO.  
Conditions fair, QRM bad.
- 14.12.49 (0615/0700): OZ2UA; SM5ARZ, 6AAU, 7BHC; VELRF. Cond. good.

- D. G. GORDON (Bournemouth), 0-V-1 (1.2 watts), 28 m/cs: --
- 3.12.49: 23 W states but nothing outstanding.
- 4.12.49: MI3SC; VP6SC; W5OTF/MM (Nr Gibraltar), 6CNY; ZD1BD.
- 5.12.49: UB5RB.
- 6.12.49: TF3SF.
- 8.12.49: KP4FS; W5OTF/MM.
- 9.12.49: LU8CW; YO7LW.
- 11.12.49: W5OTF/MM; ZC1AK; ZB1AB, 1AH, 1AJ, 1AJK, 1AK, 1E.
- 12.12.49: UA3RM; ZS6BU.
- 13.12.49 (0900/0920): KG6AD, 6GS; KR6AS, 6BV (Okinawa); W7JJ/MM  
(Saipan).  
(1300/1330): MI3NC; W5AXL/MM, 5OTF/MM (Red Sea).  
(1800/....): VE6EB; W6GAV.
- 14.12.49: KG6SF; VQ4RJ; W5OTF/MM, 6HLH; ZS6EB.
- 15.12.49 to 15.12.49: Little Dx.
- 17.12.49: OQ5AO; VE6WZ; W3NKF/MM, 6KPC.



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: "Q R P" SUPPLEMENT :  
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: JANUARY 1950. :  
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On this New Year's Day "Q R P" is five months old. It's circulation started at 13 readers and now is over 50. That may not be a great increase, but certainly no other journal (professional or amateur) ever had a warmer reception. Among our circle of subscriber members there exists as great an enthusiasm as could be found in any local club, or among the readers of any commercial publication.

Obviously this New Year issue presents the ideal occasion upon which to propose an idea which has been with me since I first realized the extent of this enthusiasm -- an idea by which we may extract, through this very enthusiasm, an even greater weight of interest, pleasure and real development from our mutual hobby. Many of the great advances of radio have originated among the ranks of amateurs. QRP receiver technique was cast aside, incomplete, with the advent of the super-het and it is up to us to retrieve it and build it up so that it can take it's place again in the forefront of radio. There is so much to be done that we need the organised assistance of every willing helper.

First, then, we must tidy up our organisation and create a more definite means of getting down to actual work upon some of the "Developments Of Low Power Radio" about which we have talked so much in the past four months. For those of our readers, therefore, who's inclinations run to constructional and experimental activities we take this opportunity to announce the formation of THE Q R P RESEARCH GROUP.