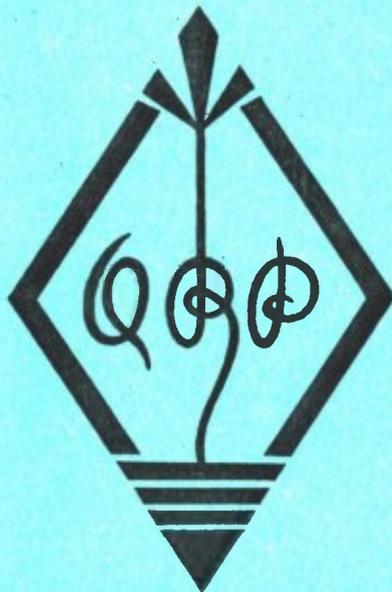


**JOURNAL OF THE
Q R P
RESEARCH SOCIETY**

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--- GREETINGS, O M. ---

I hope that this will reach you in time to bring you our most sincere good wishes for a really happy Christmas and every possible success and prosperity in 1953.

In a duplicated effort like this, you know, it is very hard to put over a truly individual and personal note. A great majority of us have never met and know nothing of each other except by the few brief mentions in these pages, yet I feel convinced that, at some time during the height of your Christmas "revelry", everyone of you will remember and raise a cup or mug or glass (or, maybe, just a smile) in silent toast to fellow members -- to friends, indeed, though they would pass by in the street unrecognised.

I can feel the strong bond of this unaccountable friendship most acutely as I write these lines and, believe me, my greetings, however collective they may appear in type, are as truly personal as though I were shaking you by the hand, OM.

May all the best of health and fortune come the way of you and yours.

73, OM,

..... THE "H Q" R x

In the last issue we mentioned that a very ambitious Rx project had worked it's way to the top of our "priority" list here. A great deal of thought has been given to the subject in the ten day's interval between posting that number and starting this one -- a remark which at once indicates the biggest snag in our plans -- our favourite and ever recurring complaint, lack of time! However, we shall "get there" ultimately, and each month's issue of "Q R P" will contain a progress report and a forecast of our next "ten day's" plans so that all our interested members can give valuable assistance by "pooling" their comments and suggestions. Thus will commence a series of articles unlike anything which has ever been done in any radio mag, so far as I know, for, instead of the usual instructions to do this and copy that, we shall be saying, in effect, "we don't know if it will work but we'll try it".

We've got some tremendously big ideas about this receiver -- nothing great can be achieved without big aims! But don't be alarmed that it will turn out to be a big job in consequence -- we have no respect for any kind of QRO apparatus and this Rx will be very small in size (though miniaturisation is NOT one of our essential aims) and deffinitely in the QRP class. That, added to our other aims, only serves to magnify the bigness of our "ideas".

The birth of this project is the direct outcome of the many recent references to the necessity for a really classic receiver when working in conjunction with a QRP Tx. It has always been assumed that such a Rx will naturally be something in the super-QRO class. We believe that our big ideas, coupled with a good deal of patient experiment, can produce a QRP receiver of equal merit on the score of selectivity, and in which a good many other attributes are combined as well -- as, for instance, it's versatility for use on mains power in the shack and battery power when portable during field days, DF contests and so on.

Let's consider the initial specification.

Our requirements are: Extreme selectivity, high signal to noise ratio, versatility in the use of mains or battery, complete band coverage from, say, 1.7 Mc/s to 144 Mc/s, an accurate and easily read tuning scale, full portability in the main units and a complete range of matching ancillary equipment to cover special purposes such as DF working. Not only must it provide the highest degree of perfection as a communications receiver, but it must also embody special features which will enable the easy use of BK working in conjunction with a QRP Tx. Such are the principles at which we have to aim, bearing in mind, always, that the main unit must be essentially QRP and that, even with all the ancillary gear in use (as, for instance, with an additional converter for 144 plus an amplifier for LS) it must still not exceed a watt or so above our Rx limit of $1\frac{1}{4}$ watts HT.

BUT PLEASE DO REMEMBER THAT WE SHALL NOT ACHIEVE THIS IN THE FIRST MONTH OF CONSTRUCTION -- nor even, maybe, in the first year. It will take a long time to produce what no commercial firm has yet achieved, and we are fully aware of the immensity of the task we have set ourselves allowing for the small amount of time available here.

One last point before we get down to more practical considerations. One of our transmitting members, who has shown great interest in this scheme, has promised to design and construct a matching QRP transmitter so that, eventually, we shall have a complete QRP communications station tried, tested and proved. And every part of this station is to be readily repeatable (ie, no service gear which may go off the market later may be used). Every part which can be hand made WILL be, and where a component can obviously not be produced at home it must be a standard commercial production. Finally, cost will always be born in mind for, though we have some wealthy members in the Society, most are, like ourselves forced to "fiddle" our radio expenses from the housekeeping budget!

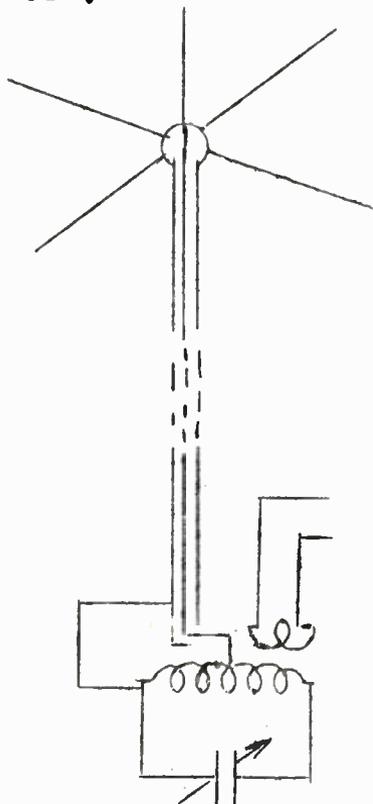
So much for an introduction. I'm sorry it has been rather lengthy but the subject will probably be with us for a very long time. May I repeat -- DON'T EXPECT CONCLUSIVE DESIGNS STRAIGHT AWAY. Wait until we've proved a point before attempting to adopt it.

The first item to receive practical consideration must be the "main unit" which is a complete QRP receiver on it's own and into which all the ancillary equipment will switch or plug as required. Maximum selectivity is the first consideration, therefore a super-het line up has been chosen consisting of a frequency changer, two IFs and detector audio stage. Requirements for battery power and portability point to the use of 1.4 volt valves (at least in the prototype, though other ideas may develop later on). At present it is proposed to use the new Osram X18, 2 x 1T4 and 1S5. One of the IF stages will be switchable so that the unit can, if desired, be used in its basic form of FC - IF - Det/Audio. Variable selectivity will eventually be available though more immediate consideration is to be given to a plug-in crystal filter and a plug or switch-in noise limiter. AVC will also be switchable and, if a small enough meter can be found, we shall incorporate an S-meter.

One chassis has already been built and discarded in favour of a better layout, the current idea on this point being to run the stages in "single-file", almost exactly as they would appear on the theoretical diagram. Dimensions for this have already been laid out on paper and, without any undue cramping the chassis size has been decided at 7" long by 2½" front to back with a panel height of 3½". These sizes could be reduced still further but it does not seem advisable to do so in view of the necessity for a good tuning drive and a readable scale. The Ae and Osc coils will be plug-in type so that other bands can be covered and, as mentioned above, provision will be made for plugging in an RF stage or a second FC cum IF unit as required. For the initial trials we are planning 6 Mc/s for the intermediate frequency, a study having been made of Mr H.B.Dent's articles in Wireless World of Oct 1950 and Feb 1951. In the discarded chassis we had planned to use a butterfly condenser for Ae and Osc tuning (with preset band-set) but, as these condensers give only 90 deg. of tuning we have now made up a staggered stator band-spread condenser from Donco parts (ex junk drawer) on the lines of the Eddystone type 535. As soon as this issue is in the post we will get that new chassis together.

.....: A GROUND-PLANE ANTENNA, PAØXE :.....

This is a real Dx antenna! For reception as well as for transmission I can thoroughly recommend it, especially for QRP Rx and Tx work.



The four horizontals (which should each be a half wavelength long) can be mounted at an angle up to 135 degrees with the vertical for better matching to the 50 ohm coaxial feeder. The vertical should be a half wavelength LESS 5% long and is, of course, joined to the centre conductor while the horizontals are all joined to the outer braid of the coax.

At the matching unit the centre conductor is fed into the centre point of the coil and the outer braid connected to the end of the coil, the condenser being set to give resonance. The link coil provides a low impedance matching into the Rx or Tx.

This antenna is really sharp for one band only, but it has low angle properties, ie, it brings down signal levels of nearby stations (up to 2000 miles) by 1 to 2 S points, and gives 1 to 3 S points improvement on Dx signals both for reception and transmission.

(This antenna is actually in use at PAØXE and Evert says that he expects wonders of it on QRP -- he has been using 50 watts for some months but will shortly be back with a 2 watts band-switched Tx with which he hopes to make WAC.

We should like more gen on this antenna, please Evert, including any constructional details you may be able to give us -- Ed:)

(assumed to be B in our arguments above). then, if we call this time t, B knows that at t plus 1 min, t plus 1 min 20 secs, t plus 1 min 40 secs, t plus 2 min, A is ascending on his original freq. At t plus 2 min 20 secs A is higher by 1/3 Kc/s, at t plus 2 min 40 secs A is higher by 2/3 Kc/s and at t plus 3 min A is higher by 1 Kc/s. Expressed another way, after 2 mins have elapsed from B's KN, A moves higher at 1 Kc/s per min.

(Ed: I feel it should be stressed once again that NO FINALISED RULES CAN BE LAID DOWN AT PRESENT. The above suggestions and those which have gone before are put forward as a basis for discussion. There will follow a period of practical experiment and trial. Even when proved satisfactory they should be left highly flexible for a further period of trial before being generally adopted)

.....: KALEVRELD COMMENTS:

G3AGQ :

Tx: el32 (?), 6V6. 210v HT. 5 watts input.
Ant: 2 1/4 waves long wire on 20. Collins coupler, tuned against E.
Rx:Phillips Berlin HMZL34/OKM with 75 ft antenna.

Qualifying QSOs -- (1) W5DQV, Okmulgee, Oklahoma. 2025 to 2114 GMT on 26th Oct. In 58/99, Out 569 at start to 349 at end. 49 min, 4500 miles 17 overs. (2) LZ1KAB, Sofia, Bulgaria. 1147 to 1211 GMT on 26th Oct. In 597, Out 569. 24 min, 1400 miles, 10 overs. (3)OK1CX, Prague, Czechoslovakia. 1944 to 2004 GMT on 26th Oct. In 589, Out 579. 19 min, 750 miles. 10 overs.

GC2CNC :

Tx: 6V6 CO with one 7028.5 Kc/s xtal only. 250v HT. 5 watts.
Ant: 66 ft end fed, E-W.

Qualifying QSOs -- (1) W2CCR, New York. 1712 to 1834 GMT 26th Oct. In 53/69, Out 449 to 579. 82 min, 3500 miles, 11 overs. (2) LZ1KAC,

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Sofia, In 549, Out 559, 77 Mins, 1400 miles, 11 overs. (3) OKLAHA,
Prague, In 579, Out 599, 61 min, 780 miles, 10 overs.

GC3IDP :

Tx. JO (25L6 with pot in HT line)

Qualifying QSOs -- (1) SM7BPO, 31 min, 9 overs, 550 miles. (2) SM3BHT,
48 min, 10 overs, 730 miles. (3) MB9CA, 23 min, 10 overs, 600 miles.

It is not a coincidence that the first two places have been taken by members of the new Contests Committee. It is actual proof that the selection of these members was well justified and, as they have both put forward a number of constructive criticisms of the contest, we are sure to have a set of really interesting amended rules for this event next year. Let us hope it gains greatly increased support.

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

Ex-GC3IDP, Peter Amy (Bulawayo, S.Rhodesia) is still waiting for the Rhodesian Post Office to make up their minds about his ZE call, and he hasn't yet collected all his gear from home but is making use of an old 1155 and a very temporary antenna. Spares, in Bulawayo, are practically non-existent, and the local's regular evening phone net seems to make condx pretty hectic. But Peter is not dismayed and he seems to be settling in despite the "rains".

Peter Hurstman (Hexham-on-Tyne) has had interesting results on 21 Mc/s and has collected a couple of Ws, an F and a VF6 despite lack of time for much radio lately. He and brother Ron, together with Bob Whitfield, who make up our Hexham contingent, promise to make a combined attack on the C-Z Panel next year, aiming for the first three places

Joe Meardon (Newton Abbot) has been completely off the air for some time owing to a pending B.Sc in chemistry and the new all-dry Rx still awaits completion in consequence.

tal Farm, Trinity, Jersey, Channel Islands.

.....: OPERATING EFFICIENCY :.....

By A.M.H.Fergus, G2ZC, Vice-Pres F.O.C.

The Golden Rule in every two way communication is that "The Receiving End is always in command." The receiver has to get copy no matter what "conditions" are like, and so should have the best possible Rx at his disposal, within his means. No matter the high quality of the Rx, it avails little if the man behind the machine is not fully matched in getting the best out of the machine -- yes, and out of himself.

As the essence of accurate reception is practice, based on experience, and the more the practice the more the experience, the SWL is at an advantage as, free from having to operate a Tx, he can concentrate the more on the reception side.

The line of least resistance usually leads us all to turn in a strong signal, but to gain experience, one should seek out a weak signal as that is of more value in giving us that experience where Rx, and we, must be kept at Concert pitch throughout the transmission.

To this add QRM, QRN, QSB, etc, and one's concentration has to be even more alert.

Looking back over a number of years of operating, the writer is of the opinion that the QRP operator gains experience of the utmost value, for if he can overcome all the difficulties (with patience & concentration) on weak signals, he seems to develop a "sense" peculiar to his "breed", and under the worst conditions, can pull in copy that defeats the less experienced operator.

Just as Rome was not built in a day, so, there is no short cut to producing a good operator -- it may take years, but once the target has nearly been gained, it is worth the long apprenticeship and the

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the patience. The most experienced operator would never claim perfection, as there is always that extra something to overcome.

These few notes are directed to the younger operator, as a guide to the correct approach to the whole subject, for the beginner of today has the future wide open for him to become the good operator of the years ahead. We all found it difficult at first, but with practice and experience the less difficult it becomes. The writer can never understand the outlook of one type of Ham who, reaching a certain stage, is content to remain there, just because it is a "hobby". We marvel at the masterpieces produced by the Amateur Model Engineer, so our target should be on equally high, idealistic lines.

To the beginner a thorough knowledge of the official abbreviations should be a "must", and these are to be found in the GPO Handbook for Wireless Operators, this publication being on a par to King's Regulations and the Army. If you obey what is laid down, then you cannot be wrong!

No attempt has been made to try & explain the "How" in these brief notes, and in fact, that "sensing" of the slight QSY in intense QRM to where there is a comparative calm, knowing that the other end will look for a change (a point which does happen) can only happen where both ends have been well and truly through the schoolroom we may call "experience".

To attain to efficiency is a target that is well worth shooting at, and the more QRP, the more satisfaction at having hit the target.

.....: Rx QUERY SERVICE :.....

We are very pleased to announce the launching of yet another Society Service -- TECHNICAL QUERIES ON RECEIVER subjects. The new Service is being managed by David White, 31, St James Road, Kingston-on-Thames, Surrey. The service is free, but return postage MUST be included, and complete layouts or circuits CANNOT be supplied.

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

	Countries				C Total	Zones	Grand Total
	3.5	7	14	28			
1: Huntsman, P.	20	67	158	7	164	38	202
2: Gardiner, E.W.	26	17	110	28	115	32	147
3: Read, B.J.	12	8	110	7	112	31	143
4: Whitfield, R.	-	-	109	-	109	32	141
5: Stonestreet, A.	18	23	89	8	108	27	135
6: Huntsman, R.	1	34	900	-	102	27	129
7: Garrard, D.	12	6	99	-	101	24	125
8: Gordon, D.G.	22	18	85	23	92	30	122
9: Kenyon, R.L.	2	-	92	-	92	26	118
10: Bason, N	11	19	77	-	80	23	103
11: Bridgewater, E.	-	4	79	-	79	23	102
12: Wells, H. G.	-	16	59	9	66	23	89

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

.....: WANTED :.....

COUNTRIES.COUNTIES.TOTAL.

Baker, W.B.	6.	52.	58
Wells, H.G.	6.	37.	43
Gardiner, E.	4.	35.	39
Godfre, J.	6.	28.	34

BACK NUMBERS OF "Q R P".
 Bob Kenyon of 4, Princes Gate
 West, Liverpool 8, wants to buy
 the following issues of our mag:
 Nos 1, 2, 3, 4, 5, 6, 8, 9, 10.
 Can anyone oblige?

Next month's entries will be the last for the 1952 series. You still have a week or ten days to catch up on the chap ahead of you.
 HAVE A GO !

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

COUNTIES WORKED DURING 1952 ON:	1.8 Mc/s	3.5 Mc/s	7 Mc/s	Total
1: GC2CNC	60	71	69	200
2: G3AGQ	50	47	4	101
3: G2AOL	41	43	-	84
4: G3EDW	30	10	5	45
5: G3HJL	-	32	-	32
6: G3FAU	16	-	-	16
7: G3HCW	12	-	-	12

It can be done in one year! We are more than glad that Monty, despite being in what is, no doubt, the most difficult locality with miles of sea between him and any county at all, has been able to prove the possibilities of this contest. Next year it will, of course be continued, each band gaining a second column -- one for the current year's scores and one for the accumulated totals. Monty will not be taking part in that. Instead he is presenting us with a cup to be won by the entrant gaining the highest score during the year. There will, of course, be a certificate for the winner as well as the standing certificates for any one gaining an eventual total of 200 counties.

Once again we cannot close without expressing amazement that, in twelve months a transmitter can accumulate such outstanding scores, while our SWLs lag so far behind, as witness the TOP Band SWL Panel by comparison with the 1.8 Mc/s column above.

.....: OPERATING PROCEDURE - SUGGESTIONS & AMENDMENTS :.....

(Editor: We are much indebted to G2AOL, Sam Hall, for an extremely interesting, detailed and constructive letter on this subject. We have not space to include the letter in it's entirety here but I have submitted it to G3CED and append his answers to the main points. INCIDENTALLY, I WOULD LIKE TO POINT OUT TO 2AOL AND OTHERS WHO HAVE DOUBTED THE PRACTICAL EXPERIENCE BEHIND OUR SUGGESTIONS OF LAST MONTH, THAT G3CED HAS HAD OVER 20 YEARS EXPERIENCE OF THE SUBJECT AND THAT THE QSY PROCEDURE WHICH HE SUGGESTED IS AN ADAPTATION, SIMPLIFIED WHERE POSSIBLE, OF A SYSTEM TRIED OUT AND PROVED EMINENTLY SUCCESSFUL DURING THE WAR IN CERTAIN VITAL AND MOST DIFFICULT CIRCUMSTANCES.)

G2AOL: The first point which arises is in respect of BK procedure. Due to the low strength of a QRP break signal, it is not by any means certain to stop the transmitted signal and the whole procedure then fails.

G3CED: (a) All BK systems are not entirely BK
(b) A good many ops, although signing BK, obviously don't attempt to work the system as such.

(c) In heavy QRM (whether QRP or not) it is frequently not possible for the receiving stn to IMMEDIATELY interrupt the transmission. Only a prolonged succession of dots will do this.

G2AOL: I would suggest...a definite time limit per over, say not more than 60 seconds

G3CED: Excellent suggestion. Agree entirely on 60 sec duration.

G2AOL: A change of frequency of 1 Kc/s is far too much, being usually out of the frying pan into the fire! After all, the only QRM which can COMPLETELY eliminate a signal is zero beat and then a change of 50 cycles can be quite adequate.

G3CED: This is covered by "US" and "DS" - up a shade or down a shade. The Kc/s indication is used for when a clear channel has been

found the relative distance away.

G2AOL: I would heartily recommend that the unit of QSY be taken as 100 c/s. The U5 would then mean QSY 500 c/s higher in freq & so on.

G3CED: Subdivision of dial into cycles, although very desirable, is usually ruled out by mechanical limitations of slow motion drive mechanism, particularly on HF bands. Also, when in QSO, it is not easy to assess just how many cycles you have moved or intend to move. "US" or "UD" should cover limited movements and, at the same time, the signal itself is reduced to the bare minimum.

G2AOL: When the transmitter is arrested by a string of dots it would mean "change frequency as indicated and repeat last sentence."

G3CED: This point is standard practice.

G2AOL: I cannot approve of the proposed use of CL which already has an amateur meaning and which says "I am going off the air completely", as against QRT which only means cessation of sending. Hence I would propose the use of AS for wait. This being sent instead of KN at the end of an over would mean standby and go ahead when I send KN (ie, receiving stn waiting for channel to clear)

G3CED: CL is sent by a stn to indicate to anyone who may be listening that the stn is switching off his Rx and would not be in a position to answer any further calls for the present. AS means "wait a moment" (as for minor adjustments). KN means "already in communication!"

The following PROCEDURES have been submitted by G2AOL and have been agreed, by G3CED, to offer improvements over the original scheme.

PROCEDURE 1A, FOR PARTIAL QRM: Station A sending and B receiving Heavy QRM appears on A. B waits until end of over, meanwhile assessing the necessary frequency shift needed to clear the interference, a quick enough job if only a few hundred cycles as Rx need hardly be retuned for this (G3CED: This point demonstrates the uselessness of indications based on a few cycles). When A atops, B sends the appropriate QSY signal 3 times followed by KN, A then changes freq as directed, sends callsign once only for identification to B, and repeats

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last over. (G3CED: One transmission of call sign is hardly adequate). Note that there is no further reference to B until repeat is complete with consequent appreciable saving in communication time.

PROCEDURE 1B, FOR PARTIAL QRM: Station A sending and B receiving. Heavy QRM appears on B's freq while A is sending. When A stops he finds QRM instead of B. A immediately assesses the necessary freq change to put B in the clear and 1 minute after taking over from B he sends the appropriate QSY signal 3 times followed by KN. If B does not respond A repeats the process three times more at 20 second intervals. B responds by changing freq as directed, giving call sign once, and the QSO is picked up again by B giving A details of anything missed etc. If B does not respond after the original directive and 3 repeats, A can assume total QRM at both ends and proceed to apply Procedure 2.

PROCEDURE 2, TOTAL QRM: A sending, having heard B's previous over and KN in the clear. A stops sending and hears QRM instead of B. He applies Procedure 1B which fails. He then moves higher in freq by about 330 c/s and after 20 secs repeats the directions to B which he has already been using in procedure 1B. If B again fails to appear A moves higher in freq in steps of about 330 c/s at 20 sec intervals, repeating his instructions to B at each step. The QSO must now come to life again fairly quickly, as soon as A is in the clear to B, when B will respond as in procedure 1B.

(Ed: Apart from the two comments inserted above, 3CED is in full agreement with these procedures and suggests their adoption. G2AOL's letter then continues as follows)

It will be seen that the system does involve the use of a reasonable clock with clear seconds hand at each station. This seems hardly too much to expect in these enlightened days as it offers the enormous advantage that B can CALCULATE exactly where A will be at any time should the QSO break down. He does not have to search for what he judges to be a clear spot. What is, I feel, it's greatest advantage is that it will work if condx give different QRM condx at each end of the path -- a point where G3CED's system comes unstuck. For those whose maths are not so hot the timing is based on the last KN received

Den Auton (Swindon) has sent us a most interesting letter on the "H-Q Rx" and allied subjects which is well worth reproducing in full, as always subject to space capacity. He says "...It is quite possible to have a real comm. Rx, well up to the standard of the 1155, BS348, S640 class, yet running at under 2 watts". (If I can't get your letter in the mag, Den, rest assured I have taken full note of it and have it filed for reference).

E.S.Smith (Eltham, S.E.9) has also expressed interest in the "H-Q" Rx and discusses a number of "lines of action" in a most useful letter which also finds it's way into the appropriate file for reference. (Thanks, OM, let's know of any further developments).

GC2CNC, "Monty" Banks (Jersey) is settling in at his new QTH (La Mabonnerie, States' Experimental Farm, Trinity, Jersey, C.I.), but he has a lot of antenna erection to complete yet. . We have had the pleasure of a two day visit from him, here at HQ, and much rag was chewed!

Harry Wells (Waltham Cross) has been giving attention to the audio side of his rig lately and has achieved full LS results with only $2\frac{1}{4}$ watts HT. (Our rules as they stand do not cover this point, Harry -- they control only aerial to phone outlet, so that, at present, you could feed into a Williamson amplifier!)

G2HKU, E.H.Trowell (Sheerness) is yet another FOC member to whom we extend a hearty welcome. He holds the lowest powered DXCC ever issued to Europe by the ARRL.

C2ZC, Capt A.M.H. Fergus (Farnham) is out of hospital, we are glad to report, though he has not yet got on the air again (Good luck, Fergie, and keep out of those places, OM!)

.....: A G I F T ! :.....

Peter White of 46, Purvis Rd, Rushden, Northants, is going out of radio altogether and offers ALL HIS GEAR free to anyone who cares to pay the postage. Drop him a line describing your interests. Much good gear is available and stacks of literature. (Thanks indeed, Peter)