

OFFICIAL REPORTS



Q R P :::::

::::::: OF THE

RESEARCH GROUP

ISSUE " FOR
JUL 1950

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Dedicated to the
advancement
of Low Power Radio

QRP

No 11.

"Q R P"

July 1950.

EDITORIAL.

Once again "Flaming June" lived up to it's name (for a couple of days or so). Whether the sudden heat wave made any appreciable difference to radio conditions I cannot say definitely, but I do know, from the falling off in correspondence, that gardens and holidays, allotments and swimming pools certainly took priority of interest. And so they should at this season,

After all ours is a hobby, not a business which we dare not lay aside, and a break now will bring us back to it with renewed zest as the outdoor season closes. Unlike the radio mags which are dependent on sales for the livelihood of their staffs, and which consequently try to drive their readers to continued effort throughout the whole twelve months, we of "Q R P" take a more reasonable attitude and say: "Enjoy yourselves, OMs -- have a jolly good time, and let us hear from you again as soon as you get back to normal routine."

"Q R P" is also quite unlike any of the commercial mags in it's organization. In some ways this is a drawback since, being dependent on very simple and, in many cases, home made production gear, we are deprived of the variety of type and the very great

asset of photography to put our ideas across and are thus condemned to a role of simplicity, although I am continually trying to find ways and means of improving our "format". The most annoying drawback of course is that the printer can get so much more onto a page than our large type will permit and I cannot get over this by increasing the number of pages because the cost of paper is rising steeply now and our 5/- sub just will not cover any such increase. Conversely there is a notable advantage in our being able to adopt the friendly, personal approach which, I believe, has contributed so much to the undoubted popularity of this little mag. The commercial journals cannot follow us in this way because they have to cater for the casual reader who acquires the odd copy on a book-stall, and anyway their circulations are so large that true individualism is bound to be lost to a great extent.

Here, at "Q, R P" HQ, nearly every incoming letter is recognized before it is opened. It is a daily occurrence for my XYL to greet me as I get in from work with a catalogue of who has written and she is most disappointed if she has not recognized any of them correctly.

Incidentally, OMs, I'll let you into a secret, seeing that we are nearly a year old now. If it wasn't for my XYL "Q, R P" would not be half the mag it is. She has relieved me of all duplicating, accounts and filing, to say nothing of having installed herself as proof reader in chief and checker of logs and doubtful calls. And, with equal enthusiasm, our eldest Junior-Op has appropriated the stamp licking dept all to herself.

This super organization has worked well enough through eleven months of the year and has enabled the mag to reach you on time regularly. But the twelfth month has finally proved a stumbling block despite every effort to overcome the fact that I and our

entire "staff" will be away on holiday together. I really have tried very hard to solve this problem, but I have had to admit defeat and must regretfully announce that --

THERE WILL BE NO AUGUST ISSUE.

In an endeavour to mitigate this disastrous announcement let me assure you that "Q, R P" will reach you again on Sept 1st as usual and this will be a bumper number to mark our first anniversary.

In the mean time -- do remember the Portable Contest announced last month and, to those who have no suitable rig let me suggest that they take a mental note of every occasion when it would have been nice to have had a pocket rig handy. If they do that they will certainly make one up for the next year.

And don't stop writing, OMs. Your letters will be forwarded while we are away and we shall all be looking forward to hearing from you as usual.

RON FINCH'S O-V-1 AGAIN.

A note from George Partridge this month, pointing out that the final paragraph on page 119 (May issue) should read:--

KT33C heater.....	26	volts
U31 " 	26	"
EF50 " 	6,3	"

Total heater voltage.....58,3

Heater current is 0,3 amps. Now $250 - 58,3 = 191,7$, and $191,7 \div 0,3 = 639$ ohms.

STATION GW2DDX.

Fred Smith, 2DDX, is our first transmitting member in GW. He has been QRP since obtaining his licence four and a half years ago and, with inputs from 0.5 to 8 watts has had some very good contacts including W and UA. He works 7, 14 and 1.7 Mc/s and very occasionally 3.5 Mc/s. His best contact on 1.7 in daylight was with G3PU of Weymouth (75 miles) with an input of only 0.5 watts; though 3PU reported him as only 339 they held the QSO for over half an hour.

DDX is particularly interested in modulation systems and has tried out all the recognised circuits. He has found that, for an economy system in audio with results nearly as good as plate systems, cathode modulation is hard to beat. Using an input of 8 watts to a 6L6 regen CO, cathode modulating with a class B battery valve (240B Cossor), he usually gets Q8 - S7/8 from stations with inputs of 50 - 100 watts, anode modulated. The quality reports from the carbon mike are described as "excellent".

Fred thinks that he is the only QRP station in the Barry area and, though he finds it pretty hard going at times, he has no desire to increase power and is at present on 1.7 Mc/s nearly every weekend. He is now building a Tx using midget valves of the 6C4, 6J6 series with low heater currents (0.15 in the case of the 6C4) at 6.3 volts. He thinks that, for 150 - 200 volts on the plates they give very high efficiency with low inter electrode capacity and that they are ideally suited to efficient QRP work, their size making it possible to construct a very compact rig.

We are hoping to hear a lot more from 2DDX on the subject of modulation systems in the near future.

A O-V-1 BY A. J. BENNETT.

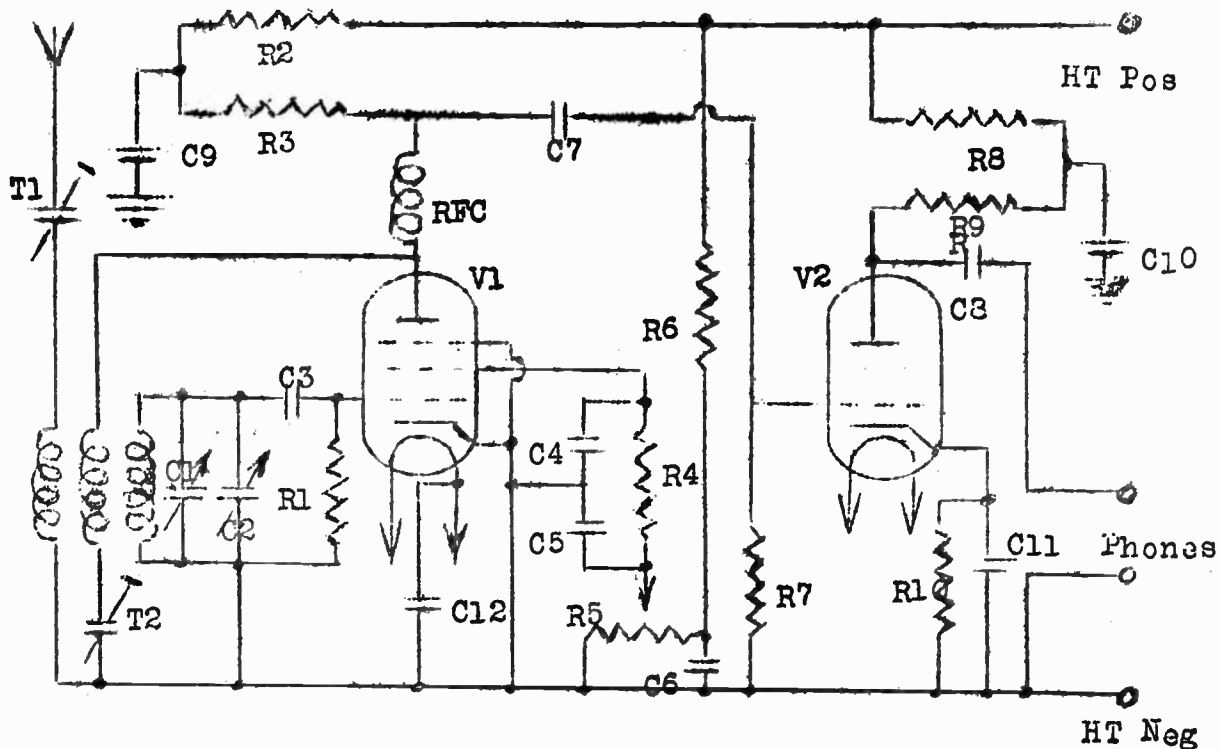
This receiver follows normal practice in it's fundamental circuit but it's designer claims that it is quite outstanding in control of regeneration. By setting the variable resistor, R6, to just within the oscillation point on whatever band is selected, he finds that the whole 180 degrees of the tuning dial can be used without further attention to reaction, making the set virtually controllable by one dial. The reaction trimmer, T2, is used only to pre-set the reaction so that oscillation occurs at nearly the same point on all bands.

The set is used mainly on top band reception with a 66ft long wire antenna and, unlike most amateur built receivers, the resistors and capacitors beneath the chassis are grouped on Tufnol "strips". These strips, which are sub-assembled as far as possible before mounting in the chassis, not only increase neatness of appearance but add greatly to the rigidity of the wiring and also provide easier replacement of components when experimenting.

An important point is the screening of the lead between the EF36 top-cap grid and the chassis.

The Rx can of course be assembled on any size or type of chassis but the one selected by A.J.B. himself has a "high deck" layout with no panel, much on the lines used for many small transmitters. All controls being below the chassis, the dials (except that of the bandspread capacitor) are on the vertical sides. The bandspread control is mounted through the "deck" at one end and has a six inch high aluminium screen between it's dial and the coil holder to prevent hand capacity during tuning.

The coils used are the Eddystone 6-pin series and valve alternatives are:- EF36, EF39 or 6J7 for V1, and 6J5 or 6C5 for V2.



C1 : 100pF	C8 : .1uF	T1 : 100pF	} Postage stamp type trimmers.	
C2 : 10pF	C9 : 8.0uF	T2 : 100pF		
C3 : 100pF	C10: 8.0uF	R1 : 1 Meg	R5 : 50 K	R9 : 30 K
C4 : .05uF	C11: 25uF	R2 : 47 K	R6 : 22 K	R10: 1 K
C5 : .05uF	(25v)	R3 : 100 K	R7 : 1 Meg	
C6 : .1uF	C12: .05uF	R4 : 100 K		

PRACTICAL AERIALS, (7): MATCHING UNITS.

On a number of occasions in past installments of this series I have mentioned the advisability -- infact the necessity in most cases -- of matching the Rx and antenna through a special unit. That such units are not almost universal, especially among the QRP fraternity who's aim must always be the highest possible efficiency, is a perpetual marvel to me. Nobody would consider using a 230 volt bulb in a motor car headlamp, yet the mismatch there is no greater than that of many an aerial-Rx combination now in daily use.

As we have seen in previous discussions, efficiency can be obtained by a resonant length aerial on any one frequency, but if the band is changed either up or down the efficiency of that particular antenna-Rx line up is lost. Working through a matching unit, however, almost any type or length of aerial can be brought into a state of high efficiency by the mere changing of a coil or resetting of a condenser. Even an allegedly resonant rig can often be vastly improved by a matching unit. And the beauty of it is that these units are cheap and easy to construct, and occupy an absolute minimum of space.

There is a lot of experimental work still to be done in this connection and there are such a variety of possible layouts that I do not propose, here, to set out any hard and fast rules to follow. I shall only suggest the foundations from which you can carry on to build a unit to your own specification.

Looking at the sketches which follow you will at once notice the symmetrical assembly of each circuit. The most simple form is that of Fig 1 which will match a single wire aerial of any length into any Rx having a single Ae connection. C1 should be about

100 pF, L2 a plug in coil of suitable size for the band required, and L1 a few turns wound over L2. Here then we have a unit which may be built round a set of home wound four pin plug in coils. A set of commercial coils would be satisfactory as regards L2, but the optimum size of L1 is best decided by experiment so that most commercial coils would need modification.

Fig 2 shows a unit for matching any type of doublet or dipole antenna to an Rx having only one Ae connection. The prototype of this unit was built with $1\frac{1}{2}$ " dia ribbed formers, wound with 18 swg tinned wire, and all connections to the coils were made with the very small size crocodile clips, thus allowing an infinite amount of adjustment. Such a layout lends itself particularly to experiment but would not be too good as a permanent unit since the clips are not absolutely secure. Once the exact settings of all the connections have been determined however the unit might well be re-made around a set of six-pin plug in coils. Originally four sizes of coil were used having 5, 10, 20, and 30 turns and covering 10 to 80 metres.

A modification of this same general scheme is the layout of Fig 3. The additional capacitor here is 100 pF.

Fig 4 is an excellent rig for matching a two element antenna to an Rx having provision for doublet or di-pole connection. Naturally it should be confirmed that the two Rx Ae sockets do in fact lead to opposite ends of the primary of the tuning coil -- some, of course, go to the same point, one direct and one through a series condenser. In the prototype crocodile clips were used again, but this unit, like that of Fig 2, lends itself to a plug-in design after finalising tapping point positions. Again 5, 10, 20 and 30 turns of 18 swg on $1\frac{1}{2}$ " dia formers were used with 100 pF capacity, though in this case the wire was enamelled and closely wound with short tapping stubs soldered on at intervals.

A rather similar rig is excellantly described by R.P.Ellis (G3SN) in the RSGB Bulletin for June 1950 (Vol 25, No 12).

One final point which is of equal importance whatever type of unit is chosen. Complete screening is essential, not only for the coil and condenser but also for the leads out to the Rx for which concentric cable should be used if possible. Stray signals picked up anywhere after the aerial feeders enter the unit may ruin an otherwise first class job.

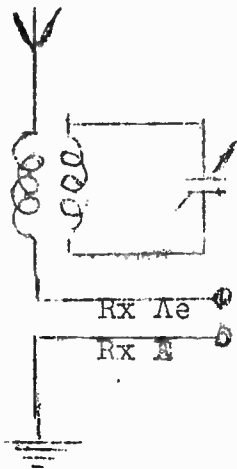


Fig 1.

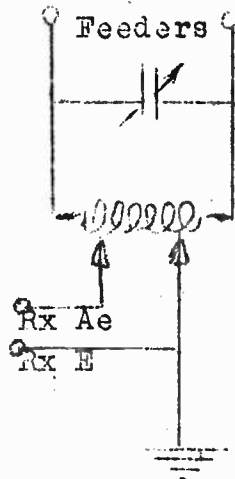


Fig 2.

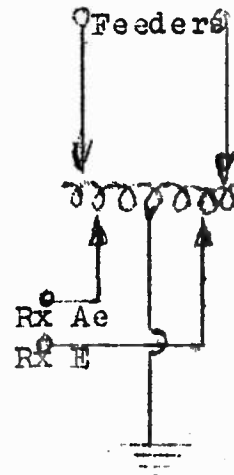


Fig 3.

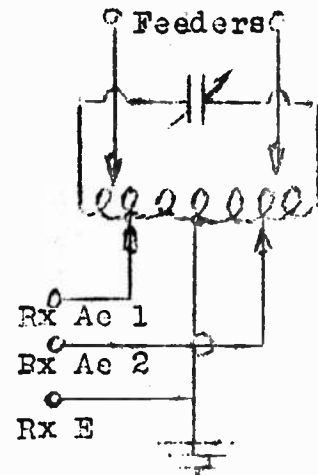


Fig4.

(SB8) : CX2CO; KP4BI; OA4AE; PY4QL; VP3MCB, 6CDI.
17/5/50 (PS8) : LU4PH; PY1AQM, 2CK; W2HUQ; ZB2A; ZC6DO; 4X4AV.
(PS3) : HI6EC.
(MW3) : CO2VW; VE8MI; W7JMY.
(SB8) : PY4ZS; PZ1Z; V75EM; YN4CB.
18/5/50 (PS7) : FA3TN; PY2CK.
(MW3) : PY1QM, 2CK; SV5UN; VELES; VS6BY; W4JXJ; ZB2A.
29/5/50 (PS2) : TA3GVU; W8LYQ; XELCQ.
(MW3) : HK1HB; TILRC; W2LMZ, 6KPC, 9HM; YN4CB.
(SB8) : TI2HC; VE1ZT; W7BHM.
20/5/50 (MW2) : PK4DA; VK9WG, 3GQ; XELAC; YN4CD.
(PS2) : SV5UN, ØWX; W4CDQ; 3V8AT.
(PS7) : MD2MB; SVØWX; VQ4RF; 4X4AT.
21/5/50 (PS1) : VP6CDI; ZC6JM.
(SB8) : PY1SQ, 4PI; PZ1Z; VQ4NSH; YV5AY.
(PS8) : KP4AZ; WLAKY.
22/5/50 (PS7) : CN8ET; FA8PX; MI3AB.
(SB8) : KP4FF; SVØWX; VP6CDI; ZC6JM.
(PS8) : CX2CO; FA3FB; MF2AA; SVØWX; VP6CDI; ZC6JM.
23/5/50 (PS7) : SV5UN.
(SB8) : AR8CC; HI6EC; LU4BH, 7AZ; PY7VA; VP6IS; YV5BQ.
24/5/50 (PS3) : CN8BA.
(PS7) : CN8AQ; IS1HM.
(PS8) : YV5AD.
25/5/50 (PS6) : M1B
27/5/50 (SB8) : CX2CO; KP4ES; OX3BD; W6YX; ZB2A.
28/5/50 (MW7) : LU6AS; KP4FF; P11LC; PY1GQ, 4RJ, 7AC; SV6VO; VP6EDI;
VQ4VL; YV5AY.
29/5/50 (MW7) : CX2OD; FA3JY, 3JZ; IS1H; LU4BH; VQ4SQ; 4X4AT.
(PS8) : CN8ED; LU6AJ, 7HJ; PY1GO; ZB2A.
30/5/50 (PS8) : CE2BQ; CN8EI; CP4DG; HK1IY; LU3TB; MF2AA.

31/5/50 (MW7) : MF2AA; TASFAS (Airborne); VP6EDI; ZC6UN.
 PS8 : AR8AB; EK1AD; FA9RZ; LU4BH; VP6CDI.
 1/6/50 MW3 : CR5UP; VK3MM.
 2/6/50 MW3 : CO2MG; MD2AM; XELAC.
 3/6/50 MW8 : PY2AA; YSLAYN.
 4/6/50 MW3 : EK1HB; MD7IN; PY1GQ; VP1AM; W4LMO.
 SB8 : CE3AE; PY4XI; W4OGX; BBM.
 5/6/50 MW8 : CN8AB; CX1CO; EK1AD; MD7VE.
 6/6/50 MW3 : CN8BA; MD2MD; W6KPC; 7AZR, ØUYC.
 SB8 : AR8BC; LU4BH, 6DJD; PY7GP, 7SG; SVØUN.
 8/6/50 (MW8) : PY1ACQ, 1HUM, 2AK, 2CO, 4AFW, 4ZS, 7AD; W3KPF, 3NCW,
 4BMR; ZB2A.
 9/6/50 (MW8) : CN8EX; EK1MD; LU7BU; PY1GQ, 2BN, 2HAS, 4PI; SVØWY;
 YV5AY
 10/6/50 (MW3) : FA3JY; HK1DZ; VK3HW.
 11/6/50 (SB8) : LU7AE; BY4ZI.

The calls underlined in the above reports are those which we consider to be outstanding Dx and which we have therefore selected for reproduction in our Short Wave News QRP Notes.

AND NOW...., what about a regular TOP BAND report? That is the recognised QRP band and I know that a lot of our Rx operators are well acquainted with it. So who will start a 1.7 Mc/s feature?

.....
 Several of our readers have mentioned an interest in TV as a side-line from their QRP activities. Have you seen the Short Wave Press Data Booklet No 4, "Inexpensive Television", compiled by our own President, Bill Overland, G2ATV?

SHORT WAVE NEWS for June 1950 (Vol 5, No6) is of especial interest to the Group. Not only does it contain the first of our Q R P NOTES, but it also features a O-V-O Rx by our own G.H.M.Yule. This Rx is the one we described in the January "Q R P" and the three excellent photographs of it in the NEWS will therefore be all the more interesting to our readers.

THE C - Z PANEL

	MEGACYCLES				TOTAL	
	3.5	7	14	28	C	Z
Bert Glass (2597) Plymouth	14	18	131	32	133	37
D.Gordon (2508) Bournemouth	12	15	62	84	110	31
R.Brooker (3457) Herne Hill	10(1)	4	75(3)	53(5)	101(8)	32(5)
P.Huntsman (1266) Hexham-on-Tyne	10	12	84(4)	-	84(4)	31(2)
Peter Short (3468) BAOR 15	9	8	79(10)	-	79(10)	31(8)
F.Herridge (3373) Balham	15	38	59	33	76(1)	23(1)
Bob Murray (3038) St Andrews	5	7(3)	58(7)	-	58(9)	19(5)
Ion Glenn (3036) Coldingham	-	2	15	-	17	6

A "TRY-OUT" CHASSIS by G3CHD.

How many would-be experimenters have hesitated to try out a new idea because of the "fag" involved in cutting and drilling a chassis, mounting the components and tediously soldering up the numerous joints, only to find, perhaps, that it doesn't work after all. Well, you can make sure the circuit functions before building it into its final form, and save all the tedious and often expensive operations, by the method to be described.

Fix an aluminium panel firmly to the edge of a wooden baseboard and mount a selection of variable condensers on the panel, together with on/off toggle switch and phone jacks. Screw a number of valve holders (the old baseboard mounting type) onto the baseboard, sufficient to accommodate any necessary coils as well as valves, and complete the wiring for LT supply via the switch and LT fuse (most important). Cut to various suitable lengths a quantity of 20 gauge insulated wire and attach to each end of each piece a crocodile clip (Bulgin "fine wire" clips carry a screw for this purpose).

It only remains for any circuit to be put on test by clipping in lengths of wire to complete the circuit. Components like grid leaks and HF chokes could be provided with a clip permanently attached to one end, while parts such as audio transformers can be laid on the baseboard in any desired position.

This arrangement permits orientation of the components to minimise inter-circuit capacities and reduce feed back, and screening is easily achieved by keeping one or two aluminium panels which can be erected by a single wood screw through a small angle bracket, provided it is bonded to earth or to the panel by the clipped wires.

DEVON CONTEST.

The Exeter Short Wave Listeners Group is running a "Field Day" from 1600 hrs 29th July to 1600 hrs 30th July for teams of two members each using portable gear. Any Devon members interested can obtain full information from Geoff Fowle, 20 Magdalen Rd, Exeter.

AMBITION!

Bob Murray, in forwarding his entry for our own August contest, says that he will be holidaying in the Fort William area for a fortnight and he threatens to send in a log from as near the summit of Ben Nevis as he can get. And not satisfied with that he is thinking of using a hydrogen balloon to hoist a vertical long-wire! Well, that certainly is the kind of ambitious project that calls for encouragement. Who else has had any bright ideas?

pse QSL.

In an endeavour to decorate the corner of the diningroom which I call the "Q R P" Office I have started a panel for members QSL cards. So far I have achieved seven very nice samples and any further specimens will be welcomed.

Incidentally, would anyone be interested in the production of a "QRP RESEARCH GROUP" card? If so I will get out some designs and investigate the question of cost.

HINTS ON THE CODE, by F.A.HERRIDGE.

(Editorial note:- There is no short cut to a mastery of Morse. Practice, practice and more practice is the only answer; but there are one or two wrinkles that have been found to ease the tedium of that process, and F.A.H., having been through the mill, gives us the following hints.)

Never try to memorise the code by appearance. It should be learnt BY SOUND -- learnt until the sounds are recognised without conscious thought. First make yourself a copy of the code like this --

A : dit - DAH
B : DAH - dit - dit - dit
C : DAH - dit - DAH - dit and so on.

Then the spacing must also be learnt correctly from the start before any sending or receiving is attempted. Like this --

The unit of spacing is a "dit". A "DAH" equals 3 dits.

The spacing between elements of a symbol equals 1 dit.

" " " letters equals 3 dits.

" " " words equals 5 dits.

Thoroughly memorise the code this way until any character comes to mind instantly without effort. There are no short cuts. Ignore ALL "easy" methods such as --.- equals "God save the Queen". Always think of the elements as "dits" and "DAHS". Do not attempt sending or receiving until the code is completely mastered

(F.A.H. will have some more hints in the Sept issue)